

Project Monitoring Performance Guide

Action D.1 Assessment of the environmental impacts before and after the project's implementation

Athens, June 2019





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Author			Spiros V	asiliadis, SYMPRAXIS TEAM
Reviewers			Alexand	er Deliyannis, SYMPRAXIS TEAM
			Frances	ca de'Donato, DEP Lazio
			Giampie	etro Casasanta, ISAC – CNR
			Stefania	Argentini, ISAC – CNR
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1. Introduction

Understanding the significance and the value of "Monitoring" and "Evaluation" activities related to the performance of technical tasks requires the provision of the definitions of the terms "Monitoring" and "Evaluation" (M&E), because the reader/ beneficiary needs to be able to comprehend this procedure for the implementation of the project.

<u>Monitoring</u> is the procedure followed for the collection and the analysis of the information regarding a project.

<u>Evaluation</u> is the assessment of an institution, a project or a programme, conducted at regular basis, by internal or external evaluators, during the project/programme implementation phase.

Furthermore, it is important to clarify the definition of the Monitoring and Evaluation (M&E) system, why it is needed and what benefits it can offer for a proper implementation of the project.

A well-designed M&E system can guide the competent person for this task towards how to take key decisions, such as informational needs, methodological approaches, capacity building and allocation of resources.

Some examples of these decisions are demonstrated below:

- Evaluate and present the project's effectiveness in fulfilling its goals and/or the effects on people lives.
- Improve the internal learning and the decision-making process of the project (i.e. how the group operates and how it implements its activities, how it perceives success factors, barriers, which approaches work/don't work etc.),
- Reinforce and give motives to volunteers and supporters,
- Ensure responsibility to key stakeholders,
- Affect policy makers.

Additionally, when a M&E system is developed, it is useful that some guiding principles are set, ensuring that it will be relevant, useful, timely and credible. For this reason, the collected information should be:

- **focused and feasible** in relation to the available resources, so that it supports rather than diverts resources from action,
- useful and timely, providing information to improve group learning, group decision making, and project design,
- **useable** by, and/or comparable to, data collected by other stakeholders/ beneficiaries so that it contributes to the wider evidence base,



- credible, valid and reliable to the extent possible within the available resources,
- sensitive to unequal power relations when information is collected,
- ethical in relation to data consent and protection.

Applying the theory for adopting a M&E system to the LIFE ASTI project, and considering what benefits can be exploited from its use, the development of the present **Project Monitoring Performance Guide (PMPG)** focuses mainly on the following three objectives:

- to align the implemented activities to the vision and strategy of the project,
- to facilitate internal and external communication and monitor project performance against strategic goals,
- to homogenise the methodology for collecting data and assessing information related to the project's performance followed by all beneficiaries.

2. Brief description of the LIFE ASTI project

Urban expansion takes massive proportions in recent years. In Europe, almost 73% of the population lives in cities, and this is foreseen to overcome 80% by 2050. The combined effect of global climate change and rapid urbanisation is expected to make the residents of urban areas more vulnerable to a range of urban environmental problems, strongly connected with the Urban Heat Island (UHI) effect, a phenomenon that is considered to be one of the most representative and well-documented manifestations of climate modifications due to urbanisation.

More specifically, urbanisation induces significant atmospheric and surface alterations, leading to a modified thermal climate that is warmer than the surrounding non-urbanised areas. The urban area with warmer conditions than the surrounding non-urbanised areas is referred to as the Urban Heat Island and this effect produce substantial impacts on human health, regional economies, and environments. Concerning people's health, the epidemiological literature has well documented the greater effects of heat within urban areas, especially within densely inhabited deprived areas, and where vulnerable subjects (e.g., elderly) live. Other adverse impacts and urban environmental problems associated with UHI effect include energy consumption, deterioration of air and water quality, and stressful bioclimatic conditions.

UHI effects become even more significant when seeing that in a changing climate, the frequency, intensity, and duration of Heat Waves (HWs) will increase. Several research results show that UHIs interact synergistically with HW episodes exacerbating their effects on urban residents. Especially over Europe, the Mediterranean region is projected as the one of the more at-risk areas regarding health impacts, in particular in densely populated urban centers. For this, the LIFE ASTI project targets the UHI effect and its effects, primarily on human mortality, by developing, piloting and validating a set of modelling systems for short-term prediction, as well as for future projection, of the UHI effect, including heat health warnings, in two Mediterranean cities, namely Thessaloniki and Rome.

The specific objectives of LIFE ASTI project are:

- 1) To design, implement, pilot and validate a set of UHI forecasting systems in Thessaloniki and Rome, based on state-of-the-art numerical models. These modelling systems will provide stakeholders with several UHI-related, high-resolution forecasting products, including thermal bioclimate indicators, as well as Heating and Cooling Degree Days to estimate the energy demand of buildings. Furthermore, they will drive the Heat Health Warning Systems that will be developed and operationally tested in both cities, helping the local authorities to react appropriately to extreme events.
- 2) To establish dissemination tools and allow open access to UHI-related information and products to the end-users with Information and Communication Technology (ICT) applications. These tools will help the concerned authorities and the general public to fill the knowledge gap on local climate vulnerabilities and risks.
- 3) To assess the impact of future climate change scenarios on UHI for the two selected cities.



