

# INCREASING CAPACITY FOR BIODIVERSITY CONSERVATION: Long-Term Integrated Research and Conservation Education Program, Azerbaijan



By Yelena Gambarova

# Gobustan State National Park, Azerbaijan



# Designing conservation education program

The goal of conservation education program “Monitoring rare vegetation within Buffer zones around Industrial objects using Space technologies” is taking as consideration rare vegetation distribution within “buffer zones” for recent years.

This proposal addresses communities’ recommendation through development of a conservation education program including the implementation of conservation training workshops.



# Designing conservation education program



Step 1:

Choose  
Geographic area  
of  
interest

Step 2:

Choose  
habitat and  
group

Step 3:

Select  
conservation  
threats

Step 4:

Identify  
key concepts  
to be  
communicated





# Designing conservation education program

Step 5:

Choose target audience

Step 6:

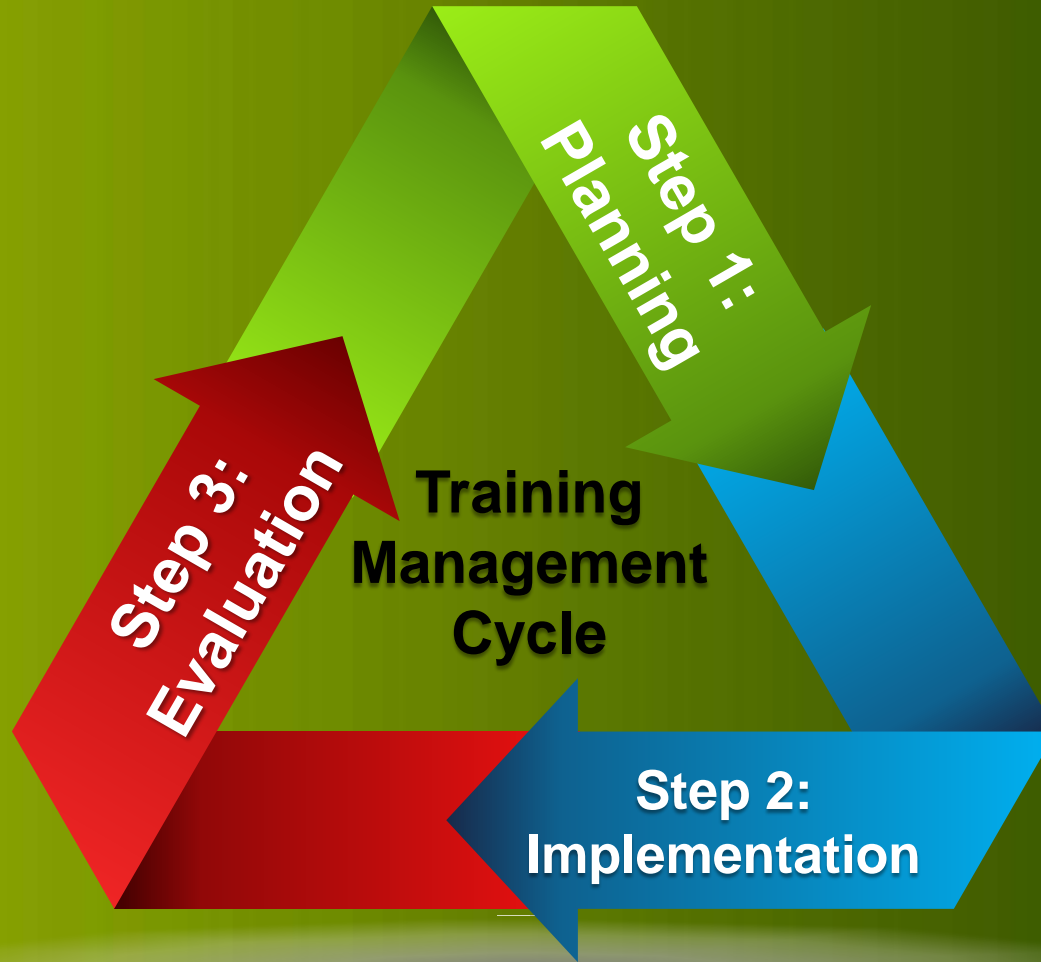
Plan the program and craft messages

Step 7:

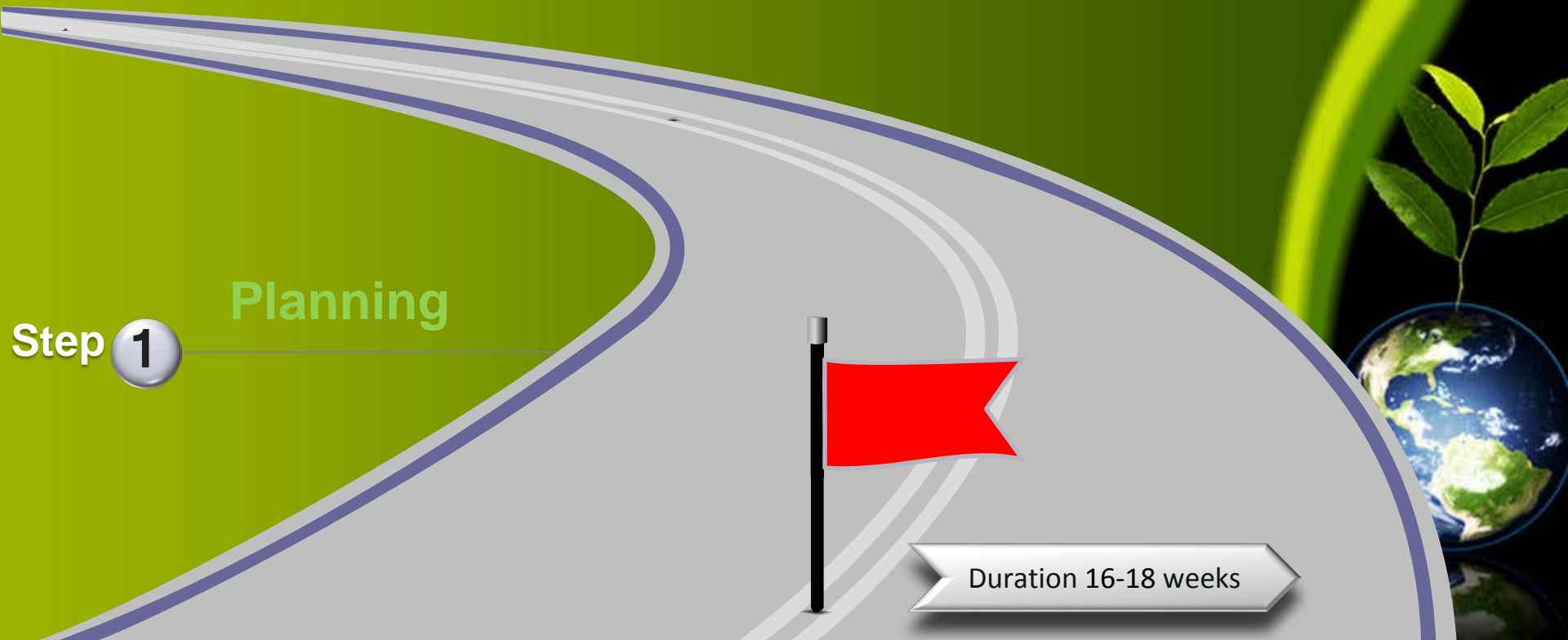
Create my own targeted recourses



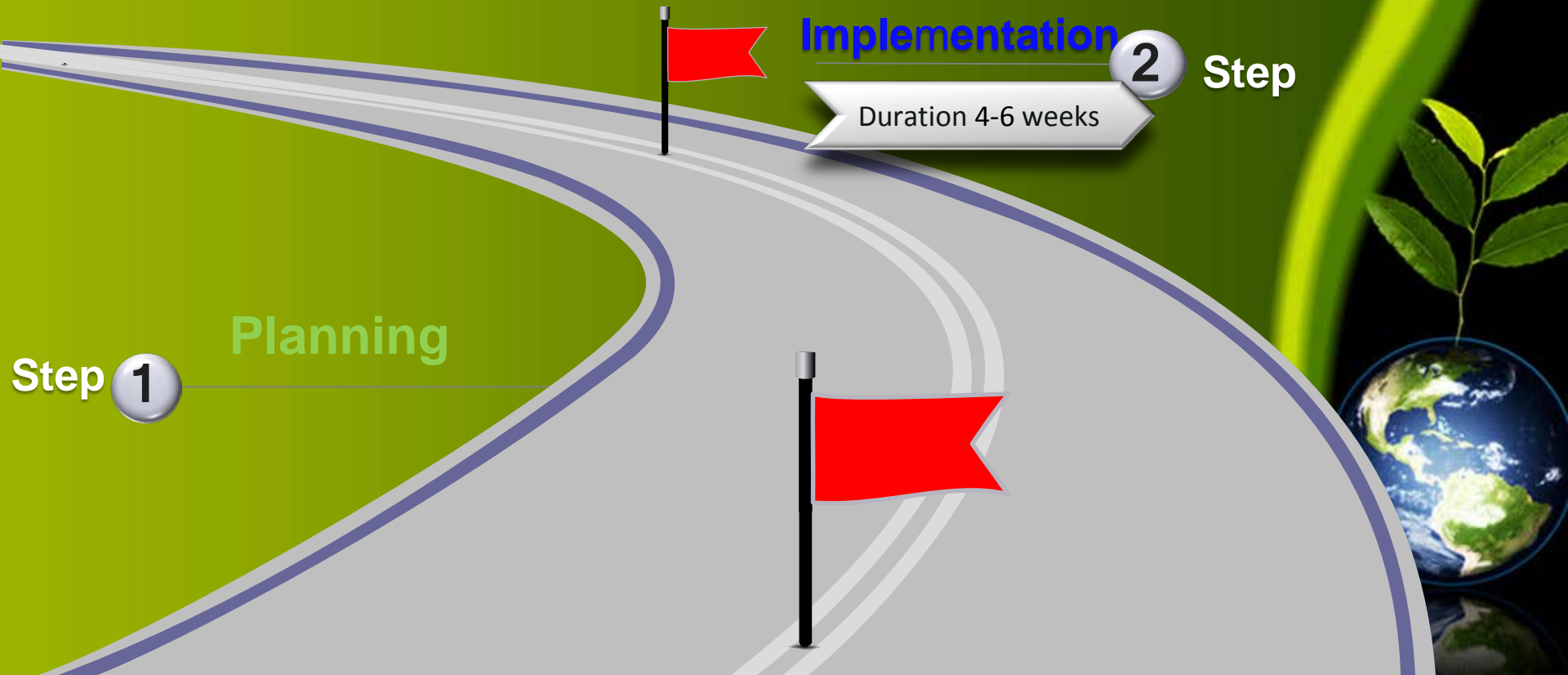
# Training Management Cycle



# Roadmap

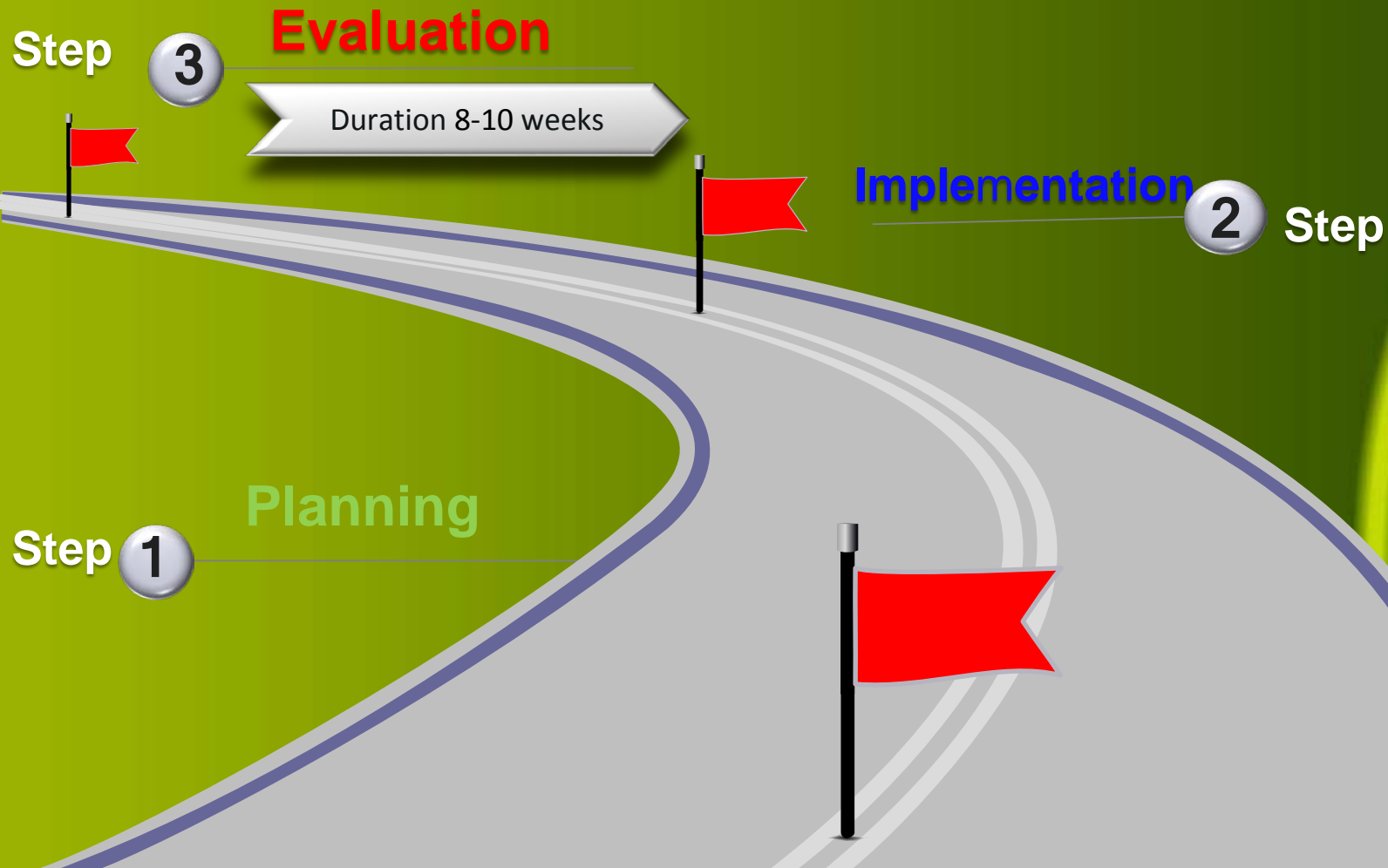


# Roadmap





# Roadmap



# Activities and Methodology



# Activities and Methodology

## **Activity 1: STRATEGY and MATERIALS DEVELOPMENT**

A common method for reducing or eliminating impacts to rare vegetation from adjacent land uses and other pressures is to maintain "buffer zones" around the resources.

- a. Design a capacity building strategy;
- b. Identify target audience);
- c. Conservation educational program development tool;
- d. Design and compile training materials;
- e. Design online learning products and services to allow retrieval of training materials.



# Activities and Methodology



# Activities and Methodology

## **Activity 2: TRAINING WORKSHOP Implementation**

Conduct training through a two-day workshop “Open Education Initiative - “Open Education Initiative - Space for our young generation”



# Activities and Methodology



## **Activity 3: MONITORING and EVALUATION PROGRAM**

- a. Make a plan for evaluating the program
- b. Feedback and review of the effectiveness of the training
- c. Analyze and report results

### **EVALUATION TOOLS**

- Feedback
- Interviews
- Performance records

The results of the training evaluation are reflected in the next phase of training planning to improve future training programs



# Activities and Methodology





# Phase 1: Planning

- **Strategy development**
- **Intended Audience**
- **Training Material Development**



# Phase 1: Planning



# Intended Audience

Students who work with biodiversity data and are interested in developing skills to effectively use spatial analysis programs with GIS applications with a focus on diversity and ecological analyses.



# Phase 1: Planning



# Phase 1: Planning



# Training Test Scripts

- Step-by-step guide for setting up and managing “*Monitoring rare vegetation within Buffer zones around Industrial objects using Space technologies*” program
- Additional practice scripts for review and skill refinement



# Phase 1: Planning



# Training Lesson Plan

## Course Objectives

To provide the necessary theoretical and practical training in technical field related to rare vegetation conservation work.

## Aim of the Training Program

The aim of this training program is to provide the teaching community an exposure to recent advances in satellite image analysis, dealing with very high spatial resolution images.

## Intended Audience

This Training Lesson Plan is intended for students who work with biodiversity data and are interested in developing skills to effectively use spatial analysis programs with GIS applications.



