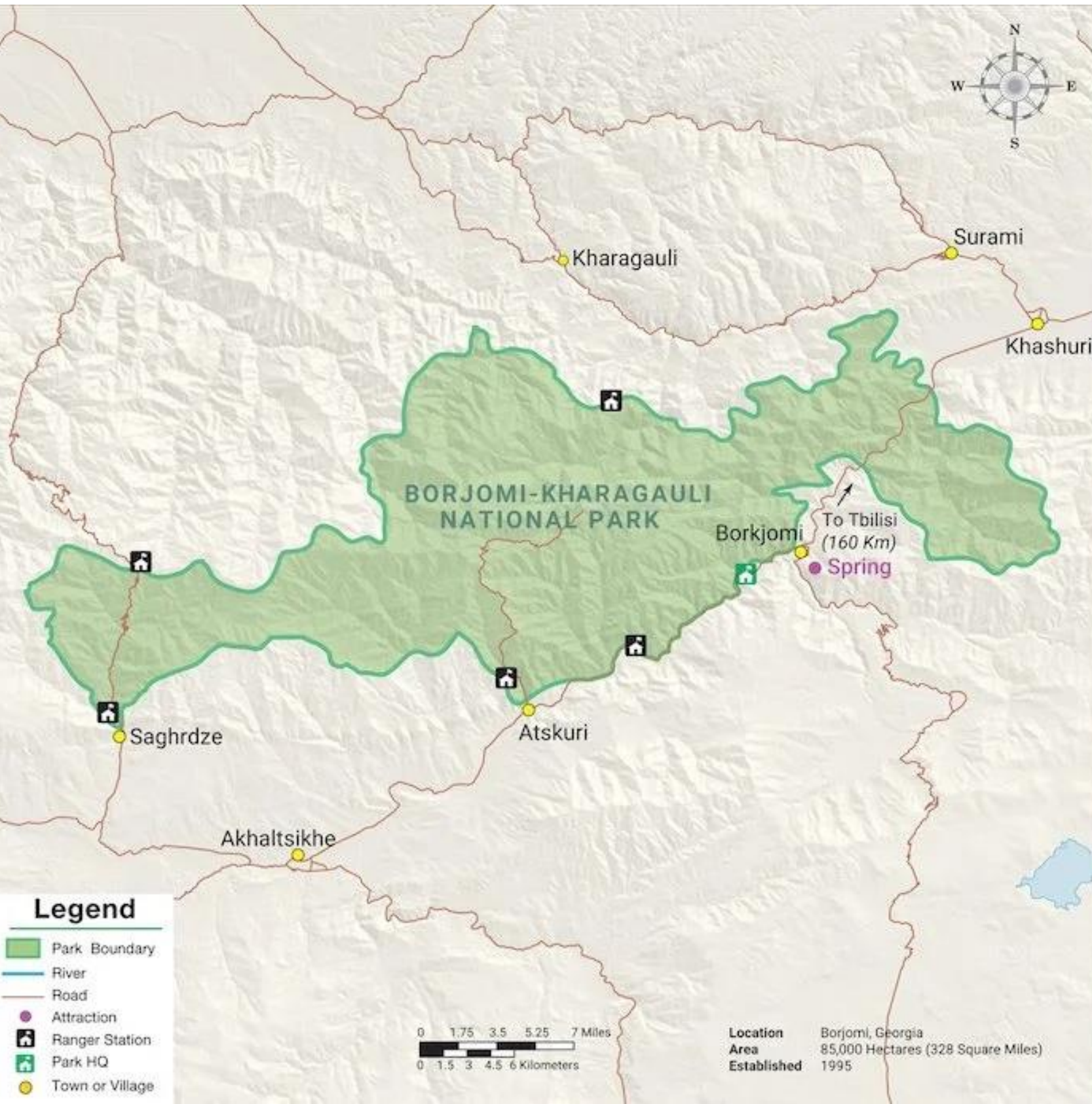


Building an Integrated Monitoring and Early Warning Forest Fire Detection System in Borjomi-Kharagauli National Park

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About Borjomi Kharagauli National Park



Protected Area

- One of the largest national parks in Europe and the first national park established in independent Georgia (1995).
- Covers 107,083 hectares — over 1.5% of Georgia's territory.
- Virgin forests cover 75% of the park's territory. The rest is covered with alpine and subalpine meadows.
- Spans parts of three regions: Imereti, Javakheti, and Shida Kartli.
- A cornerstone of (eco)-tourism in Georgia, the park attracts thousands of visitors each year and generates income and jobs in the Borjomi area.



