

2009

Wastewater Management Training- Cook Islands

Improving Sanitation and Wastewater
Management for Pacific Island Countries

July 28th -31st 2009

New Hope Town Hall, Avarua
Cook Islands



Partners



List of abbreviations

IAS	Institute of Applied Sciences
NES	National Environment Service (Cook Islands)
UNESCO-IHE	UNESCO- Institute for Water Education
UNEP-GPA	United Nations Environment Programme (Global Programme of Action for the Protection of the Marine Environment from Land Based Activities)
FSPI	Foundation for the Peoples of the South Pacific International
NIWA	National Institute of Water & Atmospheric Research
CIMRIS	Cook Islands Marine Resources Institutional Strengthening Project
NZAid	New Zealand Aid
MOIP	Ministry of Infrastructure and Planning (formerly Public Works)
SWA	Samoa Water Authority
ISACI	Islands Sustainability Alliance Cook Islands
CIRC	Cook Islands Red Cross
SOPAC	Pacific Islands Geoscience Commission

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Introduction

The first wastewater training for the Pacific was carried out in Cook Islands from the 24-28th of October 2005 and has since been replicated in 5 other Pacific island countries. The principal partners were the UNESCO-IHE and GPA who also facilitated the training. Alongside with SOPAC UNEP-GPA has successfully been able to train local Cook Islands partners in the administration and delivery of the training aptly renamed *Improving Sanitation and Wastewater Management for the Pacific Islands*. The training has so far seen more than 60 participants across the Pacific sufficiently trained in the Objective Oriented Planning process of the manual which targets maximising the capacity of wastewater managers and utility companies in managing and planning for wastewater projects/issues.



Figure 1: Wastewater training workshop participants, Cook Islands

Background and objectives of the training

The training course on Improving Municipal Wastewater Management in Coastal Cities (*improving sanitation and wastewater management for Pacific island countries*) consists of three modules, an introduction, a fieldtrip, a synthesis session and a set of mastery tests. It covers five days of intensive training for a group of 20-25 participants and is supported by a training manual, an instructor's manual, a video and a set of power point presentations. A CD ROM with background materials is also included in the participant package which complements the materials already in the training manual.

The objective of the course is to have the participants carry out an Objectives Oriented Planning Process, using a realistic wastewater problem, resulting in the presentation of a project proposal on the final day of the course. The participants will be organised in groups. These groups will formulate their own problem. Each group, for their own case, carries out the various steps involved in an Objectives Oriented Planning Process:

- i) Problem analysis
- ii) Objectives analysis
- iii) Stakeholder analysis and finally
- iv) Options analysis which will report the outcome of the various steps.

One day of the programme will be dedicated to stakeholders. Besides doing a stakeholder analysis for the selected problem within each group, a number of stakeholders (e.g. tourism/hotel association, health officials) will be invited to highlight the importance of involving them in the planning process.

In total one day was scheduled for providing appropriate knowledge to select (innovative and environmentally sound) options that can be used to address the identified problems. The participants are expected to include such approaches in their long-list of options and in the subsequent selected project proposal. The module on presentation techniques is designed to support the participants with their oral presentations and with the structure of their proposal, which is the end product of the training.

Wastewater training- Cook Islands

Presentations by participants

At the end of the training participants were given an opportunity to make presentations on the OOP process, individual groups were allowed 15 min presentations on an issue from either their own work situation or from a case study example. Final presentations were graded by the trainers Dr. Bale Tamata (IAS-USP), Mr. Geoff Mavromatis (CIMRIS) and Mr. Rodney Lui (SOPAC). Group presentations were as follows:

- Group 1: Failing septic tank systems, and point source pollution
- Group 2: Limited knowledge of the sewerage regulations

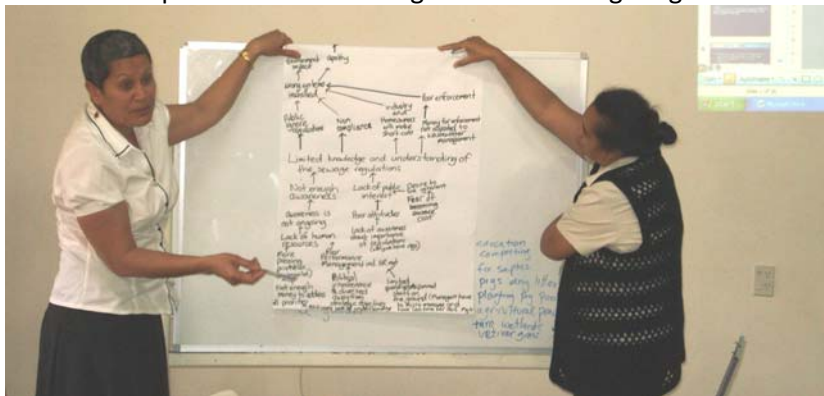


Figure 2: Cook Island training participants, Mrs. Mata Hetland (CIRC) and Tae Nootutai (MoH) presenting group findings at the training

