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FINAL Report
Covering the project activities from 01/01/2009 to 30/06/2011

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<30/09/2011>

BATinLoko – environmental performance indicators and their relation with economic factors in textile BAT implementation

Data Project

Project location	Portugal
Project start date:	01/01/2009
Project end date:	30-06-2011 Extension date: <dd/mm/yyyy >
Total Project duration (in months)	30 months Extension months <XX> months)
Total budget	311.955 €
EC contribution:	152.752 €
(%) of total costs	49%
(%) of eligible costs	49%

Data Beneficiary

Name Beneficiary	CITEVE
Contact person	Mr Paulo Cadeia
Postal address	Rua Fernando Mesquita, 2785, 4760-034 V. N. Famalicão
Visit address	Rua Fernando Mesquita, 2785, 4760-034 V. N. Famalicão
Telephone	00351 – 252 300 385
Fax:	00351 – 252 300 322
E-mail	pcadeia@citeve.pt
Project Website	www.citeve.pt/batinloko

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2. Executive Summary

With BATinLoko project it was intended to determine emission factors associated to the textile sector, defining environmental performance indicators and their relationship with economic factors related with BAT implementation, allowing the monitoring of company's performance, which will be traduced in gains for the environment.

The main deliverables of the project were the following ones:

- Report with the gaps of knowledge concerning textile sector
- Worksheets for productive process data treatment, with the determination of environmental performance indicators
- Best environmental performance indicators and goals for the textile industry
- Model for economic evaluation of BAT
- Informatics Tool
- BATinLoko Decision Support Manual

Regarding activities performed during project execution, they included the following:

Action 1 – in this action it was made the identification of the gaps of knowledge of the textile sector, concerning the productive process characterization, BAT for the sector and known performance indicators. This information was a start point to the following project activities. It were also selected 9 textile companies, representing the sample for project implementation.

Action 2 – during this action it was done the general information collection, in the 9 companies selected and it was defined a set of BAT to be studied and/ or implemented in the companies. For each selected BAT it was made a detailed study including characterizations of emissions to water, air and soil. It were also defined environmental performance indicators, as well as template sheets to help in the collection of information in the companies

Action 3 – in this action it was made previous actions data treatment. It was made the calculus of environmental performance indicators, related with the general information collected in companies. For BAT that were selected to be studied and/or implemented in the 9 textile companies, were also calculated specific indicators related with their implementation, regarding real data obtained in companies that allowed the conclusion of benefits of each BAT implementation.

Action 4 – this action addressed the economic evaluation study of BAT implementation. The work conducted included the identification of the economic constraints associated to BAT implementation. An investment appraisal process was conducted for each one of the selected BAT and the associated economic indicators were computed. The action included also the presentation of a cost-benefit methodology to be followed for the general economic evaluation of BAT implementation. The methodology application potential was demonstrated by analysing the inclusion of externalities on the evaluation of some of the selected BAT in action 2.

Action 5 – in this action was developed a software tool that relates environmental performance indicators with economic factors when of the BAT implementation, and so it's a useful decision support tool to companies. After the development phase, the software tool was tested in textile companies, in real conditions, in order to make the final validation of the tool and necessary adjustments.

Action 6 – this action concerns project dissemination activities. The main activities performed were the definition of BATinLoko conduct code, the launching seminar, elaboration and maintenance of project website, news in newsletters and websites, the economic workshop, the informatics tool training, the edition of BATinLoko manual and the final seminar.

Action 7 - this action was responsible for the general management of the project, interacting with the financial and technical execution, and now that the project ended its possible to conclude that the work was successfully achieved given the fact that the project financial execution is according to plan and that the technical objectives initially proposed are in line with the outcomes achieved.

Action 8 – during this action it was executed after-life dissemination plan, available in 5.4.3 of this report.

BATinLoko project was executed without major activities deviations and project results were achieved.

3. Introduction

In the textile sector the emission factors associated to BAT implementation aren't defined, so, it's quite difficult for the stakeholders involved to conclude about the environmental benefit when implementing BAT.

With this project it was intended to determine emission factors associated to the textile sector, defining environmental performance indicators and their relationship with economic factors associated with BAT implementation, allowing the monitoring of company's performance, which will be traduced in gains for the environment.

