



LIFE Project Number
LIFE07 ENV/GR/000282

Inception Report
Covering the project activities from 01/01/2009 to 15/09/2009

Reporting Date
01/10/2009

LIFE + PROJECT NAME
**Developing Local Plans for Climate Change Mitigation by
2020
(CLIM-LOCAL2020)**

Data Project

Project location	Municipality of Volos
Project start date:	01/01/2009
Project end date:	31/12/2011 Extension date: <dd/mm/yyyy >
Total budget	2.777.891 €
EC contribution:	1.086.542 €
(%) of eligible costs	49,88

Data Beneficiary

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2. List of abbreviations

B/C	Benefit to Cost ratio
BaU	Business as Usual
CBA	Cost Benefit Analysis
CORINAIR	CORe INventory of AIR emissions
DEMEKAV	Volos Municipal Enterprise for Urban Studies, Construction and Development
DEYAMV	Municipal Enterprise for Water Supply and Sewage Treatment of the greater Volos Area
EC	European Commission
EMEP	Co-operative programme for monitoring and evaluation of the long range transmission of air pollutants in Europe, linked to the Convention on Long-range Transboundary Air Pollution
EU	European Union
GHG	Greenhouse Gases
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
LAP	Local Action Plan
MINENV	(Greek) Ministry of Environment, Physical Planning and Public Works
SWOT	Strengths- Weaknesses- Opportunities - Threats analysis
UNFCCC	United Nations Convention on Climate Change

3. Executive summary

CLIM-LOCAL2020 is a joint project between the Municipality of Volos, the Municipal Enterprise for Water Supply and Sewage Treatment of the greater Volos Area (DEYAMV), the Volos Municipal Enterprise for Urban Studies, Construction and Development (DEMEKAV) and the private consulting firm Environmental Planning, Engineering and Management (EPEM SA).

The project is implemented in the Municipality of Volos (Region of Thessalia, in central Greece) and its main objectives include:

- Develop the appropriate tools which will enable local authorities to substantially reduce Greenhouse Gases (GHG) emissions in their region
- Develop appropriate monitoring and assessment activities related to GHG emissions reduction at local level
- Promote awareness, provide training and disseminate of information on climate change and its mitigation
- Initiate GHG emission reductions at local level (Municipality of Volos) within a 10-15 years horizon with the active participation of citizens

This inception report describes the activities of the beneficiaries within the CLIM-LOCAL2020 project, including administrative (chapter 4), technical (chapter 5) and financial (chapter 6) issues. Specific deliverables and support material are included in the Annexes.

3.1. General progress

The CLIM-LOCAL2020 project was initiated on 1/1/2009. Until the date covered by the present inception report (15/9/2009), the following Actions have been completed:

- Action 1: Calculation of present local GHG emissions (31/3/2009)
- Action 2: Projection of local GHG emissions (15/7/2009)
- Action 3: Identification of GHG emissions reduction options (30/7/2009)

Additionally, the following Actions have started and are ongoing:

- Action 4: Economic and environmental evaluation of GHG emission reduction measures (to be completed by 31/10/2009)
- Action 8: Communication and dissemination (to be completed by 31/12/2011)
- Action 10: Project management (to be completed by 31/12/2011)
- Action 11: Project monitoring and evaluation (to be completed by 31/12/2011)

The following Actions will start in the forthcoming months:

- Action 5: Defining priorities for GHG emissions reduction measures
- Action 6: Public consultation and finalization of Local Action Plan (LAP)
- Action 7: Implementation of measures in the LAP

In later stages of the project, Actions 9, 12 and 13 will start.

So far the project has been elaborated according to the proposed timetable (please refer to page 22) with minimum deviations and it is on track towards achieving its objectives. The Project Team was established in the early beginning of the project (actually the kickoff meeting was held before the official project start date, on 19/12/2008) and it consists of the

Project Management Team, the Project Monitoring and Evaluation Team and the specific Action Teams (with their respective Action Leaders).

Following the meeting with the External Monitoring Team on 26/6/2009 and the subsequent EC correspondence, the project's deliverables and milestones were revised in order to fully reflect the foreseen activities of the entire project Actions, according to the EC instructions (EC letter of 24/8/2009, ref. 629094) and the actual project implementation. As such, the revised Deliverables and Milestones Tables are as follows:

Name of the Deliverable *	Action	Deadline
Project web-site	8	15/2/2009
<i>Set of emission calculation tools</i>	<i>1</i>	<i>31/3/2009</i>
Local inventory for GHG emissions	1	31/3/2009
<i>Projection models</i>	<i>2</i>	<i>15/7/2009</i>
Report with projections of GHG emissions up to 2020	2	<i>15/7/2009</i>
<i>List of GHG emissions reduction measures</i>	<i>3</i>	<i>30/7/2009</i>
<i>SWOT analysis</i>	<i>3</i>	<i>30/7/2009</i>
Inception report	10	1/10/2009
<i>CBA report</i>	<i>4</i>	<i>31/10/2009</i>
Report with classification of measures into priority categories	5	<i>30/11/2009</i>
Local Action Plan (LAP) for GHG emissions reduction	6	<i>31/1/2010</i>
Mid-term report	10	1/7/2010
<i>Intermediate assessment report on LAP's implementation</i>	<i>7</i>	<i>31/1/2011</i>
Progress report	10	<i>1/4/2011</i>
<i>Final assessment report on LAP's implementation</i>	<i>9</i>	<i>15/8/2011</i>
Report with next steps and responsibilities for LAP's implementation after the end of the LIFE+ project	9	30/9/2011
Financial project audit	12	31/12/2011
Final report with payment request	10	<i>31/3/2012</i>
After-LIFE communication plan	13	29/2/2012

* all modifications / new entries are with bold & italics

Name of the Milestone *	Action	Deadline
Definition of methodologies for the calculation of GHG emissions	1	31/1/2009
Completion of local energy balance	1	15/2/2009
Completion of inventory	1	15/3/2009
Agreement on the final list of GHG emissions reduction measures	3	<i>30/7/2009</i>
<i>Development of progress monitoring questionnaire</i>	<i>11</i>	<i>15/10/2009</i>
CBA results	4	<i>15/10/2009</i>
Decision on criteria and their relative weight	5	<i>15/11/2009</i>
Completion of public consultation on LAP	6	<i>10/01/2009</i>

Name of the Milestone *	Action	Deadline
Completion of LAP	6	<i>31/1/2010</i>
Completion of necessary preparatory actions	7	<i>30/7/2010</i>
Intermediate assessment on LAP's implementation	7	31/1/2011
Final assessment on LAP's implementation	9	15/8/2011
Agreement on the synthesis of the management committee for the future implementation of LAP	9	15/9/2011
<i>Completion of final project workshop</i>	<i>8</i>	<i>20/12/2011</i>
Completion of final project report	10	<i>29/2/2012</i>

** all modifications / new entries are with bold & italics*

3.2. Assessment of project objectives and work plan

The project's main objective is the actual contribution in the global action against climate change, by reducing GHG emissions in the Municipality of Volos. The project will develop a Local Action Plan (LAP, Action 6) that will explicitly describe a set of climate change mitigation actions and measures. The implementation of these actions and measures will eventually lead to GHG emissions reduction at local level (within a 10-15 years horizon). It is not possible at this time to quantify these reductions, which are to be specified, estimated and reported in quantitative terms by the end of the project.

