LandSense

A Citizen Observatory and Innovation Marketplace for Land Use and Land Cover Monitoring

@LandSense

Motivation

> Uncovering the potential of citizen science and earth observation to improve the way we see, map and understand the world

> Improving the quality of Earth Observation-based Land Use & Land Cover (LULC) maps/products

Participatory process

> Earth Observation-based mapping has a conventional top-down approach

> It is possible to involve citizens and interested experts to crowdsource the needed information using a more participatory approach

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for Land Use and Land Cover Monitoring

Connecting citizens with satellite imagery to transform environmental decision making

September 2016 → August 2020

LandSense.eu

18 Partner Institutions
9 Countries

IIASA

BirdLife INTERNATIONAL

SINERGISE

The University of Nottingham

INOSENS

GeoVille

umweltbundesamt
ENVIRONMENT AGENCY AUSTRIA

IGN
INSTITUT NATIONAL DE L'INFORMATION GÉOGRAPHIQUE ET FORESTIÈRE

EUROPEAN CITIZEN SCIENCE ASSOCIATION

felis

UNIVERSITÄT HEIDELBERG ZUKUNFT SEIT 1386

WAGENINGEN UNIVERSITY WAGENINGEN UR

VU UNIVERSITY AMSTERDAM

JRC EUROPEAN COMMISSION

GLOBAL 2000

ecn EUROPEAN CROWDFUNDING NETWORK

HELYX

LandSense Themes

LandSense technologies are deployed across various themes to illustrate the potential of Citizen Observatories to tackle environmental challenges
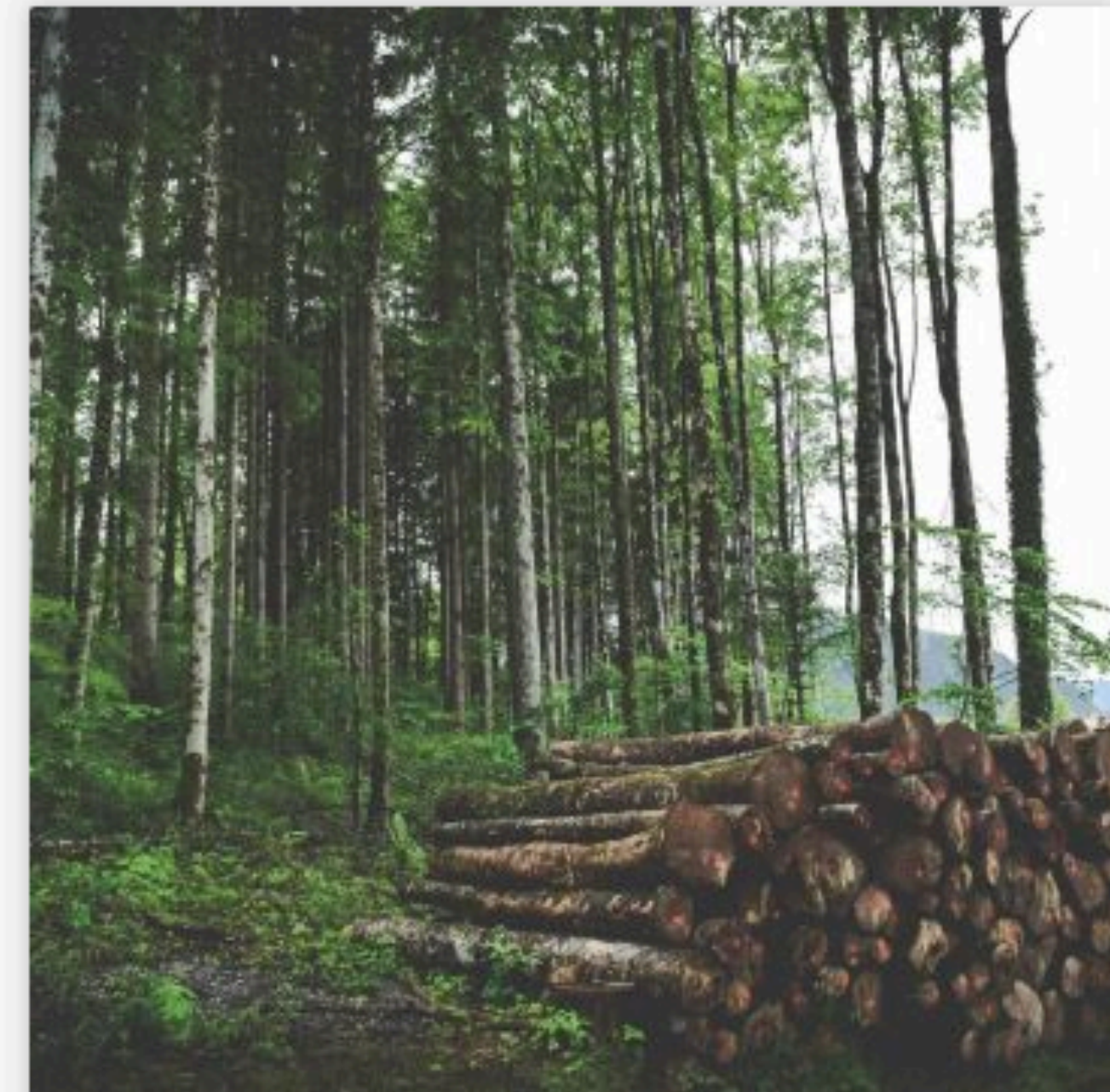