In order to achieve these objectives, the methodology used included the selection of 9 textile companies, where it was made the study of BAT implementation and associated emissions to water, air and soil, in order to calculate environmental performance indicators. This data was used to develop a model for economic evaluation of BAT and a manual and an informatics tool to help in the decision of BAT implementation.

The expected results with BATinLoko project were the following ones:

- One list of the best environmental performance indicators and goals for the textile sector
- One model for economic evaluation of BAT
- One informatics tool relating environmental performance and economics constraints
- Edition of 600 BATinLoko Decision Support Manual – Environmental performance indicators and their relation with economic factors in textile BAT implementation
- Dissemination of project results executing 4 seminars, and reaching at least 1500 visits on project's website
- One conduct code for project activities in order to reduce project carbon footprint

All results referred above were reached.

Regarding BATinLoko environmental benefits, project results intend to support the decision of BAT implementation and to encourage their implementation, allowing a better environmental performance of companies by reducing their emissions to air, water, soil, etc., with the positive benefits inherent to it. Related with these environmental benefits are always related economic ones, because the calculation of economic indicators has implicit environmental issues such as the cost benefits obtained by the reduction of CO₂ emissions, reduction in water consumption, reduced production of wastewater and thus, the implementation of the project, through BAT implementation, also leads to economic benefits.

4. Administrative part

4.1 Description of the management system

Concerning the Management System, it was defined a specific Action (nr 7) responsible for the overall coordination of the project. During the project execution the main management actions were related to the coordination of the project activities according to the proposed plan. The first action concluded was the signature of the Partnership Agreement between CITEVE and each of the partners. Since the Partnership Agreement was not according to the Common Provisions template, we had to change the text and sign a new Agreement (in annex 7.1).

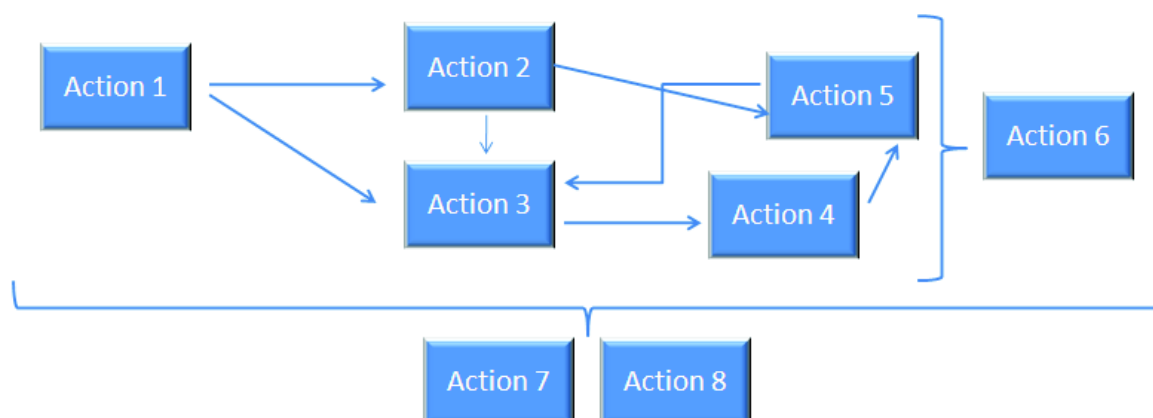
Considering the administrative issues, every six months took place one project meeting (six in total) with all beneficiaries, according to what was established. Project meetings were important reunions for partners to present their work and establish a common ground of action for the next period.

During the execution, the project management structure was responsible for monitoring partners' activities and the Project Manager was responsible for the launch of new tasks and activities in the project. According to plan, the partnership made also all dissemination activities, namely the lunching seminar, the economic workshop and the final workshop to present project results.

The external monitoring team was present in three project meetings to ensure that everyone knew the administrative and financial rules of LIFE projects and also to evaluate the project achievements.

The work accomplished states that the project resulted according to plan and that all partners were committed in the project management insuring that all deliverables and results were achieved. This can be confirmed by analysing the point 5 of this report and also the financial execution of the project.