Participants

Participant selection were done in consultation with a wide range of field contacts within the SOPAC water sector for Cook Islands and the primary stakeholders were identified as: Ministry of health (environmental health officers and inspectors), the National Environment Service (NES) and relevant NGO's; Islands for Sustainability Alliance Cook Islands (ISACI) sector contacts. A total of 20 participants were then selected from Cook Islands with one representative from Western Samoa- from the Samoa Water Authority (SWA). The SWA participant was the only non- Cook Islander participant to attend the Cook Islands training and provided objective insight into the training and also sharing the experiences and lessons in wastewater management from Samoa. Key participants noted present in the Cook Islands training was the alternate focal point for SOPAC, Mr. Keu Mataroa and the Minister for Environment the Hon. Aunty Ngamau Munokoa, who was able to attend a few sessions with participants and also participate in various group discussions. The presence of key community reps and officials is an important aspect when raising the profile of the training.

Trainers

The trainers for the Cook Islands training were: Dr. Bale Tamata (USP) and Mr. Rodney Lui from SOPAC co-facilitating various sessions in the program. Dr. Tamata was also a facilitator in the 2008 training for Kiribati and Tonga alongside with Mr. Kamal Khatri. Additional support

and presentations were made by various participants attending the course to further compliment the theory sessions with some context into the situation as is in Cook Islands with regard to wastewater management and the issues involved. Noted sessions were from:

- Ms. Jacqueline Evans- MoH (Sewerage regulations 2009 and Environmental Health related concerns for wastewater treatment systems)
- Mr. Tai Noopii- MOIP Rarotonga Septage ponds and the waste facility (brief also on the Eco-trench and cluster system)
- Mr. Joseph Brider (NES/local consultant) the role of the Environment service and the issues paper presentation detailing the key sections and recommendations' under the report.

Venue

The venue for the training workshop was at New Hope Town Hall in downtown Avarua. The venue was an appropriate and central location easily accessible with ample space for group work and was fully furnished with all the required training tools (LCD projectors, overhead screens etc) the conference area was set up to a lecture style setting with room for breakout groups and grouped discussions.



Figure 3: Participants at the workshop venue

Stakeholders and fieldtrip

The Cook Islands training was adapted to include the stakeholder analysis as part of the field trip session similar to what was carried out in the Fiji training, which was important to the course because it made the field trip more interactive, and included much of the work that was carried out in modules 1 and 2 of the training. Participants were able to visualise and interact with the stakeholder analysis component of the OOP process allowing for better appreciation of the context in which wastewater project management issues are framed within.

The Cook Islands training field trip was conducted with site visits to various projects involved with wastewater around Rarotonga (See Annex 2). The highlight to the site visits was the Muri EU funded project which focuses on various infrastructure projects in the Muri area of Rarotonga. The site visits also highlighted leading technologies and systems available in the Cook Islands and the trialling of various on site wastewater systems such as the Eco trench cluster system (Annex 3). This is a key feature of the field exercise for the training and was delivered to suit the various systems available in the Cook Islands.



Figure 4: Jacqueline Evans (MoH) discussing the Eco trench cluster system during the field trip exercise

Monitoring and evaluation- Cook Islands

As part of the monitoring for the course, evaluation forms were circulated to all participants, results for which are as follows; from the questionnaires that were circulated only ten completed questionnaires were collected.

The questionnaire is divided into two main sections; the first section looks at the general overview of the course and the second section looks at the course modules and content by section.

The logistics category looked at the appropriateness of the venue, the use of AV materials, logistical support and refreshments; participants scored evenly 50% on both agree and strongly agree that the logistics of the course were satisfactory.

The general overview of the course looked at issues like the appropriateness of the course materials, the quality of the presentations, the quality of the trainers, interaction with trainers was good, new information on various aspects. From the pool of answers 69% of participants chose to agree that this section of the course satisfied their expectations of the course, while 31% of the participants strongly agreed with this section overall.