**Monitoring rare vegetation within Buffer zones around Industrial objects using Space technologies**

**TRAINING WORKSHOP**  
**Training Lesson Plan**





# Phase 1: Planning

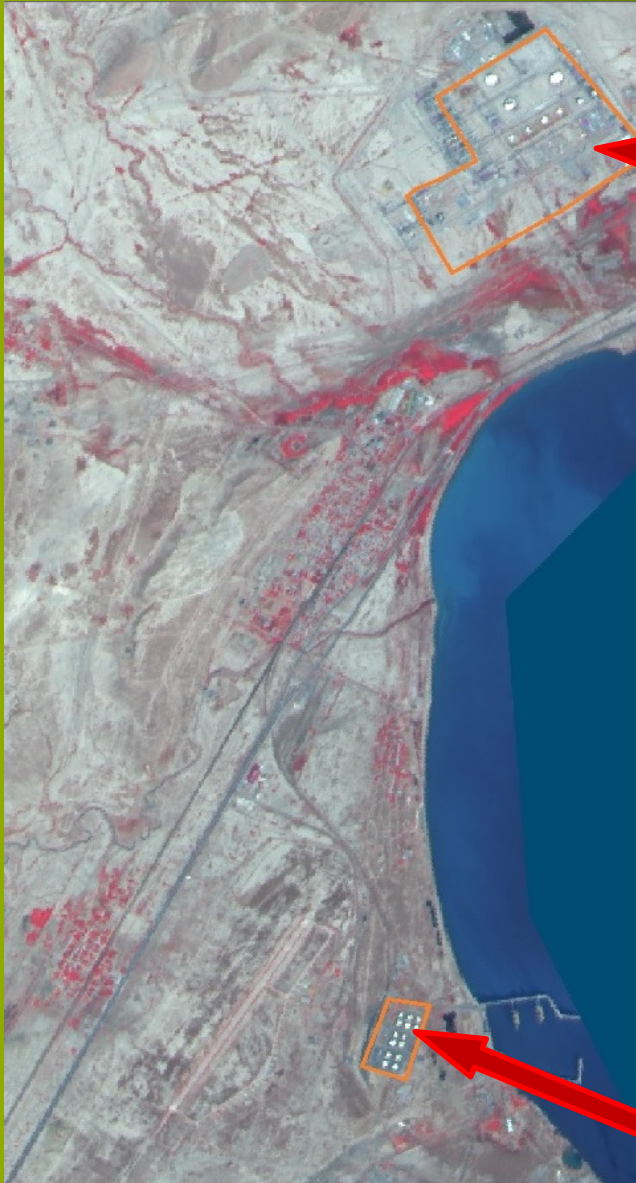


# **Presentations:**

**Subject: Rare Vegetation response to  
Industrial development**



# Indication of the “Industry object 1” and “Industry object 2” on satellite imagery



Industry object 1

Industry object 2



# Indication of the “Industry object 1” and “Industry object 2” on satellite imagery



# Rare vegetation classification within the “Buffer zone 1”



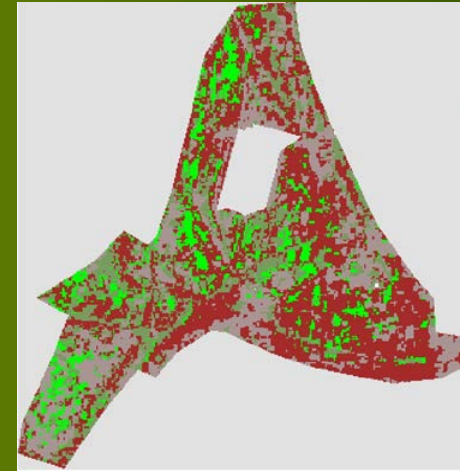