Upon completion of Actions 1, 2 and 3, the "GHG emissions calculation tools", the "Local Inventory for GHG emissions", the "GHG emissions projection models", the "Report with projections of GHG emissions up to 2020" and the "List of GHG emissions reduction options" were elaborated and are delivered in the Annex of the present inception report (7.2). These tools and methodologies will enable the project beneficiaries (Municipality of Volos, DEYAMV and DEMEKAV), and other local authorities that will be interested in the future, to substantially reduce GHG emissions in their region, according to the specific provisions of the LAP, as well as to appropriate monitor and assess these activities.

The implementation of the training activities (12/2/09, 15/5/09 and 10/7/09), the development of the project website (<http://www.epem.gr/climlocal/>) and the 1st workshop (held in the city of Volos on 29/6/09), proved very successful within the overall effort to promote awareness, provide training and disseminate information on climate change and its mitigation, as well as on the CLIM-LOCAL2020 objectives and goals.

As such, the Project Team strongly believes that the CLIM-LOCAL2020 objectives and work plan are viable.

3.3. Problems encountered and actions taken

The main technical problems encountered during the first 8,5 months of the project implementation were related to the provision of data from various sources to the Action Teams. Besides the involvement of the major municipal organizations in the project area and the experience of the project personnel in carrying out similar researches, the actual time needed for data collection proved limited for Actions 2 and 4.

More specifically, during the implementation of Action 2 significant delays were encountered for the gathering of data that would allow the estimation of future GHG emissions. There was a need to collect all the "Operational Plans" from various competent local authorities, plans

for the “2013 Mediterranean Games” to be held in the city of Volos and to have extensive discussions with various local decision makers. Also, significant time was needed for the “fine tuning” of data from energy balance inventories. As a result, Action 2 was delayed and was finally completed on 15/7, instead of the originally proposed deadline of 15/5.

During the implementation of Action 3, concerning the “Identification of GHG emissions reduction options”, significant time was spent for consultation with local authorities and stakeholders on the “List of GHG emissions options”. It was decided to hold a workshop in Volos on 29/6, in order for the project beneficiaries to present the list of possible GHG emissions reduction options and relevant measures. This resulted in a delay of 1 month and Action 3 was completed on 30/7, instead of the originally proposed deadline of 30/6.

The above-mentioned delays, as well as the fact that the month of August consists a month of low productivity due to the summer holidays, urged the Project Management Team to reconsider the work plan concerning Action 4 (Economic and environmental evaluation of GHG emission reduction measures). As such, Action 4 started its implementation on 1/6 instead of the originally proposed start of 1/7. However, due to delays in data collection, especially concerning data from the sectors “buildings” and “water supply and sanitation”, Action 4 is expected to be finalised on 31/10, instead of the originally proposed deadline of 30/9.

It should be noted that the above-mentioned delays will result in small delays in Actions 5 and 6, respectively (please refer to the timetable in page 22). Especially for Action 6 (Public consultation and finalization of the LAP) the Project Management Team decided to extend the completion deadline, in order not to occur during the Christmas holidays, since it involves public consultation.

Overall, these delays will not affect the timely completion of the project. No prolongation of the project will be required.

In respect to the financial issues, a delay occurred from the financial department of the Municipality of Volos, concerning its timely adjustment in the project. Overall, it seems that the costs are corresponding to the budgeted amounts, although a slight delay has been observed during the first 8,5 months.

Concerning the organizational issues, the main problem was that the Municipality of Volos was not very experienced in managing projects of such magnitude and of the specific – state of the art – background. Despite the strong commitment and continuous involvement of both the Mayor (Mr. Alexandros Voulgaris) and the Vice-Mayor (Mr. Dimiris Dervenis) of the Municipality of Volos, in the project, there was a need of further support to the Project Manager, which was provided by the other beneficiaries (mainly EPEM SA).

Different measures were taken in order to solve the encountered problems. The limited availability of statistical data at local and regional level was a barrier in examining past trends and estimating their change in the next 10-15 years (Action 2). In certain cases where, despite the efforts made, the evolution of a selected driver in the past could not be assessed, the future trends assumed at national level (within the framework of national GHG emissions projections) were utilised, using modifications to take into account local circumstances. The limited technical knowledge of some decision-makers and stakeholders on GHG emissions reduction options was supported by the provision of information during the meetings, the 2 training sessions and the workshop that took place. Finally, the organizational problems were resolved internally, with the provision of support by EPEM (the beneficiary from the private sector, which was very experienced in managing such projects) in the framework of the operation of the Project Management Team.

4. Administrative part

4.1. Description of project management

The role of the CLIM-LOCAL2020 Project Management (PM) Team is to ensure that all project actions are being carried out according to the time schedule foreseen, their output is consistent with the project proposal made and is of high quality, all partners share information, the finances of the project are properly managed, progress reports and other material (to be posted on the project web-site, to be used in public consultation etc.) is prepared in due time and there is effective reporting to the EC on project progress.

The PM team is responsible for the overall implementation and co-ordination of the project actions, especially with regards to the initiation and completion of the each planned activity according to the agreed timetable, and the accounting and financial management. The PM team is also responsible for the communication with the EC and the submission the respective reports. The PM team cooperates with the Monitoring and Evaluation Team (Action 11) and all the Action Teams.

During the first 8,5 months of the project elaboration, the PM team has organized the following meetings in Volos:

- 19/12/08 (kickoff meeting)
- 4/2/09
- 8/5/09
- 16/6/09 and
- 26/6/09 (meeting with the External Monitoring Team).

The PM team also participated:

- in various meetings with the project's Action Teams (12 – 13/2/09, 15/5/09, 29/6/09 and 10/7/09), concerning the elaboration of the respective Actions
- in the EC LIFE07 Kick-off Meeting (held in Athens on 5/3/09)
- in the training sessions (12/2/09, 15/5/09 and 10/7/09)
- in the local workshop (held in the city of Volos on 29/6/09)

Obviously, frequent e-mails and phone calls were also exchanged among the members of the PM Team, as well as between the PM Team and the Action Teams.