- 4) To evaluate the impact of promoting green activities (e.g., green roofs, ventilation areas, etc.) in urban areas to combat the UHI effect using the developed modelling systems for the two selected cities.
- 5) To develop good practice guides and efficient strategic plans for mitigating future UHI effects in the involved cities, as well as in other EU urban areas which face the same UHI adverse impacts.
- 6) To raise awareness and encourage authorities to apply the above urban adaptation strategies and mitigation initiatives. This will contribute and support the Signatories' commitment to "Mayors Adapt" and "Covenant of Mayors".
- 7) To organise events to promote, replicate and transfer the designed modelling systems and the best urban adaptation strategies to other European cities that face the same climate issues arising from UHI effect. The above mentioned will lead to a substantial contribution to the overall aim of the EU Adaptation Strategy by developing policies for a better adaptation to UHI impacts, especially during summer heat waves, reducing the heat wave risk in metropolitan areas by introducing heat prevention services, and better-implementing energy efficiency guidelines in European cities. The two Mediterranean cities were chosen to give a representative geographical coverage, to reflect different environmental conditions and to support one of the major EU policy priorities for joint forces and transnational cooperation.

3. The Project Monitoring Performance Guide (PMPG) and the LIFE ASTI Indicators

The present LIFE ASTI **Project Monitoring Performance Guide (PMPG)** includes a number of indicator categories¹. Nineteen such categories are defined in the application form as follows:

i. Reduction of greenhouse gas emissions (GHG)

a. CO2

ii. UHI and Heat

- a. Number of adaptation initiatives implemented in Greece, Italy and other EU countries
- b. Increased resilience to heat in Greece, Italy, and other EU countries in i) inhabitants (%) and ii) hectares (%)
- c. Reduction of heat attributable deaths in Greece, Italy and other EU countries
- d. Number of adaptation actions applied in Greece, Italy and other EU countries
- e. Improved thermal bioclimate conditions in the locations where adaptation actions applied in % change of inhabitants

iii. Energy

a. Reduced energy consumption

iv. Employment

a. Jobs Created

v. Replication / Transfer

a. Number of replication / Transfer

vi. Awareness raising

a. Number of entities/individuals reached / made aware

vii. General Public (additional)

- a. Number of public events organised by LIFE ASTI partners
- b. Total number of participants in two (2) local conferences with public participation.
- c. Total number of participants in public two (2) guided visits

viii. Policy makers (additional)

- a. Number of meetings and local working tables with stakeholders organised by LIFE ASTI partners
- b. Total number of participants in two (2) local working tables

ix. Scientific community (additional)

- a. Number of conferences attended by LIFE ASTI partners, presenting project's outputs
- b. Number of conferences attended by LIFE ASTI partners
- c. Number of publications related to UHI effect and health related impacts

x. Networking (additional)

a. Number of relevant projects where collaboration was achieved.

¹ The indicator categories are presented exactly as included in the LIFE ASTI Application Form



xi. Website (additional)

- a. Number of website visits in total number
- b. Number of website subscribers in total number

xii. Social Media (additional)

a. Number of followers in social media channels (Facebook, Twitter etc.) in total number

xiii. Mobile application (additional)

a. Number of mobile application downloads

xiv. Operational Performance (additional)

- a. Forecast period in days
- b. Service uptime

xv. Behavioural change

a. Number of entities/individuals changing behaviour

xvi. Improved competences of local/regional authorities

 a. Number of local/regional authorities with improved knowledge, skills and competences (for combating UHI effect and extreme heat conditions) in Greece, Italy and other EU countries

xvii. Compliance with EU and national legislation

a. Number of local/regional authorities that complied with EU and national regulation, legislation and initiatives in Greece, Italy and other EU countries

xviii. Improved quality of life support

a. Improved quality of life support in % change of inhabitants

xix. Deliverables consistency

- a. Number of deliverables brought on time
- b. Amount of expenditures incurred by all beneficiaries

The project will have to report on its outputs and impacts taking into account the LIFE Key Performance Indicators; an online spreadsheet has been set up for this purpose. The values of these indicators will be reported twice during the project duration. The first measurement will be made at the end of the project and the second will be made five years after the end of the project.

The achievement of the target values set in the project's application form is representative of the project's success, as it depicts the performance of the project in relation to its main objectives. These key objectives refer to climate change (heat wave) adaptation initiatives that have been applied in Thessaloniki and Rome, and the number of citizens from these two cities that have benefited from these measures.

NB. The indicator definitions and values are presented as included in the LIFE ASTI proposal. The present document does not examine whether these can realistically be achieved within the framework of the project implementation or not. However, in parallel, a spreadsheet including all indicators is provided online, to facilitate overview and further dialogue between project partners.

4. How to measure the LIFE ASTI Indicators

The successful application of the present LIFE ASTI **Project Monitoring Performance Guide (PMPG)** depends on the quality of the data collected for the measurement of the KPIs; so, the methodology that will be established and followed by the competent partners should be unambiguous, clear, comprehensive and easy to understand and follow.

This section presents how these KPIs will be measured and what kind of data is required to be collected from each partner for this purpose.

N/B: Some additional indicators are only assessed 3-5 years after the project's end.