2004



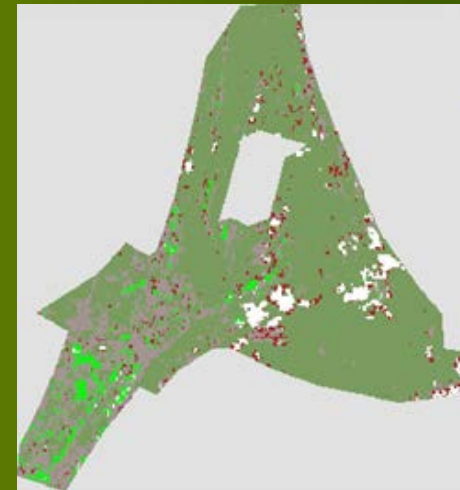
2012



# Rare vegetation classification within the “Buffer zone 2”



2004



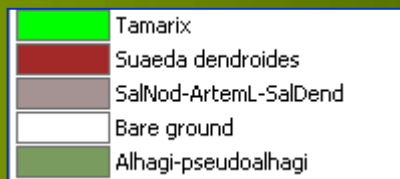
2012



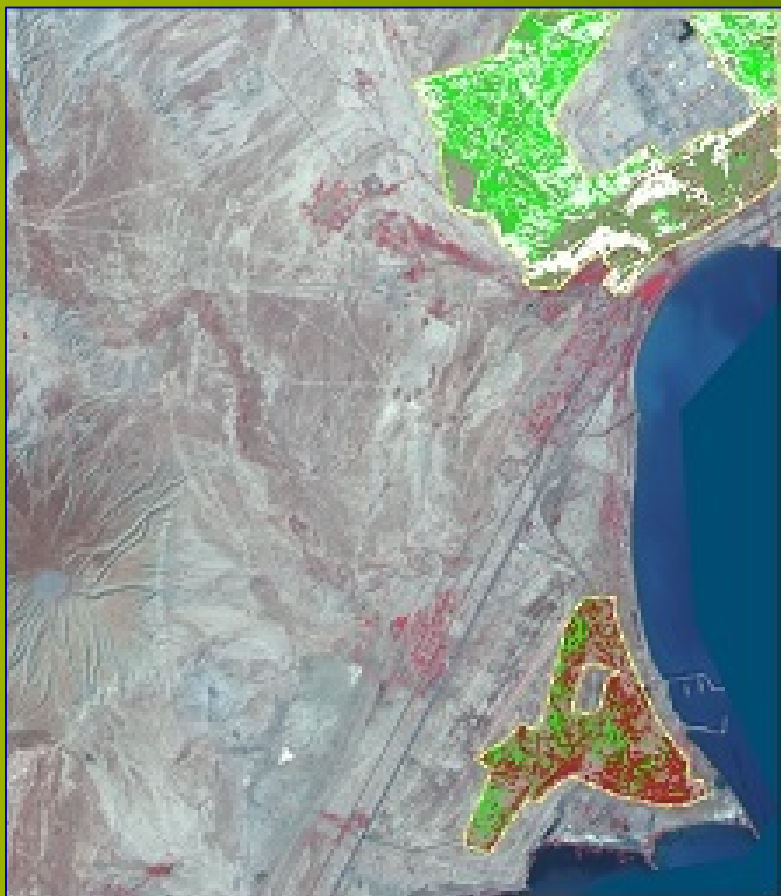
# Rare vegetation classification within the “Buffer Zone 1” and “Buffer Zone 2”

2004

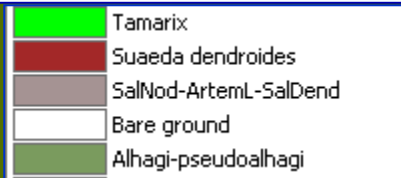
2012



2004

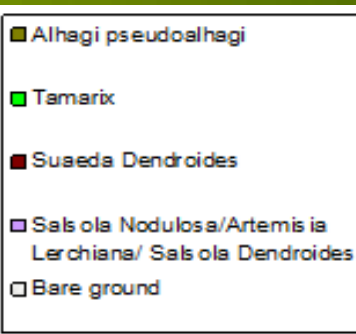
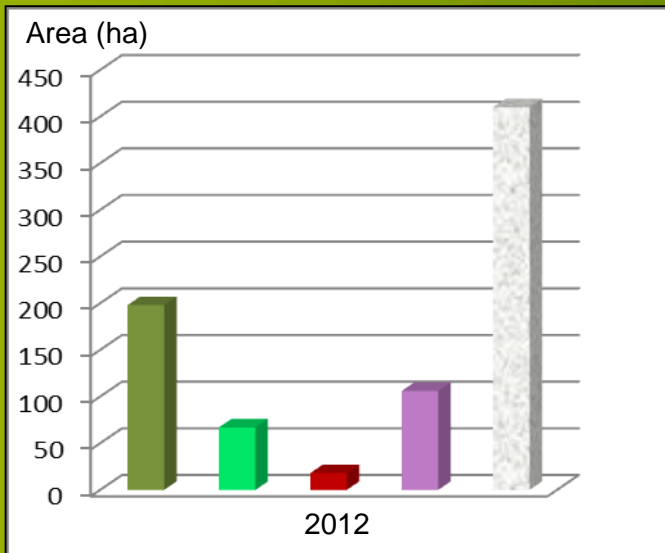
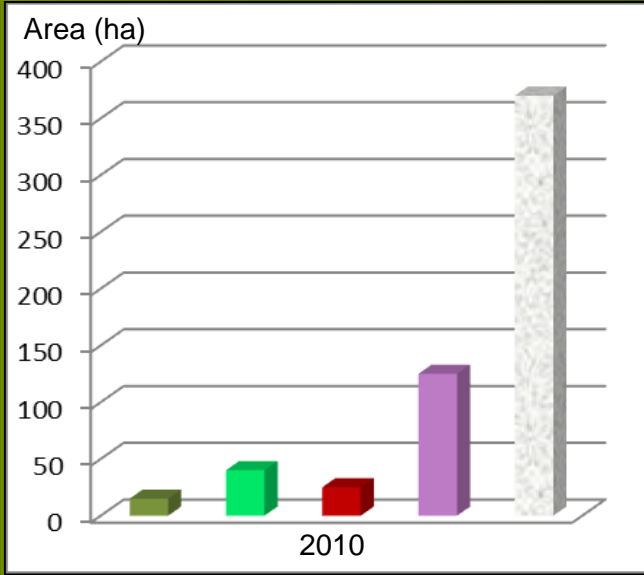
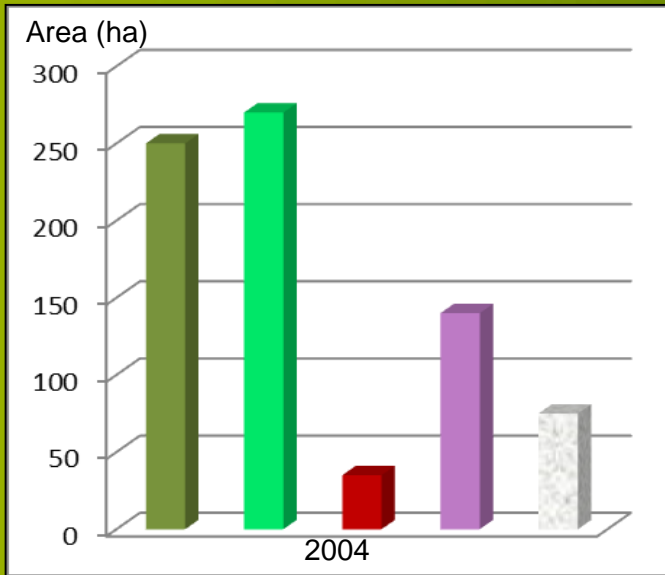