The PM Team, especially through the assistance of the Vice-Mayor of the Municipality of Volos, was in close co-operation with all stakeholders, in order to promote the efficient application of the project and the fulfilment of its objectives and anticipated results (e.g. Public Power Corporation, Natural Gas Supply Corporation of Thessaly region, Solid Waste Management Association (SYDISA) of the Magnesia Prefecture)

In addition, the PM Team has started specific actions towards the CLIM-LOCAL2020 project participation in networking of other LIFE projects related to climate change (SMAQ and MEDCLIMA).

Other actions taken by the PM Team included the decisions to extend the implementation period for Actions 2 and 3, which have been completed, and to extend the implementation period for Actions 4, 5 and 6. Additionally, it was decided to start Action 4 earlier than the originally planned date.

The PM Team also suggested, and finally organized, the workshop that was held in Volos on 29/6/09, as an addition to the proposed workshop that was originally planned for Action 6 (as a public consultation meeting). The workshop was very important and proved very crucial for the finalization of the “List of GHG emissions reduction options” (Action 3), since it provided valuable comments and ideas from the participating local stakeholders.

During the period up to the present inception report, and especially during the first months of the project elaboration, the PM Team initiated all the necessary actions for the financial management of the project. As such, the following were implemented:

- Official decisions of the Municipality Council of Volos and the Managing Boards of DEYAMV and DEMEKAV, concerning their participation in the project (please refer to the Annex of the present inception report, 7.1)
- Formulation and respective signing of the Contracts between:
 - The Municipality of Volos and DEYAMV
 - The Municipality of Volos and DEMEKAV
 - The Municipality of Volos and EPEM SA
 These contracts were written both in English and Greek (please refer to the Annex of the present inception report, 7.1), according to the guidelines that are issued by the EC toolkits.
- Formulation of “standard” Contracts to be used for the personnel with “Service Contracts” and for the “External Assistance”.
- Formulation of timesheets to be used by the project’s personnel
- Assistance to the beneficiaries’ financial departments, in order to communicate the project’s financial requirements. As already mentioned in point 3.3, a delay occurred from the financial department of the Municipality of Volos, concerning its timely adjustment in the project.

Finally, it should be mentioned that, following the meeting with the External Monitoring Team on 26/6/2009 and the subsequent EC correspondence of 24/8/2009, the project’s reporting schedule was revised as follows:

Inception Report: due 1/10/2009

Mid-Term Report: due 1/7/2010

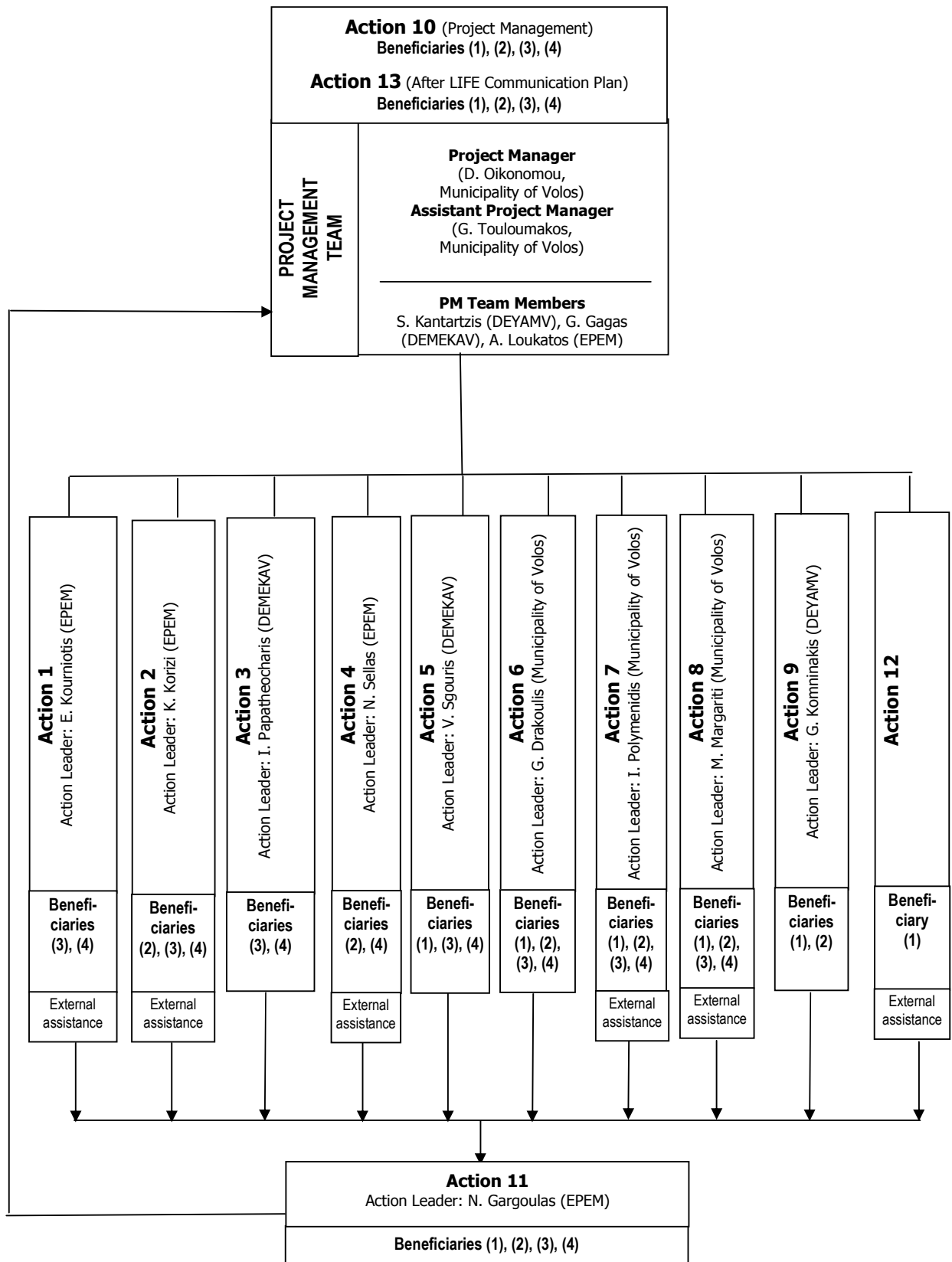
Progress Report: due 1/4/2011

Final Report: due 31/3/2012

4.2. Organigramme of the project team and project management structure

The organigramme of the project team is displayed in the following page.

The PM team is coordinated by the Project Manager (Ms. Despina Oikonomou) and the Assistant Project Manager (Mr. George Touloumakos), both from the coordinating beneficiary (Municipality of Volos). The Project Manager is working full-time in the project. The PM team also comprises 3 more members, one from each associated beneficiary, namely Mr. Stefanos Kantartzis (DEYAMV), Mr. George Gagas (DEMEKAV) and Mr. Andreas Loukatos (EPEM). It should be noted that the Vice-Mayor of the Municipality of Volos, is significantly and continually assisting the PM team.



