Helen Bradley Dept. Geography UCC



european social fund in the czech republic



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MINISTRY OF EDUCATION, YOUTH AND SPORTS

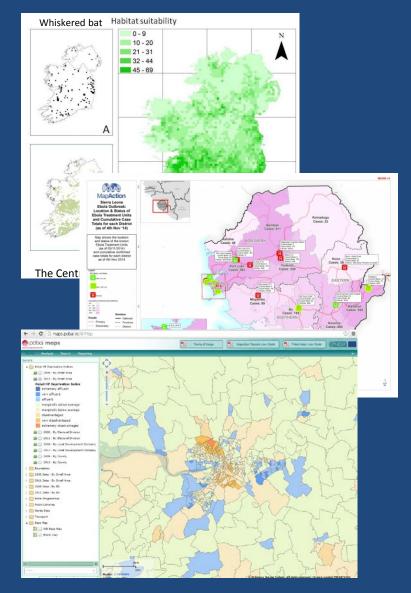


OP Education for Competitiveness

> INVESTMENTS IN EDUCATION DEVELOPMENT

### Use of Geoinformatics for NGOs

- GIS, GNSS and Remote Sensing have been used successfully by NGOs (Nongovernmental organisations) for many years.
- Used for a wide variety of applications;
  - conservation, sustainable development, disaster response and social programmes
- But can geoinformatics be beneficial to smaller NGOs with more limited resources?



## A little background information

- Friends of Londiani was founded in 2002 by a group of Irish volunteers.
- The initially goal was to aid the Londiani Children's home. Subsequently expanded to work with the people of Londiani and surround villages.

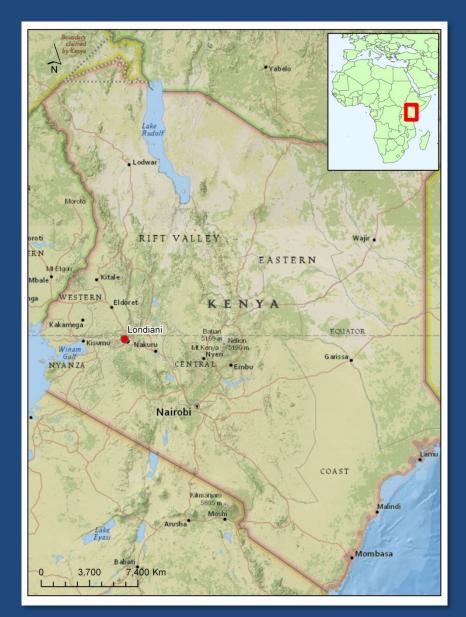


#### Their mission:

"The mission of Friends of Londiani is to work with the people of Londiani and its surrounding villages to develop and complete sustainable community projects to enable and empower the people to achieve an improved quality of life based on their values and become the authors of their own development."

### Londiani

- 220 km northwest of Nairobi, in the Rift Valley Province of Kenya.
- Londiani Division is a predominantly rural area.
- The census reports that almost 28% of the urban population and 41% of the rural population of the division live below the poverty line
- The majority of the local population relies on locally grown produce from small family owned plots.
- The area was badly affected by the ethnic violence in 2008.





Satellite image Showing areas burnt during the 2008 conflict.



### Londiani

According to the Population Survey (2004):

- Over half the population live in traditional homesteads, informal shacks or houses built from mud blocks
- Over 65% of the respondents have no electricity in their dwelling.
- Over half the homes have no running water.
- Parts of this District have poor infrastructure and the unpaved roads make transport difficult.
- During the rainy season roads are often impassable.







### Friends of Londiani (FOL)

### **Focus Areas**

(based on helping to achieve the Millennium Development Goals):



