



EC-ASEAN ENERGY FACILITY



Feasibility study for the implementation of energy integrated urban planning (EIUP)  
in ASEAN cities and of applicability of European approaches

# FINAL TECHNICAL PROGRESS REPORT

## ANNEX 01

### EIUP Working Report Form

Blank form to be filled in by new candidates to replicate the approach

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### EIUP Working Report Guideline

Related guideline to the EIUP Working Report Form

Providing detailed instructions how to proceed step-by-step



# Energy Integrated Urban Planning Working Report

**Provided by**

<b>Name of the City</b>	
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Actual version (date)	
Prior updates (date)	
Prior updates (date)	
Prior updates (date)	

Final version (date)	
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# List of Contents

The actual form is a working document, which is completed step by step during the project life time. It is the basic document to report the progress made.

- 1. Socio-economic City Profile .....
- 2. Energy and Environment.....
- 3. Stakeholder Analysis.....
- 4. Definition of problems and targets.....
- 5. Option finding .....
- 6. Action Plan .....
- 7. Summary .....

ANNEXES



## 1 Socio-economic City profile

### 1.1 Summary profile



## 1.2 Geography

### 1.2.1 Country location of the city

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### 1.2.2 Geo-coordinates of the city

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### 1.2.3 Map of the city

### 1.2.4 Area of the city (sqm)

Land area (sqm)	
Water area (sqm)	
Land boundaries (km)	
Coastline (km)	

### 1.2.5 Climate of the city

Lowest day temperature	
Highest day temperature	
Average day temperature	
Precipitation	
Sunshine hours per year	

### 1.2.6 Terrain of the city

Lowest point (over sea level)	
Highest point (over sea level)	



1.2.7 Natural resources

Oil	
Natural gas	
Coal	
Metals	
Others, if so	

1.2.8 Resources of wood and their use

Wood area, in ha	
Wood annual cutting, in m3	
Major use of wood, in %	
- construction material	
- fuel wood	
- production of charcoal	
- other use	
- not used waste wood	

1.2.9 Land use within the city (in % of total)

Arable land	
Permanent crops	
Forest	
Building area	
Other use	
Irrigated land	

1.2.10 Major crop production (t/year) or area (in ha)

Crop	Area (ha)	Crop production (t/year)	Way of utilization of waste (e.g. bagasse, rise husk, rustles)	% of utilization of waste by way of utilization
Sugar cane				
Rise				
Corn				



1.2.12 Live-stock production

	Total number	Of which in stables/ poultry farms
Cows and bulls		
Buffalos		
Pigs		
Poultry		
Ships		

1.2.13 Waste management

Estimated waste production, t/year	
Estimated waste collected and dumped, %	
Estimated share of biodegradable part of waste, in %	
Way of use of biodegradable part of waste if any (e.g. sorting and composting)	
Estimated volume of existing dumps, in m3	

1.2.14 Natural hazards

1.3 People in the city

1.3.1 Total population living in the city

1.3.2 Age structure (% of group)

0 – 14 years	
15 – 64 years	
65 years and older	



1.3.3 Median Age (years)

Male	
Female	
All	

1.3.4 Population growth (% per year)

Total growth rate	
Birth rate	
Death rate	
Net migration rate	

1.3.5 Sex ratio (% per group)

Age	Male	Female
At birth		
Under 15 years		
15 to 64 years		
65 and more years		
Total population		

1.3.6 Infant mortality rate (in %)

--

1.3.7 Life expectation at birth (years)

Male	
Female	

1.3.8 Ethnic origin or nationalities of the population

Majority (in %)	
Ethnic groups (provide % of each group)	

1.3.9 Religions


1.3.10 Languages

--





1.3.11 Literacy (provide your definition)

Total population (in %)	
Male (in %)	
Female (in %)	

**1.4 Government of the city**

1.4.1 Official name of the city government

1.4.2 Head of city government

1.4.3 Council

1.4.4 Administrative divisions

1.4.5 Legislative body

1.4.6 Constitution of executive and legislative bodies of the city government

1.4.7 Political parties and pressure groups of the city

1.4.8 Autonomy and dependency status of the city

1.4.9 Decision making process in the city



1.4.10 Specific responsibilities of the city within the region and the state

**1.5 Economy of the city**

1.5.1 Economy overview

1.5.2 Currency and exchange rates to \$ US and Euro

Name of currency		
Year/exchange rate	To \$ US	To Euro €
January 2001		
January 2002		
January 2003		
January 2004		
Current exchange rate		

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### 1.5.3 Per capita net income per year of the city population (in \$ US)

Population	Local currency	\$ US
Average		
Male		
Female		
Retired persons		
Lowest 20 %		
Highest 20 %		
Percentage of population below poverty line:		

### 1.5.4 Structure of household expenditures

Annual expenditures per household	Absolute (in \$ US)	In % of total expenditures
Food		
Housing		
Energy		
Others		
Total		100,00
Average size (number of persons) of households:		

### 1.5.5 Residential structure

Type categories	Most recent figures (absolute + in %)	Estimated growth rate (in %/year)
Farming houses		
One store buildings (bungalows)		
More store buildings		
Apartment blocs		
Standard categories	Most recent figures (absolute + in %)	Estimated growth rate (in %/year)
High-standard		
Middle-standard		
Sub-standard		
Heating/Cooling equipment		
Electrified		
Size categories	Most recent figures	Estimated growth rate (in %/year)
Average sqm per person		
Location	Most recent figures (absolute + in %)	Estimated growth rate (in %/year)
City centre		
Sub-urban		
Surrounding area		
Qualitative description of residential structure:		

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### 1.5.6 Labour force within the citizens

Labor force by occupation	Most recent figures (N° employees)	Expected growth rate (in %/year)
Agriculture		
Industrial production		
Handicrafts		
Trade		
Private services		
Public services		
Other		
Total		
Unemployment rate	Most recent figures	Estimated growth rate (in %/year)
Male		
Female		
Total		
Qualitative explanations:		

### 1.5.7 Commercial and industrial establishments within the city

Sectors	Number of establishments	Estimated growth rate (in %/year)
Agriculture		
Industrial production		
Handicrafts		
Trade		
Private services		
Other private establishments		
Total		
Qualitative explanations:		

### 1.5.8 Specific public services within the city

Types	Quantitative and qualitative indicators
Education	
Health	
Governmental offices	
Others	
Qualitative explanations:	



1.5.9 City owned properties

Types	Quantitative and qualitative indicators
Buildings	
Land	
Other infrastructure	
Explanations:	

1.5.10 Budget of the city (in \$ US)

Revenues/income	Most recent figures	Remarks
Overall		
List of major sources		
Expenditures	Most recent figures	Remarks
Overall		
List of major expenditures		
Budget balance	Most recent figures	Remarks
Annual		
Cumulative balance over last 10 years		
Credibility ranking of the city including source of information:		

1.6 Communication systems in the city

1.6.1 Radio broadcast stations (Numbers and names)

1.6.2 Television broadcast stations (Numbers and names)

1.6.3 Internet

Number of hosts	
Number of users	



1.6.4 Newspapers (Numbers and names)

Local	
Regional & national	

1.6.5 Telephone

Access to telephone	
Telephone companies	

**1.7 Transportation and traffic**

1.7.1 Railways (stations and major connections)

1.7.2 Highways (major connections)

1.7.3 Ports and waterways

1.7.4 Airports (and major connections)

1.7.5 Pipelines

1.7.6 Public transport system in the city

1.7.7 Individual traffic



## 2 Energy and Environment

### 2.1 Summary description of the energy and environmental situation



**2.2 Energy consumption in the city**

2.2.1 Energy consumption in the most recent year

Unit: Physical Units

**EIUP Energy Commodity Accounts in the year .....**

Flow \ Source	Coal	Gasoline	Natural gas	Kerosene/ Jet fuel	Diesel	Fuel Oil	LPG	Electricity					Bagasse	Fuel Wood	Char-coal	Rice husk	Solar Thermal	Biogas
								Thermal	Hydro	PV	Geo-thermal	Total						
Unit	t	liter	m3	liter	liter	t	kg	kWh	kWh	kWh	kWh	kWh	kg	kg	kg	kg	kWh	
1. Primary Production																		
2. Imports																		
3. Primary Supply (3)=(1+2)																		
4. Transformation																		
Charcoal production																		
Distillation																		
Fermentation																		
Gas production																		
Heat/steam/cold prod.																		
Electricity generation																		
5. Energy Own-use&Loss																		
6. T&D loss																		
7. Total Secondary Supply (7)=(4-(5+6))																		
8. Statistical difference (8)=(7-9)																		
9. Final Energy Use																		
Agriculture																		
Industry																		
Transport																		
Road																		
Air																		
Services (Public/Private)																		
Households																		
Non-energy use																		





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## 2.2.2 Estimated total energy consumption in 5 years ago

Unit: Physical Units

### EIUP Energy Commodity Accounts in the year .....

Flow \ Source	Coal	Gasoline	Natural gas	Kerosene/ Jet fuel	Diesel	Fuel Oil	LPG	Electricity					Bagasse	Fuel Wood	Char- Coal	Rice husk	Solar Thermal	Biogas
								Thermal	Hydro	PV	Geo- thermal	Total						
Unit	t	liter	m3	liter	liter	t	kg	kWh	kWh	kWh	kWh	kWh	kg	kg	kg	kg	kWh	
1. Primary Production																		
2. Imports																		
3. Primary Supply (3)=(1+2)																		
4. Transformation																		
Charcoal production																		
Distillation																		
Fermentation																		
Gas production																		
Heat/steam/cold prod.																		
Electricity generation																		
5. Energy Own-use&Loss																		
6. T&D loss																		
7. Total Secondary Supply (7)=(4-(5+6))																		
8. Statistical difference (8)=(7-9)																		
9. Final Energy Use																		
Agriculture																		
Industry																		
Transport																		
Road																		
Air																		
Services (Public/Private)																		
Households																		
Non-energy use																		