Participants all felt that the time allocated for the course overall was about right, time allocated to discussion with trainers, lecture and presentation time, group discussions/exercises.

The second part of the course evaluation looked at 3 key areas (see annex 4 for the details and content for each of the modules and sections in content for the course):

- I. Importance of the topic;
This section was scored by participants (85%) to have met participants' expectations to a high degree scoring at 4, for this section.
- II. Quality of the content;
This section in the evaluation form was successfully scored at 4 (to a high degree) for all participants who attended the Cook Islands course; this section looked at all the sections and modules in the course content.
- III. Relevance for your work;
This section of the evaluation forms was scored at 4 as well for most of the sections in the evaluation forms received from participants.

Conclusion and recommendations

Following the delivery of the Cook Islands training the following conclusions were drawn:

- The training should clearly address the needs of the countries in which they are delivered and as such comprehensive consultation should be undertaken in order to ensure success in the delivery and the quality of the final outcomes of the training.
- The training was able to incorporate important linkage between ongoing projects within the wastewater subsector of the country for example the Muri (EU) sponsored project on wastewater infrastructure support, was an ideal project within which participants were able to analyse and practically apply knowledge they had built from the OOP process to an actual on the ground project.
- The training again forms an important forum for dialogue between stakeholder's public and non-public in the wastewater sector, which in turn assists in interagency cooperation and also offers stakeholders a chance to clarify and discuss the issues and constraints that affect them in relation to their institutional functions and mandates.
- The work compiled by the local consultant for the training plays an important role in targeting and summarising the situation on the ground for wastewater and related issues and is often a good point for discussion in the training in terms of its updated relevance.
- The training could be most effective by the mode of delivery and as such for the Cook Islands, group discussions were more effective and beneficial and lead to the quality of discussions and also offers participants a more interactive component to the training which as is, has a lecture style format. Incorporating comments and feedback from the participants and in country partners allowed for smoother delivery of the course.
- Pre-planning and discussions with in country partners is essential and forms the basis for the success and relevance to the countries in which they are delivered. Support and logistics also are important factors of consideration for future facilitators and trainers of the wastewater course. Discussions with NES and MoH prior to the training allowed for healthy discussion on the content of the training course.
- The attendance and often endorsement of key officials is essential to merit support of both the communities and stakeholders involved. The presence of key people involved in institutional strengthening projects, the donor community and the project stakeholders was significant in the delivering of the Cook Islands course, participants were able to discuss the various financing options available to them through the presence of these key stakeholders.
- Wastewater issues for the cook islands cross a multitude of issues and a core issue is the concern of land rights including tenure and ownership which are recurring and important in implementing wastewater and watershed related issues for Cook Islands

References

- *Bridger Joseph Case Study Report: Improving municipal wastewater management in coastal cities, 28-31 July 2009. Rarotonga Cook Islands*

Annex 1: Course program Cook Islands

Workshop program; Wastewater training Cook Islands July 28th - 31st 2009

VENUE: NEW HOPE HALL, AVARUA

	Day 1-Tuesday 28 th July	Day 2- Wednesday 29 th	Day 3- Thursday 30 th	Day 4-Friday 31 st
08:30-10:00	9am Workshop Opening 09:30 Opening Introduction BRUNCH	Options Analysis; Cook Islands relevance and importance	Field trip evaluation & trip presentation Module 2: Wastewater management technologies (<i>ref: Sanitation Park pamphlets</i>)	Module 3: Group work on presentations
10:00-10:30	Coffee/ tea break			
10:30-12:00	Module 1: Problem Analysis (<i>ref: Wastewater Management in Rarotonga: It is not just a matter of a Technological Fix</i>) – J. Evans	Field trip (Banana Trench, Tepuka Enviroflow system- Tereora, Arorangi Waste facility)	Financial approaches to wastewater management: Facilitated discussion with Cook Islands situation	Grouped discussion and work on presentations
12:00-13:00	Lunch break			
13:00-15:00	Objectives Analysis	Field trip (Muri Beachcomber resort, discussions with Mata Hetland Muri Environment Comm Rep)	Panel discussion (G. Mavromatis) presentations: MoH, NES, MOIP, CIMRIS)	Group Presentations
15:00-15:30	Coffee/tea break		Coffee/tea break	Coffee/tea break
15:30-17:30	Stakeholder analysis (<i>issues paper: J. Briday</i>)		(Issues paper discussion- <i>presentation J Briday</i>) Discussion and overview with participants.	Group presentations/ feedback from participants Evaluation
17:30-19:00				Certificate presentation by Chief guest- Director NES Vaitoti Tupa)