- Health
- Water
- Education



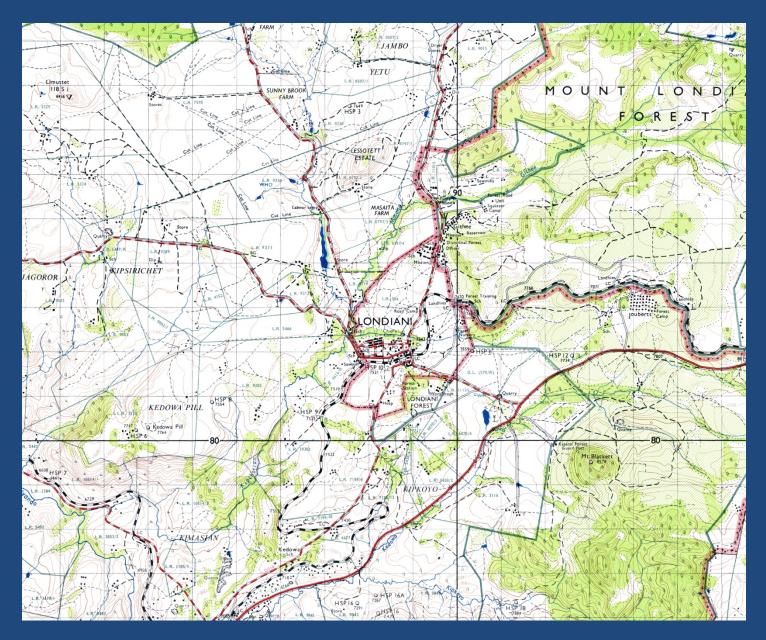
# Why is mapping/GIS important to the organisation?

- Knowing where things are...
  - A very rural area of Kenya with few roads and many small tracks and pathways.
  - Little traditional mapping available. No road names and signposts.
  - Difficult to find locations and navigate through the area.
  - Necessary to record the location of facilities installed by FOL
    - This allows for monitoring and maintenance
    - Helps to communicate the distribution to the local community.

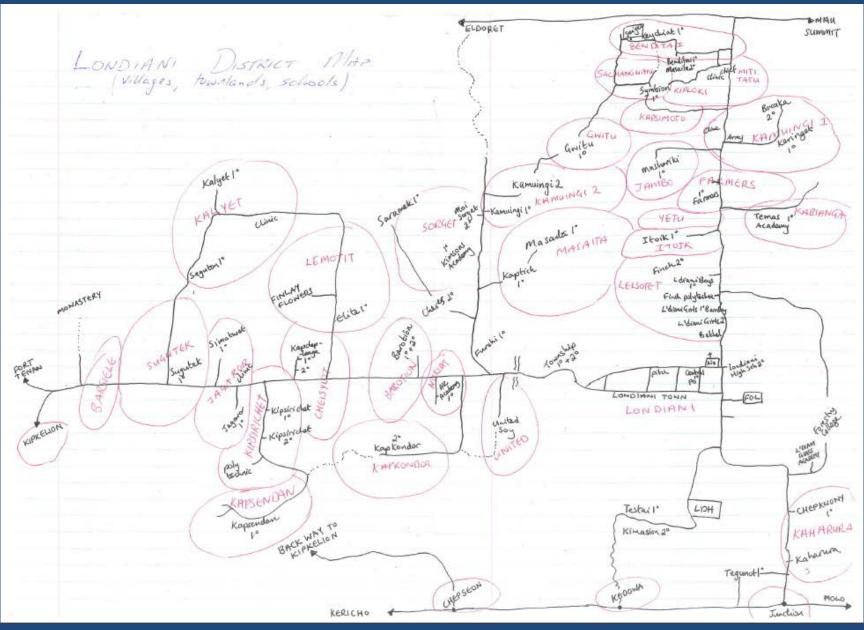
# Why is mapping/GIS important to the organisation?

- Visualising, reporting and planning...
  - Highlighting problem areas
  - Identifying patterns and relationships
  - Identification of potential sites for projects
  - Decision support and improved community planning
  - Assessing the success of past projects
  - More effective reporting to supporters and funding agencies.
    - Giving a clear view of where and how funds are being spent
    - Improved feedback to Irish aid, one of the key sources of funding

### Survey of Kenya Map - 1973

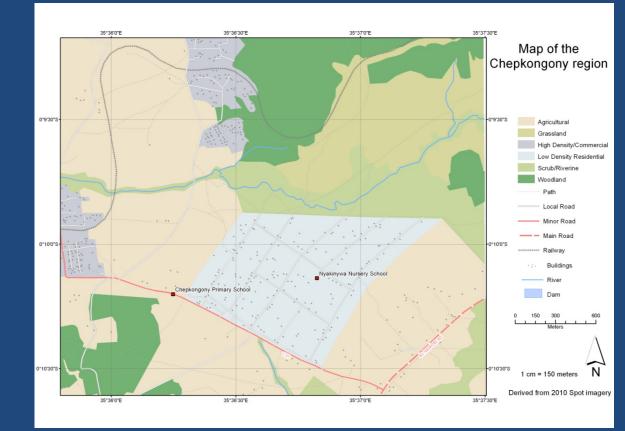


### Reliance on hand drawn maps



## Using GIS for Mapping

- Using GIS FOL can now produce their own maps of the area.
- This allows them to
  - Gain a better understanding of the geography of the area
  - Navigate more effectively
  - Highlight key features
  - Report on activities and developments