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Explanations of the latest changes and current situation (main reasons):



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## 2.2.3 Estimated total energy consumption in 5 years from now

Unit: Physical Units

### EIUP Energy Commodity Accounts in the year .....

Flow \ Source	Coal	Gasoline	Natural gas	Kerosene/ Jet fuel	Diesel	Fuel Oil	LPG	Electricity					Bagasse	Fuel Wood	Char- Coal	Rice husk	Solar Thermal	Biogas
								Thermal	Hydro	PV	Geo- thermal	Total						
Unit	t	liter	m3	liter	liter	t	kg			kWh	kWh	kWh	kg	kg	kg	kg	kWh	
1. Primary Production																		
2. Imports																		
3. Primary Supply (3)=(1+2)																		
4. Transformation																		
Charcoal production																		
Distillation																		
Fermentation																		
Gas production																		
Heat/steam/cold prod.																		
Electricity generation																		
5. Energy Own-use&Loss																		
6. T&D loss																		
7. Total Secondary Supply (7)=(4-(5+6))																		
8. Statistical difference (8)=(7-9)																		
9. Final Energy Use																		
Agriculture																		
Industry																		
Transport																		
Road																		
Air																		
Services (Public/Private)																		
Households																		
Non-energy use																		



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## 2.2.4 Estimated total energy consumption in 10 years from now

Unit: Physical Units

### EIUP Energy Commodity Accounts in the year .....

Flow \ Source	Coal	Gasoline	Natural gas	Kerosene/ Jet fuel	Diesel	Fuel Oil	LPG	Electricity					Bagasse	Fuel Wood	Char- Coal	Rice husk	Solar Thermal	Biogas
								Thermal	Hydro	PV	Geo- thermal	Total						
Unit	t	liter	m3	liter	liter	t	kg	kWh	kWh	kWh	kWh	kWh	kg	kg	kg	kg	kWh	
1. Primary Production																		
2. Imports																		
3. Primary Supply (3)=(1+2)																		
4. Transformation																		
Charcoal production																		
Distillation																		
Fermentation																		
Gas production																		
Heat/steam/cold prod.																		
Electricity generation																		
5. Energy Own-use&Loss																		
6. T&D loss																		
7. Total Secondary Supply (7)=(4-(5+6))																		
8. Statistical difference (8)=(7-9)																		
9. Final Energy Use																		
Agriculture																		
Industry																		
Transport																		
Road																		
Air																		
Services (Public/Private)																		
Households																		
Non-energy use																		



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## 2.2.5 Estimated total energy consumption in 15 years from now

Unit: Physical Units

### EIUP Energy Commodity Accounts in the year .....

Source Flow	Coal	Gasoline	Natural gas	Kerosene/ Jet fuel	Diesel	Fuel Oil	LPG	Electricity					Bagasse	Fuel Wood	Char- Coal	Rice husk	Solar Thermal	Biogas
								Thermal	Hydro	PV	Geo- thermal	Total						
Unit	t	liter	m3	liter	liter	t	kg	kWh	kWh	kWh	kWh	kWh	kg	kg	kg	kg	kg	kWh
1. Primary Production																		
2. Imports																		
3. Primary Supply (3)=(1+2)																		
4. Transformation																		
Charcoal production																		
Distillation																		
Fermentation																		
Gas production																		
Heat/steam/cold prod.																		
Electricity generation																		
5. Energy Own-use&Loss																		
6. T&D loss																		
7. Total Secondary Supply (7)=(4-(5+6))																		
8. Statistical difference (8)=(7-9)																		
9. Final Energy Use																		
Agriculture																		
Industry																		
Transport																		
Road																		
Air																		
Services (Public/Private)																		
Households																		
Non-energy use																		



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Explanations of growth scenarios (main reasons):

## 2.3 Energy infrastructure in the city

### 2.3.1 Access to electricity per sector

Sector	In % of sector total	Remarks
Agriculture		
Industrial production		
Handicrafts		
Trade		
Private services		
Public services		
Private households		
Explanations:		

### 2.3.2 Production, selling and buying of electricity by the city by source (MWh)

Source	Production	Buying	Selling
Coal			
Oil			
Natural gas			
Hydro			
Nuclear			
Other			
Total			
Explanations:			

### 2.3.3 List of energy and energy resources suppliers in physical units

Electricity	Recent annual supply (MWh)
Coal	Recent annual supply (tons)
Oil	Recent annual supply (toe)
Natural gas	Recent annual supply (million m <sup>3</sup> )



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Motor fuels	Recent annual supply (toe)
Renewables	Recent annual supply (MWh)
Explanations:	

### 2.3.4 List of energy and energy resources suppliers in physical units

Ownership of energy supply systems (structure of shareholders of installations – plants, networks)	
Owned by the city	
Owned by the state	
Owned by domestic private	
Owned by foreign investors	
Public-Private-Partnership	
Explanations:	

### 2.3.5 Networks

	Electricity	Natural gas	District heating/cooling
Extension/length of network (in km)			
Number of total customers			
Number of private customers			
Number of commercial customers			
Number of public customers			
Losses in the net (technical and economic losses) in %			
Revenue collection rate in total (%)			
Revenue collection rate (%) of private customers			
Revenue collection rate (%) of commercial customers			
Revenue collection rate (%) of public customers			
Explanations:			





## 2.4 Energy policy

### 2.4.1 General description of the city's energy policy

### 2.4.2 Energy pricing policy

Sector/pricing	5 years ago (\$ US/kWh)	At present (\$ US/kWh)	In 5 years (\$ US/kWh)
Agriculture			
Industrial production			
Handicrafts			
Trade			
Private services			
Public services			
Private households			
Motor fuels			
Explanations:			

### 2.4.3 Applied energy policy instruments and impacts on customers

Sector/instruments	Taxes	Subsidies	Standards	Others, please specify
Agriculture				
Industrial production				
Handicrafts				
Trade				
Private services				
Public services				
Private households				
Motor fuels				
Explanations:				



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Sector	Impacts of pricing by taxes, subsidies, standards, other instruments on sectors
Agriculture	
Industrial production	
Handicrafts	
Trade	
Private services	
Public services	
Private households	
Motor fuels	
Explanations:	

Are there revenues for the city from the applied instruments? If so, please specify:

### 2.4.4 Environment – national and international agreements

Party to	
Signed, but not ratified	



## 2.5 Energy use in the city

### 2.5.1 Baseline review of energy use by sector and purpose in the city, in .....

Year		Sectoral energy use in the base year							TOTAL
		farms	industry	crafts	private services	public services	private households	power generation	
energy types	electricity								
	coal								
	oil								
	natural gas								
	renewables								
	motor fuels								
	others								
	TOTAL								
purpose of energy use	steam production								
	machine drive								
	process heating								
	process cooling								
	electrochemical								
	lighting								
	room heating								
	room cooling								
	household appliances								
	communication								
	transport								
	others								

### 2.5.2 Five-year forecast of energy use by sector and purpose in the city in .....

Year		Sectoral energy use in 5 years							TOTAL
		farms	industry	crafts	private services	public services	private households	power generation	
energy types	electricity								
	coal								
	oil								
	natural gas								
	renewables								
	motor fuels								
	others								
	TOTAL								
purpose of energy use	steam production								
	machine drive								
	process heating								
	process cooling								
	electrochemical								
	lighting								
	room heating								
	room cooling								
	household appliances								
	communication								
	transport								
	others								



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2.5.3 Ten-year forecast of energy use by sector and purpose in the city in .....

Year		Sectoral energy use in 10 years							
		farms	industry	crafts	private services	public services	private households	power generation	TOTAL
energy types	electricity								
	coal								
	oil								
	natural gas								
	renewables								
	motor fuels								
	others								
	TOTAL								
purpose of energy use	steam production								
	machine drive								
	process heating								
	process cooling								
	electrochemical								
	lighting								
	room heating								
	room cooling								
	household appliances								
	communication								
	transport								
	others								

2.5.4 Fifteen-year forecast of energy use by sector and purpose in the city

Year		Sectoral energy use in 15 years in MWh							
		farms	industry	crafts	private services	public services	private households	power generation	TOTAL
energy types	electricity								
	coal								
	oil								
	natural gas								
	renewables								
	motor fuels								
	others								
	TOTAL								
purpose of energy use	steam production								
	machine drive								
	process heating								
	process cooling								
	electrochemical								
	lighting								
	room heating								
	room cooling								
	household appliances								
	communication								
	transport								
	others								

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## 2.6 Environmental impact of energy use in the city

### 2.6.1 Actual environmental impacts

Year		Present environmental impact (base year)							TOTAL
		farms	industry	crafts	transport	Services	private households	power generation	
air pollutants	SOx								
	NOx								
	PE								
	others								
	TOTAL								
GHG	CO2								
	CH4								
	N2O								
	HFCs								
	PFCs								
	CF6								
	TOTAL CO2 equ								
Other	solid waste								
	waste water								
	others								
	TOTAL								

### 2.6.2 Five-year forecast of environmental impact

Year		Forecast sectoral environmental impact (in 5 years)							TOTAL
		farms	industry	crafts	transport	Services	private households	power generation	
air pollutants	SOx								
	NOx								
	PE								
	others								
	TOTAL								
GHG	CO2								
	CH4								
	N2O								
	HFCs								
	PFCs								
	CF6								
	TOTAL CO2 equ								
Other	solid waste								
	waste water								
	others								
	TOTAL								



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2.6.3 Ten-year forecast of environmental impact