4.3. Partnership agreements status and key content

As already mentioned in point 4.1, the Coordinating Beneficiary (Municipality of Volos) signed partnership agreements with the 3 Associated Beneficiaries (DEYAMV, DEMEKAV and EPEM SA). The date of signature of these agreements was 28/4/2009. The content of the agreements is presented in the Annex of the present inception report (7.1).

5. Technical part

Climate change is already happening and it represents one of the greatest environmental, social and economic threats that our planet is facing. During the last 100 years, increased greenhouse gases (GHG) in the atmosphere have caused the temperature of the earth to rise by 0.6°C. The 10 warmest years of the 20th century all occurred in the last 15 years, and 1998 was the warmest year on record. Thermal expansion and glacier melting are causing sea levels to rise, exposing populations to increased risk of flooding. In Greece, as in other regions of the world, patterns of precipitation are changing, with greater likelihood of extreme events and more areas subject to water stress, with consequences for agricultural production. Developing countries are particularly at risk. Global temperature will continue to increase causing further disruption to climate patterns. Ultimately all this can only be brought under control by stabilising GHG concentrations in the atmosphere.

At international level, the Kyoto Protocol (1997) is the first step towards combating climate change for the period 2008-2012, whereas negotiations are in progress regarding future commitment for the period after 2012. The European Union (EU) has long been at the forefront of international actions against climate change. In 2007, EU leaders have set the EU's position on post 2012 global action to combat climate change and committed to achieve at least 20% reduction of 1990 GHG emissions levels by 2020 and start transforming Europe into a highly energy-efficient, low-carbon economy.

Local government has a key role to play in this agenda. Within a supportive context, local authorities can make an important contribution to respond to climate change and have huge opportunity to help make national climate change targets a reality. Since the local authorities are closest to citizens and can often deal more effectively with regional characteristics than the central administration, a major challenge towards a sustainable energy future and climate change mitigation is to stimulate the local potential for GHG emissions reductions through a set of systematic, well-designed and well-monitored activities, which can have significant ancillary benefits for local environmental problems as well. Working towards this future can lead to multiple benefits for local authorities and their communities: improvements in living conditions, quality of life, strengthening of local economy and positive impact on local employment.

The "CLIM-LOCAL2020" project aims at the active participation of local authorities in the efforts made for climate protection. The project objectives are to:

-
- 1- Develop a systematic approach and appropriate tools which will enable local authorities to substantially reduce GHG emissions in their region

 - 2- Develop appropriate monitoring and assessment activities related to GHG emissions reduction at local level, which can serve as a guide to other local authorities

 - 3- Clearly identify the interface between local authorities and central administration with respect to climate change mitigation and the main barriers imposed at local level when taking measures for reducing GHG emissions.
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- 4- Promote awareness, provide training and disseminate of information on climate change and its mitigation, which is necessary for the active participation of citizens and local stakeholders in any mitigation effort.
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- 5- Initiate GHG emission reductions at local level within a 10-15 years horizon and with the active participation of citizens.
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5.1. Actions

This report covers the actions that have taken place during the first 8,5 months of the project (01/01/2009 – 15/09/2009). This period involves the initiation of seven Actions, namely:

- | | |
|-----------|--|
| Action 1 | Calculation of present local GHG emissions |
| Action 2 | Projection of local GHG emissions |
| Action 3 | Identification of GHG emissions reduction options |
| Action 4 | Economic and environmental evaluation of GHG emission reduction measures |
| Action 8 | Communication and dissemination |
| Action 10 | Project Management |
| Action 11 | Project Monitoring and evaluation |

5.1.1. Action 1: Calculation of present local GHG emissions

Planned duration: 01/01/09 – 31/03/09

Implemented: 01/01/09 – 31/03/09

Status: Completed

Deliverables:

- a. Local inventory report for GHG emissions
- b. Set of emission calculation tools (*delivered as compact package with the deliverable 'Projection Models' of Action 2*)

Description of the fulfilled activities:

The first Action of the project was implemented according to the time schedule and the work plan. The Action aimed at the calculation of present GHG emissions that are generated in the greater Volos area (municipalities of Volos, Nea Ionia and Esonia), taking 2007 as the base year. The outcomes of Action 1 (together with the results of Action 2) provide the basis for the identification of possible policies and measures to be defined at local level, as well as the quantification of their expected effect. The steps that were taken for its realisation include:

- Survey of all basic GHG emission sources at local level
- Decide on emission calculation methodologies per emission source and gas
- Collection of necessary input data
- Development of local energy balance
- Development of calculation tools per emission source
- Compilation of the local GHG emissions inventory
- Comparison of results with national emissions data
- Personnel training

The basic GHG emission sources that were investigated are: Energy (stationary and mobile), Industrial processes, Solvents, Agriculture, and Waste. Emissions estimates included also the indirect emissions attributed to electricity consumption. Emission calculation covered all

GHG (CO₂, CH₄, N₂O, F-gases), as well as basic air pollutants (PM₁₀, NO_x, SO₂ and NMVOC). The applied GHG emission calculation methodologies followed the guidelines developed by the Intergovernmental Panel on Climate Change (IPCC) in the context of the United Nations Convention on Climate Change (UNFCCC) and the Kyoto Protocol, while the EMEP/CORINAIR methodology was mainly used for the estimation of non-GHG emissions. The indirect emission factors for electricity consumption were derived from the latest national GHG emissions inventory (Greek MINENV, 2009).

The collection of input data involved the concentration of the necessary activity data for the calculation of emissions of all the sources under consideration, such as the demographic characteristics, the building stock, data on transportation, and the economic and energy profile of the study area. Particular attention was paid on energy data, since the energy sector is the major contributor of GHG emissions. Special attention was also given to data related to emission sources on which local authorities have direct control (e.g. public lighting, public transport, water supply and sanitation, waste management). At central level, all available bottom-up data on the consumption of fuels and electricity, as well as on non-energy parameters (e.g. agricultural areas, number of buildings etc.) for the greater Volos area were collected. At local level, the collection of data targeted competent local authorities (Municipality of Volos, DEMEKAV and DEYAMV), local fuel suppliers (e.g. Public Power Corporation, Natural Gas Supply Corporation of Thessaly region) and other sources (e.g. Solid Waste Management Association (SYDISA) of the Magnesia Prefecture).

For each sector a separate emission calculation tool has been developed in a spreadsheet form (Excel files), i.e. separate files have been developed for each category. This format was selected as it allows for significant flexibility during its development and at the same time potential users are familiar with its structure.