URBAN LANDSCAPE DYNAMICS

Austria, France, Germany, Netherlands

AGRICULTURAL LAND USE

Serbia
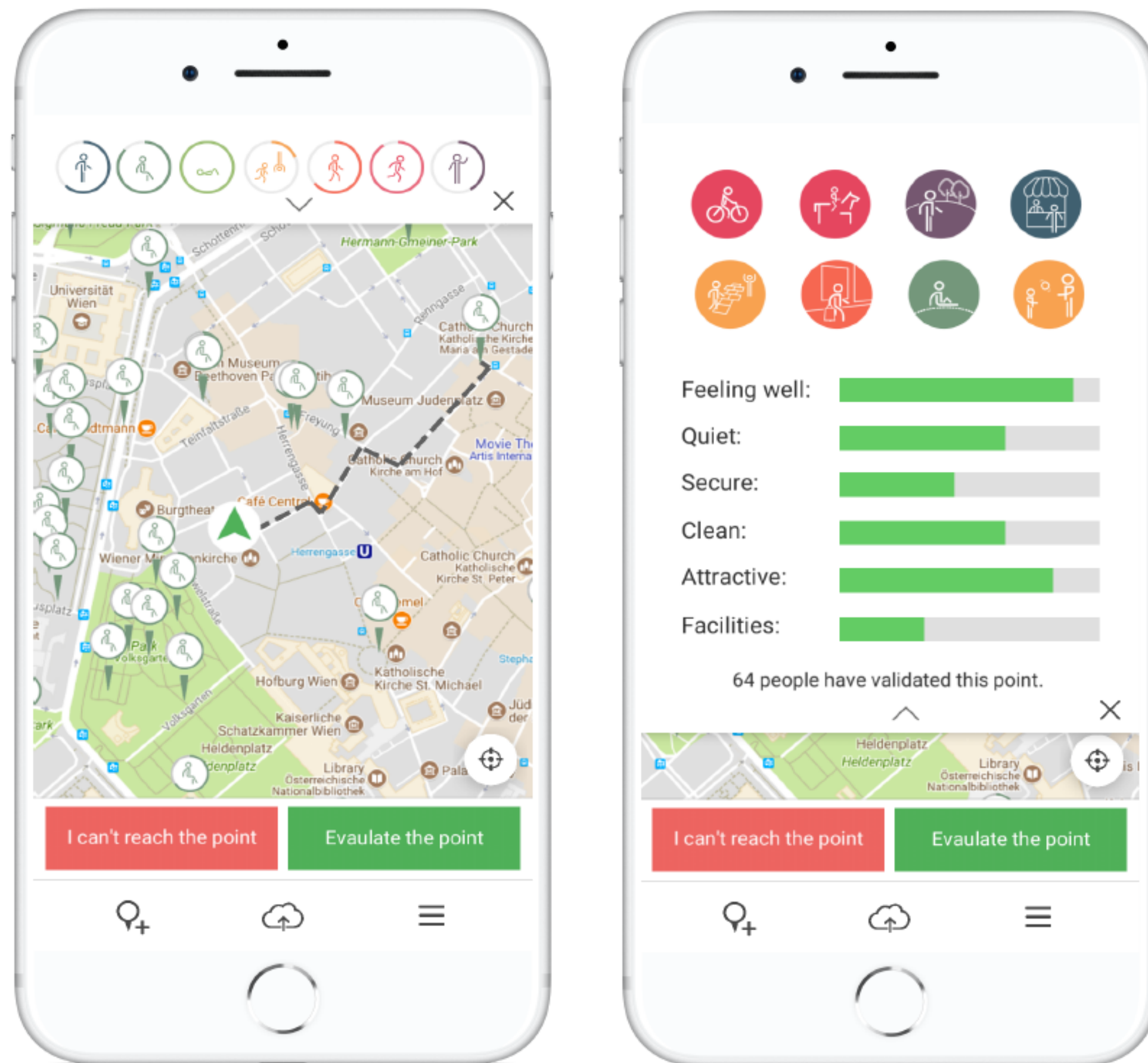
FOREST & HABITAT MONITORING
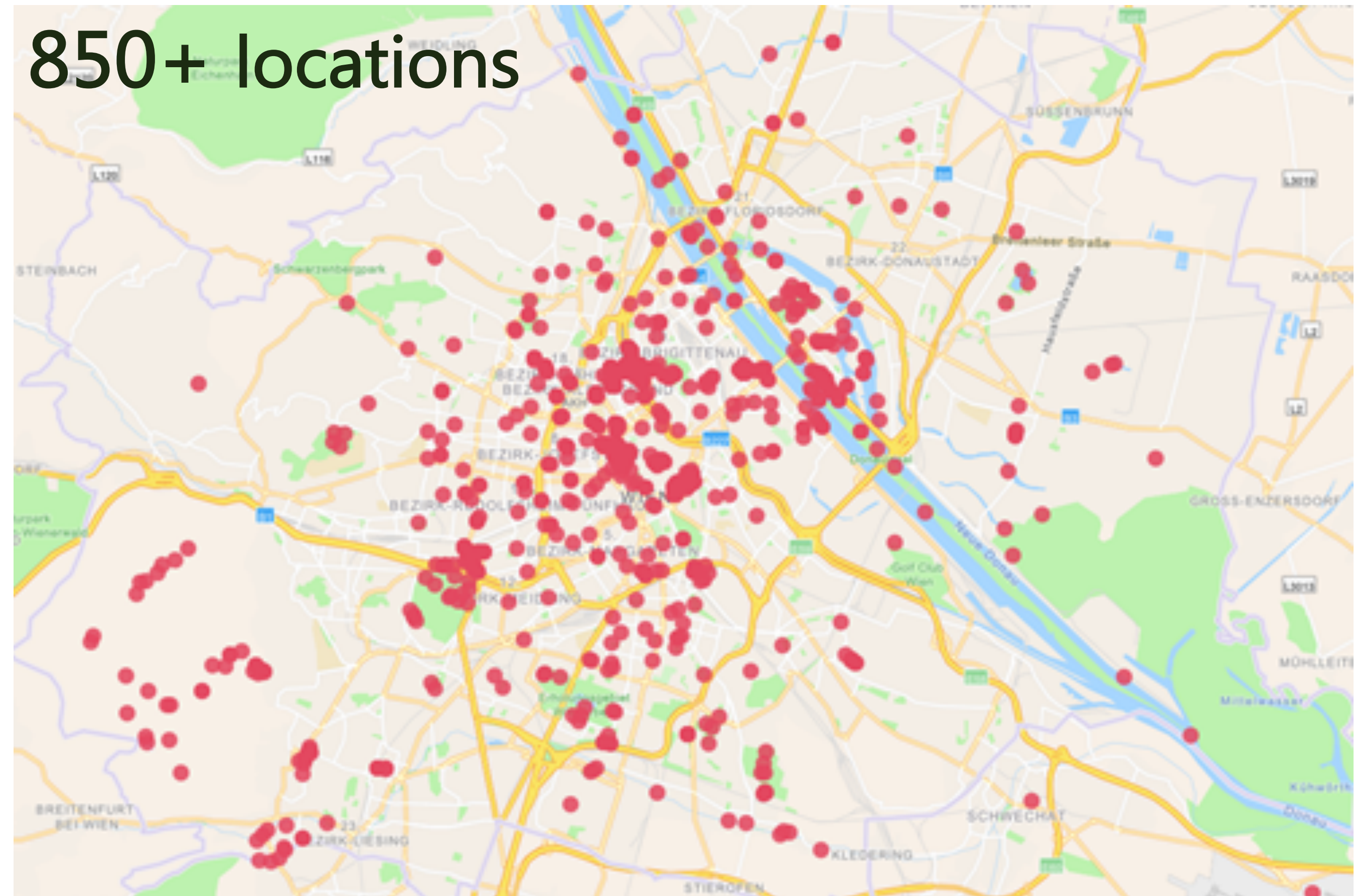
Spain, Indonesia