No	Indicator	Description	-	esults during ementation ²	-	ults 3-5 years roject's end %	Channels & tools for the measurement	Approach / methodology for the measurement of the indicators
1	CO₂ (additional)	This indicator will be measured 3-5 years after the project's end. It will be used in order to identify the reduction of CO ₂ emissions after the project's implementation.	n/a	n/a	200 tons/year	0,01 % change	Energy Audits, Energy Performance Certificates	A reduction of CO ₂ emissions is expected due to the application of adaptation action plans and good practice guides for energy saving in public buildings that are under the authority of the MoE. Data will be derived from the respective technical reports.
2	Number of adaptation initiatives implemented in Greece, Italy and other EU Countries	This is an output indicator and internal records will be used for tracking project activities and outputs/ deliverables, such as: a) UHI Operation Forecasting Systems (UHI-OFS), b) Heat Health Warning Systems (HHWS), and c) New Services (UHI forecasting and Heat Health Warning System) in 1 EU Country (replication).	6	n/a	4	n/a	Completion of the 3 systems (a, b & c) – main outputs of the project.	Project partners need to confirm that these three systems, under development in the framework of the LIFE ASTI project, are operational in the target-cities (Thessaloniki & Rome) and if such a system is also replicated in Heraklion City (Greece).
3	Increased resilience to heat in Greece, Italy and other EU Countries in i) inhabitants &	i) This indicator refers to the number of people targeted by warning announcements from the UHI forecasting systems and the heat health warning systems.	i) 1.676.500 ii) 40.000	i) 35% ii) 18%	i) + 1.000.000 ii) +14.000	i) 60% ii) 35%	1. Direct messaging to citizens (i.e. via SMS) 2. Project website (i.e. automatic	For all mentioned tools & means, the following methods will be used for estimating the number of people reached by heat wave warning announcements: 1. Number of SMS/emails recorded every three (3) months 2. Number of automatic messages sent through the project website to subscribed users

² The indicator definitions and values are presented as included in the LIFE ASTI proposal; the present document does not examine whether these can realistically be achieved within the framework of the project implementation or not.



No	Indicator	Description	Expected Res project imple Absolute value	_	•			Approach / methodology for the measurement of the indicators
	ii) hectares	ii) This indicator shows the territorial coverage of the warning message/notice transmitted/broadcasted from the UHI forecasting systems and the heat health warning systems.					messages sent to the subscribed users of the forecasting service) 3. Project social media account (a. Facebook, b. twitter) 4. Press releases to local media (TV & radio stations and newspapers)	3. Social Media a. Facebook b. Twitter In social media accounts, tools are available to estimate the number of people reached with an announcement directly and through further reproduction (shares, retweets, etc.) 4. Press releases The estimate of people reached by heat health warnings through newspapers can be provided through readership data and sales data for the specific issues. The estimate of people reached by heat health warnings through TV & radio stations can be provided through audience metrics published (Audience Measurement Organisations i.e. AGB Nielsen etc). N.B. Readability of the press releases on the online versions of newspapers and TV & radio stations should be added to the above. For the estimation of the % change that refers to the total population of the metropolitan areas (of Rome & Thessaloniki) that have been informed about the heat health warnings, the following steps will be taken into consideration: a. Estimation of the population based on audience measurements by the time that the message had been broadcasted on TV & radio stations. b. Estimate of the % of population changed = (step1/population of each city)*100 ii) For the estimation of the total area (in hectares) where the UHI and heat health warnings forecasting systems have been applied in, the following steps will be taken into consideration: 1. Estimation of the population based on audience measurements by the time (or the date) that the message had been broadcasted on TV & radio stations. 2. Estimation of newspaper readership, based on sales data. number of newspapers sold that day).

No	Indicator	Description	Expected Res project imple Absolute value	•				Approach / methodology for the measurement of the indicators
								3. Estimation of the number of people informed through social media & website (see above) 4. Estimation of the number of residents per hectare for Thessaloniki and Rome based on the density population of each city, 5. Estimation of the hectares changed (for each city) = (step1+step2+step3) / step 4 Regarding the estimation of the % change of the total area (in hectares) that the UHI and heat health warnings forecasting systems have been applied in, the following steps will be taken into consideration: a. Estimation of the number of people reached by warning announcements based on the methodology described above. b. Estimation of the number of residents per hectare will for Thessaloniki and Rome based on the density population of each city, c. 3. Estimation of the % of hectares changed = [(step2/step1) / area (in hectares) of each city]*100
4	Reduction of heat attributable deaths in Greece, Italy and other EU Countries	This indicator will be measured 3-5 years after the project's end. It will estimate the number of heat attributable deaths in Rome and Thessaloniki at baseline (before LIFE ASTI), at the end of the project and after the project end (3-5 years later) to assess potential improvements in adaptation to heat in terms of heat related mortality.	n/a	5-10%	n/a	10-20 %	Deliverable: Report on the changes in the effect of heat in mortality in both cities (action C.6). % change refers to reference period 2014-2017	Heat attributable deaths will be calculated at the beginning of the project as baseline condition, on a year period, including previous years using time series analysis. Temperature data and mortality data collected in C6 will be used to estimate risks and attributable fractions. At the end of the project and in its after-LIFE period the heat attributable deaths for the latter 3-5 years will be calculated and compared to baseline conditions. It is worth mentioning these estimates will also depend on the number of heat wave days registered each summer in the study period. Each summer the number of deaths will be recorded for both Rome and Thessaloniki.