Pert Diagram



Organigramme

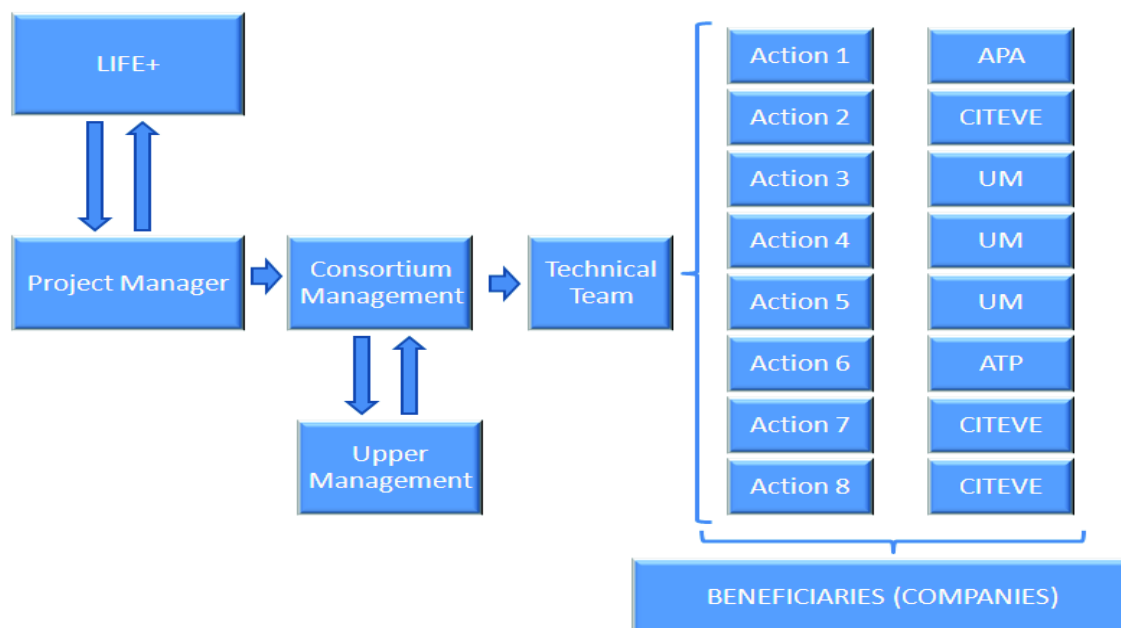
Concerning the persons involved in the project, the following roles were defined:

Project Manager – the head of the project with power to define, plan, control and lead the project. The Project Manager in BATinLoko is Dionísia Portela that works in CITEVE.

Consortium Management – represented by 1 member of each partner with the responsibility of ensure the correct technical and economic performance of the project Actions. The main communication channel of this board was the email and the telephone.

Project team members – This team is responsible for the production of the outputs (deliverables) for the project and participate in the project management processes given contributions to the decision-making. The main contribution of this team to the project is their skills and effort to perform tasks preview.

Upper Management – General Managers of the beneficiaries that have the formal authority, providing guidance and maintaining project funding.



4.2 Evaluation of the management system

As regards to the evaluation of management system process, it was well conducted since it provided information share between all project beneficiaries, in order to achieve all expected project results.

Concerning the project management structure, the operational scheme was well conducted and the problems encountered during the project execution were solved by

the project manager and team members. In some specific cases related to the financial execution the project manager asked to Astrale some advises and permissions.

The composition of the partnership and each partner expertise was the needed one to develop the actions planned. Therefore all partners gave an important contribution for specific actions, e.g., ATP was responsible for the approach to the textile companies, Minho University responsible for the development of the web tool, CITEVE responsible for the data collection in the companies and APA responsible for the overall analysis of the indicators. This means that the major tasks were performed by the partners and only some minor technical issues were subcontracted.

Regarding project results application, namely the BATinLoko webtool and the BATinLoko decision support manual, they can be used by any textile company that needs a support in BAT decision and implementation thus, project reproducibility is guaranteed. The results can be used by interested stakeholders without any further changes. Except for the maintenance costs of the webtool and project website that will be supported by beneficiaries, it isn't expected any more costs related with results application. Since the webtool includes 12 BAT, that is the limiting factor of this support, given that only those BAT can be tested with this project deliverable. The webtool was based on the theoretical development of each of the studied unit operations and not with the actual performance of these operations in each of the textile company. As a consequence the value obtained by the webtool may be much higher than what companies actually get.

Project results were achieved, regarding that it was possible to make a thorough study on the environmental performance indicators associated with the implementation of BAT in the textile sector, allowing to check, based on data determined in the field, that due to textile sector specificity is not feasible to set global environmental goals for all textile sector. In comparison to the initial objectives described in the project proposal, all objectives were accomplished in the end of the project. Furthermore, the project didn't suffer any deviations in terms of budget, quality or time.