2012

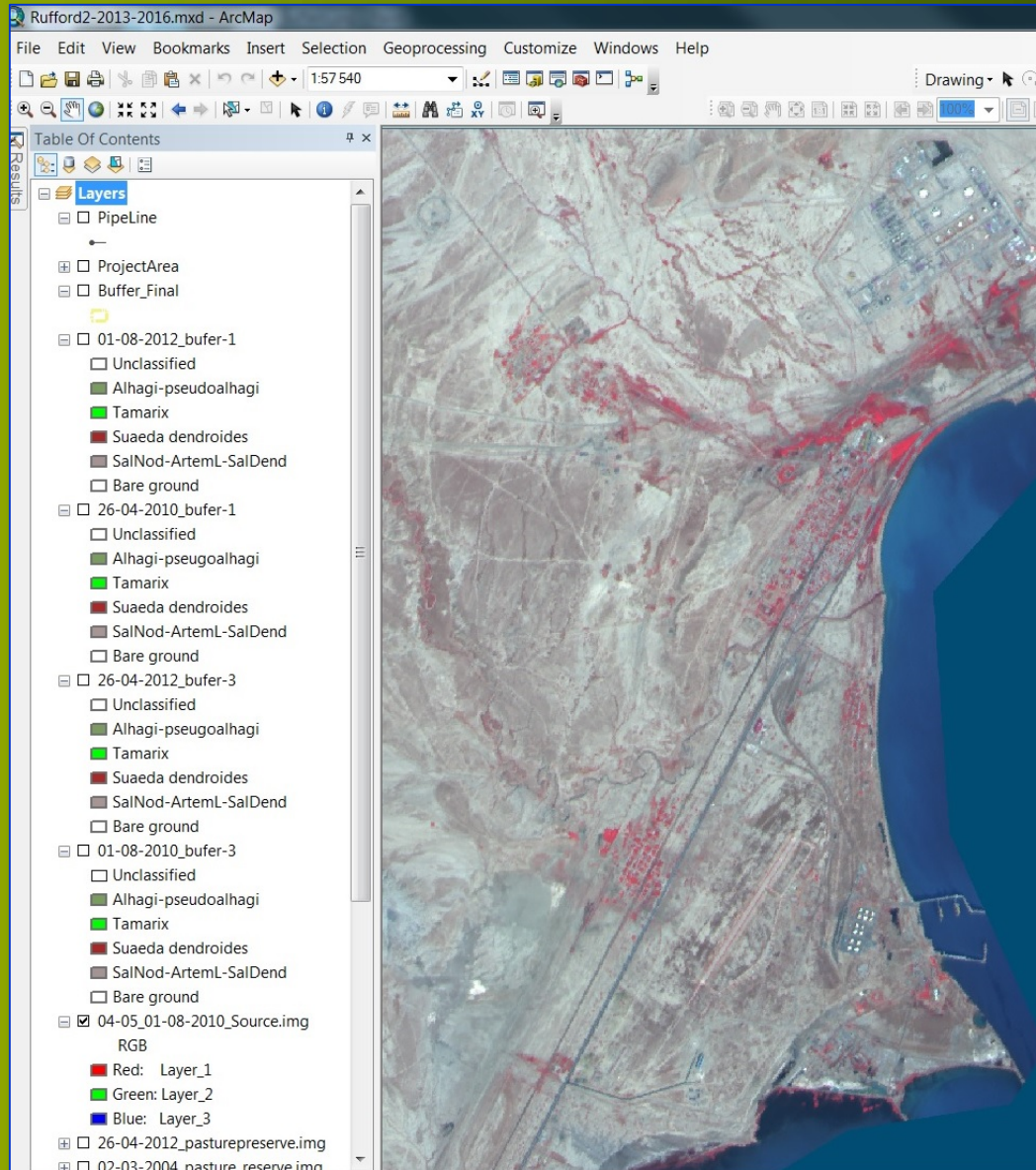




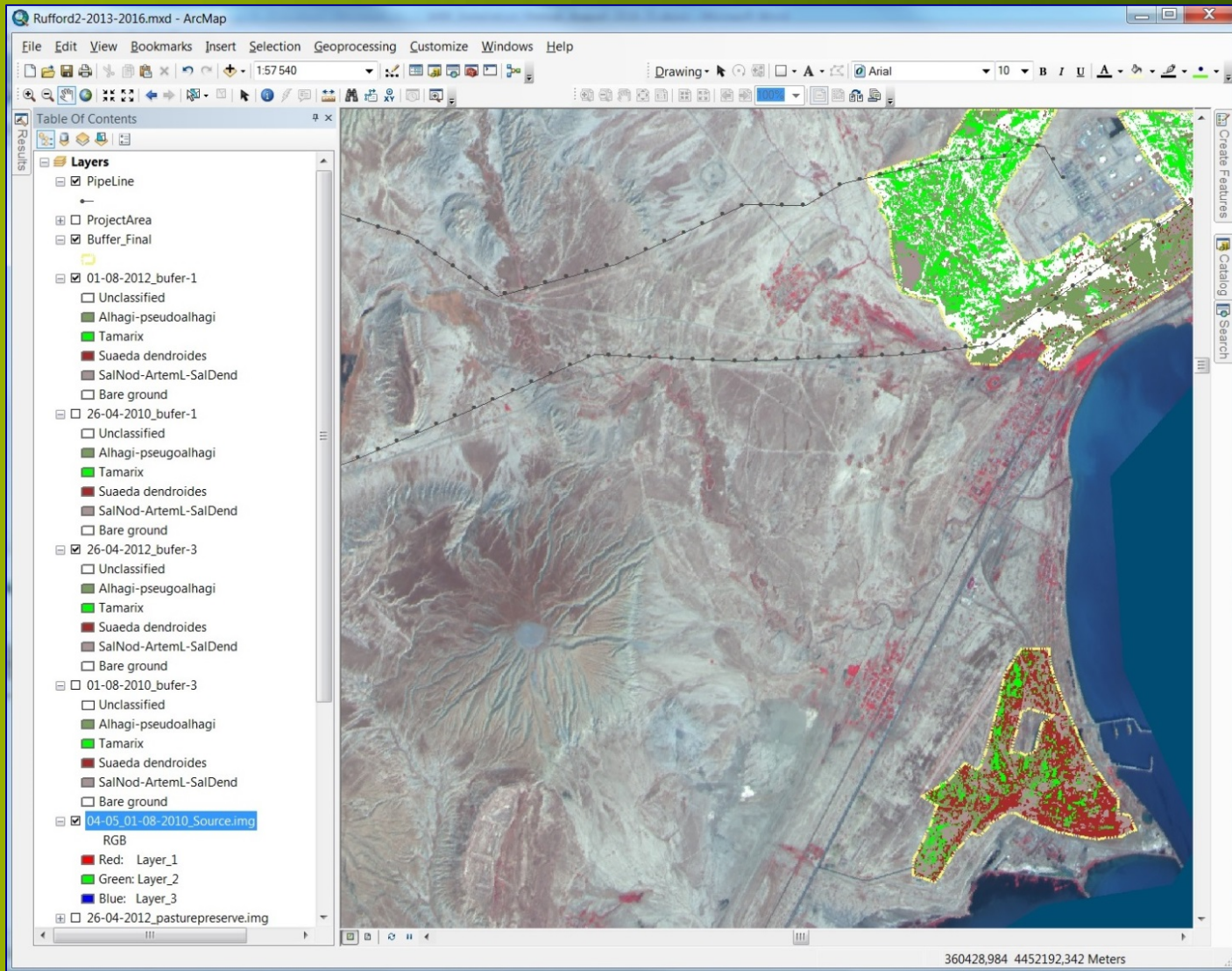
# Rare vegetation degradation within the "Buffer zone"



# Geographical Data Base (GDB)



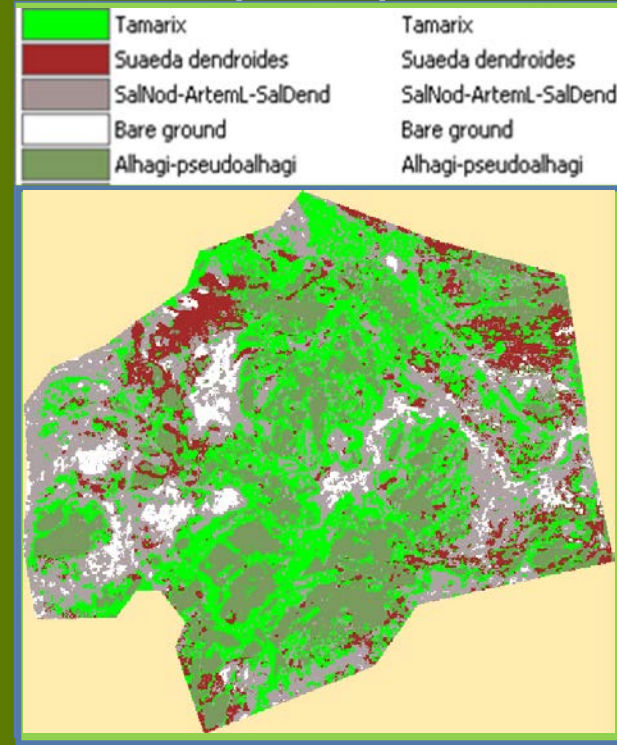
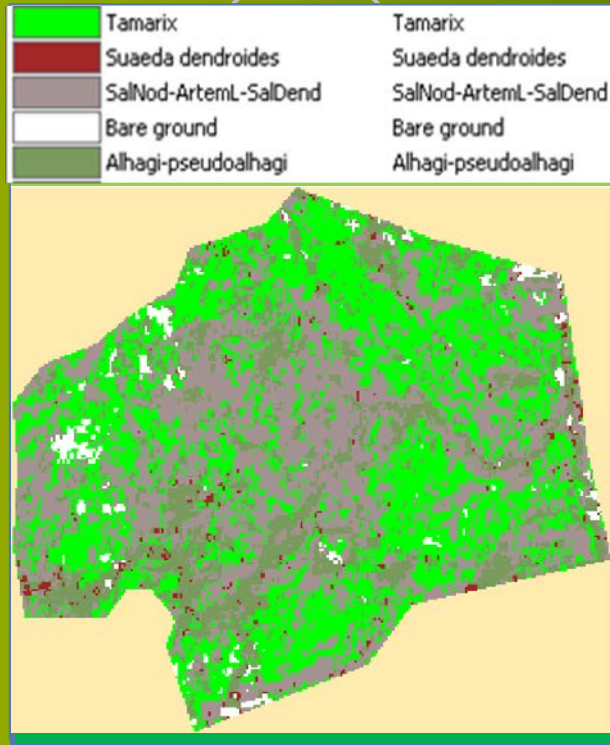
# Geographical Data Base (GDB) with classification results