No	Indicator	Description	Expected Reproject imple			sults 3-5 years roject's end	Channels & tools for the	Approach / methodology for the measurement of the indicators
			Absolute value	%	Absolute value	%	measurement	indicators
5	Number of adaptation actions applied in Greece, Italy and other EU countries (additional)	This indicator will be measured 3-5 years after the project's end. It measures the adaptation actions applied in Greece, Italy and other EU countries	n/a	n/a	2	n/a	Based on web research, existing databases, statistics authorities etc.	After-LIFE PPR
6	Improved thermal bioclimate conditions in the locations where adaptation actions applied in % change of inhabitants	This indicator will be measured 3-5 years after the project's end.	n/a	n/a	n/a	40 % of the inhabitants indicating improved thermal bioclimate conditions	Survey / Questionnaire to a pool of residents of the locations where mitigation actions will take place.	Provide the survey online or in the context of relevant events organised by partners.
7	(additional) Reduced energy consumption (additional)	This indicator will be measured 3-5 years after the project's end. This indicator refers to the reduced energy consumption of public buildings at the time.	n/a	n/a	350.000 kwh / year	0.008 % change	Technical assessments	A reduction of energy consumption is expected due to the application of good practice guides for energy saving in public buildings that are under the authority of the MoE and DEASL. Data-will be derived from the respective technical reports.
8	Jobs Created	This indicator refers to new jobs (Full Time Equivalent) created during project implementation including the external experts. Each partner will measure his new personnel that will be employed for project purposes as well as the number of members that comprise the project team of the contractors / subcontractors that will be appointed by the project partners (Full Time Equivalent).	2000 Full Time Equivalent (FTE)	69% change	500 FTE	42%	- Contracted new personnel (staff) by partners - Contracted external experts by partners	Number of External Experts contracted by every partner. N.B. if an external expert is a company then the person-months dedicated for the implementation by the project team should be calculated. Number of additional personnel contracted for the implementation of the project by each partner. After-LIFE PPR: Monitoring of additional staff employed for the continuation of the operational services and for the implementation of mitigation actions. % change is calculated with respect to the respective FTE (=1200) of the permanent staff or civil servants for the continuation of the operational services after the end of the project.

No	Indicator	Description	Expected Res project imple Absolute	-	•	Expected Results 3-5 years after the project's end Absolute		Approach / methodology for the measurement of the indicators
			value	%	value	%	measurement	
9	Number of replication / Transfer	This indicator measures the number of new services (UHI forecasting and Heat Health Warning System) that will be transferred/replicated in at least 1 EU country / city (Heraklion, Crete). Each partner will fill in the number of cases where the above new services were efficiently transferred / replicated.	1	n/a	2	n/a	Replication of the new services in Heraklion of Crete and possibly elsewhere	Documentation of replication of the new services (UHI forecasting and Heat Health Warning System). After-LIFE PPR: 2 additional EU countries/cities are foreseen
10	Number of entities/ individuals reached /made aware	This indicator refers to the number of individuals reached / made aware of the set of modelling systems for short-term predictions, as well as for future projections, of the UHI effect, including heat health warnings.	250 entities, 53.000 individuals	n/a	100 additional entities, 10.600 additional individuals	40% (entities) 25% (individuals)	Project website Notice Boards Layman's reports Launch Events & Final Conference Guided visits Participants' lists Project Video Leaflets Electronic Newsletters Infographics Project social media account (Facebook, twitter etc.) Press releases to local media (tv stations, radio stations	For all the above information tools the following methods will be used for measuring the people received the warning message. In social media accounts, tools are available to estimate the number of people reached with an announcement directly and through further reproduction (shares, retweets, etc.). In the project's or partners' websites, the number of visitors and views of announcements can be identified through web analytics. The estimate of people reached by information through newspapers can be provided through readership data and sales data for the specific issues Regarding TV & radio stations publicly available audience metrics may be used. N.B. Readability of press releases on the online versions of newspapers and TV & radio stations should be added to the above. Regarding the events, guided visits and conference, the target groups reached can be provided through participants' lists. Leaflets / newsletters are distributed in specific numbers. The project video will be displayed in specific events, social media and mass media. Viewers will be estimated through the methodology described for these specific channels.
							(tv stations, radio stations and newspapers)	the methodology described for these specific channel After-LIFE PPR: % change compared to the baseline which be provided at the end of the project