The available spreadsheets within each file correspond to the different source categories (as defined by the IPCC guidelines) applicable for each sector. These spreadsheets were structured in accordance with the calculation method, but in general four "blocks" were defined: activity data, emission factors, calculation parameters related to activity data and/or emission factors and results. Where appropriate, references to the data sources used were included. In the case of Energy, an intermediate tool/file was developed for the estimation of the necessary activity data and the construction of a local energy balance, by means of a bottom-up modelling approach.

At all stages of the tool development, feedbacks from all partners were taken into account. All partners examined for example, among other things, the applicability of the calculation method in their area of expertise and their comments were taken into account accordingly. The final version of the tool package includes the projection models developed under Action 2 (projection of local GHG emissions).

Upon completion of the tool development, a selected number of employees from DEYAMV, DEMEKAV and the Municipality of Volos (~2 people per local partner) was trained in using the methodologies and the tools for emission calculation. The personnel training was organised in two sessions. The first was realised in 12/2/09 with the aim to introduce in detail the selected calculation methods per emission source, to discuss the applicability of the tools and to enable receiving the necessary comments before its finalisation. The second, and basic one, took place in 15/5/09 after the completion of the inventory and after the incorporation of the projection models to the tools. The scope of the second session was to thoroughly discuss the results and familiarise the personnel with the tools, by introducing application modules and practical tips. A part of the session was dedicated to the connection of the methodologies used for the calculation of the present and future emissions.

The main findings of the inventory in the greater Volos area are summarised below:

- ↪ Energy consumption is dominated by the energy consumption of industrial installations participating in the EU-ETS. A totally different allocation of energy consumption per sector and fuel is obtained when excluding energy consumption of EU-ETS installations from the analysis: the residential sector is the major energy consumer, followed by road transportation. This allocation is considered more representative for an urban area.
- ↪ Total GHG emissions are estimated at 4569.49 kt, representing 3.5% of total GHG emissions at national level (excluding Land Use, Land Use Change and Forestry, LULUCF). The major contributor is the big industry in the area that falls under the EU-ETS.
- ↪ If both indirect emissions from electricity consumption and emissions from installations participating in the EU-ETS are excluded from totals, then GHG emissions are estimated at 395.5 kt (about 12 times lower compared with the total figure).
- ↪ Stationary combustion is the major contributor to total GHG emissions.
- ↪ Indirect emissions associated with electricity consumption in all sectors represent a significant part of total emissions as they account for 22% of total GHG emissions.
- ↪ Excluding EU-ETS installations and indirect emissions from electricity consumption, the share of emissions from mobile combustion is increased to 28%, while the waste sector accounts for 25% of the total. Industrial processes and solvents have a minor contribution (about 0.4% of the total).

Problems encountered:

The deliverables of this Action were developed on time and therefore no delays were created. Certain difficulties were faced during the data collection phase, especially in regards to the availability of energy and fuel consumption data. In order to overcome this constraint, a parallel effort was made, both at local and central level, from the beginning of the project. For each emission source, a detailed data list was formulated and dispatched to the partners to conclude on the data that would need special collection efforts and arrange data collection campaign where required (e.g. electricity consumption for the municipal/public buildings and public lighting, natural gas consumption per sector). Where necessary, simulations were made by utilising the available regional statistical data (e.g. in the case of disaggregation of energy use in buildings: space heating, cooling, hot water, cooking, etc).

5.1.2. Action 2: Projection of local GHG emissions

Planned duration: 15/02/09 – 15/05/09

Implemented: 15/02/09 – 15/07/09

Status: Completed

Deliverables:

- a. Report on projections of local GHG emissions up to 2020
- b. Projection models (*delivered as compact package with the set of emission calculation tools of Action 1*)

Description of the fulfilled activities:

The second project Action started on time and was completed two months after the initial time schedule. The Action aimed at the projection of the GHG emissions generated in the greater Volos area up to 2020. The outcome of Action 2 (together with Action 1) provides the basis for the implementation of the next actions, in regards to the identification and quantification of the proposed measures. The steps that were taken for its realisation are presented below:

- Collection of necessary input for the estimation of GHG emissions trends per sector
- Development of projection models per emission source
- Compilation of report
- Personnel training

The projection of GHG (including non-GHG) emissions in the greater Volos area was based on the methods selected for the compilation of the emissions inventory (in order to maintain consistency), taking into account changes in the emission-generating activity. These changes were associated with activity data trends (e.g. population, number of buildings, industrial production, etc.) and the emission factors applied, as they may be affected by policies and measures that are or will be in place.

Calculation and projection of emissions were integrated in a single emission calculation tool per source category (energy, industrial processes, solvents, agriculture and waste), as the same calculation methods were applied in order to ensure, to the extent possible, the consistency of the results.

The main results of the action can be summarized to the following.

- ↳ Total GHG emissions decreased from 2007 to 2020 by 1.6%. This decrease is mainly attributed to changes in the fuel mix for the electricity generation sector that resulted to a continuous decrease of the average emission factor. If indirect emissions from electricity consumption are excluded from the total figures, then the developed scenario projects a total increase of 1.8% for the period 2007 – 2020. If both indirect emissions and emissions from EU-ETS installations are excluded, then a total increase (for the period 2007 – 2020) of 1.5% is projected.
- ↳ The energy sector represents the main source of GHG emissions throughout the period 2007 – 2020. Road transportation and the Tertiary sector have the highest increase within the sector (30% approximately). Such an increase is obviously not in line with the provisions of the EU legislative package on energy and climate change that calls for GHG emissions reduction targets for the non-ETS sectors (a reduction of 4% in 2020 as regards 2005 levels is foreseen for Greece). It is evident that policies and measures both at national and local level should address this issue.
- ↳ A continuous and significant decrease of non-GHG emissions is projected for the greater Volos area (excluding EU-ETS installations). This is attributed to (a) the improved qualitative characteristics (especially S content) of liquid fuels; (b) the continuous renewal of the passenger vehicles fleet and (c) the gradual reduction of traditional biomass use in the residential sector for space heating

Personnel training started after the incorporation of the projection models to the emission calculation tool package. Two training sessions organised for the personnel that was allocated in Action 1. The first one (15/5) was dedicated to the introduction of the projection models, their functionality and their connection with the emission calculation methods developed within Action 1. The second session was realised after the completion of the projection results (10/7) and its overall target was to make personnel more familiar with the tool package as a whole.

Problems encountered:

Action 2 was completed two months after the initial time schedule. The activities that necessitated this extension are related to the collection of the necessary information for the determination of certain key activity data trends. This consideration was focused on the detailed input required for the estimation of the emission evolution derived from the planned activities

according to the regional and local operational plans as well as the planned infrastructure for the 2013 Mediterranean Games that will be hosted in Volos.