Biodiversity

- 64 species recorded — 11 Caucasus endemics, 8 on Georgia's Red List. Key species: red deer, chamois, roe deer, brown bear, wolf, lynx. Other inhabitants: wild boar, wild cat, and 20 species of bats.
- 217 species of migrating and nesting birds. 13 species are included in the Red List of Georgia.
- 30 reptile species; 3 West Caucasian endemics, 2 Red List species
- Mountain rivers support a rich population of river trout (*Salmo fario trutta*).



A few inhabitants



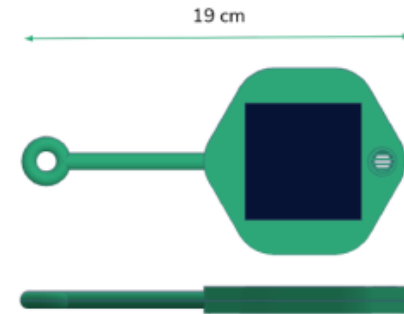


Challenge

- The park has experienced major wildfires, including severe events in 2008 and 2017, resulting in significant ecological and economic losses.
- Forest fires were once rare in Georgia, but today Georgian scientists warn that the country is experiencing emerging fire seasons — a phenomenon that has never occurred before.
- Climate change is intensifying fire risk through rising temperatures, droughts, and changing precipitation patterns
- Existing monitoring systems rely mainly on visual observation by rangers and local communities — no integrated early warning system
- Fires threaten biodiversity, tourism, carbon sequestration, and local livelihoods. This forest serves as a major carbon sink, supporting the country's climate mitigation goal under NDC.

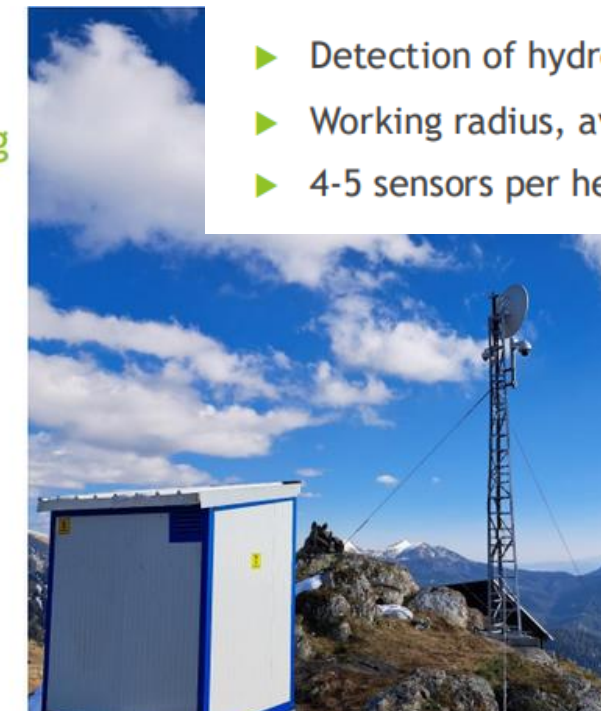
The CTCN Technical Assistance

▶ Wireless sensors: Silvanet Wildfire Sensor - <https://www.dryad.net/wildfiresensor>



- ▶ Detection of hydrogen, carbon dioxide, carbon monoxide;
- ▶ Working radius, average 30 meters
- ▶ 4-5 sensors per hectare, depending on geography

Hardware infrastructure:
Communication mast, solar panels, shelter with network equipment, lighting protector and video cameras set



- ▶ Autopilot functionality,
- ▶ Real-time monitoring,
- ▶ Monitoring of unreachable places,
- ▶ Monitoring on request,
- ▶ Functioning in patrol mode.



Objective:

- To reduce the risk of uncontrolled forest fires in Borjomi-Kharagauli National Park by implementing an advanced monitoring and early warning system. This system will allow for early detection of fire hazards, enabling swift action.

Key components:

- The project supports a total of 174,135 beneficiaries, including 1,020 direct beneficiaries and 173,115 indirect beneficiaries.
- Remote sensing technologies: satellite imagery, AI-based video surveillance, and drones.
- Pilot early warning system installed and tested within the park.
- Capacity building: training of rangers, administrators, and national agencies.
- Standard operating procedures for prevention, preparedness, response, and restoration.



This adaptation matters because when nature thrives, local communities prosper and the economy grows — but when ecosystems collapse, everyone loses.

THANK YOU!

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