No	Indicator	Description	Expected Re project imple Absolute value					Approach / methodology for the measurement of the indicators
11	Number of public events organised by LIFE ASTI partners (additional)	This indicator will be measured 3-5 years after the project's end. This indicator refers to the number of events organised by project partners 3-5 years after the project's end for awareness raising.	n/a	n/a	5	n/a		After-LIFE PPR: Monitoring of community engagement activities
12	Number of meetings and local working tables with stakeholders organised by LIFE ASTI partners (additional)	This indicator will be measured 3-5 years after the project's end. This indicator refers to the number of meetings and local working tables with stakeholders and policy makers organised by LIFE ASTI partners.	n/a	n/a	4	n/a		After-LIFE PPR: Monitoring of policy-makers and experts' engagement activities.
13	Number of conferences attended by LIFE ASTI partners, presenting project's outputs (additional)	This indicator will be measured 3-5 years after the project's end. This indicator presents the number of conferences attended by project partners 3-5 years after the project ends	n/a	n/a	8	n/a		After-LIFE PPR: Monitoring of experts' engagement activities
14	Total Number of participants in two (2) local conferences with public participation	This indicator refers to the number of people that will attend the two (2) local conferences that will be held in Thessaloniki and Rome.	100	n/a	n/a	n/a	Deliverable: Proceedings of the local conferences in Thessaloniki and Rome (action E.4)	The indicator will be measured by the number of participants that will be registered /signed in the participants' list. In this context, the project partners need to collect the participants' lists in order to document, if necessary, the reported number of participants.
15	Total number of participants in two (2)	This indicator refers to the number of people that will participate in the two (2) guided visits.	60	n/a	n/a	n/a	Deliverable: Report analysing the results of the	The indicator will be measured by the number of participants that will be registered / signed in the participants' list. Project partners need to collect the participants' lists in order to

No	Indicator	Description	Expected Re project imple Absolute value			ults 3-5 years roject's end %	Channels & tools for the measurement	Approach / methodology for the measurement of the indicators
	public guided visits						questionnaires completed by the participants in the guided visits (action E.1)	document the number of participants. Additionally, qualitative data can be collected through the questionnaires provided to the participants in the guided visits.
16	Total number of participants in two (2) local working tables	This indicator refers to the number of people that will participate in the two (2) local working tables.	40	n/a	n/a	n/a	Deliverable: Proceedings of the local working tables in Thessaloniki and Rome (action E.2)	The indicator will be measured by the number of participants that will be registered / signed in the participants' list. Project partners need to collect the participants' lists in order to document the number of participants.
17	Number of conferences attended by LIFE ASTI partners	This indicator refers to the number of the conferences/fairs/exhibitions the project's partner will attend in.	16	n/a	n/a	n/a	Deliverable: Presentations of the project in conferences (action E.2)	The project partners need to provide a certificate/documentation of attendance or the participants list in order to document their participation in the conferences.
18	Number of publications related to UHI effect and health related impacts	This indicator refers to the number of publications related to UHI effect and health related impacts such as Technical publications of the project in conference proceedings (at least 6 publications of the project in conference proceedings are foreseen) and papers submitted or accepted for publication in scientific journals (at least 4 papers about the project results in scientific journals are foreseen).	10	n/a	4	n/a	Deliverables: a) Technical publications of the project in conference proceedings, b) Papers submitted or accepted for publication in scientific journals (action E.2)	The project partners need to measure the number of publications related to the UHI effect and health related impacts such as technical publications of the project in conference proceedings and papers submitted or accepted for publication in scientific journals
19	Number of relevant projects where collaboration was achieved	This indicator refers to the number of collaborations and synergies achieved with relevant projects. It can be measured from the report on the results form networking with relevant projects (action E.3). According to the AF, collaboration with at least 7 projects is foreseen.	7	n/a	n/a	n/a	Deliverable: Report on the results form networking with relevant projects (action E.3)	The project partners need to document their collaboration with the other projects by participating in joint activities, events, or by producing/developing joint outputs and deliverables. A document signed by the Lead Beneficiary of the other projects mentioning the collaboration with the LIFE ASTI project or a jointly developed output (elaboration of joint report, participation in a workshop/event; video/photo material - participants' lists - presentations etc.) should be provided. Related data includes:



No	Indicator	Description		esults during ementation ²	•	ults 3-5 years roject's end %	Channels & tools for the measurement	Approach / methodology for the measurement of the indicators
20	Number of website visits in total number	This indicator refers to the number of visitors/guests (unique and recurring) browsing through the project website.	50.000	n/a	10.000 additional (60.000 total)	20%	Dashboards Email Exp	No. 100 Total Training Control Training
21	Number of website subscribers in total number	This indicator refers to the total number of website subscribers.	5.000	n/a	1.000 additional (6.000 total)	20%	website statistics	This will be automatically provided by the back-office of the project website. % change: compared to the baseline which will arise at the end of the project