5.1.3. Action 3: Identification of GHG emissions reduction options

Planned duration: 15/05/09 – 30/06/09

Implemented: 15/05/09 – 30/07/09

Status: Completed

Deliverables:

- a. List of GHG emission reduction measures
- b. Presentation of GHG emission reduction measures & SWOT analysis

Description of the fulfilled activities:

The third Action of the project started on time and was completed one month after the initial time schedule. The Action aimed at the identification of all possible options for the reduction of GHG emissions at the greater Volos area. The steps undertaken for its realisation are presented below:

- Development of an initial list of GHG emission reduction options
- Discussion of the initial list with local authorities and stakeholders in a consultation conference
- Evaluation of difficulties and opportunities associated with the implementation of measures – SWOT analysis
- Compilation of final list of potential GHG emission reduction measures

The initial list of the possible options for responding to climate change at local level was developed on the basis of the results obtained from the local inventory and projection of GHG emissions up to 2020 (outcome of Actions 1 and 2). During the list's preparation process, special consideration was given to the experience gained from the development of action plans for GHG emissions at national level, and the local action plans of European and other cities abroad (e.g. <http://www.c40cities.org/>). The effort was led by the Municipality of Volos with several discussions among the project beneficiaries to conclude on the "initial" list.

The selection of the sectors / emission sources to be addressed was performed as one of the first steps of the list preparation. Efforts were concentrated on the sectors that local authorities have direct control. The target sectors were: Buildings, Transportation, Water supply and sanitation, Municipal solid waste management, City operation, and 'Other' representing possible actions that can be taken for the "2013 Mediterranean Games" infrastructure and land rehabilitation. The sectors 'Agriculture' and 'Solvents' were excluded, as they represented minor contribution to GHG emissions at the Volos area. The industrial installations covered by the EU ETS were apparently excluded, since the competent authority is the central government (Greek MINENV). Likewise, the other Industrial Processes source category was discarded since it represented a minor contributor to local GHG emissions and the enforcement role of local authorities is considered as advisory.

For each measure, the actors responsible for implementation were specified, these being: Local government, Public sector, Private sector and Residents.

The list was addressed to local decision makers and key stakeholders at a "consultation" workshop, which took place in the premises of the Municipality of Volos (29/6). The workshop also enabled the participants to become familiar with the project and the GHG

emission reduction options under consideration. There was an overwhelmingly positive reaction to the proposed measures from the attendance.

For each option, a simple SWOT analysis was performed and discussed. Barriers, both present and future, to the implementation of the measures were identified. It was concluded that no potential conflicts or specific difficulties can be foreseen at this stage that should lead to the refinement of the planned measures.

In overall, the consultation phase resulted in minor comments that did not significantly alter the initial list of measures. As a result, the initial list was adopted without modifications, as the “Final list of GHG emission reduction measures” under consideration.

Problems encountered:

This Action faced no particular problems. The extension in its implementation was mainly due to the additional time needed for the local decision makers and stakeholders to respond to the initial list of the GHG emission measures.

5.1.4. Action 4: Economic and environmental evaluation of GHG emission reduction measures

Planned duration: 01/07/09 – 30/09/09

Implemented: 01/06/09 - 31/10/09

Status: Ongoing

Deliverables: Cost-Benefit Analysis (CBA) report (*partial results are currently available*)

Description of the fulfilled activities:

Action 4 is an ongoing activity and will be completed one month after the initial time schedule. The Action aims at the economic and environmental evaluation of GHG emission reduction measures that were specified within Action 3. The basic steps undertaken for its realisation are presented below:

- Collection of necessary input data
- Calculation of GHG emissions reduction potential per measure
- Calculation of environmental externalities associated with each measure
- Cost-Benefit Analysis of measures

Following the formulation of the initial list of GHG emission reduction measures under consideration, the first step of Action 4 was to collect all necessary data for the assessment of the GHG emissions reduction potential and the economic assessment of each measure. In all cases apart from waste management, the main factor determining the emissions’ reduction was the extent of possible energy conservation. Two main categories of measures can be distinguished: (a) measures addressed to residents and the private sector (offices, services, commercial stores, hotels etc.), and (b) measures addressed to particular buildings/ organizations (e.g. specific municipal buildings, public hospital, DEYAMV, public transport etc.). The methodological approach followed for estimating the potential energy conservation and consequently the GHG emissions reduction in each category was as follows:

- (a) For the former category, the potential for energy conservation was estimated on the basis of local characteristics and data already collected during the elaboration of project Actions 1 and 2. Consistency between the present/ future local energy balance and the results of Action’s 4 estimations was maintained by using, where appropriate, the same

values of parameters and assumptions as in Actions 1 and 2. For the purpose of calculations, technical data from the Greek market, similar applications in Greece and abroad, as well as simulation models (e.g. in the case of building insulation) were used. In addition, in order to calculate the total amount of energy conservation per measure, it was necessary to define a degree of penetration over time. This estimation was based on the experience already gained from similar applications in Greece and abroad, as well as on local characteristics, while the present situation and the expected evolution specified in Action 2 were also taken into account. The estimated penetration goes beyond the business-as-usual (BaU) scenario defined in Action 2 and thus GHG emissions reduction measures forming the content of a Local Action Plan are 'additional' to the BaU case.

- (b) For the latter category of measures, a specific data collection form was developed, facilitating the proper assessment of present situation with respect to buildings' insulation, performance of energy installations/ devices etc. Data collected, together with those of Action 1, formed the necessary basis for the estimation of possible penetration of each measure and the consequent calculation of expected energy conservation. For measures in the transport sector such as renewal of fleet or replacement of conventional vehicles, penetration was based on the characteristics of the present and future fleet. Finally, in the case of tram construction, redesign of bus lines, and extension of bicycle lanes/ pedestrian walkways, expected energy conservation was estimated on the basis of the length of the network to be constructed, the official planning of local authorities (i.e. the Municipal Business Plan), data from similar applications elsewhere in Greece, etc.

Although the estimated penetration per measure determines the absolute amount of energy conservation and GHG emissions reduction, as well as the total investment cost per measure, it has little or no influence to the Benefit/ Cost ratio (B/C) of measures. Absolute figures will represent criteria to be used in the subsequent Action 5 of the project.

The calculation of the energy conservation potential was made on an annual basis and for a time horizon appropriate for each measure. For each year of the analysis, the consumption of conventional fuels and electricity with the absence and with application of each measure were calculated. For waste management, the reduced annual amount of biodegradable materials emitting GHG emissions when placed in landfills was estimated instead.

Next, the expected GHG emissions reduction and rest environmental benefits per measure were calculated. With respect to the latter, since the majority of measures are associated with energy use, the main environmental benefit expected is the reduction of basic air pollutants (PM10, SO₂, NO_x, NMVOC). In order to maintain consistency with Actions 1 and 2, the same emission factors were applied.