Year		Forecast sectoral environmental impact (in 10 years)							
		farms	industry	crafts	transport	Services	private households	power generation	TOTAL
air pollutants	SOx								
	NOx								
	PE								
	others								
	TOTAL								
GHG	CO2								
	CH4								
	N2O								
	HFCs								
	PFCs								
	CF6								
	TOTAL CO2 equ								
Other	solid waste								
	waste water								
	others								
	TOTAL								

2.6.2 Fifteen-year forecast of environmental impact

Year		Forecast sectoral environmental impact (in 15 years)							
		farms	industry	crafts	transport	Services	private households	power generation	TOTAL
air pollutants	SOx								
	NOx								
	PE								
	others								
	TOTAL								
GHG	CO2								
	CH4								
	N2O								
	HFCs								
	PFCs								
	CF6								
	TOTAL CO2 equ								
Other	solid waste								
	waste water								
	others								
	TOTAL								



## **2.7 Explanations to the energy and environment situation**

2.7.1 Baseline energy balance (table 2.5.1)

2.7.2 Forecast energy balance (table 2.5.2-2.5.4)

2.7.3 Actual environmental impacts (table 2.6.1)

2.7.4 Forecast environmental impacts (table 2.6.2-2.6.4)



## 2.8 Monitoring of energy and environment

### 2.8.1 Areas of monitoring and monitoring bodies

Area of monitoring	Monitoring body	Subjects of monitoring
Explanations:		

### 2.8.2 Reports and further sources of monitoring results available:

Report name	Reporting body	Subjects of report
Explanations:		

## 2.9 SWOT analysis of energy and environment

### 2.9.1 Energy

Strengths	
Weaknesses	
Opportunities	
Threats	

### 2.9.2 Environment

Strengths	
Weaknesses	
Opportunities	
Threats	





### 3 Stakeholder Analysis

#### 3.1 Summary of the analysis of different stakeholder groups

<u>Stakeholders</u>	<u>Characteristics</u> (social, economic, number and structure, organisation, etc.)	<u>Interests and expectations concerning EIUP</u>	<u>Sensitivity towards EIUP</u>	<u>Potentials and deficiencies</u> (know-how, awareness, ability to contribute actively, etc.)	<u>Conclusions for the project</u> (possible actions, how to deal with the group)
<u>Farms</u>					
<u>Industries</u>					
<u>Crafts</u>					
<u>Private services</u>					
<u>Public services</u>					
<u>Private households</u>					
<u>Energy suppliers</u>					
<u>City government</u>					
<u>Transport, traffic in city</u>					
<u>Others, if so</u>					



3.2 Summary of the analysis of different planning sectors

<u>Planning sectors</u>	<u>Overall planning objectives</u>	<u>Major actual planning prospects</u>	<u>Sensitivity towards EIUP</u>	<u>Potentials and deficiencies</u>	<u>Conclusions for the project (recommended actions)</u>
<u>Farming</u>					
<u>Industries</u>					
<u>Housing</u>					
<u>Transport and traffic</u>					
<u>Land management</u>					
<u>Nature conservation</u>					
<u>Energy supply</u>					
<u>Energy consumption</u>					
<u>Waste management</u>					
<u>Water supply</u>					
<u>Public services</u>					
<u>Others</u>					



3.3 List of responsible bodies for the different planning sectors

<u>Planning sectors</u>	<u>Responsible in local government</u>	<u>Superior governmental bodies involved</u>	<u>Non-governmental organisations involved</u>
Farming			
Industries			
Housing			
Transport and traffic			
Land management			
Nature conservation			
Energy supply			
Energy consumption			
Waste management			
Water supply			
Public services			
Others			



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3.4 List of related existing policies, laws; regulations

<u>Planning sectors</u>	<u>Title of the document (date of conclusion, valid for which period)</u>	<u>Main targets and actions</u>	<u>Conclusions for the project (supporting and limiting factors for EIUP)</u>

3.5 Set up of the city’s Energy integrated urban planning team (EIUP-team)

<u>Name of person</u>	<u>Institution and position within this institution</u>	<u>Major concerns and tasks within the EIUP team</u>



## 4 Definition of problems and targets

### 4.1 List of problems and impacts

What is the problem?	Who or what is affected?	What is the effect



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### 4.2 Problem-tree



### 4.3 Problem storage (ABC analysis)

Title of the problem according to chapters 4.1 and 4.2	Ranking of the problem (A B C)
Ranking of the identified and listed problems: A = problem with big pressure and urgent need to be solved B = problem of great importance, which should be solved mid term C = important, but no urgent need of solution	



#### 4.4 Detailed problem analysis and desired improvements

Problem title	
Summary description	
Where this problem occurs concretely	
What are the causes of the problem	
Who is affected by the problem	
What are the effects of the problem	
Desired improvement	
Realisation time	

Problem title	
Summary description	
Where this problem occurs concretely	
What are the causes of the problem	
Who is affected by the problem	
What are the effects of the problem	
Desired improvement	
Realisation time	

Problem title	
Summary description	
Where this problem occurs concretely	
What are the causes of the problem	
Who is affected by the problem	
What are the effects of the problem	
Desired improvement	
Realisation time	





## 5 Option finding

### 5.1 List of specific objectives

Specific objectives	Related problem	Target	Logical order

### 5.2 From objectives to activities

Specific objective (according 5.1)	
What activities would be required and adequate to achieve the objective?	
Why these activities not yet have been realised? What are the obstacles and barriers for realisation?	
What are the suggestions how to overcome these obstacles and barriers?	
What are the concrete first steps to take action?	



### 5.3 Portfolio of energy policy instruments

#### 5.3.1 Applicability of instruments for the city

Instruments	Applicability (full, partly, not)	Existing limitations, if so

#### 5.3.2 Description of applicable and recommended instruments for the city

Instruments	Description



## 6 Action plan

### 6.1 Strategy of the city's EIUP

#### 6.1.1 The city's EIUP policy

#### 6.1.2 Visions and goals

#### 6.1.3 Priority objectives

High priority objectives	Criteria applied to rank priority

Medium priority objectives	Criteria applied to rank priority

Low priority objectives	Criteria applied for non-selection

#### 6.1.4 List of actions

#### 6.1.5 Relevance for planning sectors and target groups (stakeholders)

Sector affected by the plan	Major effects for the sector /target group



### 6.2 Detailed description of actions

Title of the action	
Sectors affected by the action	
Summary description of the action	
Targets of the action	
Tasks and sub-activities	
Qualitative effects, which should be achieved by the action	
Quantitative effects, which should be achieved by the action	
Means for realisation	
<ul style="list-style-type: none"> <li>• Required political commitments</li> </ul>	
<ul style="list-style-type: none"> <li>• Laws and regulations to be issued</li> </ul>	
<ul style="list-style-type: none"> <li>• Financial requirements</li> </ul>	
<ul style="list-style-type: none"> <li>• Organisational requirements</li> </ul>	
<ul style="list-style-type: none"> <li>• Technical requirements</li> </ul>	
<ul style="list-style-type: none"> <li>• Other requirements</li> </ul>	
Risks and assumptions	
Countermeasures to reduce risks	
Feasibility of the action	
<ul style="list-style-type: none"> <li>• Political</li> </ul>	
<ul style="list-style-type: none"> <li>• Economic</li> </ul>	
<ul style="list-style-type: none"> <li>• Social</li> </ul>	
<ul style="list-style-type: none"> <li>• Technological</li> </ul>	
<ul style="list-style-type: none"> <li>• Organisational</li> </ul>	
Main responsible for implementation	
Other stakeholders involved	
Time schedule and milestones of implementation	
Other aspects, if so	



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## 7 Summary



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## Annexes



# Energy Integrated Urban Planning

## EIUP Working Report

## GUIDELINE

### Introduction

The EIUP working report is a document, which should be completed step by step during the project life time by the city. It will be the basic document, where the city and the international expert team can follow the progress made.

- The guideline follows the enumeration of the EIUP working report to give basic advice how to complete the form step by step until project end.
- Any update should be mentioned on the title page.
- Please check and read carefully.

The EIUP working report was especially developed to be applied within the project. It describes the methodology for Energy Integrated Urban Planning (EIUP):

- EIUP should be based on a reliable database.
- EIUP should be in line with superior given frameworks (policy, legislation).
- EIUP should be interrelated with other planning sectors
- EIUP should involve all stakeholders and generate benefits for the whole citizenship.
- EIUP should contribute to sustainable economic, environmental and social development.
- EIUP should respect the local conditions (demands, constraints, resources).
- EIUP should identify feasible and justified improvements.
- EIUP should prepare the reliable ground to take concrete action.

The EIUP working report is structured in several chapters:

- Socio-economic City Profile
- Energy and Environment
- Stakeholder Analysis
- Definition of problems and targets
- Option finding
- Action Plan
- Summary

The seven chapters are logically combined and fulfil the requirements of sound project management and integrated planning:



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- The first two chapters (1, 2) have merely describing character to provide sufficient information about the existing situation in social, economic, environmental and energy-related aspects, from which the city starts its efforts of EIUP.
- The next two chapters (3, 4) have analytic character, to identify the scope of required integration under the view of pressing problems.
- The next two chapters (5, 6) will help to clarify options under the view of their feasibility and implementation aspects. Reaching these chapters the efforts of the detailed analysis done should be awarded by clear recommendations to take action according to clear priorities and feasibility.
- The final chapter (7) should provide a summary, which can be communicated within the city and to third parties.

The EIUP working report is a very comprehensive document; and very comprehensive information will be needed finally, when it comes to justify investments or to raise funds. At the end of the Integrated Planning process most cities will need support from external partners. They should have the document which contains all major information on economy, population, energy etc. This is why we try to provide the participating cities with a single reporting document tailor-made for each of the cities. We should avoid proposing only single measures that look nice, but are not feasible at the end or miss the real crucial demands of the city.