Annex 2: Participants list

Name	Organization	Contact details (email/telephone)
1. Tauraki Raea	NES- Rarotonga	tauraki@environment.org.ck
2. Bobby Bishop	NES- Aitutaki	climate@aitutaki.org.ck
3. Daniel Chung	Self-Employed Drain Layer	(+682 31306)
4. Ioane Meti	Self-Employed Plumber	(+682 31386)
5. Natua Ruarangi	Aitutaki Waste Facility	(+682 31771)
6. Tai Nooapii	Rarotonga Waste Facility (MOIP)/Engineer	t.nooapii@moip.gov.ck
7. Elise Levi	Samoa Water Authority (senior water technician)	elise@swa.gov.ws
8. Helen Muir	Island Sustainability Alliance Cook Islands (ISACI)	htmuir@oyster.net.ck
9. Keu Mataroa	MOIP – Alternate SOPAC Focal Point	k.mataroa@moip.gov.ck
10. Mata Hetland	CI Red Cross Society (EU Muri project comm. rep)	cookis@redcross.org.ck
11. Paul Maoate	MOIP – Engineer/IWRM focal point	p.maoate@moip.gov.ck
12. Tae Nootutai	Ministry of Health – Environmental Health Inspector	t.nootutai@health.gov.ck
13. Jacqui Evans	Ministry of Health – Health Planner	j.evans@health.gov.ck
14. Nooroa Ruaine	Registered Drain Layer – Raro Plumbing	soonworkz@oyster.net.ck (+682 71216)
15. Ngamau Munokoa	Minister for Environment- Cook Islands (traditional leader)	honmau@oyster.net.ck
16. Joseph Brider	NES – Local Consultant	jobridy@hotmail.com
17. Geoff Mavromatis	CIMRIS	
18. Deyna Marsh	In-Country Support – NES	deyna@environment.org.ck
19. Peter Tierney	Development Programme Coordinator NZAID	Peter.Tierney@mfat.govt.nz
20. Nolene	Cook Islands Herald (journalist)	