# Rare vegetation classification within the Sensitive area

2004






2007

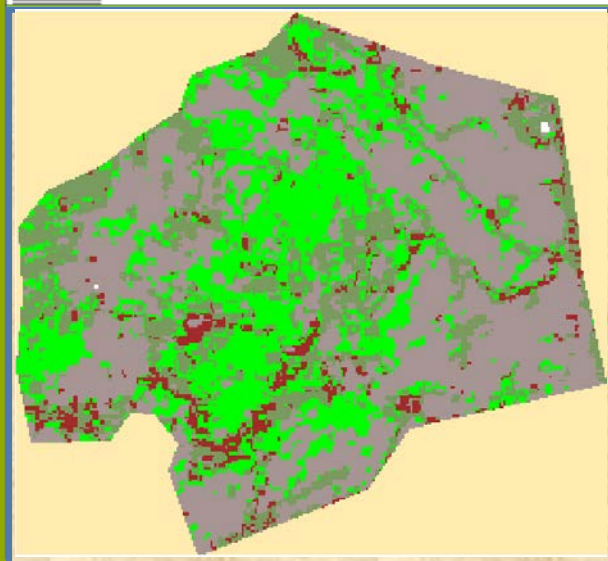







# Rare vegetation classification within the Sensitive area

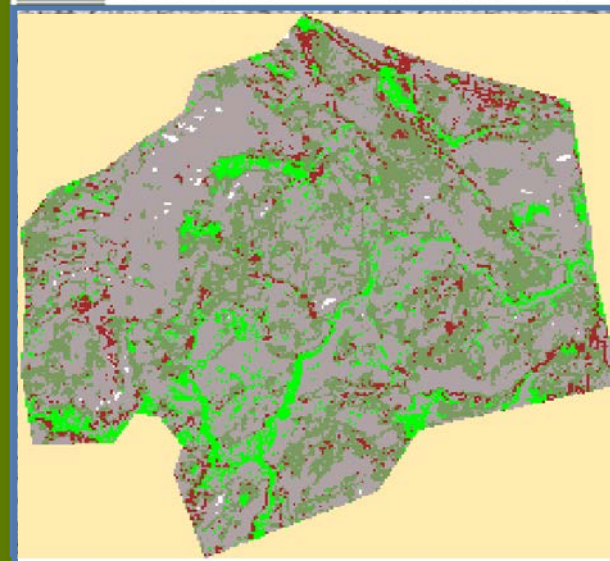
2012

2014

	Tamarix	Tamarix
	Suaeda dendroides	Suaeda dendroides
	SalNod-ArtemL-SalDend	SalNod-ArtemL-SalDend
	Bare ground	Bare ground
	Alhagi-pseudoalhagi	Alhagi-pseudoalhagi



	Tamarix	Tamarix
	Suaeda dendroides	Suaeda dendroides
	SalNod-ArtemL-SalDend	SalNod-ArtemL-SalDend
	Bare ground	Bare ground
	Alhagi-pseudoalhagi	Alhagi-pseudoalhagi



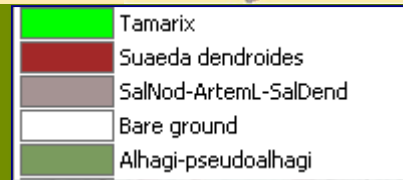
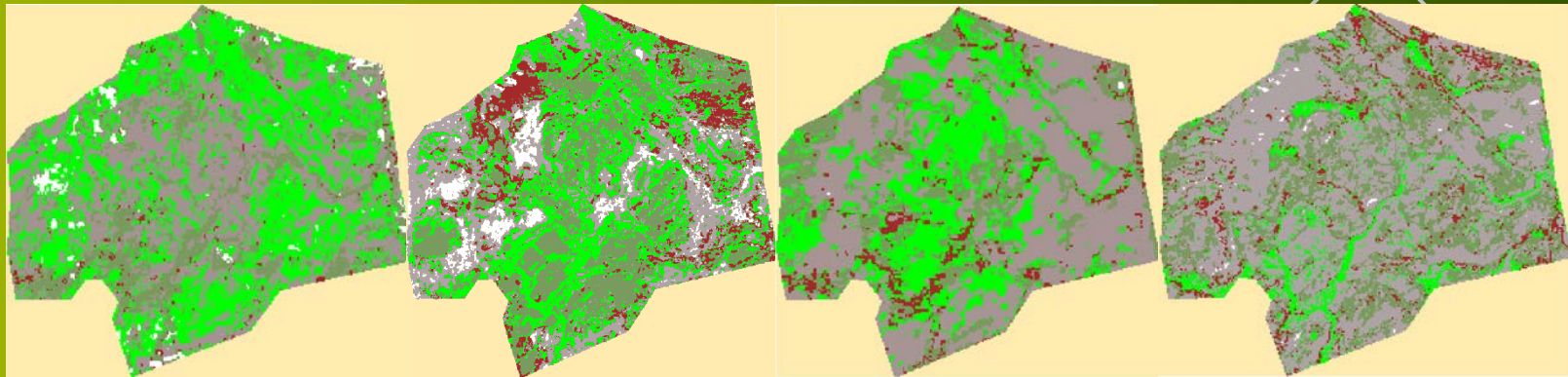
# Vegetation response to Industrial development

2004

2007

2012

2014



# Training Management Cycle

## Phase 2: Implementation

The aim of this training is to provide the community an exposure to recent advances in satellite image analysis, dealing with very high spatial resolution images.

The participants have been provided with course materials and demo versions of image analysis software. Suitable laboratory sessions are organized to complement the classroom lectures.



# Collaborating with lecturers of Universities

Working with lecturers gives our education program the greatest impact.

During developing the education program, we ask lecturers to review materials for accuracy, up-to-date information, and appropriate use of terms.





# Training workshop implementation

## Lesson Structure: 4 stages with details

### Introduction:

- Importance of rare vegetation conservation in Azerbaijan
- Information about the threats to rare vegetation, rare vegetation monitoring, species identification and Field Surveys and Data Recording
- Vegetation response to industrial development: Assessing protected area effectiveness using surrounding (buffer) areas environmentally similar to the target area

### Geographic Information Systems (GIS): Knowledge Base

- Basic GIS introduction;
- ESRI ArcGIS: Tools and Functionality;
- Map Queries and Navigation. Spatial Filtering,
- Geospatial Analysis
- Practical work



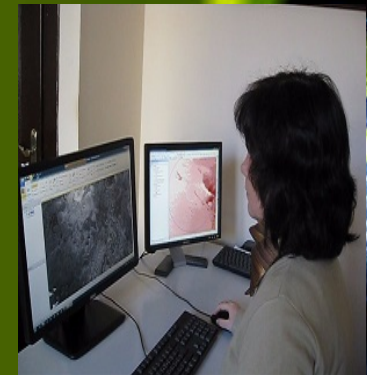
### GPS machines:

- Buttons & Pages in GPS
- Getting to know the basic GPS terms
- Set Up
- Entering a grid reference
- Routes & Information the GPS provides