### **Community Water Tanks/Pumps**

- FOL installs community water tanks/pumps in the villages in which it works.
- These are community water tanks/pumps and will allow the community to have clean easily accessible water.
- Each tank/pump is shared by a number of families.

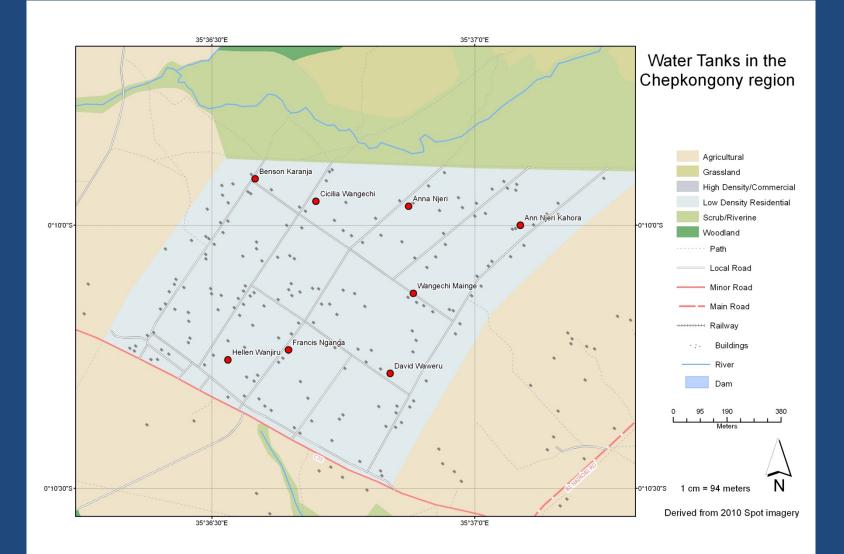


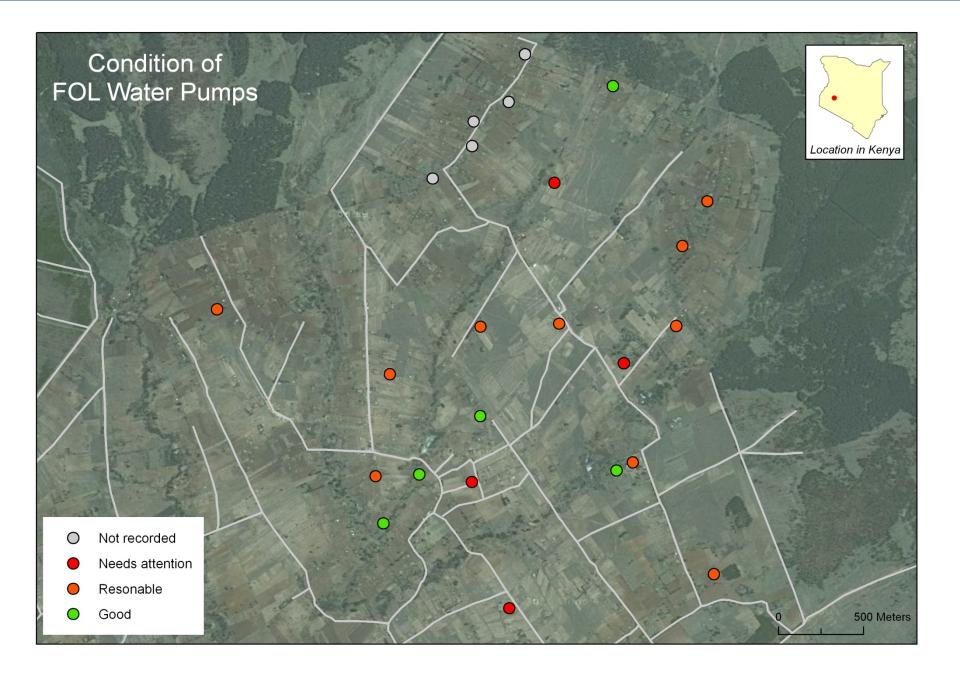






