KEY
LESSONS
LEARNED

GreenWatersheds

ORO VERDE
Together for tropical forests
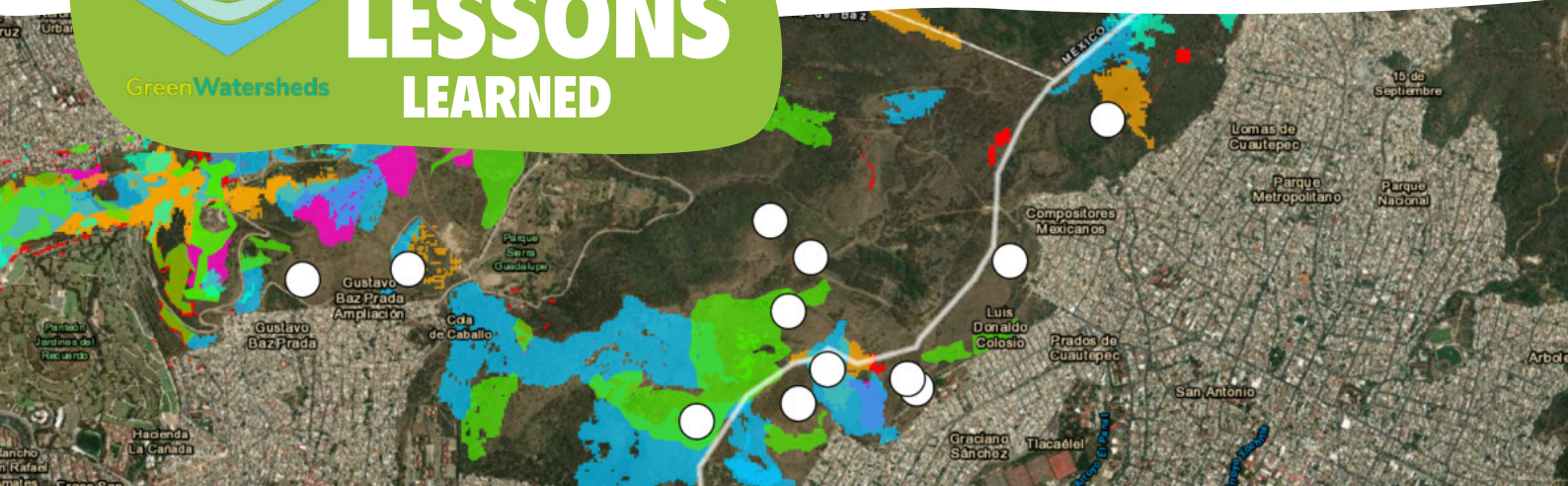
Geo-Information Systems (GIS) for Climate Change Adaptation

Geospatial data are an invaluable tool for climate change adaptation in general and Ecosystem-based Adaptation (EbA) in particular. The accessibility of Geographical Information Systems (GIS), satellite imagery and the respective equipment has grown exponentially in the last few years. Open-source applications, free databases and low-cost drones put these tools within reach even of small organizations. This opens vast opportunities not just for monitoring and evaluation. Compelling datasets and illustrative maps help to engage political actors, the private sector and other potential allies. They also improve the foundation for decision making on local, national and global adaptation policies. Certification processes for agricultural products are another field of application with high synergy potential.

In the GreenWatersheds-project, OroVerde and its partner organizations in Mesoamerica and the Caribbean have identified four key lessons:

1 Using Freely Available Tools

The European Space Agency grants free access to the satellite data from its COPERNICUS program (https://dataspace.copernicus.eu/browser). Even more importantly, the online-tool also allows for a wide range of analysis and download of the resulting cartography without clogging up disk space with the data-heavy original imagery. With a free account, analysis parameters can even be saved for repetition at regular intervals. The open-source Sentinel Application Platform (SNAP)-Toolbox (https://step.esa.int/main/download/snap-download/) provides additional functionality. Google Earth Engine (https://earthengine.google.com/), too, offers adaptable analysis algorithms, and remains free for noncommercial and research use.

2 Diversifying Human Ressources

Most project teams for climate change adaptation are focused on technical knowhow in the implementation of adaptation measures. To fully utilize the potential GIS offer for adaptation efforts, GIS expertise needs to be part of human resources planning. Simultaneously, exploiting the opportunities for political advocacy and private sector engagement requires solid skills in strategic communication.

3 Creating Localized Data and Ensuring Comparability

Sometimes, effective EbA-monitoring requires more detailed local data than what free access databases provide. Readily available and relatively low-cost drones are well-suited for generating such localized cartography. However, it is important to standardize scales and units to ensure comparability.

4 Capacity Building

Operating GIS-tools does not require advanced technological knowledge. However, a basic understanding of available free databases, analysis tools, drone operation and cartography is necessary to correctly interpret locally generated data, ensure comparability, and link it to the broader picture at the national or global level. Hence, planning for appropriate capacity building measures is essential.

Success Stories for GIS for Climate Change Adaptation

WILDFIRE AND DROUGHT MONITORING

OroVerde's resident GIS expert has built **semi-automated algorithms based on the workflow tools of the open-source SNAP-Toolbox**. With these tools, partner organizations can **easily generate localized wildfire risk and drought indicator maps** based on the COPERNICUS satellite data through entering a simple set of variables. Such maps facilitate the monitoring of climate change impacts on ecosystems and are invaluable in planning preventive measures and other interventions.

INTERVENTION PLANNING

Over time, these maps allow partner organizations to build up their **own cartography**, adapted specifically to their aims and needs. This is extremely helpful for mid- and long-term **planning of projects and interventions** as well as for **political advocacy and alliance building**.

TECHNOLOGICAL LITERACY

In the course of the GreenWatersheds-project, **more than 60 staff members** from partner organizations in Guatemala, the Dominican Republic, Cuba and Mexico have been **trained in the processing and analysis of geospatial data as well as the generation of localized imagery** via drone operation.

Interested in more lessons learned?

[Financing Climate Change Adaptation](#)

[Building Governance Mechanisms for Adaptation](#)

[Local Implementation of Ecosystem-based Adaptation](#)