Of course, it is expected that maybe not all information is currently available in the cities, but that they can be added step by step in the future.

- A part of data has already been collected with the questionnaire in the pre-screening phase of the project. Some data have to be reviewed again and adjusted, where necessary.
- But in addition, EIUP requires integration and more details and data on different aspects are needed that are relevant to energy planning.
- There could be some data which cities may not have and can not provide. In that case also no information is information because cities should first try to get data before the implementation of actions.
- Some data on economy or society (chapter 1) may not be available on local city level, but it is very important that the city understands the social-economic impact of energy and environment.
- E.g. if cities cannot fill in data in the energy balance (chapter 2), it can become a target to introduce such a system, which will make possible the energy monitoring.

The EIUP working report should be carried out by a team, not only by a single person. There should be created a group working on the project and reporting to the mayor of the city. This team should work on data collection first; then answer main questions and discuss individual city problems, rank them and finally to identify the priorities and targets, figure out options and compile a feasible action plan at least.

**It is recommended to view first the whole EIUP working report document and the related EIUP guideline before starting with the work.**

- In the following, explanations, hints and ideas, how to complete the working report step by step are listed to each of the seven chapters.
- During workshops and expert missions the international expert team will provide further tools and methodology to specific items.
- To several items the international expert team will provide further materials in kind of textbooks, case studies, etc.





## 1. Socio-economic City Profile

A number of aspects have already been asked and answered in the prior questionnaire, so you can refer to this document, but you should check and correct where necessary. A lot of other information is new and you will have them to collect first.

**Note:** When we talk about the city, we mean only this area, which is covered by your EIUP project.

### 1.1 Summary profile

You should provide a qualitative description of your city of maximum 1 page length. To get an idea, think of an entrance about your city in a country folder, a public relations article or something similar. Contact your press officer, if you need help to make an attractive short presentation, which should give a stranger a first glance about your city. Add a photo, if appropriate and meaningful.

### 1.2 Geography

**1.2.1 Country location of the city:** To which state and which province your city belongs.

**1.2.2 Geo-coordinates of the city:** Asked is the geographical length and width.

**1.2.3 Map of the city:** Provide a map as appropriate.

**1.2.4 Total area of the city (sqm):** It is obvious to answer only these points, which are the fact in your city.

**1.2.5 Climate of the city:** This information could be useful, if we later on consider renewable energy resources or to estimate heating or cooling demand. If no city data are available, take estimates from your province. But you should contact your meteorology or weather station.

**1.2.6 Terrain of the city:** Please, insert requested data.

**1.2.7 Natural resources:** Provide a qualitative and quantitative description. In this respect, it can be useful to mention not only resources, which exist within the close city boundaries, but also neighbouring resources, to which the city has easy access. If so, you should describe the situation accordingly. Highlight the resource assets of your city.

**1.2.8 Resources of wood and their use:** Provide a qualitative and quantitative description. In this respect, it can be useful to mention not only wood resources, which exist within the close city boundaries, but also neighbouring resources, to which the city has easy access. Information on the way of wood use and also on not used waste wood within the city would be useful for assessment on energy use of waste wood potential. You should describe the situation accordingly.

**1.2.9 Land use within the city (in % of total):** Please provide a statistics. This information will be an indicator of the urbanisation stage of your city.

**1.2.10 Major crop production (t/year) or area (in ha):** Provide a qualitative and quantitative description. Presentation of the of the way of agricultural waste utilization (e.g. bagasse, rice husk, rustles) and the % and way of waste utilization of is important for assessment on potential of waste-to-energy use.

**1.2.12 Live-stock production:** Provide a qualitative and quantitative description. Presentation of the location of animals (in stables/ poultry farms) would be used for assessment on the potential of waste utilization for energy production (biogas).

**1.2.13 Waste management:** Provide a qualitative and quantitative description. Presentation of data on estimated waste production, waste collected and dumped, share of biodegradable part of waste and its use, estimated volume of existing dumping site(s) would be very important information for estimation of the potential for energy production (biogas).



**1.2.14 Natural hazards:** If so, please describe type and frequency.

## 1.3 People in the city

**1.3.1 – 1.3.11:** The demographic data asked in these subchapters contain a number of valuable information about the development of the population, the living quality, the culture and the human potentials of your city, which will influence the future. Please refer to your demographic statistic department of your city or other institutions, which may have detailed data. Other common sources of such data are city yearbooks or annual reports.

## 1.4 Government of the city

The items asked in this chapter concern the governmental bodies of your city and how decisions and responsibilities are shared. Remember, that city is this closer entity, which is subject to your EIUP project.

**1.4.1 Official name of the city government:** Provide name according to statutes or articles.

**1.4.2 Head of the city government:** Provide name, title and position.

**1.4.3 City council:** Number of members, name of persons, titles and specific positions within the city cabinet.

**1.4.4 Administrative divisions:** List all divisions/departments belonging to your city administration.

**1.4.5 Legislative body:** Provide number of council members and chambers, if so.

**1.4.6 Constitution of executive and legislative bodies of the city government:** Please provide information to the following topics:

- How are the head of government and the city cabinet members appointed?
- How are the city council members appointed?
- Period of elections and suffrage (mandate to vote).

**1.4.7 Political parties and pressure groups of the city:** Provide a list and the results of recent elections. Please include also non-governmental organisations with relation to the theme of EIUP, if any.

**1.4.8 Autonomy and dependency status of the city:** Please try to explain:

- Has your city a specific autonomous status and if so, what is the meaning and the resulting independency?
- How your city is depending on superior regional and national levels and if so, what are the resulting restrictions for autonomous decision making?

The mandate of cities in this respect is important to know, if your EIUP considers the introduction of regulations, laws or other instruments like taxes or subsidies.

**1.4.9 Decision making process in the city:** Please describe the typical way, how decisions are made in your city: who has the power to make proposals; how the consulting and discussion processes are organised; who finally has the power to decide. The reliability of decision processes is important for foreign or extern investors.

**1.4.10 Specific responsibilities of the city within the region and the state:** Depending on the status, their regional or national ranking or importance, cities may have specific responsibilities (mandatory or voluntary) in their region or state or towards their surrounding. Please describe the role of your city in this respect.



## 1.5 Economy of the city

The data asked for in this chapter concern the population, the economy sectors and the government. These data will be useful to analyse the potentials and limitations to take certain measures like taxation, subsidies, etc. Some of the data could be difficult to be found in your statistics; in these cases you should make estimations, but you have to explain the assumptions you have made to this task. Please provide in the subchapters additional to quantitative data also qualitative information and explanations as appropriate.

**1.5.1 Economy overview:** You should provide a qualitative description of your city's economy of maximum 1 page length. To get an idea, think of an entrance about your city in a country folder, a public relations article or something similar. Contact the office of your mayor, if you need help to make an attractive short presentation, which should give a stranger a first glance about the economy of your city. Maybe you have also a development plan, where the features of economic development are outlined.

**1.5.2 Currency and exchange rate to \$ US and Euro:** To make the development visible, please provide the rates for the years always of the same month (e. g. January). In the following you should use \$ US as international currency.

**1.5.3 Per capita net income per year of the city population:** The per capita income is a typical indicator of the economic strength or weakness of a community. If no statistics exist yet in your city, you can contact your tax authority to get information about income taxes paid by the citizens, which is the usual source to calculate the requested information. For future applications to donors, the percentage of the population below poverty line (international and national benchmarks to be applied) is important information.

**1.5.4 Structure of household expenditures:** The total per capita net income divided by the number of households is equal to the average household income. What households have to spend for basic living requirements like food and housing in comparison to energy is an important indicator for the design of a social-oriented energy policy.

**1.5.5 Residential structure:** This section should help further on to estimate the future energy demand under the view of estimated extension and improvement of the residential structure in your city.

**1.5.6 Labor force within the citizens:** How many people earn their money in which sectors and what change is estimated to happen in the future (estimated growth rate). What is the unemployment rate?

**1.5.7 Commercial establishments within the city:** Please provide a statistics about your establishments and the estimated development per sector.

**1.5.8 Specific public services within the city:** What is the purpose of these institutions? How many of these institutions exist in your city and what is the share of the public sector of the total economy of the city?

**1.5.9 City owned properties:** What is the purpose of these institutions? Provide a list of properties including the value at market prices. Useful quantitative indicators could be e.g. share (%) of city owned buildings of the total building stock.

**1.5.10 Budget of the city:** This section concerns the budget of the city government. You will find adequate information in the annual reports of your city government. The resulting figures are important concerning the ability of the city to do investments or to get credits and funds.

## 1.6 Communication systems in the city

**1.6.1 – 1.6.5:** How the public communication is organised and structured in your city. Media can play an important role promoting your concerns of EIUP. You should know your potential partners from the communication sector well.



## 1.7 Transportation and traffic

**1.7.1 – 1.7.5:** How your city is connected with the region, other cities, etc.? Is your city an important knot in transportation?

**1.7.6 Public transport system in the city:** Of particular interest is the public transportation in the city (bus lines, trolleys, subways, etc.). Other than the regional transportation systems the inner city traffic is subject of the city to manage. A lot of impacts to environment and social conditions depend on related services.

**1.7.7 Individual traffic:** Consequently we ask also for the habits of the citizens, how they move within the city. Adequate information should provide number of private cars and motor bikes registered in the city.



## 2 Energy and Environment

A number of aspects have already been asked and answered in the prior questionnaire, so you can refer to this document, but you should check and correct where necessary. A lot of other information is new and you will have them to collect first.