### Using GIS for Reporting

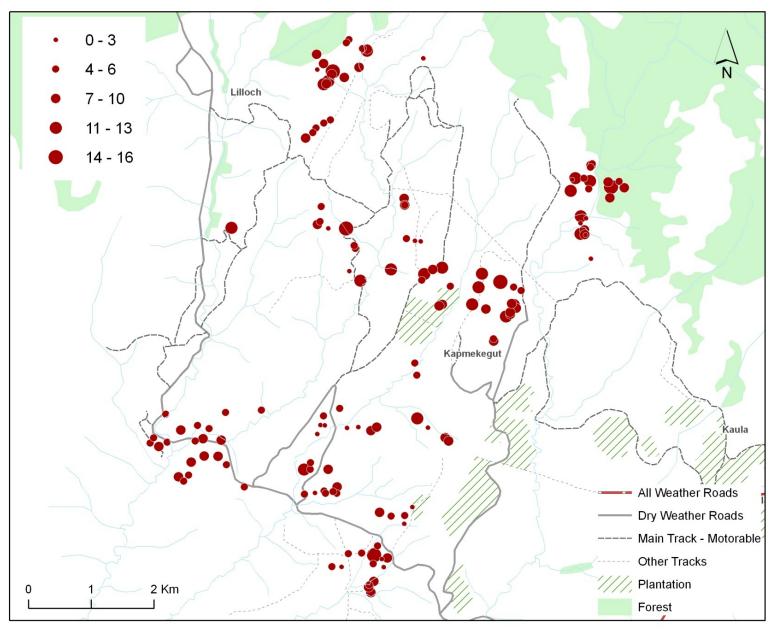




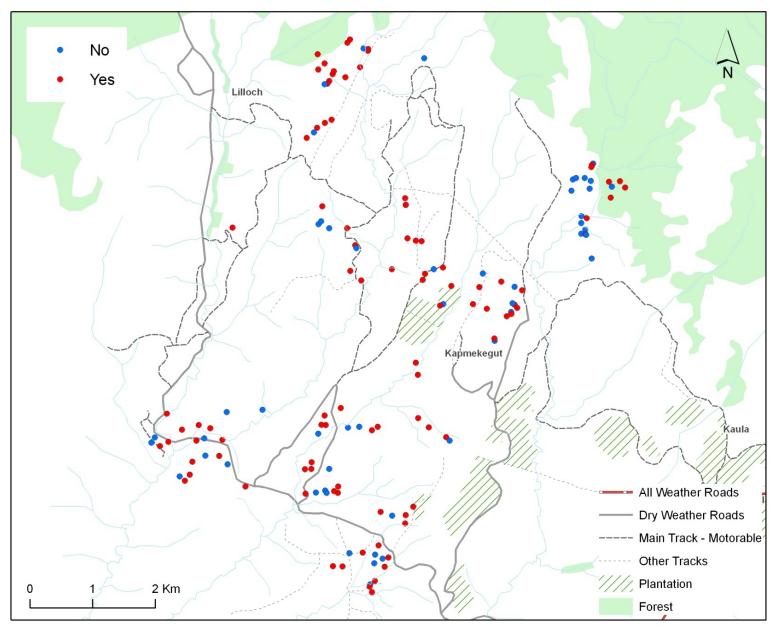
### Healthy Village

- FOL carry out health surveys in the area on a regular basis.
- Mapping the data collected allows them to visualise the information, identify problem areas and plan for future schemes.
- Mapping can identify disease hotspots and help investigate potential causes.