No	Indicator	Description	project impl Absolute		-	ults 3-5 years roject's end	Channels & tools for the measurement	Approach / methodology for the measurement of the indicators
22	Number of followers in social media channels (Facebook, Twitter etc.) in total number	This indicator refers to the total number of followers / subscribers of social media accounts (Facebook, Twitter etc.) operated by the project.	1.500	% n/a	300 additional (1.800 total)	20%	Social media statistics	This indicator will be measured by the partner responsible for the social media accounts through the social media statistics made available by the service providers. % change: compared to the baseline which will arise at the end of the project.
23	Number of mobile application downloads	This indicator refers to the total number of downloads of the mobile application developed during project implementation.	3.000	n/a	600 additional (3.600 total)	20%	Mobile application statistics.	This indicator will be measured by mobile application statistics provided by the service providers (i.e. Google Play store, Apple App store). % change: compared to the baseline which will arise at the end of the project
24	Forecast period in days	This indicator refers to the number of days that the set of UHI forecast systems will cover during the project (UHI-OFS).	5	n/a	7	n/a	Deliverable: UHI Operation Forecasting Systems (UHI- OFS) (action C.2)	The foreseen number of the forecasted days is five (5). In this context, the project partners need to document the operations of the systems by displaying images from the predictions for at least 5 days. After-LIFE PPR: Monitoring of maintenance, optimisation and further development of the operational UHI forecasting systems
25	Service uptime		n/a	90%	n/a	85%	Deliverable: UHI Operation Forecasting Systems (UHI- OFS) (action C.2)	After-LIFE PPR. Monitoring of maintenance, optimisation and further development of the operational UHI forecasting systems
26	Number of entities / individuals changing behaviour	This indicator refers to the number and to the percentage (%) of entities and individuals who will change their behaviour in respect to the UHI, as a direct or indirect result of the information provided by the forecast systems and the LIFE ASTI project.	50 entities, 5.300 individuals	20 % change of entities and 10% individuals. (taking into account only those who will respond to	10 additional entities, 1.000 additional individuals	20 % change (taking into account only those who will respond to Surveys/Qu estionnaire s)	Deliverable: Report on a) Online Survey/Questio nnaire to the entities reached through the LIFE ASTI activities, b) Online	Project partners will measure this indicator considering only those responding to Surveys/Questionnaires that will be conducted, during the project implementation, to the entities and to a random sample of individuals, distributed online and in hard copy, in the metropolitan areas where the UHI and heat health warnings forecasting will be implemented. The % change will take into account only those responding to Surveys/Questionnaires compared to the foreseen target.



No	Indicator	Description		esults during ementation ²	•			Approach / methodology for the measurement of the indicators
				Surveys/Qu estionnaire s))			survey/question naire for the individuals visiting the LIFE ASTI website. % change will take into account only those who will respond to Surveys/Questi onnaires	
27	Number of local/regional authorities with improved knowledge, skills and competences (for combating UHI effect and extreme heat conditions) in Greece, Italy and other EU countries	This indicator refers to the number of local/regional authorities that have been identified and possess high skills, knowledge and capabilities in Greece, Italy and other EU countries for addressing UHI effect and extreme heat conditions.	10	n/a	5	n/a	Relevant project deliverables, such as local working tables and seminars (registration) as well as the distribution of informative and scientific material (communicatio n network).	The project partners can measure this indicator through the project activities and deliverables that are relevant to communication, capacity building, awareness raising, experience sharing and dissemination activities, such as local working tables and seminars (registration), as well as the distribution of informative and scientific material (communication network). In this context, the project partners should take into consideration the number of the local / regional authorities that participated in the events, the workshops / seminars and the activities of the project. These authorities will be counted through participants lists. After-LIFE PPR: Project deliverables that are relevant with communication and dissemination actions, such as local working tables and seminars (registration) as well as the distribution of informative and scientific material (communication network).
28	Number of local/regional authorities that complied with EU and national regulation, legislation and initiatives in	This indicator refers to the number of local/regional authorities that operate in accordance with the EU and the national regulation/legislation and adopt initiatives that deal with the UHI effect.	2	n/a	2	n/a	Deliverable: Report on survey/question naire to the local/regional authorities reached through the communication	This indicator can be measured by the project partners, based on surveys/ questionnaires conducted to the local/regional authorities which can be shared/distributed during their participation in the communication and dissemination actions of the project, including training seminars, organisations of forums, meetings, events, study visits, conferences etc. Indicative questions:

No	Indicator	Description Description Description Description Absolute Absolute		•	Expected Results 3-5 years after the project's end Absolute		Approach / methodology for the measurement of the indicators	
	Greece, Italy and other EU countries		value	%	value	%	and dissemination actions (action D.2)	- Is the authority involved in any initiative that deals with the UHI effect? - If the answer is "yes", can you briefly mention these initiatives (in few lines)? - Is the authority in line with any EU or National regulation/legislation that addresses the UHI effect? - If the answer is "yes", can you please mention the
29	Improved quality of life support in % change of inhabitants	This indicator refers to the % change of inhabitants with improved quality of life support in respect to the UHI effect.	n/a	40 % of the inhabitants are indicating improved quality of life support	n/a	50 % of the inhabitants are indicating improved quality of life support	Deliverable: Report on survey/question naire to a pool of residents (general public) of the metropolitan areas where the operational UHI forecasting and Heat Health Warning systems will be provided (action D.2)	This indicator can be measured by conducting a survey/questionnaire to a pool of residents (general public) of the metropolitan areas where the operational UHI forecasting and Heat Health Warning systems will be provided (action D.2). Whenever the warning systems developed in the project are applied in an area/neighborhood, quality of life of the inhabitants may be considered as improved.
30	Number of deliverables brought on time	This indicator refers to the number of deliverables finalised / elaborated on time according to the foreseen time-plan for the approved AF.	87	100%	n/a	n/a	Deliverable: Actions Performance Report included in the Final Report to Contracting Authority (action F.2)	This indicator can be recorded taking into account the Actions' Performance Report included in the Final Report submitted to the Contracting Authority (action F.2).
31	Amount of expenditures incurred by all beneficiaries	This indicator refers to the number of the expenses incurred by all beneficiaries during project implementation.	1.155.933	90%	n/a	n/a	Deliverable: Actions Performance Report included in the Final	The expenses can be recorded taking into account the Actions Performance Report included in the Final Report submitted to the Contracting Authority (action F.2). The "%" will be filled in by the project partners comparing the incurred expenses with the total foreseen budget. The individual financial statements



No	Indicator	Description	Expected Res project imple Absolute value	_	Expected Resi after the pr Absolute value	-	Channels & tools for the measurement	Approach / methodology for the measurement of the indicators
							Report to Contracting Authority (action F.2). % change refer to total Amount.	(for the beneficiaries) and the consolidated statement report (for the whole project) can be also used to record the financial performance of the project.