All dissemination activities occurred like expected since it was possible to reach the intended audience in all events and their feedback was very positive.

Like it is stated in the after-life dissemination plan, the beneficiaries intend to spread project results in the future, supported by the tools developed during project execution, namely the webtool and the manual. Also, the information related with BAT implementation study can be taken into consideration during the elaboration of textile sector relevant documents, abroad Europe.

5. Technical part

5.1 Task by task – description

5.1.1 Action 1 - Approach to the textile industry sector

The main objective of this action was the identification of the gaps of knowledge concerning the textile sector, and the definition of a representative sample of Portuguese textile industries, in which it was made the fieldwork and the demonstration of the work methodology developed in this project. This action comprised two tasks: Task 1.1 - *Data compilation* and Task 1.2 - *Sample selection*.

Regarding the *Data compilation* (Task 1.1), all partners gathered information related with project objectives and the gaps of knowledge of the sector, namely textile sector characterization in Portugal and Europe, textile BAT, resources consumption and pollutants emissions and also performance indicators. All the information is presented in the deliverable Report with the gaps of knowledge concerning textile sector that can be found in annex 7.2.1. This document isn't a complete state of art of the sector, since it mainly collects the most important data and information necessary to project activities based in the different levels of experience of each partner, so that all partners have the same level of knowledge about the thematic of the project. This task was performed in the scheduled time and the partnership hadn't encountered any problems in its execution.

Concerning Task 1.2 – *Sample selection*, CITEVE and ATP provided project objectives dissemination, using the project launching session and also by making a divulgation to all its clients and associates, inviting textile companies to participate in project activities. Thirteen companies demonstrate interest in participate in the project and since the project sample was planned to be composed by nine companies, the partnership defined selection criteria. Those were:

- Preferably companies included in IPPC Directive
- Productive process diversity (covering dyeing of raw material, yarn, woven and knitted fabric)
- Availability of time and resources to participate in the project

The 9 companies selected were:

- Tinturaria e Acabamento de Tecidos Vale de Tábuas, Lda.
- Arco - Têxteis, S.A.
- Somelos Acabamentos, S.A.
- Fábrica de Tecidos Viúva de Carlos Silva Areias & C^a, S.A. (Felpos BomDia)
- Coelima - Indústrias Têxteis, S.A.
- Riopole - Têxtil, S.A.
- Lameirinho - Indústria Têxtil, S.A.
- JMA - Felpos, S.A.
- Acatel – Acabamentos Têxteis, S.A.

This task was performed on the scheduled time and the partnership hadn't encountered any problems in its execution.

During Action 1 execution all objectives and results were achieved.

5.1.2 Action 2 - Characterization of textile sector regarding environmental performance indicators

The main objective of this action was to do the characterization of emissions to water, air and soil and to analyze real process conditions in order to determine environmental performance indicators to textile sector. This action was performed in the nine companies selected in the scope of Action 1.

The information collection was made in the scope of tasks Task 2.1 – *Information collection* and Task 2.3 – *Wastes and subsidiary materials identification*, like planned. With the analyses of the gathered information, namely BAT implemented in each company, it was defined a set of BAT to be studied and/ or implemented according with companies availability (Task 2.2 – *Emissions characterization*).

It was developed a sheet to help in the collection of the general information in the companies (see the template in Action 2 deliverable – Annex 7.2.2). The collected information was divided in the following groups:

- General data
- Chemical products
- Energy
- Water
- Wastewater
- Air emissions
- Solid Wastes
- BAT implemented

The BAT selected to be studied and/ or implemented in 9 selected companies were the following ones:

- Heat-insulation of pipes and stenters
- Segregation of hot and cold waste water streams and recovery of heat from the hot stream
- Installation of automated dosing and dispensing systems which meter the exact amount of chemicals and auxiliary required and deliver them directly to various machines through pipework without human contact
- Installation of automated dosing and dispensing systems which meter the exact amount of dyes required, only considering manual operation for dyes that are used infrequently.
- Recover and reuse sizing agents by ultrafiltration
- Enzyme treatment
- Recovering and reuse alkali from mercerizing rising water

- Minimizing volume capacity of the dip through when using pad dyeing techniques, in continuous dyeing processes
- Reusing rinse water
- Reducing water consumption in printing cleaning operations
- Minimizing energy consumption in stenter frames by installing heating recovery systems
- Bleaching elimination in dark colours dyeing

A detailed study was made for each BAT, concerning parameters like operation time, operation conditions, costs and amounts of chemical products, amount of water and/or wastewater, equipment investment, among others, and characterizations of emissions, specifically related to each BAT implementation. In the deliverable of Action 2 there's an example of the sheets used to collect the BAT data in the companies.