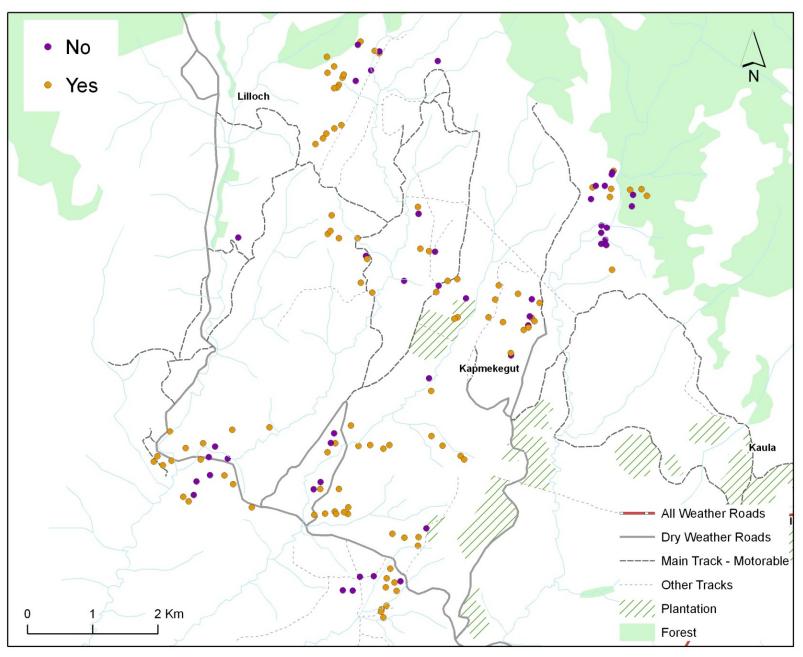
#### **Total Household**



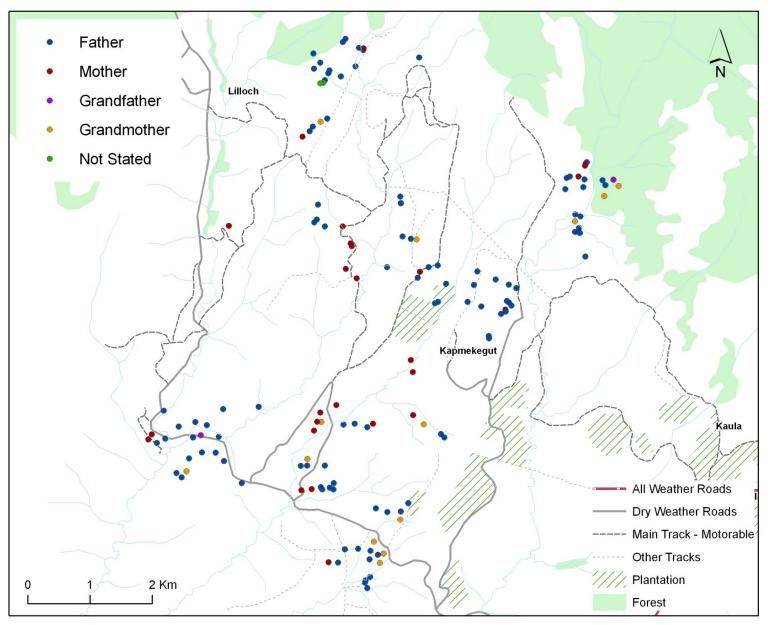
#### Illness



#### Malaria Nets Used



#### Head of Household



### How is the data collected?

- As no suitable spatial data existed for the area, the data was captured using a combination of satellite imagery and GPS.
- 2011 SPOT imagery used to capture topography data.
- GPS used to capture features and verify track and road data.
- Basic handheld GPS used by FOL in the field
  - Due to:
    - Cost
    - Limited expertise of the volunteers collecting the data
    - High levels of accuracy not required

## Until 2011 only Landsat imagery available for the area.



### In 2011 SPOT imagery become available



### **GPS Data Collection - Challenges**

- Volunteers with limited training.
- Rural area, often difficult to navigate and traverse.
- Proximity to the equator
- Recording attributes data dictionaries.
- Transfer of GPS data to GIS
- Error checking