For the economic analysis of measures, data regarding the investment and operational cost of each measure, as well as the cost (or benefit) due to increased (or decreased) fuel and/or electricity consumption were collected. In order to estimate the latter component, energy prices for Greece, derived by the IEA database for the year 2007, were used. The economic analysis was performed on the basis of constant energy prices over time. For the whole set of measures, a uniform discount rate (6%) was applied. Although this rate may be lower than the one usually used by private investors, and higher than the one used in the economic analysis of public goods, it was considered as more appropriate, since the aim is to formulate a Local Action Plan that will represent a compromise between all the actors involved. The economic analysis generated 6 economic indicators per measure: B/C, Net Present Value/ NPV (in €), Internal Rate of Return/ IRR (%), levelized cost per unit energy conserved (in €/toe), levelized cost per unit CO₂ avoided (in €/t CO₂) and payback period (in years). For the classification of measures within the context of Action 4, the first indicator (B/C) was used.

The economic assessment of measures was carried out in two steps. During the first step, a

Cost Effectiveness Analysis, where only the net financial costs associated with the interventions under consideration were taken into account, was performed. At this stage, out of 80 cases examined (*note*: the term ‘case’ refers to combinations of GHG emission reduction measures and sectors where the measures are applied), 29 had a B/C > 1 (i.e. ‘win-win’ options).

The next task of Action 4 was to express environmental externalities into monetary terms. For this purpose the most recent values of external cost per unit mass of pollutant derived from the ExternE project (*European Commission 2008, “Cost assessment for sustainable energy systems”, Technical report of the CASES project*) were used. For electricity, since the mix of fuels (and consequently air emissions generated) varies over time, a non-constant value of external cost was applied. The specific monetary values of externalities that were applied are shown in the Annex of the present inception report (7.2.6).

The results of the Cost-Benefit Analysis (CBA), where private costs/ benefits and cost/ benefit of environmental externalities are considered, are presented in Table 2 of the Annex of the present inception report (7.2.6). According to the results obtained, 7 more measures turn out to have a B/C ratio greater than 1 when externalities are included in the economic analysis. In addition, 10 more measures present are added to this list when some sensitivity analyses were performed.

Problems encountered:

During the elaboration of Action 4, a difficulty faced was the lack of recent information and data on the characteristics of the building stock and the performance of energy installations with respect to individual municipal and public buildings, as well as schools. Thus, a number of visits in each building in order to collect all necessary data took place and started one month prior to the initial time schedule. In addition, difficulties were faced with respect to the assessment of energy conservation in the water supply and sanitation system, as up to the present LIFE project there has not been an official planning for integrated energy conservation in this field and thus a great part of data required for the assessment within the context of the LIFE project were not yet available. This task is under progress and it is expected that the economic and environmental assessment will be completed within the next month.

5.1.5. Action 8: Communication and dissemination

Planned duration: 01/01/09 – 31/12/11

Implemented: 01/01/09 – 31/12/11

Status: Ongoing

Deliverables: Project website

Description of the fulfilled activities:

Action 8 is an ongoing activity and will be implemented until the end of the project, according to the work plan. The aim of this action is to ensure that the project’s goals and outputs are disseminated efficiently, to assist the implementation of LAP measures, and to stimulate environmental awareness. The activities undertaken during this project phase included:

- Development and regular update of the project’s website
- Notice boards describing the project at strategic places accessible to the public
- Dissemination of project’s progress to press
- Workshop for key stakeholders, local associations and NGOs

More specifically, during the second month of the project implementation the project website was completed (<http://www.epem.gr/climlocal/>). It became available to the public through the main web pages of the project beneficiaries: the Municipality of Volos (<http://www.volos-city.gr/>), DEYAMV (<http://www.deyamv.gr/>), DEMEKAV (<http://www.demekav.gr/>), as well as from the above-mentioned website of EPEM.

The project website is available both in Greek and English and it was designed in a contemporary format, using artwork, photography, animation and relevant links (where applicable). Visitors are able to get information on the objectives and contents of the CLIM-LOCAL2020 project, and to download documents prepared in the scope of the project (e.g. material for public consultation etc.). Local citizens and stakeholders are able to supply comments during the duration of the project.

The website consists of the following:

- Home page: general information on the CLIM-LOCAL2020 project
- Information: information on climate change, GHGs, Emissions Trading issues etc
- Actions: presentation of the 13 project Actions and the respective deliverables
- News: news concerning project activities
- Forum: space dedicated for public consultation issues and exchange of comments
- Management: information on project management
- Contact
- Links: important links on Climate Change, GHG etc

Until today, one notice board was placed in the entrance of the “Programming and New Technologies” building of the Municipality of Volos (174 Dimitriadou Str, Volos).

As already described in section 5.1.3, a “consultation” workshop took place in the premises of the Municipality of Volos on 29/6/2009. The workshop consisted part of the project’s dissemination actions, but it was attributed in Action 3, since it concerned the finalization of the “List of GHG emission reduction measures”. The invitation for participation in the workshop, the workshop program, the list of the invited authorities and persons and the list of participants are presented in Annex A of the Deliverable of Action 3 “Presentation of proposed GHG emission reduction measures and SWOT analysis” (please refer to 7.2.5). Some photos of the event are included in the Annex of the present inception report (7.4).

Finally, some articles and press releases that presented the CLIM-LOCAL2020 project, so far, are included in the Annex of the present inception report (7.4).

Problems encountered:

This Action faced no particular problems.

5.1.6. Action 10: Project management

Planned duration: 01/01/09 – 31/12/11

Implemented: 01/01/09 – 31/12/11

Status: Ongoing

Deliverables: Inception Report

Action 10 is described (Project Management) under section 4 of the present Inception Report.

Problems encountered:

This Action faced no particular problems.

5.1.7. Action 11: Project monitoring and evaluation

Planned duration: 01/01/09 – 31/12/11

Implemented: 01/01/09 – 31/12/11

Status: Ongoing

Deliverables: -

Description of the fulfilled activities:

Action 11 is an ongoing activity and will be completed at the end of the project according to the work plan. The aim of this action is to measure and document the effectiveness of the project as compared to objectives and expected results.

The activities undertaken during this project phase involved the preparation of a “Progress monitoring questionnaire”, in order to monitor the project’s performance against the progress indicators. A delay was encountered during the preparation of the questionnaire, which will be completed on 15/10/2009, and subsequently sent to the Action Team Leaders. The first reporting on the questionnaire is anticipated by 31/10/2009 and from then onward it will be completed on a 6-month basis. The completed questionnaires will be submitted with the future progress reports.