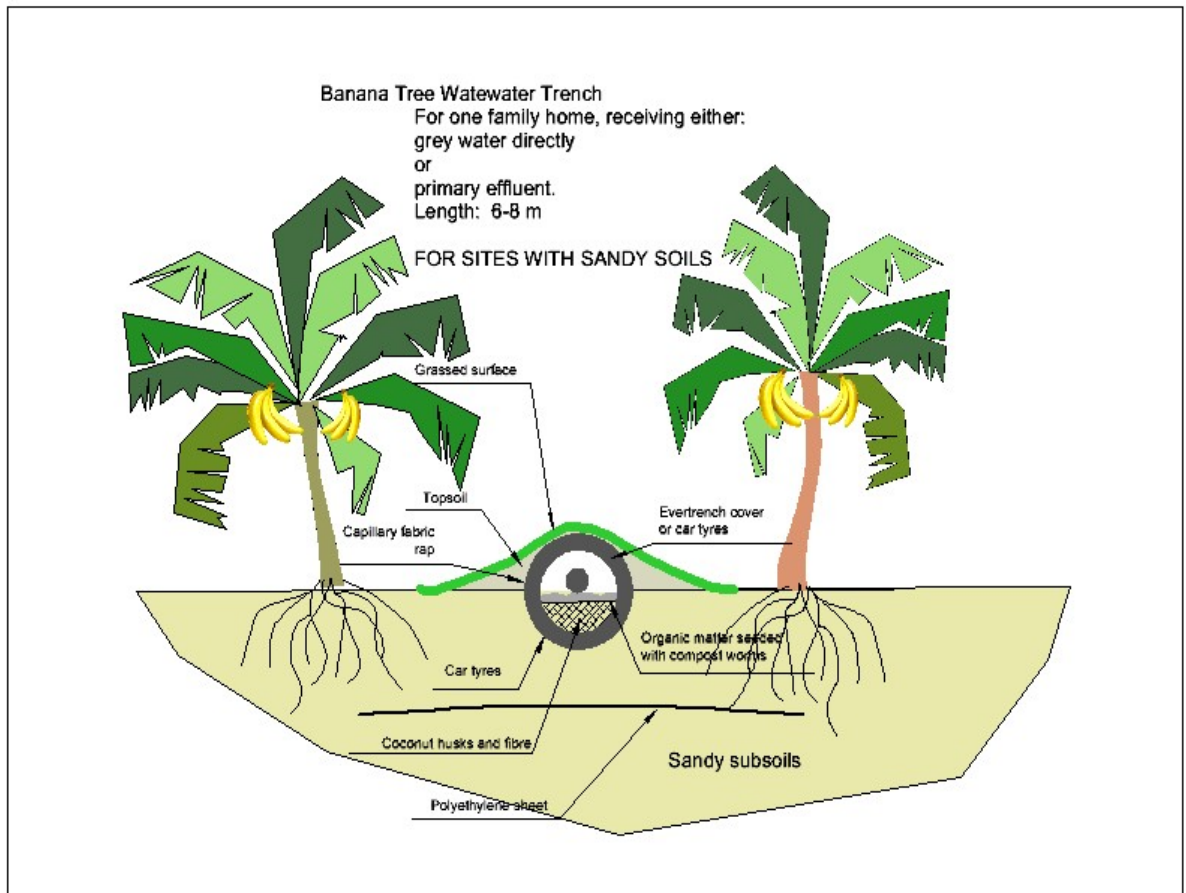
Annex 3: Field trip notes- Cook Islands

Field trip sites and onsite guides:

1. Eco trench (cluster system)- OPM, Bowling Club, MMR- Taii Nooapii, Jacqui Evans
2. Enviroflow system Tepuka- Multi sports complex- Jacqui Evans
3. Rarotonga Septage ponds (Arurangi Waste Facility)- Taii Nooapii
4. Vaima' anga Hotel (Hilton project)
5. Paregaru stream (Muri)
6. Muri (EU) project- Mata Hetland including Muri Beachcomber hotel (tourism developer)

Eco trench cluster system

The eco trench system was an innovative system upgrade which was fashioned out of contributions from the Office of the Prime Minister, ministry of marine resources, and the neighbouring bowling club. The eco trench is designed to treat the cluster of the 3 main wastewater inputs and is set for a capacity suitable for the purposes of treating wastewater from the given capacity of these systems.



Enviroflow system: Tepuka & Telecom sports multiplex

The Enviroflow system at Tepuka is the only functioning reticulated septic wastewater system which serves the public high school, Tepuka residents and the new Cook Islands telecom sports complex. The system supports a maximum load suitable for this load and has an additional 2 septic systems which are planned to be set up to ease the load of the entire system during the games. A concern for the games will be managing the high loads from the sports multiplex given all the movement in the area. The



Figure 5: Enviroflow system located at Tereora College, Nikao
Rarotonga Septage ponds (Rarotonga waste facility) - Tai Nooapii

The Rarotonga Septage ponds were selected as a site visit to understand the set up and also discuss the operation and maintenance of such a facility.



Figure 6: Rarotonga Waste facility Septage ponds- Arorangi
Vaima' anga hotel development (Hilton) - Jacqui Evans

The Hilton project has been an ongoing saga since the late 80's and early 90's, a tourism development which failed after poorly managed funds and questionable financial investors. Various developers have offered to take up the Vaima' anga property which has not been viable in any sense and has since fallen into disrepute. Currently the government has secured the property and has taken on various options to develop the land but after a poorly reported EIA the development has been unable to deliver on the promise of sun, surf and sand associated with the Cook Islands. The field trip was to see the Wastewater system that was set up for the hotel during construction and is a similar reticulated system to that of the one visited in Tepuka which features the same Enviroflow system.



Figure 7: Hilton Rarotonga property, Vaima Anga

Paregaru stream (Muri)

The Paregaru stream is one of the local streams which forms part of the natural stream systems into the Muri area lagoon. This stream was noted by local residents to be one of the sites where the Takitumu Eye irritant syndrome was located within the area adjacent to the Paregaru stream. Recent tests in 2004 showed data corresponding to high levels of bacteria in the lagoon area and also in areas downstream near the mouth of the stream. The Paregaru stream in order to develop was recently given funding through Red-Cross to undertake some dredging of sediment build up at the mouth of the stream to curtail the impact of sediment entering the surrounding mouth of the river, but this has somewhat had a mixed effect on the estuarine conditions at the mouth of the river only further exacerbating the current problems of the stream.