It is important to state that, whenever possible, each BAT was studied in more than one company to evaluate the application potential and the environmental and economic impact.

There were also made characterizations of emissions to water and air related with the productive process in general, in order to determine general performance indicators.

Concerning the data collection, and despite the companies that participated in this project being very cooperative, there was in some cases, a lack of data from emissions to water, air and soil provided. More detailed data would have allowed the determination of more reliable emission factors. Regardless, this situation did not prevent the full achievement of the main objectives of the project.

Subsequently it was made treatment and analysis of obtained data (*Task 2.4*) and Task 2.5 - *Definition of environmental indicators*. The results are presented in the deliverable Worksheets for productive process data treatment, with the determination of environmental performance indicators (see annex 7.2.2). In this deliverable it can be found the definition of environmental performance indicators that were used as reference in other project actions, as well as template sheets to help in the collection of information in the companies, for general or specific BAT indicators calculus.

The main difficulties that appeared during Action 2 execution were the availability to test the implementation of some BAT, like companies necessity to acquire a specific chemical product or material, or even the productive process availability to perform the study, because it was dependent on the orders for costumers. Nevertheless with a careful planning all these questions were overcome.

It wasn't also possible to test the implementation of some BAT who needed the purchase of machinery /materials, by the companies, because of the costs involved.

During Action 2 execution all objectives and results were achieved.

5.1.3 Action 3 - Definition of the best environmental performance indicators and goals on textile sector

The objective of this action was to identify the production typologies with the best environmental performance indicators, and the environmental goals for textile industry.

The Task 3.1 – *Data Treatment* began in the month 7 with the analysis of the collected data of Action 1: “Approach to textile industry sector” and presented in the “Report with the gaps of knowledge concerning textile sector”. The data obtained in the Action 2 was analyzed and compared with the data obtained in the Action 1, in order to help in the definition of the environmental performance indicators referred above. Indicators, related with the general information collected in companies, were calculated.

Concerning Task 3.2 – *Definition of environmental goals*, this definition was made using information gathered in bibliography, results from Action 2 and Task 3.1, experience of textile companies participating in the project and also results from BATinLoko webtool.

It was requested an extension of Action 3, because, the partnership concluded that results from the BATinLoko webtool could provide more information about indicators that can be obtained with BAT implementation. Since the webtool reach the BETA phase in May 2011, this was the date were Action 3 was concluded, because it was possible to test BAT implementation scenarios in order to obtain more results, that were included in the deliverable Definition of the best environmental performance indicators and goals on textile sector. This deliverable is available in annex 7.2.3.

It's important to state that textile activity shows high variations in terms of raw materials, chemicals, processes, equipment and products, and the production may vary widely during the year, derived from changes in the level of colours (light, medium or dark), fibres (only one or mixtures of two or more types of fibres), the structure of the processed material (wool, yarn, fabric, etc.), but also over the single day according to the production programme. This variability of textile sector was a constraint in the development of environmental performance indicators and the definition of overall environmental goals that could be applied to all textile sector demonstrated not to be feasible.

During Action 3 execution all objectives and results were achieved.

5.1.4 Action 4 – Economic evaluation study

The main objectives of this action were: (1) to identify economic constraints related with the adoption and use of the BAT and (2) to conduct an economic evaluation of BAT implementation in the textile industry. To execute this action the following tasks were performed:

– Identification of economic constraints.

The economic constraints of BAT implementation were identified and quantified, namely the capital costs, O&M costs, benefits and cost saving potential, fuel, water and other materials costs, associated to each BAT and the discount rate to be used for the investment appraisal.

- Investment appraisal of BAT.

The investment appraisal tools and indicators to be used were selected based on academic knowledge and on the general practice of the selected textile companies in action 1. This last aspect was assessed resorting to the consultation of selected textile companies during meetings and technical visits. Preference was given to Net Present Value (NPV) and Payback time. The BAT economic evaluation methodology was defined and the indicators were included as output of the informatics tool.

- Cost-benefits analysis of BAT implementation.

The macroeconomic/industry benefits of BAT implementation were evaluated, the associated externalities were identified and listed and a cost-benefit analysis methodology was proposed. Based on the previous investment appraisal and on the externalities identification, the economic valuation of some BAT was presented taking into account external costs related to CO₂ emissions and water consumption.

- An integrated economic model was presented summarizing the proposed economic evaluation of BAT implementation.

The deliverables of the Action include the *Model for economic evaluation of BAT* and the *Report with the list of essential issues to serve as an incentive to other companies for BAT adoption* (these deliverables are available in annexes 7.2.4 and 7.2.5). An economic workshop was organized to disseminate the results of this task among companies and other stakeholders. A paper to be submitted to an international journal was prepared with the aim of validating the results and disseminating the project among the scientific community.

During Action 4 execution all objectives and results were achieved.

5.1.5 Action 5 - Development of an informatics tool relating environmental performance and economics constraints

The objective of this action was to develop a software tool that relates environmental performance indicators with economic factors when of the BAT implementation, and so it's a useful decision support tool to companies.

The Task 5.1 - *Definition of the tool's requirements* – “emissions/economics data” calculation tools and submission reports tools.

In the requirements analysis were identified the mathematical models required by each of the BAT that were selected for inclusion on the software tool. This was a task complicated by the absence of models documented in the scientific and technical literature for some of the BAT. This required an important work by all team members to resolve the problems identified.

Task 5.2 - *Design of information architecture and system architecture*

Based on the results of the previous requirements analysis, it was designed the information architecture required to support the mathematical models identified for each of the BAT to be implemented in the software tool. Also was designed the

architecture of the software tool that allowed a simple and friendly interaction to its users.

Task 5.3 - *Implementation* - Programming of the tools.

It was developed a software tool that allows to calculate the benefit of environmental performance indicators related to economic factors, and can be used as a tool for decision support in the implementation of BAT for textile companies.

Task 5.4 – *Testing* – Software tool test in textile companies, in order to make the final validation of the tool and necessary adjustments.

After verifying these simulations was detected that the results can deviate from the values found in real companies. These deviations can be justified by the use of materials with properties different from those used in the development of algorithms or the operating conditions. However in all cases there was a behavior that follows the trend expected for the BAT study.

Environmental performance indicators previewed in project proposal were calculated, and beside those, others were determined too. They can be found in the deliverable Definition of the best environmental performance indicators and goals on textile sector, available in annex.

During Action 5 execution all objectives and results were achieved.

Progress made during project execution is illustrated in the next Gantt chart:

Tasks/ Activities		2009				2010				2011	
		1T	2T	3T	4T	1T	2T	3T	4T	1T	2T
Action 1	Proposed	■	■	■							
	Executed	■	■	■							
Action 2	Proposed		■	■	■	■	■	■			
	Executed		■	■	■	■	■	■			
Action 3	Proposed			■	■	■	■	■	■		
	Executed			■	■	■	■	■	■	■	■
Action 4	Proposed							■	■	■	■
	Executed					■	■	■	■	■	■
Action 5	Proposed	■	■	■	■	■	■	■	■	■	■
	Executed	■	■	■	■	■	■	■	■	■	■
Action 6	Proposed	■	■	■	■	■	■	■	■	■	■
	Executed	■	■	■	■	■	■	■	■	■	■
Action 7	Proposed	■	■	■	■	■	■	■	■	■	■
	Executed	■	■	■	■	■	■	■	■	■	■
Action 8	Proposed										■
	Executed										■

5.2 Evaluation

The methodology applied during project activities planning proved to be adequate, in relation to the objectives pursued, since the planned actions and their results have been achieved. Regarding action 4, it began first than it was previewed in the revised proposal, because the partnership concluded that tasks could begin prior to what was established regarding the required information. It also ended after what was expected in order to receive inputs from action 5, which proved to have a lot of interest. There was a slight deviation in the course of Action 3, which was extended to receive inputs from Action 5, but even in this case, this extension was intended to improve the quality of the deliverable, since its production was never in question.

Comparing the results foreseen in the proposal and the results achieved it can be stated the following:

Task	Foreseen in the revised proposal	Achieved	Evaluation
Action 1	Report with the gaps of knowledge concerning textile sector	1 report with the gaps of knowledge concerning textile sector	Objective achieved
Action 1	9 textile companies' selection	9 companies selected	Objective achieved
Action 3	Best environmental performance indicators and goals for the textile industry	1 report with environmental performance indicators	Objective achieved
Action 4	Model for economic evaluation of BAT	1 economic model	Objective achieved
Action 5	Informatics Tool	1 Informatics tool available online (BATinLoko webtool)	Objective achieved
Action 6	BATinLoko decision support manual	600 BATinLoko decision support manual (edited in DVD)	Objective achieved
Action 6	Project website	1 project website	Objective achieved
Action 6	4 Seminars	1 launching seminar; 1 economics workshop, 1 informatics tool training, 1 final seminar	Objective achieved
Action 6	Conduct code	1 conduct code	Objective achieved

5.3 Analysis of long-term benefits

1. Environmental benefits
 - a. Direct / quantitative environmental benefits:
 - b. Relevance for environmentally significant issues or policy areas

BAT implementation, that was encouraged with this project, not only allows a better environmental performance of businesses by reducing their emissions (air, water, waste, etc..) with the inherent benefits to it (environmental and economic), as well as in many cases allows compliance with emission values set out in legislation, avoiding economic spending with fines.

2. Long-term sustainability
 - a. Long-term / qualitative environmental benefits

Long-term benefits of this project are of various orders. Being a project that provides industry tools, like the webtool and the BATinLoko Manual, to support the decision of Best Available Techniques implementation and that somehow try to encourage their implementation, it is easy to understand that the environmental benefits will be clearly positive.

- b. Long-term / qualitative economic benefits

The production of scientific knowledge through the development of a user-friendly software tool, available online to the stakeholders brought, in economic terms, an important asset because it allows the industry to verify the cost-benefit of implementing a particular BAT and support, based on reliable theoretical values, the best option to take allowing the combination of environmental and economic benefit, whose coexistence is mandatory under the sustainable development of enterprises.

Additionally, by implementing the BAT, the productive process gets more efficient and with higher product quality. This will enhance the company's competitiveness on the market which can be traduced in the gain of new customers and more contracts with the inherent economic benefits.

This appears to be of special importance in complex economic times, like the ones we were living, where the investments have to be necessarily selective, in order to maintain the liquidity of companies.

- c. Long-term / qualitative social benefits

Some BAT implementation like for example the installation of automated dosing and dispensing systems which meter the exact amount of chemicals, auxiliary or dyes, among others, has a positive effect on employees. Since the exposure to harmful substances is reduced, it has less effects on health which contributes to motivation at work and has reflects in the family life (social improvement).

Regarding the company's point of view, a company which carries out BAT implementation, strengthens its competitiveness in the market, which can result in the maintenance of employability, with the inherent social benefit. Also, the

implementation of good environmental practices is well regarded by the neighborhood of the company, providing a better integration of the company in the surrounding society.

3. Replicability, demonstration, transferability, cooperation:

Another added value of the project is its reproducibility, namely at European level, because BAT implementation for each activity sector is carried out at that level, since the reference documents on BAT (BREF - BAT Reference Documents) where these are established, are prepared and approved by joint work between the various Member States, and BATinLoko project results could provide important information to be taken into account during these documents revision.

Additionally, the principles used in this project and in the webtool development can be effectively extended to other sectors simply by taking into account the specificities of the sector and applicable BAT, thereby increasing the range of activities where this project could be useful in the future.

4. Innovation and demonstration value:

The development of the algorithms that simulate BAT application and evaluate economic and environmental benefits, that are webtool basis have a high level of innovation since that aren't available others tools with the same characteristics.

The webtool was tested in real textile companies, using real data and had a positive feedback, since it demonstrated to be a tool that can be used directly by companies' technicians providing useful information about BAT implementation. Also, the video made about companies experience during BATinLoko project is a good dissemination tool about the benefits of companies participation in LIFE projects.

Another innovative aspect of the project was the development and the application to project activities of the conduct code for CO₂ emissions reduction, which proved to have high benefits (reduction of about 10 tons of CO₂).

