

Lesson 1:

Introduction to Environmental Restoration

Technology



Lesson Objectives: Introduction to Environmental Restoration Technology

Portal presentation – geospatial information system



The presentation of the map where the flights in individual countries are possible.

Mapping and Route Optimization for Environmental
Restoration



Research and observation of the environment and buildings

What is the research and observation of the environment and buildings?

Defintion: It is the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed. It involves a variety of activities aimed at reviving the natural processes and habitats to their original or improved state.

- Besides the environment, the buildings are also observed with the focus primarily on what is happening at the top—on the roofs of the buildings. This is important in cases of repairs or if we want to install solar panels or other modules that allow the acquisition of various forms of energy.



Timeline

How does technology take part in environmental restoration?

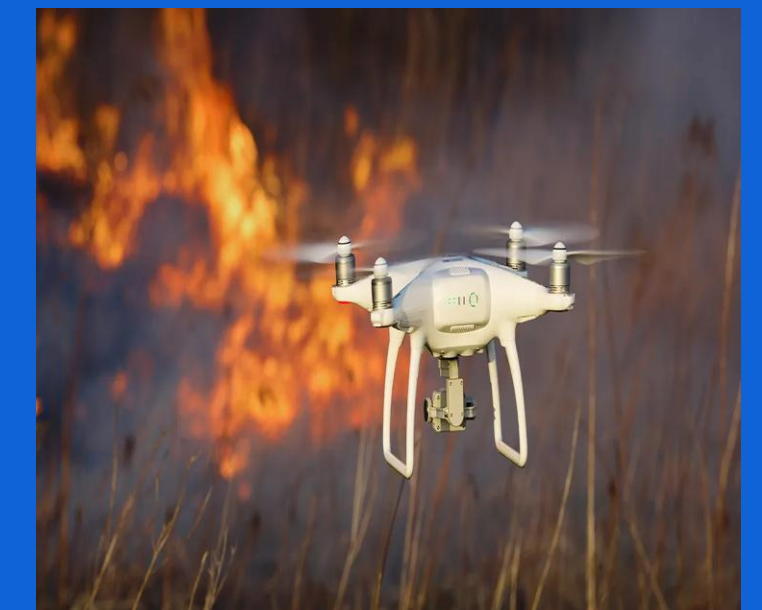
- 1 Look at the timeline to understand how environmental monitoring has changed over the years.



- 2 Analysis and result interpretation to understand, where, how, why and when those effects appear.

Why drones?

- Opportunities for using drones for environmental restoration.
Using drones flying in the damaged/recovered are collecting data.
- With the use of drones, we can view buildings from above without needing to find a lift with a basket



Swarm flying mode

Definition and quick view on swarm mode operations and flight:

Swarm Flying Mode is a technological approach where multiple drones move in a coordinated group, similar to how bees or birds in nature form swarms and follow specific flight patterns.

This flying mode allows drones to collaborate, communicate, and perform tasks in tandem, which increases their efficiency, reliability, and performance.



Swarm flying mode



Coordination: Drones use advanced software, sensors, GPS, and AI to move in sync, adjusting paths based on others' movements.

Connectivity: Drones exchange data via wireless networks, adjusting navigation in real time.

Autonomous Decision-Making: Each drone independently adjusts based on its environment, supporting dynamic task execution without central control.

Real cases



Forest

Drones dispersed seeds,
aiding forest regrowth
after wildfires



Floodplain Monitoring

Drones mapped
wetlands, guiding
habitat restoration
post-floods.



Combating Desertification

Drones planted
drought-resistant
trees, preventing
desert spread.

Questions

How could drones assist in restoring underwater ecosystems?

Could customized underwater drones play a key role in restoring coral reefs or seagrass meadows?

Could drones use renewable energy sources for sustainable operation?

How would the use of solar-powered drones impact mission duration and scope?

Can drones help prevent environmental disasters?

How could they be used for early detection of droughts, wildfires, or floods?

What are your questions?





Thank you for your
attention !



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