5. The balanced scorecard monitoring tool

According to the project's application form a **balanced scorecard monitoring** tool will be used for the measurement of the indicators.

A brief definition of the term "balanced **scorecard**" is given.

"The **balanced scorecard** is a strategic planning and management system that is used extensively worldwide to align business activities to the vision and strategy of the organisation, improve internal and external communications and monitor organisation performance against strategic goals."

The purpose of this balanced scorecard is the measurement of the actual performance of the project as per the available indicators and their comparison with the target values set in the application form, and is based on the difference between the two corrective interventions made as required. This control methods need to take under consideration three elements in order to be effective, these are:

- Selection of data to measure
- The defining of a reference value for the data
- The capability to make a corrective intervention if needed

For measuring the indicators performance it is very common for spreadsheets to be developed. These are adjusted to the specific project needs. An example is given in the figure below:

	Mission: Our hospital brings health and healing to the community.					
	Vision: Our hospital will be the best place to work and get health care.					
	Objectives	Measures	Targets	Initiatives		
Stakeholders: How should we appear to our stakeholders?	Overall Patient Satisfaction Patient perception of quality index	Overall rating of care % Family physicians that receive discharge summaries Employee and physician engagement Community consultation measures	75% good or better rating 90% As per survey, >50% Meet 8 of 10	Management staff leadership initiative Develop charter for community group		
Internal Processes: At which internal processes should we excel to better serve our patients?	Processes are focused on quality, patient safety, and patient-centered	% Medication reconciliation on admission Rate of inpatient falls Surgical safety compliance checklist % Compliance with hand hygiene policy # Publicly-reported infection measures	95% <5% 95% completed 95% compliant 5 per month	Revamp infection reporting process Converge report form review group		
Learning: How should we better develop our systems to serve our patients?	Enhance and maintain a healthy work environment	Vacancy rate Sperformance development plans completed If Grievances received and resolved prior to arbitration Leader learning development	3% 80% by end of quarter 4/5 100% completion rate	Hire new HR lead		
Financial: To sustain our mission financially, what should our focus be?	Demonstrate accountability and efficiency	% Alternative level of care patients % Nursing purchased service worked hours Absenteeism rate	• <15% • 80% • <7%			

Source: https://www.smartsheet.com

To apply this theory to the LIFE ASTI project, the **balanced scorecard** monitoring tool developed serves exactly the aforementioned principles. In particular, from the above description the data that should be collected for the environmental indicators has been defined, the target values are described within the application form and finally the scientific committee of the project will set a contingency plan in case that any deviations are noticed from project's targets.



An important role to this specific procedure will be played by the excel factsheet where every involved partner will have to feed in appropriate data. The structure of this spreadsheet is:

- The first horizontal row includes the name of the tool
- The second horizontal row includes the following categories: objectives, names of the indicators, target values, data and measures proposed
- ♣ The vertical rows will be filled in with the relevant information for each of the above categories

The steps, that will be followed for the LIFE ASTI monitoring procedure are:

1st **step:** SYMPRAXIS TEAM will circulate among the involved partners the instructions for the measurement of the LIFE ASTI KPIs and what data should be collected for each of them.

2nd **step:** The responsible partner will collect the data from the project partners within a predefined time period. For the data collection of Greece, SYMPRAXIS TEAM will be responsible, and for the data collection of Italy, ISAC-CNR will be responsible.

3rd step: SYMPRAXIS TEAM will elaborate the collected data and will enter the results in the "LIFE ASTI balanced scorecard" spreadsheet. Evaluation of the findings will be done by the Monitoring and Scientific Committee which will decide for undertaking correction measures or not.

4th **step:** The values of the LIFE AST KPIs which are compatible with the LIFE web tool will be uploaded there.

The LIFE ASTI balanced Scorecard is presented in the following table. As mentioned above, the table should be filled in using data provided by each partner following the methodology described in chapter 4.

LIFE ASTI BALANCED SCORECARD

Mission: To limit the effects of the UHI effect

Vision: EU Adaptation Strategy – developing policies for a better adaptation to UHI impacts

Objectives	Names	of Indicators	Target Values	Data	Correction measures
	Reduction of greenhouse gas emissions (GHG)	CO2	200 tons / year (0,01%) (3-5 years after project's end)		
		Number of adaptation initiatives implemented in Greece, Italy and other EU countries	200 tons / year (0,01%) (3-5 years after project's end) er of adaptation es implemented in Italy and other EU countries During project implementation) 4 (3-5 years after project's end) During project's implementation: i) 1.676.500 (35%) ii) 40.000 (18%) 3-5 years after project's end: i) +1.000.000 (60%) ii) +14.000 (35%) of heat attributable of Greece, Italy and reu countries f adaptation actions of Greece, Italy and received for Greece, Italy and receive		
Improved Environmental and Climate Performance (including resilience to climate change)	UHI and Heat	Increased resilience to heat in Greece, Italy, and other EU countries in i) inhabitants (%) and ii) hectars (%)	i) 1.676.500 (35%) ii) 40.000 (18%) 3-5 years after project's end: i) +1.000.000 (60%)		
		Reduction of heat attributable deaths in Greece, Italy and other FLI countries 200 (10%) 3-5 years after project's end:			
		Number of adaptation actions applied in Greece, Italy and other EU countries			