### 2.1 Summary description of the energy and environmental situation in the city

Provide a summary description of the energy and environmental situation in the city of maximum 1 page. Please list major demands and constraints as well as major problems and assets. Some suggestions could be to describe the air quality in the city corresponding to the use of polluting fuels; the generation of by-products and the resulting pollution of rivers; the degradation of forests due to exploitation of wood resources. On positive side green belts, recreation areas and similar can be mentioned. But it is up to you and depending on the individual city to characterise the present energy and environmental situation.

### 2.2 Energy consumption in the city

The aim of this section is to review recent and current energy supply and consumption on the territory of the city and also to make medium term (up to 15 years) outlook of future energy supply and demand. The review of energy consumption should be based on statistical data or, if not available, on survey of energy suppliers. The energy supply and demand outlook should be based on social and economic outlook of the city.

**2.2.1 Energy consumption per sector – the most recent data:** Please indicate the year of the most recent figures. Provide data on fuel and energy sources and energy use in natural (physical units) in the following categories:

1. Primary Production – refers to quantities of fuels extracted, produced or purchased on the territory of the city as well as primary electricity and heat and/or cold produced on the territory of the city from renewable energy sources (hydro, wind, solar, geothermal, wave, ambient air), and waste heat. The output of primary production are primary forms of energy.
2. Imports – exports – comprises difference between quantities of fuels and energy imported (transported and used) on the territory of the city and quantities of fuels and energy exported (transported and used) outside the territory of the city.
3. Primary Supply – is defined as primary production + difference between imports and exports.
4. Transformation – comprises the conversion of primary forms of energy to secondary ones in the following processes
  - Charcoal production – production of charcoal in charcoal pits
  - Distillation – production of liquid fuel from oil in refineries
  - Fermentation – production of liquid biofuels in fermentation process
  - Gas production – gasification of solid or liquid fuels or production of biogas
  - Heat/steam/cold prod. – Production of heat, steam and/or cold using primary fuels
  - Electricity generation – generation of electricity using primary fuels in a separate process or in combination with production of heat, steam and/or cold
5. Energy Own-use&Losses – own consumption of energy in transformation processes and losses
6. T&D losses – losses in energy transmission and distribution up to the end use
7. Total Secondary Supply – quantity of primary and secondary forms of energy available for end energy use as outcomes of primary production (reduced by inputs into transformation processes) plus output of transformation processes minus Energy Own-use&Losses and T&D losses.
8. Statistical difference – difference between total secondary supply and final energy use (real energy

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used at end users). The statistical difference is usually due to estimates instead measuring.

9. Final Energy Use – equal to the sum of end use sector consumption. Final energy use reflects for the most part deliveries to consumers.

10. Non-energy use – quantities of energy products (mostly oil products) that are used for other than energy purpose (e.g. gasoline for cleaning).

If you don't know exactly, please indicate approximately.

**2.2.2 Total energy consumption per sector in 5 years ago:** If you don't know exactly, please indicate approximately. Please indicate the year. Please provide explanation of the major reasons for the development in past 5 years.

**2.2.3 – 2.2.5 Estimated total energy consumption in the future:** This question is crucial for the planning. Probably you will not be able to answer this point sufficiently at the beginning of the EIUP project. So you will have to come back to this item after further analysis. But in your first draft you should try to insert your preliminary assumptions. The growth of energy consumption depends a lot on the general development of your city. Future social and economic development should be available from the city department dealing with general planning and/or city development. As estimation of the future development is usually connected with high level of uncertainty, the future is described in scenarios. To give you some ideas how to estimate the future development we give you a draft example how to answer this point distinguishing between three scenarios and three time levels:

Scenario/Timing	5 years	10 years	15 years
1. Business as usual	+ 2 %	+ 3 %	+ 5 %
2. Optimistic	+ 5 %	+ 20 %	+ 40 %
3. Pessimistic	+ 0 %	- 3 %	+ 0%
Scenario/Timing	5 years	10 years	15 years
1. Business as usual	No economic changes	Gradually increased living standard	Gradually increased living standard
2. Optimistic	New investments in industry	Prospering economy and higher private demand	Citizens can afford more energy to consume
3. Pessimistic	Stagnation in economy	Closing of some industries	Stagnation in economy

Feel free to design your future by your own. Stay realistic. You may insert more reasons per field as appropriate. Discuss item with your team. Explain how you have reached numbers.

For filling tables 2.2.3 – 2.2.5 the most realistic scenario would be used.

## 2.3 Energy infrastructure in the city

**2.3.1 Access to electricity per sector** – provide information on electrification rate by sector and also future strategy for meeting full electrification rate if applicable and available.

**2.3.2 Selling and buying of electricity by the city by source** – information is required on structure of electricity generation in the city by energy type, buying (import) of electricity by energy source (usually grid average) and selling (export) of electricity to the grid.

**2.3.3 List of energy and energy resources suppliers in physical units** – provide list of major energy form type suppliers and quantities of supply.

**2.3.4 – 2.3.5:** Provide details about the owners and operators of energy infrastructure. These companies will be important as partners to realise many aspects of your EIUP. In first instance, they will be able to provide you with more detailed data on energy consumption (see chapters above).



## 2.4 Energy policy

**2.4.1: General description of the city's energy policy:** Has your city an official energy policy? What are the main issues? If your city does not have such a particular policy, you will find some energy related policy in your overall city policy or related country or province policy.

**2.4.2: Energy pricing policy:** Are there different prices for different sectors in force? What was the development of prices and what will be the future?

**2.4.3: Applied energy policy instruments and impacts on customers:** Maybe your city has already implemented such instruments like taxes, subsidies, standards or other regulations, or for your city adequate superior state policies are applied. Please mention such instruments, and if so, describe the impact of these policies on the concerned customer sectors.

## 2.5 Energy balance of the city

**2.5.1 – 2.5.2:** With the so far collected data mainly in the energy accounts you should be able to complete the baseline energy balance of your city concerning energy types and make a draft forecast. The energy balance is given in one energy unit. You should use the most common energy unit in your county (e.g. toe, BTU, MJ). Applied unit should be entered in the table title. The section purpose of energy use does not follow immediately from the previous questions. At least a general energy audit, at the sector level, may have to be performed to supply this information at the level of detail asked, if necessary and of priority meaning.

This part of the EIUP Working Report is crucial. You should just to try to fill in to get the idea about an extent of data. You will receive the spreadsheet for calculation of the energy forecast and balance during the first visit of the international expert team in your city.

## 2.6 Environmental impact of energy use in the city

**2.6.1 – 2.5.2:** Once you have a reliable energy balance you will be also able to calculate the energy **impact on the environment**. Besides data given in energy balance you will also need emission coefficients per each pollutant. To find such coefficients you should involve your ecologists regarding this matter. Do not forget to implement units in individual rows.

## 2.7 Explanations to the energy and environment situation

**2.7.1 – 2.7.4:** In these chapters you are asked to give an interpretation of the results displayed in the tables of chapters 2.5 and 2.6.

## 2.8 Monitoring of energy and environment

**2.8.1 – 2.8.2:** These chapters have not at least the function to stimulate you to look for further appropriate sources of information. Not all information has to be collected new; some of them will be already available certainly.

## 2.9 SWOT analysis of energy and environment

Once you have reached this point of your EIUP work, you should draw some first conclusions in form of a so called SWOT analysis. SWOT means: S = strength, W = weaknesses, O = Opportunities and T = threats. This interim evaluation will be of practical help for the next steps, because it can be used as introduction for involving further people in the project.



## 3 Stakeholder analysis

Entering this project step the EIUP experts will be fostered to complete their office desk work with other input from a number of stakeholders. With this step EIUP leaves the conventional tracks of only supply oriented energy planning. EIUP tries to locate the main purpose of energy into the centre of planning considerations. And this purpose of energy is to enable people to benefit from energy use to satisfy their needs. Energy is a service provider and not only an abstract physical entity.

**The EIUP-stakeholders are** all Individuals or institutions or groupings of these that may – directly or indirectly, positively or negatively – affect or be affected by the outcomes of the EIUP-project. This means any individuals, groups of people, institutions or firms that may have a relationship with the project are defined as stakeholders.

In order to maximize the social and institutional benefits of the project and minimise its negative impacts, stakeholder analysis identifies all likely to be affected (either positively or negatively), and how. It is important that stakeholder analysis take place at an early stage of the project.

In the case of EIUP we have **different types of stakeholders**:

**3.1:** Groupings of citizens and of economic entities in the city, which may have different potentials, interests, demands and expectations regarding EIUP.

**3.2 – 3.3:** Different planning sectors, which may have different approaches and concerns with EIUP.

**3.4:** On non-personnel level existing laws, regulations and policies may also affect the EIUP and have been considered therefore.

**3.5:** Finally the closer group of your EIUP team will affect a lot the outcome of the EIUP project.

### 3.1 Summary of the analysis of different stakeholder groups

Start with a check of the presented list in the left column of the table and add, if appropriate, further groups of stakeholders, which:

- Might be affected by the project.
- Might affect the project.
- Might become useful project partners even though the project may also be implemented without their contribution.
- Might become conflict partners as they may face the project as a threat for their role and interests.
- Will anyway be involved in the project.

Categorise them according to their role:

- Is the stakeholder group (organisation, group of people, etc.) supposed to work in the project, co-finance it, or benefit from the project?
- Is it an ideally supporting party of the project only?
- Does it have a controlling function, etc.?

**Characterise them from a social and organisational point of view** (insert summary in column of table):

- What are their social and economic characteristics?
- How are they structured / Are they organised? How are decisions made by the group?





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- What is their status in society?

**Analyse them with regard to expectations and relationships** (insert summary in column of table):

- Identify their interests and expectations in the project.
- Analyse the links and relationships between the various stakeholder groups.

**Characterise their sensitivity towards and respect of cross-cutting issues** - energy efficiency, environmental protection, sustainable development (insert summary in column of table):

- Are they sensitive to these issues?
- Do they consider impact of their tasks and activities on these issues?