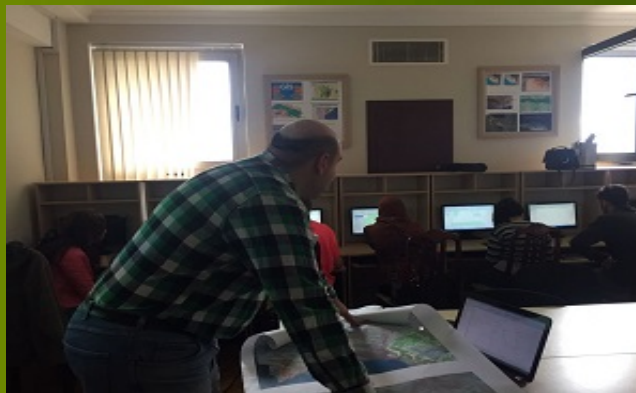


### Remote Sensing (RS) Technologies:

- Introduction to Remote Sensing
- Overview of Satellite Image Processing
- Satellite Image Classification



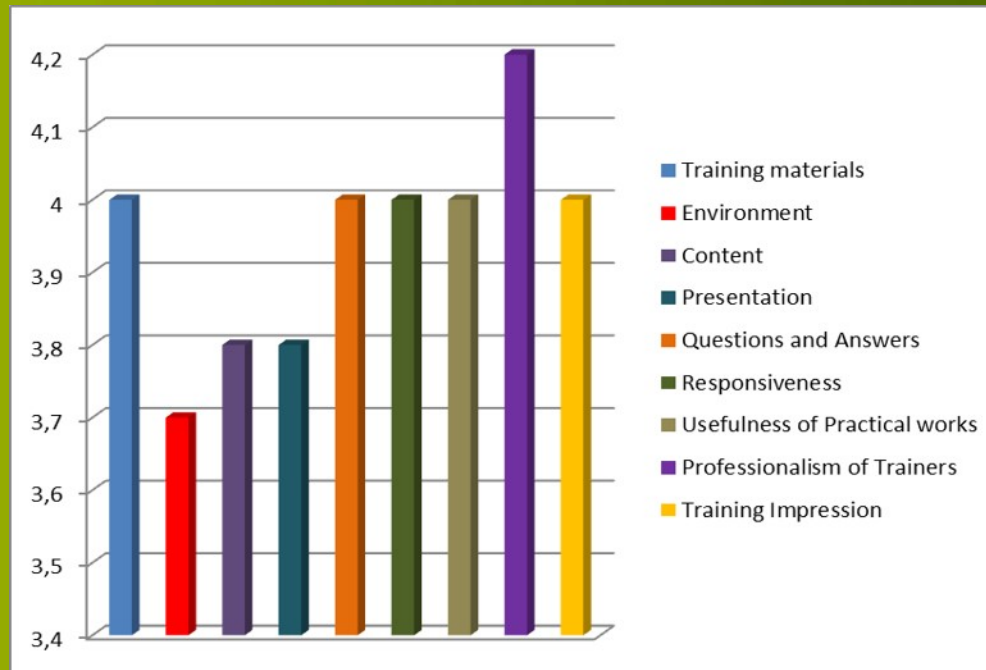
# Training workshop implementation



# Training Management Cycle

## Phase 3: Evaluation

REVIEW OF THE EFFECTIVENESS OF THE TRAINING.



# Experiences Gained, Recommendations and Lessons Learnt from the Training Workshop

In general, the workshop appears to have been highly successful. While some tentative recommendations might be made for future training programs of this type – the evaluation capacity-building project should include two workshops: the first – at the beginning of the project, the other - at the end of the project, one year later.

Creation of Evaluation Team - A training outcome evaluation requires engagement from several stakeholders (e.g. external evaluator, representative from the training institution) and ideally they should all be represented in the evaluation team.

Results of the Training Outcome Evaluation should be measured on four levels: the event and the participants' immediate reactions, the participants' learning, the participants' job performance, and the organizational performance.



# Public Awareness and Understanding for Conservation

<http://www.science-community.org/ru>

Scientific Social Community  
Социальная Научная Сеть

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- Новое на сайте
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- Мои Коллеги
- Моя Почта
- Профиль
- Выйти
- Создать материал
- My files
- Блоги
- Дейджест
- Объявления


Жизнь нашего проекта

2015-10-03 [Лекция по фандрайзингу в Украинско-французском центре Горного университета](#)

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- Create content
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- Мои Файлы
- Мои Группы
- Мои Коллеги
- Моя Почта
- Выйти

R5G-Gobustan2\_760.jpg 50:157



Navigation

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PLANET_ACTION_GOBUST2.jpg	176.66 KB	428	452
Bare vegetation change 4e	73.39 KB	872	1000
RUFFORD_FUND-2.jpg	133.15 KB	500	299
Threats-300level.jpg	56.00 KB	300	266

3 files using 623.33 KB of 4.9 MB.

Web File Manager

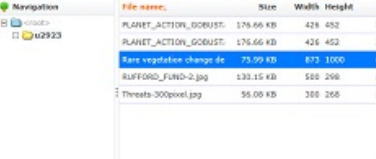
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yelenagambarova

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United Nations Convention to Combat Desertification

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Awareness raising

World Day to Combat Desertification

Desertification: The Battle is On



Bonn Symposium 2009  
Sustainable Development in Times of Crisis  
Innovation in Opportunity?



Journal of  
**Earth Science & Climatic Change**

Gambarova and Gambarov, *J Earth Sci Clim Change* 2016, 7:4  
<http://dx.doi.org/10.4172/2157-7617.1000344>

Research Article Open Access

## Rare Vegetation Degradation within “Buffer Zones” In Gobustan State National Park, Azerbaijan


Yelena M. Gambarova\* and Adil Y. Gambarov  
R.I.S.K. Company, Regid Behbudov Kŏpəst, Baki, Azerbaijan

**Abstract**

This paper investigates the spatial change of rare vegetation cover of Gobustan, Azerbaijan. The Gobustan State National Park (Conservation Area) is a nationally important desert/semi-desert located west and south-west of Baku, Azerbaijan. In 2007 Gobustan was declared a UNESCO World Heritage Site considered being of “outstanding universal value” for the quality and density of its rock art engravings. The Study Area at Gobustan contains a wealth of historical and archaeological sites and is also known for its rare vegetation. This investigation includes monitoring of existing threats to rare vegetation (Global Climate Change, oil and gas exploration, overgrazing of winter and summer pastures by domestic sheep, goats and cattle, pollution, etc.) as well as the processing of remote sensing data to produce “measured” vegetation indicators.

This study has shown that oil and gas infrastructure, in an ecologically important semi-arid region, has a negative effect on species abundance and cover of vegetation.

Rare vegetation classification within a buffer zone indicates: Plant cover has decreased in the buffer zone and is higher than the Sensitive Area. Bare ground has increased dramatically in the buffer zone whereas in the Sensitive Area it has decreased slightly.



Development and Implementation of the project have been carrying out with support from:

