



LIFE TCY05/MA000141  
MOROCOMP



UNIVERSITE CHOUAIB  
DOUKKALI



National Technical University of  
Athens



Office Régional de Mise en  
Valeur Agricole des Doukkala



Faculté des Sciences El  
Jadida

# **Design and Application of an Innovative Composting Unit for the Effective Treatment of Sludge and other Biodegradable Organic Waste in Morocco MOROCOMP**

## **DELIVERABLE 6:**

### **Minutes of Kick-off Meeting**

**University of Chouaib Doukkali,  
Faculty of Sciences El Jadida,  
9<sup>th</sup> February 2006**



composting  
MOROCOMP

*Recycler Valoriser Protéger*

# 1<sup>st</sup> Session

## Organization and participant name

1. University of Chouaib Doukkali (UCD): Prof M. Kouam (President) and Prof A. El Hachimi (Vice-President).
2. Faculty of Sciences, University of Chouaib Doukkali, El Jadida: Prof A. Ajjane, Prof J. Amine, Prof A. Arbaoui (Vice-Dean), Prof O. Assobhei, Prof Y. Boughaleb (Dean), Prof K. Chedad, Prof A. El Abbouyi (Vice-Dean), Prof S. Etahiri, Prof Kabil, Prof M. Mountadar, Prof Rihani and Prof L. A. Semlali.
3. National Technical University of Athens (NTUA): Prof. M. Loizidou and Mr S. Malamis.
4. Regional Office of Agricultural Development of Doukkala (ORMVAD): Dr M. Rafrafi and B. Droussi.
5. Ministry of Regional Planning, Water and Environment: Dr A. Sahibi and N. Brine.
6. Ministry of National Education, Higher Education, Executives Training and Scientific Research: Prof A. El Hattab (Director of Sciences) and Dr M. Lahlou.
7. Ministry of Interior, Province El Jadida: Dr B. Daraaoui.
8. Member of Moroccan Parliament: Mr K. El Hariry.
9. GREPEN association : Prof K. Zourarah (President).
10. Association ANNAMAE for Self-employment: Mr K. El Moutai (Vice-President).
11. Association Andalous: Prof S. Bakkas (President).
12. Moroccan association of Limnology: Prof M. Fekhaoui (General Secretary).
13. National Association for Environment and Sustainable Development: Dr. M. Maanane.
14. Association of higher upgraded without a job: Dr M. Chennaoui and Dr A. Hamdani.
15. Journalists: Mr A. Chahid and Mr M. Lakhia.

## Introduction

- **Prof M. Kouam**, President of UCD, welcomed all participants who attended the meeting and stressed the importance of this project for Morocco, the innovative character of the project and gave his best wishes for the successful implementation of the project
- **Prof Y. Boughaleb**, Dean of Faculty of Sciences in El Jadida, welcomed all participants and congratulated the partners for the project's approval and mentioned that several socio-economic benefits will emanate from the development of co-operation between Morocco and foreign countries. The Faculty of Sciences will make all efforts in order to contribute to the successful project implementation.
- **Prof M. Loizidou**, introduced herself, welcomed all participants and mentioned that the EU can assist Morocco through such projects in order to promote the country's research, development and capacity building
- **Mr El Hariry** (Member of Parliament) mentioned that the acquisition of know-how gained through such projects is very important and that he is available to contribute to the project's successful implementation
- **Prof O. Assobhei** (UCD, Faculty of Sciences) welcomed and thanked all participants for their attendance. Prof Assobhei stressed the importance in providing a liaison between the laboratory research and research and development in UCD. This way UCD can contribute towards the development of the country. It is important to develop technology in Morocco which has proved to be successful in Europe.
- **All partners** introduced themselves and the organization they represent

## Project Overview

**Prof O. Assobhei** (Faculty of Sciences) made a brief overview of the project which included:

- General information concerning the project

- The principal aim and objectives of the project
- Short presentation of all the tasks that will be carried out (activities foreseen)
- Conclusions and benefits emanating from the project for Morocco
- Important points:
  - Need to provide much publicity for the project.
  - The main aim is to construct a model composting unit that will be accessible to everyone.

## **Short presentation of the profile of each partner**

Each partner briefly presented the activities, interests and current status of their organization:

- UCD profile (Prof A. El Hachimi)
- Faculty of Sciences of UCD profile (Prof M. Mountadar)
- NTUA profile (Prof M. Loizidou)
- ORMVAD profile (Dr M. Rafrafi)

## 2<sup>nd</sup> Session

### Organization and participant name

1. Faculty of Sciences, University of Chouaib Doukkali, El Jadida: Prof A. Aajjane, Prof J. Amine, Prof A. Arbaoui (Vice-Dean), Prof O. Assobhei, Prof Y. Boughaleb (Dean), Prof K. Chedad, Prof A. El Abbouyi (Vice-Dean), Prof S. Etahiri, Prof Kabil, Prof M. Mountadar, Prof Rihani and Prof L. A. Semlali.
2. National Technical University of Athens (NTUA): Prof. M. Loizidou and Mr S. Malamis
3. Regional Office of Agricultural Development of Doukkala (ORMVAD): Dr M. Rafrafi
4. Ministry of Regional Planning, Water and Environment: Dr A. Sahibi and Dr N. Brine
5. Ministry of National Education, Higher Education, Managers training and Scientific Research: Prof A. El Hattab and Dr M. Lahlou
6. Ministry of Interior, Province El Jadida : Dr B. Daraaoui
7. Member of Parliament: Mr. K. El Hariry
8. GREPEN association: Prof K. Zourarah
9. Association ANNAMAE for Self-employment: Mr. K. El Moutai
10. Association Andalous : Prof S. Bakkas
11. Moroccan association of Limnology: Prof M. Fekhaoui

### Presentations

- **Prof Loizidou** (NTUA) made a presentation on solid waste management in the EU and focused on the following issues:
  - Waste management hierarchy in the EU
  - Material & energy recovery
  - Priority waste streams in the EU
  - Relevant EU Directives

- Treatment and disposal practices in the EU
- **Mr S. Malamis** (NTUA) presented the EU and Greek experience in composting
  - Data on quantities of waste which are being composted in the EU
  - Real case studies from composting plants operating in Greece and in other EU countries

## Discussion

- **Pr M. Fekhaoui** pointed out that most waste produced in Morocco is organic and has a potential commercial value if it is properly treated. Two major problems mentioned: sludge management in Morocco and the content of heavy metals in sludge and in the end compost.
- **Prof Assobhei** explained that this project is a pilot scale demonstration project that aims to promote the future full-scale commercialization of such systems in the future. It is important to show at pilot-scale that this technology works and that it can be applied in Morocco.

Discussion on the additives that can be used together with sludge in order to improve the properties of the compost mix. Need to use readily available material that is cheap and of Moroccan origin.

## Formulation of the Steering Committee

Name	Organisation
M. Kouam	President, University Chouaib Doukkali
A. El Hattab	Director of Sciences, Ministry of National Education, Higher Education, Executives Training and Scientific Research
A. Moulid	Director of Regional Office of Agricultural Development of Doukkala
K. El Hariry	Member of Moroccan Parliament
Y. Boughaleb	Dean of Faculty of Sciences El Jadida
A. Sahibi	Chief of the Cooperation Division, Ministry of Regional Planning, Water and Environment
M. Loizidou	Professor, National Technical University of Athens
O. Assobhei	Professor, Faculty of Sciences of El Jadida
S. Bakkas	President, Association ANDALOUS
N. Brine	Regional Inspection of Doukkala Abda, Ministry of Regional Planning, Water and Environment
K. El Moutai	Vice President, Association ANNAMAE for Self-employment
M. Fekhaoui	General Secretary, Moroccan Association of Limnology
M. Lahlou	Ministry of National Education, Higher Education, Executives Training and Scientific Research
M. Mountadar	Professor, Faculty of Sciences of El Jadida
M. Rafrafi	Regional Office of Agricultural Development of Doukkala (ORMVAD)
K. Zourarah	President, Association GREPEN

## **Endorsement of the Action Plan**

All participants signed a document accepting the action plan of the project

### **TASK 1: Assessment of the existing situation in Morocco and in the EU**

- Assessment of the existing situation and existing management schemes in Morocco regarding sewage sludge & BOW
- Assessment of the existing situation and existing management schemes in the EU regarding sewage sludge & BOW
- Review of composting practices in the EU
- Trip to composting facility in Germany
- Trip to composting facility in Switzerland

### **TASK 2: Design and Construction of an innovative aerobic composting system for sludge treatment**

- Design of the composting system (main phase & maturation)
- Construction of the composting system
- Trips of Moroccan teams to Greece
- Trip of the Greek team to Morocco
- Completed composting unit

### **TASK 3: Development of sludge aerobic composting process Optimisation of the operation of the pilot composting systems**

- Physico-chemical analysis of sludge generated from the WWTP
- Development of aerobic composting processes using sludge & BOW
- Development of alternative composting processes and optimization of the system
- Trip of the Greek team to Morocco
- Composting unit operating under optimal conditions

### **TASK 4: Evaluation of compost products as soil improvers**

- Development of phytotoxicity tests to evaluate suitability of compost end product for agricultural application
- Examination of the effects of compost on selected crops
- Trip of the Greek team to Morocco



#### **TASK 5: Alternative uses of compost – Market opportunities in Morocco**

- Assessment of the alternative uses of the compost products
- Suggestions for the development of compost market in Morocco
- Trip of the Greek team to Morocco

#### **TASK 6: Development of guidelines and specifications covering the sludge composting process Characterization and use of compost as soil improver**

- Development of specifications on the optimum operation of the composting system
- Development of specifications on the quality of the compost product
- Development of guidelines on the requirements for compost use

#### **TASK 7: Dissemination and training**

- Kick-off meeting & Launching Event
- Information of the public
- Website development, uploading and regular updating
- Tours to the composting Unit
- Development and distribution of informative material
- 3 Workshops
- 3 Training Sessions
- Trips of the Greek Side to Morocco
- Publications
- International Conference in Morocco

#### **TASK 8: Management and reporting to the EC**

- Formulation of Steering Committee and of Management Team
- Endorsement of Action Plan
- Progress Reports
- Interim report
- Final Report

## 3<sup>rd</sup> Session

### Organization and participant name

1. University of Chouaib Doukkali (UCD) - Faculty of Sciences: Prof A. Ajjane, Prof J. Amine, Prof O. Assobhei, Prof K. Chedad, Prof S. Etahiri, Prof M. Kabil, Prof M. Mountadar, M. Rihani and L. A. Semlali.
2. National Technical University of Athens (NTUA): Prof. M. Loizidou and Mr S. Malamis.
3. Regional Office of Agricultural Development of Doukkala (ORMVAD): Dr M. Rafrafi and Mr B. Droussi.

### Tasks presentation

#### Task 1: Assessment of the existing situation in Morocco and in the EU

UCD (Prof M. Mountadar) presented the objectives, activities and deliverables of Task 1

- The assessment of the existing situation in Morocco with regard to the production, treatment, disposal and reuse of sludge and other BOW.
- The analysis of management schemes, systems and practices of sludge and other BOW
- The examination and analysis of the European Union legislative framework in connection to sludge and other biodegradable organic waste (BOW).
- The assessment of the existing situation in the European Union with regard to sludge and other BOW production and management (treatment, reuse and disposal)
- The review of sludge and other BOW composting practices in European Union (success stories)

Start date: **1/02/06**; End Date: **01/06/06**

## **Task 2: Design and construction of an innovative sludge aerobic composting System**

NTUA (Prof Loizidou) presented the objectives and activities of Task 2

- Factors that must be taken under consideration in the design phase
- Role of each group for the implementation of the design, construction and installation of the system
- Certain operational data of the aerobic composting system
- The design specifications according to which the final product (compost) will have the prerequisite characteristics
- Presentation of the flow diagram of a typical in-vessel composting facility
- Trips which are foreseen during the task
- Deliverables:
  - The demonstration of the aerobic composting unit

Start date: **10/04/06**; End Date: **10/10/06**

## **Task 3: Development of sludge aerobic composting process - Optimisation of the operation of the pilot composting system**

NTUA (S. Malamis) presented the objectives, activities and deliverables of Task 3

- Detailed physico-chemical analysis of the feed waste of the system
- Development of alternative composting operating conditions which result in the production of high quality compost with minimal adverse environmental and low operational cost
- Optimization of the pilot system operation
  - Optimum operating conditions
  - Optimal feed mix
  - Evaluation of the quality of the end product
- Deliverables:
  - A report on the analyses of the feed waste
  - A report on the optimal operating conditions of the unit (including the alternative trials)

- At the completion of this Task the unit will operate under optimized conditions
- Trip of the Greek team to Morocco

Start date: **10/10/06**; End Date: **10/04/07**

#### **Task 4: Evaluation of compost products as soil improvers**

NTUA (S. Malamis) presented the objectives, activities and deliverables of Task 4

- Development of phytotoxicity tests will take place via a series of laboratory tests and open field experiments in Morocco
- The compost quality characterization will be based on its behaviour against seed toxicity and plant growth
- An application of compost products, in agriculture, will be tested
- The effects on the production quantity and quality of selected cultivations will be taken under consideration
- Trip of NTUA researchers to the open field experiment sites in Morocco is foreseen in order to supervise the experiments and to collect samples for further laboratory examination
- Deliverables:
  - A report on the phytotoxicity tests
  - An evaluation of compost products
  - A report on the effects of compost on the tested cultivations
  - A final evaluation of compost products and a report on the analyses of the feed waste

Start date: **10/04/07**; End Date: **10/10/07**

#### **Task 5: Alternative uses of compost – Market opportunities in Morocco**

UCD (Prof A. Aajjane) presented the objectives, activities and deliverables of Task 5

- Assessment of alternative uses of compost products
- Suggestions for the development of compost market network in Morocco
- Job opportunities related to compost production and distribution
- Deliverables:

- Report on the alternative uses of compost
- Report on the market opportunities for the compost products

Start date: **10/10/07**; End Date: **10/12/07**

### **Task 6: Development of guidelines and specifications covering the sludge composting process Characterization and use of compost as soil improver.**

NTUA (Prof M. Loizidou) presented the objectives, activities and deliverables of Task 6

- Development of specifications concerning the optimum operation of the composting system
- Development of specifications concerning the quality of the compost products
- Development of guidelines concerning the requirements for compost use
- Development of manual for testing and analysis of compost
- Deliverables:
  - Specifications on the optimum operation of the compost unit
  - Specifications concerning the quality of compost products and their possible uses
  - Manual for the physicochemical compost analysis

Start date: **01/11/07**; End Date: **01/02/08**

### **Task 7: Dissemination and training**

UCD (Prof J. Amine) presented the objectives, activities and deliverables of Task 7.

- The dissemination of project progress and results to all target groups and to the scientific community will be performed via:
  - Publications in national and international scientific journals and technical editions
  - Tours to the composting unit
  - The development and distribution of printed material
  - The MOROCOMP website (has been uploaded)

- The International Conference in Morocco which will take place during the last month of the project and where relevant parties from Morocco and from European countries will attend
- Training activities for specific target groups
- Three (3) training sessions for the competent authorities the farmers and the private companies and industries
- Three workshops which will inform a wide spectrum of target groups of the project's progress and will be organized back-to-back with the training sessions
- Radio and newspaper announcements
- Deliverables:
  - Minutes of the kick-off meeting in Morocco
  - Minutes of the kick-off meeting of Life Projects in Brussels
  - Workshop minutes
  - Training material Leaflets & brochures
  - Web-page
  - Conference proceedings
  - Technical papers

Start date: **01/02/06**; End Date: **01/02/08**

### **Task 8: Management and reporting to the EC**

NTUA (Prof M. Loizidou) presented the objectives, activities and deliverables of Task 8

- Management Team Formulation
- Organization of the Management Team
- Formulation of the Steering Committee
- Endorsement of Action Plan
- Reporting to the European Commission (EC)
- Budget of Project
- Financial Management

Start date: **01/02/06**; End Date: **01/02/08**

## Presentation of timetables and responsibilities

Prof O. Asssobhei presented the project's timetable and the responsibilities of each partner.

## Discussion and task assignment

The pilot system will be installed at the premises of ORMVAD

The team determined the Task Leaders for each task and the Coordination Group:

### Task Leaders

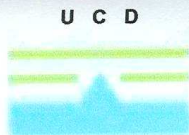
- Task 1: M. Mountadar
- Task 2: M. Loizidou
- Task 3: A. Aajjane/ M. Loizidou/ M. Rafrafi
- Task 4: M. Kabil/ E. Kapetanios/ M. Rafrafi
- Task 5: J. Amine
- Task 6: S. Malamis
- Task 7: S. Etahiri/ M. Loizidou/ B. Droussi
- Task 8: O. Assobhei

### Coordination Group:

NTUA: M. Loizidou, S. Malamis, E. Kapetanios

UCD: M. Mountadar, A. Aajjane, J. Amine, O. Assobhei, S. Etahiri M. Kabil

ORMVAD: M. Rafrafi



Université Chouaib  
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Faculté des Sciences  
El Jadida



Life Pays - Tiers



National Technical  
University of Athens



Office Régional de Mise en  
Valeur Agricole des Doukkali

## Liste des présents à la réunion de démarrage du projet Life TCY/05/MA/0000141

El Jadida, 9 Février 2006

Nom	Organisme	Signature
Khalid EL HARIRY H. LOIZIDOU S. Mira ETAKRI	Député Prof NTUA Prof.	
Mouhssen LAHLOU	DESFCRS	
RAFRABI Mohamed	ORMVAD	
DROUSSE Brahim	ORMVAD	
Khalid EL MOUTAI FEKHAOUI Mohamed	Association ANNAMAE Ass. Nat. de Limnologie	
Bahsas Salem Mohammed MOUNTADAR AMINE JAMAL	Association Amalobous Faculté des Sciences El Jadida FACULTÉ DES SCIENCES EL JADIDA	
RIHANI Mohamed	Faculté des Sciences El Jadida	
AAJJANE Ahmed ZOURAIAH Bendakhou	Faculté des Sciences El Jadida Association GREPEN	
JARAAOUI Badia Simos Malamis	Service Environnement Province El Jadida National Technical University of Athens	
KABIL Mustafa Nourdine BRINE Omar ASSORHEI	Faculté des Sciences El Jadida Inspection Régionale de l'Aménagement du Territoire et de l'Environnement Faculté Sciences EL JADIDA	