The Project Monitoring Team used the “Output indicators table” that was provided by the External Monitoring Team on the 26/6/09 meeting, in order to evaluate the progress of the project. The “Output indicators table” will become part of the future progress reports.

With the completion of the project, the evaluation of the benefits that each project beneficiary has received from his participation and the added value will also be undertaken.

Finally, it should be mentioned that a monitoring plan for the implementation of the LAP will be formulated (Action 6), the actual monitoring of the LAP implementation will take place (Action 7) and the overall LAP’s progress will be evaluated (Action 9).

Problems encountered:

This Action faced no particular problems. A delay was encountered during the preparation of the “Progress monitoring questionnaire”.

5.2. Availability of appropriate licences and authorisations

No licences or authorisations were envisaged during this phase of the project according to the proposal. Upon completion of the LAP (31/1/2010) all the measures that will be required for the implementation of the LAP will be clearly defined. A monitoring plan will be in place and a ‘roadmap’ will be formulated, starting with necessary preparatory activities. These preparatory activities will include the acquisition of the necessary licenses (e.g. environmental permits, installation permits), where needed. The Project Management Team and the Action 7 Team are already aware of this issue, and as such, a 6-month period is envisaged for the completion of the necessary preparatory actions.

5.3. Envisaged progress until next report

The next reporting period involves a 9,5 month implementation period. The following table presents the status of the project actions till the next report (Mid-term report due on 1/7/2010). The overall plan of the project is presented in the Gantt-chart in page 22.

Status of actions till next reporting period	
To be completed	Action 4, 5 & 6
Ongoing	Action 7, 8, 10 & 11
Not to be started yet	Action 9, 12 & 13

Each action is accompanied by a brief description of its activities, the milestones to be achieved and the deliverables to be produced till the next report (Action 4 was presented in 5.1.4).

Action	Activities	Milestones	Deliverables
5	Determination of additional parameters affecting the desirability and applicability of measures. Discussions with local authorities and stakeholders. Classification of measures into priority categories.	Decision on criteria and their relative weight	Report with classification of measures into priority categories
6	Presentation of a draft LAP to citizens and key stakeholders of Volos through the internet and during special event open to public. Finalization of priorities. Development of timeframe for the implementation of measures. Development of a set of practical guidelines for implementation. Development of monitoring plan. Compilation of final LAP.	Completion of public consultation on LAP Completion of LAP's compilation	Local Action Plan (LAP) for GHG emission reduction
7	Elaboration of necessary studies and rest preparatory actions for the implementation of measures. Establishment of a monitoring team to overview the implementation of LAP.	Completion of the majority of preparatory actions	
8	Dissemination (of LAP etc) through the project's web-site, hard copies, local newspapers, TV, and radio. Presentation of LAP in an open event (workshop).		Updated website
10	Regular meetings and systematic information exchange of the Project Management Team and Action Teams. between Action leaders.		Mid-term report
11	Performance evaluation throughout the project reporting period. Compilation of regular monitoring reports.		

The planned actions are also indicated in the following Gantt chart.

Progress and planned activities

ACTION		2009				2010				2011				2012			
		I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
Overall Project schedule	Proposed				x		x	x		x	x			x			
	Actual				x		x	x			x			x			
1 Calculation of present local GHG emissions	Proposed	[Bar]															
	Actual	[Bar]															
2 Projection of local GHG emissions	Proposed	[Bar]															
	Actual	[Bar]															
3 Identification of GHG emissions reduction options	Proposed	[Bar]															
	Actual	[Bar]															
4 Economic and environmental evaluation of GHG emissions reduction measures	Proposed	[Bar]															
	Actual	[Bar]															
5 Defining priorities for GHG emissions reduction measures	Proposed	[Bar]															
	Actual	[Bar]															
6 Public consultation and finalization of LAP	Proposed	[Bar]															
	Actual	[Bar]															
7 Implementation of measures in LAP	Proposed	[Bar]															
	Actual	[Bar]															
8 Communication and dissemination	Proposed	[Bar]															
	Actual	[Bar]															
9 Overall evaluation of LAP's progress and planning of its future operation	Proposed	[Bar]															
	Actual	[Bar]															
10 Project Management	Proposed	[Bar]															
	Actual	[Bar]															
11 Project monitoring and evaluation	Proposed	[Bar]															
	Actual	[Bar]															
12 Audit	Proposed																
	Actual																

↑
Inception Report

↑
Mid-Term Report

↑
Progress Report

↑
Final Report

○ Start / Mid-Term / End date
x Reporting schedule

6. Financial part

6.1. Putting in place of the accounting system

As it was thoroughly discussed during the 26/6/09 meeting with the LIFE+ External Monitoring Team, all project beneficiaries have already established separate cost accounts in their financial systems.

6.2. Continued availability of co financing

Not applicable

6.3. Costs incurred (summary by cost category and relevant comments).

The incurred project costs (1/1/2009 – 15/9/2009) are presented in the following table.

Budget breakdown categories	Total cost in €	Costs incurred from the start date to 15/9/2009 in €	% of total costs
1. Personnel	941.483,00	200.632,95	21,3
2. Travel and subsistence	64.200,00	1.886,39	2,9
3. External assistance	289.000,00	32.000,00	11,1
4. Durable goods			
Infrastructure			
Equipment	1.198.850,00	9.933,53	0,8
Prototype			
5. Land purchase / long-term lease			
6. Consumables	33.500,00	140,88	0,4
7. Other Costs	117.900,00	719,40	0,6
8. Overheads	132.958,00	15.945,35	12,0
TOTAL	2.777.891,00	261.258,50	9,4

Although the overall result that is presented in the above table shows that only 9,4% of the total costs have occurred during the first 8,5 months of the project implementation (~1/4 of the total project duration), it should be noted that this is in accordance with the proposed financial application. The proposed total cost for Actions 1, 2 and 3 (which have been completed) was ~218.000 € and it involved, mainly, personnel costs. The main project costs are expected to occur during Action 7 for equipment purchase. As such, there are no particular discrepancies on the budget posts, so far, and no significant modifications are expected.

7. Annexes

7.1. Partnership agreements and decisions for participation in the project

7.2. Deliverables

- 7.2.1. Local inventory for GHG emissions (Action 1)
- 7.2.2. Projections of GHG emissions up to 2020 (Action 2)
- 7.2.3. Tool package (Actions 1 & 2)
- 7.2.4. List of GHG emission reduction measures (Action 3)
- 7.2.5. Report on the Presentation of proposed GHG emission reduction measures and SWOT analysis (Action 3)
- 7.2.6. CBA report / partial results (Action 4)

7.3. Output indicators

7.4. Other

- 7.4.1. Photos of the 29/6 local workshop
- 7.4.2. Articles in newspapers etc