**Assess the potential, resources and capacities of the stakeholders** (insert summary in column of table):

- What are the existing strengths on which the project could be build up?
- What are the potential contributions on which the project could be build up?
- What are existing deficiencies to be considered by the project?

**Draw conclusions and make recommendations for the project** (insert summary in column of table):

- How to take the group into account?
- Which action to undertake?
- How to deal with the group?

**Please note and be aware of:**

- At a certain point during the analysis process a decision has to be taken on which objectives to adopt for the project, i.e. whose interests and views to give priority. Ideally a consensus should be found between the stakeholders involved - realistically an attempt should be made to achieve a compromise between the different stakeholders' views and interests, although at times it might be more suitable to concentrate on the priorities of core stakeholders rather than on a compromise, "no-body is really committed to". When defining objectives it is important that it is agreed upon and made transparent which views and interests are given priority to. Attention has to be paid to potential conflicts arising from setting priorities. It should be carefully considered where conflicts could arise, how they could be avoided or mediated, and what impact it would have on the project, if the conflicts cannot be avoided or mediated.
- In an ideal case the stakeholder analysis should be designed in a participatory planning workshop, involving representatives of the main stakeholders, ensuring balanced representation of the interests also of women and men.
- Stakeholder analysis and problem analysis are closely connected: without people's views on a problem, neither its nature, nor their needs, nor eventual solutions will become clear.
- The findings of the stakeholder analysis accompany the whole process of the project. Picture the findings according to table format in chapter 3.1 as a "transparency" which can be used as an overlay, be it for further elaboration or cross-checking during other project stages.

### 3.2 Summary of the analysis of different planning sectors

As EIUP requires integration, it cannot be restricted to the considerations of energy and environmental experts or departments only. Others have to be involved and it is rational to analyse their planning, concerns and targets first.

Start again with a check of the presented list in the left column of the table and add or delete planning sectors as appropriate, which:



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- Might be affected by the project.
- Might affect the project.
- Might become useful supporters or promoters of EIUP as the project may also be based on their planning.
- Might become conflict areas as they may face the project as a threat for their role and interests.
- Will anyway be involved in the project.

Categorise the planning sectors to be involved according to their role:

- Is the sector supposed to contribute to the project, co-finance it, or benefit from the project?
- Is it a supporting sector of the project?
- Does it have a controlling function, etc.?

**Characterise the sectors according their overall planning objectives** (insert summary in column of table):

- What are long term visions of the sector planning?
- What is the scope of actions within the city covered by the planning sector?
- What is the status of the planning sector within the community?

**Analyse them with regard to major concrete planning prospects** (insert summary in column of table):

- What are the actual projects planned or implemented under the planning sector.
- Analyse the links and relationships between different planning sectors.

**Characterise their sensitivity towards and respect of cross-cutting issues** - energy efficiency, environmental protection, sustainable development (insert summary in column of table):

- Are they sensitive to these issues?
- Do they consider impact of their tasks and activities on these issues?

**Assess the potential, resources and capacities of the planning sectors** (insert summary in column of table):

- What are the existing strengths on which the project could be build up?
- What are the potential contributions on which the project could be build up?
- What are existing deficiencies to be considered by the project?

**Draw conclusions and make recommendations for the project** (insert summary in column of table):

- How to take the sector into account?
- Which action to undertake?
- How to deal with the sector?

**Please note and be aware of:**

- At a certain point during the analysis process a decision has to be taken on which objectives to adopt for the project, i.e. whose interests and views to give priority. Ideally a consensus should be found between the sectors involved - realistically an attempt should be made to achieve a compromise between the different sectors views and interests, although at times it might be more suitable to concentrate on the priorities of core sectors rather than on a compromise, "no-

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body is really committed to". When defining objectives it is important that it is agreed upon and made transparent which views and interests are given priority to. Attention has to be paid to potential conflicts arising from setting priorities. It should be carefully considered where conflicts could arise, how they could be avoided or mediated, and what impact it would have on the project, if the conflicts cannot be avoided or mediated.

- In an ideal case the analysis should be designed in a participatory planning workshop, involving representatives of the main sectors, ensuring balanced representation of the interests.
- Like stakeholder analysis also the planning sector analysis and problem analysis are closely connected: without the planners' views on a problem, neither its nature, nor their needs, nor eventual solutions will become clear.
- The findings of the sector analysis accompany the whole process of the project. Picture the findings according to table format in chapter 3.2 as a "transparency" which can be used as an overlay, be it for further elaboration or cross-checking during other project stages.

### 3.3 List of responsible bodies for the different planning sectors

Start with adjusting the presented table (left column) according to the analysed planning sectors in chapter 3.2.

Provide a list of bodies, which:

- Might be responsible in the local government for the planning sector
- Might be responsible in the superior (provincial or national) government for the planning sector
- Might be an interesting partner for the project from non-governmental organisations for the planning sector

It is useful to have a parallel list of persons within these organisations, who:

- Might be interested to assist the EIUP project actively
- Might be willing to provide information in open mind
- Might be willing to become member of your EIUP team
- Might be willing to participate in workshops or project meetings
- Might be a conflict partner, who tries to obstruct the EIUP project

**Please note and be aware of:**

- At this stage of the project it would be useful to organise a presentation of the EIUP project to the city's decision makers and administrative heads, in particular of the affected planning sectors.
- Ensure support by your mayor, who ideally should participate this event.
- It could be more practical to manage first the tasks of this actual sub-chapter 3.3 before entering the other subchapters of chapter 3.

### 3.4 List of related existing policies, laws; regulations

You should not struggle with wind mills. All your proposed actions as result of the EIUP project must fit into the existing political and legal frameworks. Of course, recommendations for changes or adjustments of regulations, etc. can be also result of your EIUP work.

But in all cases, you will have to know first, which existing policies and regulations:

- Might affect the project.



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- Might be affected by the project.
- Might be a useful background and base for EIUP.
- Might be in conflict areas with your ideas.
- Will have to be respected in anyway.

### **Please note and be aware of:**

- Existing policies and regulations contain often already appropriate directives, which are conform to modern and adequate energy and environmental targets, but many times they are not enforced or practised sufficiently. Some of these directives could be reanimated with the EIUP project successfully.
- On the other hand some existing policies and regulations might be in contradiction to EIUP targets, and they could be easily repaired on base of good arguments.
- In particular the review of existing policies and regulations referring to energy and environmental policy instruments like taxes, subsidies, standards, etc. is a basic work, which has to be done during the EIUP project.

### **3.5 Set up of the city's Energy integrated urban planning team (EIUP-team)**

Please provide a list of your team and mention

- Name of person
- Institution and position within this institution
- Major concerns and tasks within the EIUP team (Highlight the person, who is the team leader)

An ideal size for a permanent EIUP team is five to eight persons. Less than five would maybe lead to capacity and competence problems. More than ten persons would complicate communication and effectiveness of discussion.

## **4 Definition of problems and targets**

Stakeholder analysis and problem analysis are closely connected as part of the initial "Situation Analysis":

- Without people's views on a situation the problems and potentials will not become clear (stakeholder consultation).
- Without consultations of stakeholders on a situation their views (interest, potentials, etc.) will not become clear.
- Without analysis of potentials, subsequent action by the project may not be feasible by the stakeholders.

Once you have completed the stakeholder analysis you can start now with a detailed problem analysis, which should lead in the final step to the formulation of targets. The EIUP methodology combines several approaches for a comprehensive problem analysis:

**4.1 List of problems and impacts:** Identification of the problems faced by target groups and their impacts (What is/are the problem/s? Whose problems are these? What is/are the effect/s?);

**4.2 Problem-tree:** Visualisation of the problems in form of a diagram, called "problem tree" or "hierarchy of problems" to establish cause – effect relationships.

**4.3 Problem storage:** To set priorities by means of a so-called ABC-analysis.

**4.4 Detailed problem analysis:** To analyse in detail type, size and context of priority problems and

establish target lines for improvements.

## 4.1 List of problems and impacts

The first step of the problem analysis identifies the negative aspects of an existing situation and establishes the **'cause and effect' relationships** between the problems that exist.

In the following some examples are presented:

What is the problem?	Who or what is affected?	What is the effect
Electricity supply is not given over 24 hours a day	Private households	Poor living conditions
	Industry	Limitation of production, losses
Burning of low quality coal	Environment	Bad air quality, degradation of vegetation
	Population	Health problems of children
Poor communication between departments of the municipality	Planning departments, the city development plan	Overlapping responsibilities, misunderstanding, lack of enforcement, etc.

You can see that problems can be identified on several target levels:

- In regard to stakeholder groups (private households, industry, population in total, etc.)
- In regard to the environment and the nature
- In regard to the management and the planning sector on a meta-level

You can see that problems can lead to several impacts:

- On living conditions
- On economy
- On environmental quality
- On health
- On efficiency of policy and administration
- Etc.

It is up to your team to collect the list of your problems according to your individual situation.

### Recommended procedure:

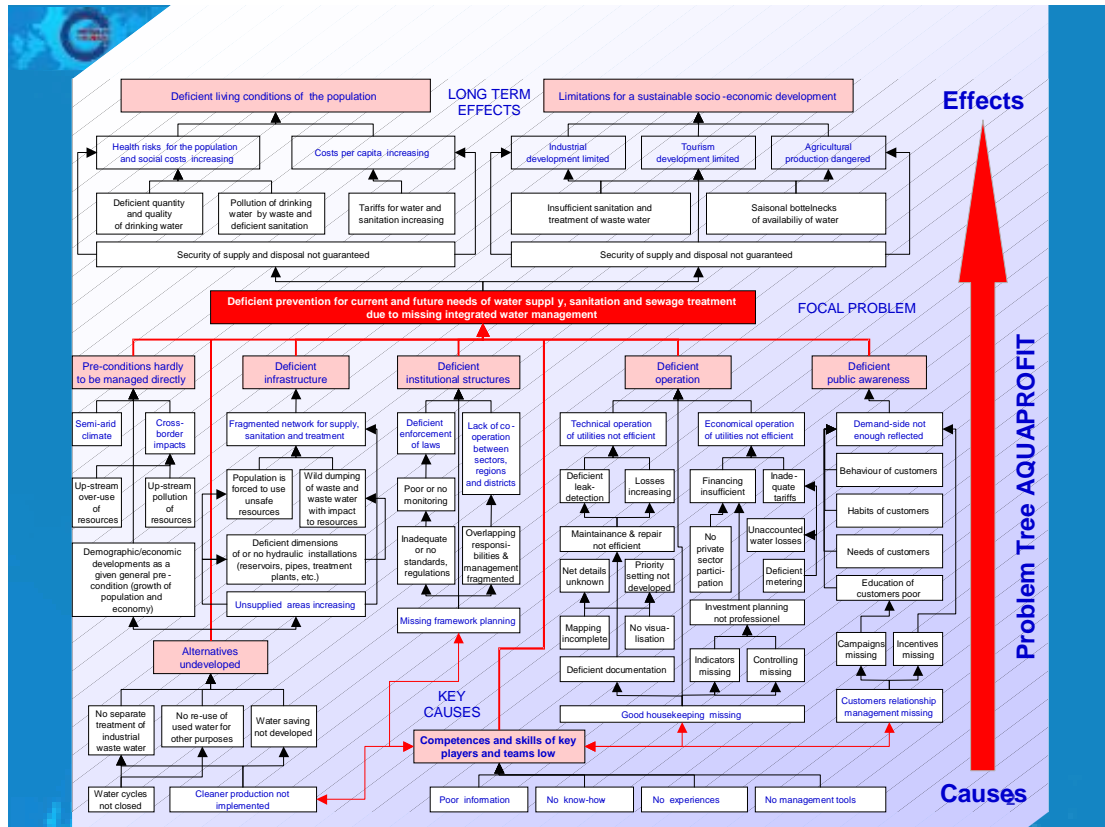
- The task of chapter 4.1 is a typical task for a workshop. You should invite your EIUP team members and further experts as appropriate for a one day workshop.
- Choose a moderator (chair person) for the workshop, who will care for efficient discussions, and a reporter, who will care for documentation of all discussion contributions.
- Start with a short introduction presenting the results of the stakeholder analysis.
- Open a brain storming session, where everybody is invited to suggest problems. Report all suggestions on the black board or flip-chart.
- In the next step the team should collectively sort the suggestions to thematic clusters.
- In a further step each suggested problem has to be linked with the concerned stakeholders.
- In an additional step the effects of each problem and the concerned stakeholders have to be allocated.

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- o Finally you can fill in the list presented in chapter 4.1.

### 4.2 Problem-tree

To visualize the problems we use a diagram, called “problem tree” or “hierarchy of problems” to establish cause – effect relationships. To give you an idea, how a very comprehensive problem-tree could look like, an example of another Centric Austria project dealing with integrated water management is shown. The example from the water sector was chosen not to prejudice your creativity in the energy planning.



The problem-tree appropriate for your EIUP may be simpler, but also more comprehensive. It is up to you.

#### How to establish a problem-tree?

- o Step 1: Identify major problems existing within a given situation (brainstorming)
- o Step 2: Select an individual starter problem
- o Step 3: Look for related problems to the starter problem
- o Step 4: Establish hierarchy of cause and effects:
  - Problems which are directly causing the starter problems are put below
  - Problems which are direct effects of the starter problem are put above
- o Step 5: Complete with all other problems accordingly
- o Step 6: Connect the problems with cause-effect arrows
- o Step 7: Review the diagram and verify its validity and completeness



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- Once complete, the problem tree represents a comprehensive picture of the existing negative situation.

### Note:

- Problems have to be worded as negative situations.
- Problems have to be existing problems, not future ones or imagined ones.
- The position of the problem in the hierarchy does not indicate its importance.
- A problem is not the absence of a solution, but an existing negative situation.

There are two common difficulties that are experienced during problem identification and analysis: inadequate problem specification and the statement of 'absent solutions':

- Inadequate problem specification occurs when a problem is specified in insufficient detail so that it does not communicate the true nature of the problem. Statements such as 'poor management' need to be broken down so that we understand what the problem is, and can therefore analyse the underlying causes - for example, the management problems might include poor financial control, late delivery of key services, etc.
- Absent solutions are problem statements that do not describe the current negative situation, but describe the absence of a desired situation. For example, 'Lack of trained staff' does not describe the specific problem (staff has in-sufficient or inappropriate skills), and risks biasing the intervention towards the absent solution ('training') when in fact it might be an issue of recruitment or personnel management.

### 4.3 Problem storage (ABC analysis)

Obviously to take efficient action, the importance of problems has to be analysed as a next step. To this end you should list all identified problems according to chapters 4.1 and 4.2 in the problem storage.

The ABC-analysis should clear, which priorities exist:

- A = problem with big pressure and urgent need to be solved
- B = problem of great importance, which should be solved mid term
- C = important, but no urgent need of solution

There exist numerous systems of ranking:

- We propose to use a 10 point system.
- Ranking should be done by the whole EIUP team.
- Every member gets ten points, which he/she can distribute amongst the listed problems (more points are allowed per single problem)
- Count the points per problem and you get a draft priority list.
- You should discuss the result before making the final list.

### 4.4 Detailed problem analysis and desired improvements

Once you have agreed a list of problems ranked according priority need of solution you are ready to enter the final step of your problem analysis.

You should do this analysis for each distinct problem according to the provided format:

- Problem title: Take title from your problem storage

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- Summary description: Describe in keywords the problem.
- Where (and when) this problem occurs concrete: Situational context of the problem?
- What are the causes of the problem (according to the problem hierarchy)?
- Who is affected by the problem (according to stakeholder analysis)?
- What are the effects of the problem (according to causes-effects relationship)
- Desired improvement: Quantitative and qualitative indicators of improvement.
- Realisation time: Short-, mid- or long-term (insert year of realisation)

**Note:**

Concerning the desired improvement: At this stage of planning do not mention concrete solutions (neither technical, nor economic and political), but only the effect of improvement you want to achieve and within what time limit.

## 5 Option finding

Option finding is the last step of analysis before you will be able to propose reasonable actions. The option finding procedure consists mainly of three steps:

- **5.1:** The first step is to define your specific objectives, which means to organise the desired improvements according chapter 4.4 in a logical way.
- **5.2:** The second step is the analysis of activities which are adequate to meet the specific objectives.
- **5.2:** The third step is the analysis of instruments, which are available for your city to implement concrete activities.

The relation between activities and instruments is similar to the relation of making music (activity) with instruments. It is obvious that different instruments allow different music.

For this section again a workshop atmosphere (chairperson, reporter, flipchart, etc.) is very practical. Focus is to figure out, how the desired improvements as outlined in chapter 4.4 can be achieved.

### 5.1 List of specific objectives

Analysis of objectives is a methodological approach employed to describe the situation in the future once the problems have been remedied:

- The 'negative situations' of the problem-tree are converted into solutions, expressed as 'positive achievements'. For example, 'Electricity supply is not given over 24 hours a day' is converted into 'Electricity supply is secured over 24 hours a day'.
- These positive achievements are in fact objectives, and should be presented in the list of objectives. This table provides a clear overview of the desired future situation.
- If you like a better visualisation of your objectives and a clear picture of the desired future you can design additionally an objective-tree similar to the problem-tree in chapter 4.2.

To make your objective list operational you should:

- Formulate a target line, which means to define the desired improvement in qualitative and quantitative terms and according to the time limit of realisation.
- In order to define the hierarchy you should rank the objectives: first, second, third, and so on.



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As some objectives have a parallelism in hierarchy you may have more objectives of the same rank.

- If necessary revise statements, add new objectives if these seem to be relevant and necessary to achieve the objective at the next higher level, delete objectives which do not seem suitable/convenient or necessary.

## 5.2 From objectives to activities

Some objectives may be unrealistic, so other solutions need to be found, or the attempt to solve them abandoned. Therefore it is necessary to analyse each objective according to the following aspects:

- **What activities would be required and adequate to achieve the specific objective?** Usually a number of different measures exist on political, legal, organisational, economic, technical, communication, etc. levels, which can be combined as appropriate. List all activities, which seem to be adequate.
- **Why these activities not yet have been realised? What are the obstacles and barriers for realisation?** Of course, you should investigate, why the proposed activities have not been implemented yet, even, if they sound so good and practical. What are the reasons for non-implementation so far?
- **What are the suggestions how to overcome these obstacles and barriers?** In some cases no real obstacles exist. Why not realise now? In other cases you will have to identify first ideas, how to overcome existing barriers. If you have no preliminary ideas, how to overcome implementation barriers, you should skip the concerned activity idea from your list.
- **What are the concrete first steps to take action?** If you have no idea, where to start and who can be addressed as responsible for, the activity is also mature to be sorted out from your activity list.

At the end of this analysis you will have a clear idea of the means-end-relation regarding your objectives.

- This section is crucial for EIUP and should be worked out with care.
- Make a new table for each objective. Duplicate the table as appropriate.

## 5.3 Portfolio of energy policy instruments

Other than activities, which concern the concrete level to act, instruments concern the pre-conditions to take action. The portfolio of instruments describes on a meta-level the scope of a city concerning these pre-conditions. It is obvious, that not all cities, depending on their (in) dependency status, have the same margin to provide the pre-conditions.