		Improved thermal bioclimate conditions in the locations where adaptation actions applied in % change of inhabitants	40 % of the inhabitants are indicating improved thermal bioclimate conditions	
Better use of natural resources	Energy	Reduced energy consumption	3-5 years after project's end: 350.000 kwh / year (0,008%)	
Economic Performance, Market Uptake, Replication	Employment	Jobs created	2000 FTE (69%) 3-5 years after project's end: 500 FTE (42%)	
ivial ket Optake, Replication	Replication / Transfer	conditions in the locations where adaptation actions applied in % change of inhabitants Reduced energy consumption 3-5 years after project's end: 350.000 kwh / year (0,008%) 2000 FTE (69%) 3-5 years after project's end:		
	Awareness raising	reached, infromed and made	3-5 years after project's end: 100 additional entities / 10.600	
Communication, dissemination, awareness rising		organised by LIFE ASTI	5 (3-5 years after project's end)	
6	General Public	in two (2) local conferences	100	
			60	

	Policy makers	Number of meetings and local working tables with stakeholders organised by LIFE ASTI partners	4 (3-5 years after project's end)	
		Total number of participants in two (2) local working tables	40	
	Scientific community Networking	Number of conferences attended by LIFE ASTI partners, presenting project's outputs	8 (3-5 years after project's end)	
		umber of conferences attended by LIFE ASTI partners	16	
		Number of publications related to UHI effect and health related impacts	10 4 additional (3-5 years after project's end)	
		Number of relevant projects where collaboration was achieved.	7	
	Website	Number of website visits in total number	50.000 (during project implementation) 3-5 years after project's end: 10.000 additional (20%)	



		Number of website subscribers in total number	5.000 (during project implementation) 3-5 years after project's end: 1.000 additional (20%)	
	Social Media	Number of followers in social media channels (Facebook, Twitter etc.) in total number.	1.500 (during project implementation)3-5 years after project's end:300 additional (20%)	
	Mobile application	Number of mobile application downloads	3.000 (during project implementation) 3-5 years after project's end: 600 additional (20%)	
	Operational Performance	Forecast period in days	5 (during project implementation) 7 (3-5 years after project's end)	
		Service uptime	90% 85% (3-5 years after project's end)	

	Behavioural change	Number of entities/individuals changing behaviour	50 entities, 5.300 individuals 10 additional entities, 1.000 additional individuals (3-5 years after project's end)	
	Improved competences of local/regional authorities	Number of local/regional authorities with improved knowledge, skills and competences (for combating UHI effect and extreme heat conditions) in Greece, Italy and other EU countries	10 5 additional (3-5 years after project's end)	
Other (please specify) Societal added value	Compliance with EU and national legislation	Number of local/regional authorities that complied with EU and national regulation, legislation and initiatives in Greece, Italy and other EU countries	2 2 additional (3-5 years after project's end)	
	Improved quality of life support	Improved quality of life support in % change of inhabitants	40 % of the inhabitants are indicating improved quality of life support	
Other (please specify) Project's actions performance	Deliverables consistency	Number of deliverables brought on time	87 (100%)	
		Amount of expenditures incured by all beneficiaries	1,155,933.00€ (90%)	

6. Reporting obligations

The reporting obligations that derive from the LIFE ASTI grant agreement include two types of report.

1) Updated LIFE Performance indicators table (LIFE ASTI BALANCED SCORECARD) (Mid-Term Report)

The deadline for submitting this report is the 02/2020. For the collection of the necessary data all partners have to contribute and SYMPRAXIS TEAM will be responsible for collecting the data in Greece and ISAC-CNR will be responsible for collecting the data for Italy.

2) Updated LIFE Performance indicators table (LIFE ASTI BALANCED SCORECARD) & Project Performance Report at the end of the project (Final report)

The deadline for submitting this report is the 08/2021. Again, for the collection of the necessary data all partners have to contribute and SYMPRAXIS TEAM will be responsible for collecting the data in Greece and ISAC-CNR will be responsible for collecting the data for Italy.

SYMPRAXIS TEAM will have the overall responsibility for collecting and reporting the data. For this purpose, an online spreadsheet file has been developed and will be used as tool for collecting and recviewing the indicators.

7. Appendix

Tools used for the measurement of the indicators (LIFE ASTI BALANCED SCORECARD) – spreadsheet file



8. References

- LIFE ASTI Application form
- "A step by step guide to Monitoring and Evaluation" School of Geography and Environment of Oxford University (January 2014)
- "Project/programme monitoring and evaluation(M&E) guide" International Federation of Red Cross and Crescent Societies (2011)





The project Implementation of a forecAsting System for urban heat Island effect for the development of urban adaptation strategies- LIFE ASTI has received funding from the LIFE Programme of the European Union".