FOL GPS Survey – Waypoint attribute sheet

ID = Feature type, Feature ID, Surveyor ID i.e. WF01HB

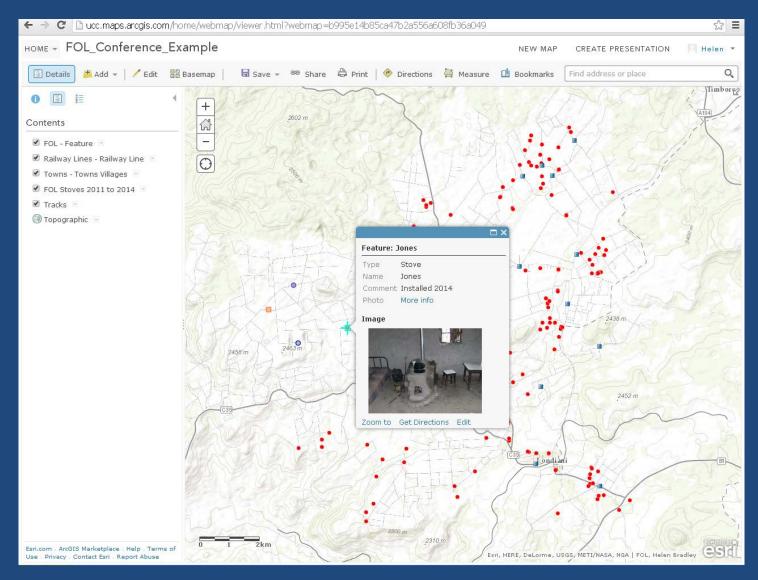
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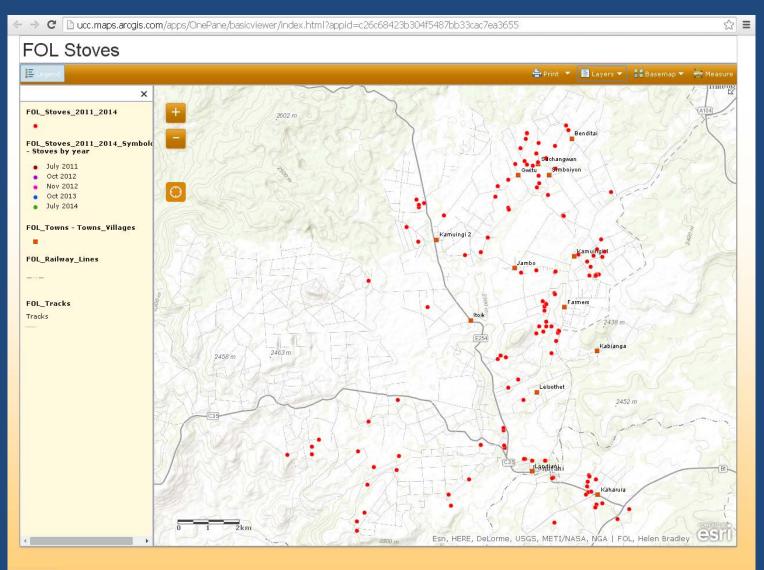
### Using GIS - Challenges

- Very limited GIS expertise in the organisation
- Reliance on volunteers to collect and process data
- Effective use and development of GIS hampered by lack of skilled personal
- Poor levels of error checking and verification.
- Software, data and equipment costs.
- Currently investigating the use of newer technologies to overcome some of these deficiencies

### Online\Cloud GIS

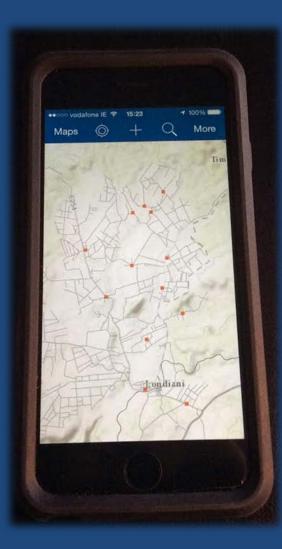


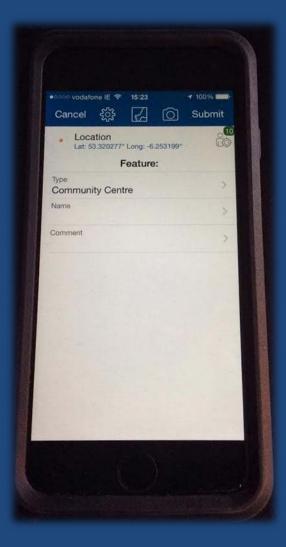
### Web mapping applications



Click here to begin

### Smart Phone Apps





### **Future Plans**

- To complete comprehensive spatial database of the area.
- To train local community volunteers to collect and process additional data.
- To increase use of web and mobile applications
- Develop ecotourism in the area.
  - Using GIS and GPS to develop suitable routes.