Muri (EU) development project

The Muri area remains one of the most highly developed tourist areas on the rarotonga and as such is prone to the impacts of coastal developments such as lagoon impacts from improperly managed wastewater discharge and ground infiltration from inappropriately designed and managed wastewater systems. The Muri (European Union) project was selected after close consultation with EU reps and also discussion with agencies (MoH and NES) the project funds that are allocated are approximately 3.75 million Euros. With at least 2.25 Euros allocated out to infrastructural developments and the remaining funds set aside for consultancy fees and technical assistance. Currently the project is in its early phases with surveyors moving through the community collecting data. A key note on the project is the integration of the traditional leaders ('*Aronga Mana*'- traditional chiefs, and the *puta pere*- village leaders on the project committee).



Figure 8: Participants conducting a stakeholder analysis with resort owner at the Muri Beachcomber accommodation area.

The project is set at a time frame of 5 yrs; the project involves three main stakeholders:

- The community (landowners, traditional leaders, community, small businesses, inland farmers etc)
- Tourism developers and relevant public sector partners (MoH, NES, MMR etc)
- European Union (donor community)

The strong community participation in the Muri project has been one of the main factors contributing to the progress of the project with traditional community leaders taking the lead. The tourism developers around the Muri area as such are indicative of their support for the project which in turn safeguards their interests as business owners. The tourism industry is a major driving force behind developer support. The lagoon health and pristine ecosystem conditions have intrinsic market value and as developers the tourism industry highlights the urgent need for better wastewater management practices along the Muri area.



Figure 9: Muri Beachcomber accommodation (EU Muri project partners)

Annex 4: Course outline

Module 1: Objective Oriented Planning

The objective of this module is to guide participants through the different steps of objective oriented planning. In this module the participants will be familiarised with problem analysis, objectives analysis, options analysis and stakeholder analysis. In each of these topics the participant will first be introduced to into the methodology of undertaking the analyses. Following this introduction a case study will be used to illustrate the approach for undertaking the analyses. Application and contextualisation of OOP to the participants working environment is important and the material should reflect this or be adapted as such across the range of participants present

The module consists of the following parts:

- The Problem Analysis
- Objectives Analysis
- Stakeholder Analysis
- Options Analysis

Module 1 objectives:

In this module participants should be able to describe the steps involved in creating a problem tree, identifying cause and effect relationships and be able to analyse these problem trees and create objectives from the given problems. Participants then proceed to look at their options available, rank them in order and then select viable options in achieving a selected objective, look at various stakeholders and also discern their interests and roles.

Expected outputs

Proper application of Objective Oriented Planning in the final proposal formulation and presentation, with attention to the inclusion of stakeholders

Module 2: Conventional and Innovative Approaches to Municipal Wastewater management

This module is the core of the course. The participants will get an overview of conventional and innovative technological solutions as well as financing options. A general overview of possibilities and limitations of various approaches is presented that will give sufficient background to develop new approaches to wastewater management in each municipality.

This module has two focal areas, technological and financial content for the Cook Islands training was adapted to the situation on the ground and 3 step strategic approach section was briefly touched while the City of tomorrow section was offered as reading material.

Module 2 objectives:

- Cognise the changing principles underlying (wastewater services (technological and financial)).
- Adapt to a more consumer-based financing approach.
- Classify various alternatives to address wastewater problems.
- Describe their strengths and weaknesses in a specific situation.

Expected outputs

Application of innovative approaches and appropriate technologies for use in the final presentation

Module3: Presentation Techniques

Developing proper solutions is one thing, but getting moral and financial support for the ideas is as important. Thus, a proper presentation to organisations, to stakeholders, or to potential donors for getting support for the ideas is vital. Therefore one has to pay some attention to presentation techniques: each module ends with a presentation by some of the participants.

To facilitate these presentations, a short introduction into the basic skills for giving oral presentations is provided. Moreover, after a brief introduction of the distinct stages of a project (project cycle) this module will acquaint the participants with the contents of a feasibility study and explain how to structure the presentation of projects in a written document.

This module is divided into two following parts:

- Presentations Skills
- Writing the Feasibility Report

Module 3 objectives:

Compose a presentation within a set time frame.

Realise an oral presentation within a set time frame, using basic presentation skills (e.g. visual aids, time management, and delivery performance).

Prepare and present a project proposal to address the problem that requires mitigation.

Expected outputs

Good quality and well structured presentations during the course. The end product of the 3rd module should be a properly designed feasibility study.