5. Long term indicators of the project success:

The long term indicators of the project will be the number of accesses to the webtool to test BAT implementation, the number of new organizations that register in the webtool, the distribution and utilization of BATinLoko decision support manual and also the utilization of BATinLoko project results during textile BREF revision.

5.4 Dissemination issues

The objective of dissemination actions was to divulgate the results and benefits of the project in order to promote the implementation of BAT among the textile sector. Since

this action was determinant for project results success after project's conclusion, the consortium intended to reach the higher number of entities interested in the results.

5.4.1 Dissemination: overview per activity

During project execution were made the following dissemination activities:

Establishment of a conduct code (Task 6.1) - The conduct code defines a whole set of principles and values applicable to BATinLoko project activities, that should be followed by all project beneficiaries, in order to reduce CO₂ emissions, and is a document signed by all. The principles and values were divided as following:

- Being informed
- Consuming less energy
- Travel control
- Maximizing products utilization
- Inform

This conduct code was disseminated in project events and in publications made by project beneficiaries. With the conduct code implementation the partnership was able to offset around 10 tons of CO₂ emissions, during project period (30 months).

See conduct code in annex 7.2.6.

Launching session (Task 6.2) - The launching session of the project was a public session, made to present BATinLoko project and their benefits to the operators of textile industrial plants, which had around 30 participants. The session was made in CITEVE's facilities and had the following content:

- Project presentation
- New legal frame regarding IPPC
- Conduct code presentation
- Q&A

Economics workshop (Task 6.3) - The economics workshop of the project was a public session, made to present the economic model developed, which had around 50 participants. The session was made in Minho University facilities and had the following content:

- Project presentation
- Textile BAT implementation (presentations made by textile companies)
- Economic model developed during project
- Q&A

Informatics tool training (Task 6.4) – This training aimed to make a demonstration and validation of the developed BATinLoko webtool to textile companies and other interested stakeholders. This training took place at Minho University and had around 40 participants.

Website information (Task 6.5) – It was developed and maintained project website that is available, in Portuguese and English, in the following address: www.citeve.pt/batinloko.

Edition of the BATinLoko Decision Support Manual (Task 6.6) – It was edited in DVD the BATinLoko decision support manual, in Portuguese language, that was distributed to participants of the final seminar, and that will continue to be distributed to all interested stakeholders even after project's conclusion, by project beneficiaries. (See manual in annex 7.2.7)

Final seminar (Task 6.7) – The final seminar of the project was a public session, made to present BATinLoko project results which had around 50 participants. The session was made at CITEVE's facilities and had the following content:

- Presentation of BATinLoko project results
- Presentation of BATinLoko webtool
- Textile companies' experience within the BATinLoko project (film presentation)
- Offset of CO₂ emissions with BATinLoko
- Q&A

This seminar was simultaneously broadcasted online, in English language, so the ones that couldn't be present at CITEVE could also assist the seminar. This webcast had 12 people participating, which was considered a satisfactory number regarding that this kind of tools still have a low utilization. It also contributed to the reduction of carbon emissions. Regarding carbon emissions minimization, each participant was offered a plant that they should keep in order to offset the CO₂ emissions associated with the travel to the seminar.

Participation in the conference Pollutec (Task 6.8) – CITEVE went to Pollutec 2010 that took place between 30th November and 3rd December 2010. In the proposal was previewed the attendance of one person on this event, but since the event had several simultaneous conferences and also a wide area of pavilions, two person visited the event in order to get the maximum of information. Nevertheless the budget previewed wasn't exceeded. In the event the technicians had the opportunity to make technological surveillance, in order to check the advances on new technologies and techniques related to textile BAT implementation, and also assist to conferences related with those issues.

Concerning dissemination, it was also made a presentation of project objectives and results obtained, in the 22nd IFATCC - International congress, that was held in Italy, Stresa, between 5 and 7 of May 2010. The presentation was made by Minho University (project beneficiary). The article presented in the conference can be found in annex 7.3.

Deliverables of BATinLoko project regarding dissemination can be found in annex 7.3 and are the following ones:

- Notice boards
- Video with textile companies' experience within the BATinLoko project

- BATinLoko Decision Support Manual (in annex 7.2.7)
- Articles publication
- News publication in newsletters and partners websites

5.4.2 Layman's report

See attached reports in English and Portuguese language.

5.4.3 After-LIFE Communication plan

See attached after-life dissemination plan.