- Local energy politicians and energy planners must admit that their margin to influence their local energy system is limited.
- They have to accept political guidelines on higher - regional and national - levels. In some respect they have also to accept global handicaps, e.g. global energy prices.
- To interfere with such pre-conditions on local level would be wasted time and can obstruct constructive planning through demotivation.
- On the other hand the local margins, even if embodied in superior frameworks, give enough space for local planning, if clever interpreted and used.

As already mentioned not all political instruments are available for local policy to the whole extent. Some are reserved for the superior political levels. In particular, cities have less legislative functions than national or provincial levels; on the other hand enforcement of laws and regulations will be executed on the local level in many respects. Local energy planning is thus fore challenged to use the existing margin as appropriate and to the wanted extent. Many policy instruments have the potential to attract investments, which can be stimulated by the local policy.

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- **Fiscal measures:** In OECD countries about two-thirds of fiscal measures concern subsidies (grants, soft loans, guaranteed minimum prices) to support specific investments (e.g. to encourage renewable energies or other environmentally benign technologies). The emphasis of cities should be laid on fostering the development of commercially available technologies and fuels with low emissions but are not yet competitive with conventional technologies and fuels. The instrument tax is restricted for cities usually. But cities can encourage local population and business to fall back on these opportunities provided by the state.
- **Tradable permits:** Cities may participate in these types of market instruments. By now emission trading systems are not yet elaborated very well. Nevertheless, cities may encourage local industry to become addressors of such trading activities within the framework of the Clean Development Mechanism (CDM) and make appropriate preparations. Industry will need some professional advisory support to develop eligible projects.
- **Regulatory instruments:** Local administrations are usually responsible for the enforcement of superior regulations in their area. Cities should seek to use this power to navigate concrete local projects into the appropriate directions recommended through the local situation. Experiences from European countries show, that local administrations could influence the local energy use to a larger extent as the do by now, if they would use their authority better in the fields of spatial planning, licensing of industrial installations, permitting of building construction and careful tendering and procurement activities.
- **Voluntary agreements:** Every city is free to complete its mandatory policy with voluntary approaches. Most of such agreements are negotiated with industry to reduce emissions. The motivation of industry to make such agreements is the higher the more economic benefits can be drawn out. Compared with most mandatory standards voluntary agreements have more often than not the advantage not to freeze technological standards in kind of an abstract state of the art but keep innovation running.
- **Research and development:** Cities may set up own research programmes, perform demonstration projects or should encourage local institutions to participate in provincial or national or even international programmes. In the minimum they should care for sufficient information about such features. The extent of a city's engagement will depend on the availability of own resources (financial, personnel).
- **Information, consulting and advice:** Cities should have an eye on the quality and extent of information available for their inhabitants and business. Usually it is recommended to organise additional or new services in this respect. Experiences from Europe show, that the later is necessary and useful to stimulate more innovative energy projects and to bring the parties together.

For this section again a workshop atmosphere (chairperson, reporter, flipchart, etc.) is very practical. Focus is to figure out, which instruments are applicable for your city. Please follow the two-steps procedure:

- **5.3.1:** Analyse first the applicability of the listed instruments.
- **5.3.2:** Provide a list and description of recommended instruments, which are applicable and useful according to your analysis.

## 6 Action plan

The EIUP action plan is the result of your detailed analysis. It contains the strategy for the future and a detailed description of activities, which you recommend for implementation including the means required for the realisation. It is obvious that this chapter is closely linked with the prior chapters, in so far the presented result is justified by the prior analysis.

### 6.1 Strategy of the city's EIUP

This chapter should send out a clear signal and commitment for improvement and the city's long and mid

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term and strategic goals with regard to the beneficiaries of EIUP, the stakeholders.

**6.1.1 The city's EIUP policy:** This policy is the foundation, which supports everything else, for instance the activities proposed. The policy has to be defined and approved by the city government and should promote the principles of EIUP. Some examples:

- Promotion of the awareness of stakeholders
- Responsibility for the environment
- Saving of resources
- Commitment for the continuous improvement
- Reduction of ecological damage by using the best available technology within reasonable economic limits
- Etc.

**6.1.2 Visions and goals:** This chapter summarizes the desired improvements, which should result from EIUP:

- Long term vision (20 years)
- Mid term goals (5 to 10 years)

**6.1.3 Priority objectives:** Based on the analysis in chapter 5, the action plan should include only these objectives any longer that have proofed to be useful and feasible and of strategic value. In the hierarchy of objectives, the different clusters of objectives of the same type are called strategies. One or more of them will be chosen as strategy for future operation. The most relevant and feasible strategy is selected on the basis of a number of criteria to be agreed upon individually. In the following some possible criteria:

- Priorities of and attractiveness to stakeholders, including time perspective of benefits
- Resource availability: external funds, institutions' funds, expertise required/available
- Existing potentials and capacities (of stakeholders)
- Relevance for sectors and relevance for contribution to overarching policy objectives
- Relationship and complementarities with other planning sectors
- Social and economic acceptability
- Contribution to reduction of inequalities (e.g. income, access to energy services)
- Urgency

It could be the case that some of the objectives analysed before are not desirable or not feasible; you should mention what objectives you want and which you do not want to pursue and why respectively why not. Please provide a list according to the table.

**6.1.4 List of actions:** In chapter 5 you have already analysed different objectives and related activities. You have meanwhile also agreed on priorities. Now you are ready to compile manageable actions. An action can consist of only one activity or a grouping of activities with a number of tasks within the action according to:

- Types of activities (e.g. capacity building)
- Sectors affected by the activities (e.g. building and housing sector, industry)

In practice the second kind of grouping or clustering has figured out to be more practical. Some typical sectoral actions could be:

- Improve the energy use in municipality owned buildings



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- Rehabilitation of existing buildings
- New guidelines for energy efficient buildings - low energy housing
- Clean energy from the net - coordination of district heating/cooling and natural gas
- Force renewables - solar initiative
- Energy-Profit programme for the local industry
- Improve public transport system
- Neutral consulting services for end-users
- Etc.

The expert team will provide case studies and examples during the project.

**6.1.5 Relevance for planning sectors and target groups (stakeholders):** As EIUP is a cross-sector and integrated approach it is important to outline how the stakeholders will be affected, what are the benefits, what are the requested contributions, etc. With this respect you should provide the major effects in a table.

## 6.2 Detailed description of actions

Please provide a table to each action listed in chapter 6.1.4: Go into very detail, as this section is crucial for all implementation steps and the final realisation. Provide all necessary information and explanations.

**Title of the action:** Choose a meaningful and expressing title, which can be communicated and promoted optimally.

**Sectors affected by the action:** Please mention the sectors and stakeholders affected by the action. Be aware of possible cross-impacts.

**Summary description of the action:** What are the overall and specific objectives of the action?

**Tasks and sub-activities:** If the action consists of more than one single activity, list all tasks and activities in logical order.

**Qualitative effects which should be achieved by the action:** What will be the benefits of the action, what indirect effects have to be considered?

**Quantitative effects, which should be achieved by the action:** Please mention the quantitative indicators of the desired impact of the action.

**Means for realisation:** What is necessary to operate the action well? Please answer the different means criteria as follows:

- Required political commitments: If so, which and by whom.
- Laws and regulations to be issued: If so, which and by whom.
- Financial requirements: How much, for what purposes and from whom?
- Organisational requirements: Is the action managed by existing organisations, by whom? Or are further capacities necessary.
- Technical requirements: Please describe in detail.
- Other requirements: If so, please mention.

**Risks and assumptions:** What risks could jeopardize a successful implementation of the action. What pre-conditions are required, which are not under control of the EIUP team?



**Countermeasures to reduce risks:** What measures in your power could reduce risks, if so?

**Feasibility of the action:** There exist several criteria, which in sum describe the feasibility of the action. Please check carefully all aspects.

- o Political feasibility: Commitment of policy to the action given or not?
- o Economic feasibility: Financing given or not? Are the economic impacts to concerned stakeholders reasonable or not?
- o Social feasibility: Are the impacts to society justified and acceptable or not?
- o Technological feasibility: Is the required technology available or not?
- o Organisational feasibility: Is the capacity sufficient to run the action or not?

**Responsible for implementation:** Who will take the lead to realise the action? What is the margin of the leader to make decisions? Who will do the monitoring?

**Other stakeholders involved:** Does action need support by others, e.g. planning sectors? Is there a sharing of responsibilities?

**Time schedule and milestones of implementation:** Start and end date of the action. Interim and final evaluation of effects planned. Are there stop-or-go criteria formulated for the action?

**Other aspects, if so:** As a checklist never is perfect, please provide further information or explanations here as appropriate.

## 7 Summary

Provide a **1-page summary** of the project which can be disseminated to decision makers and to the public as well. The summary should contain:

- o **Headline:** Find an attractive title.
- o **Trailer text:** Provide an abstract of not more than three lines.
- o **Long text:** Including information to the project concerning What, Who, Why, When, How
- o **Contact:** Provide information, who should be contacted concerning the project if wanted.

As the working report should be updated several times, you should make a summary even at project begin and periodically update it by time.

- o You can use the summary as press release or folder to approach stakeholders, inform your chiefs and the media.
- o Don't forget to mention the international expert team under leadership of CENTRIC AUSTRIA INTERNATIONAL and the financial support provided by the European Commission under the framework of the ASEAN Energy Facility Programme governed by the ASEAN Centre of Energy (ACE).

## Annexes

You should collect all materials used for the project and list it accordingly, e.g.:

- o Information sources for data collection, training materials
- o Draft versions of the working report
- o List of persons and institutions contacted during the project or participated in meetings and workshops



## EC-ASEAN ENERGY FACILITY



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- o Agendas, reports of meetings and workshops, etc.