Participate as a citizen scientist
Ground-based observations

City Oases

Urban green space monitoring in Vienna

850+ locations

umweltbundesamt
PERSPEKTIVEN FÜR UMWELT & GESELLSCHAFT

TU WIEN
TECHNISCHE UNIVERSITÄT WIEN

City of Vienna

BOKU
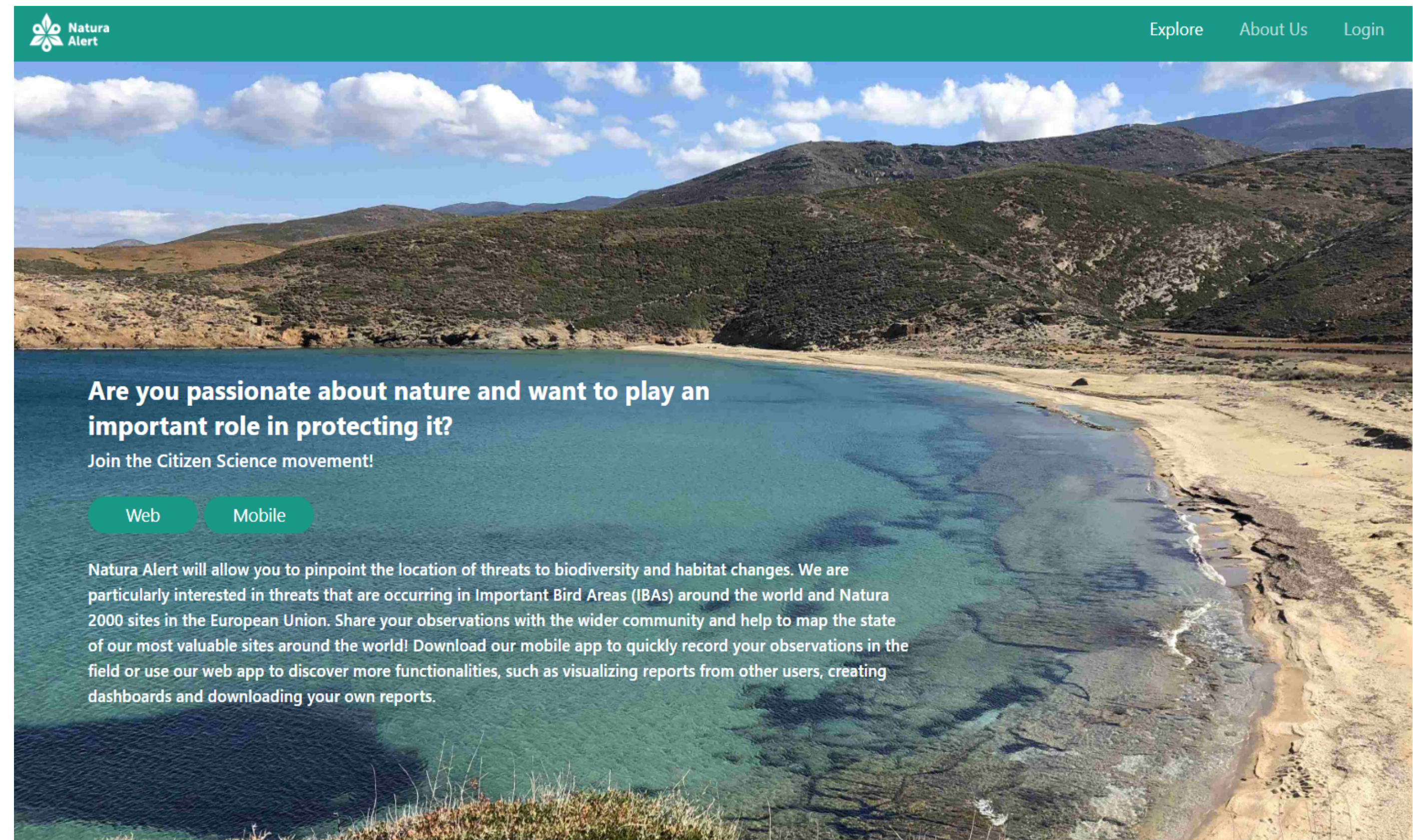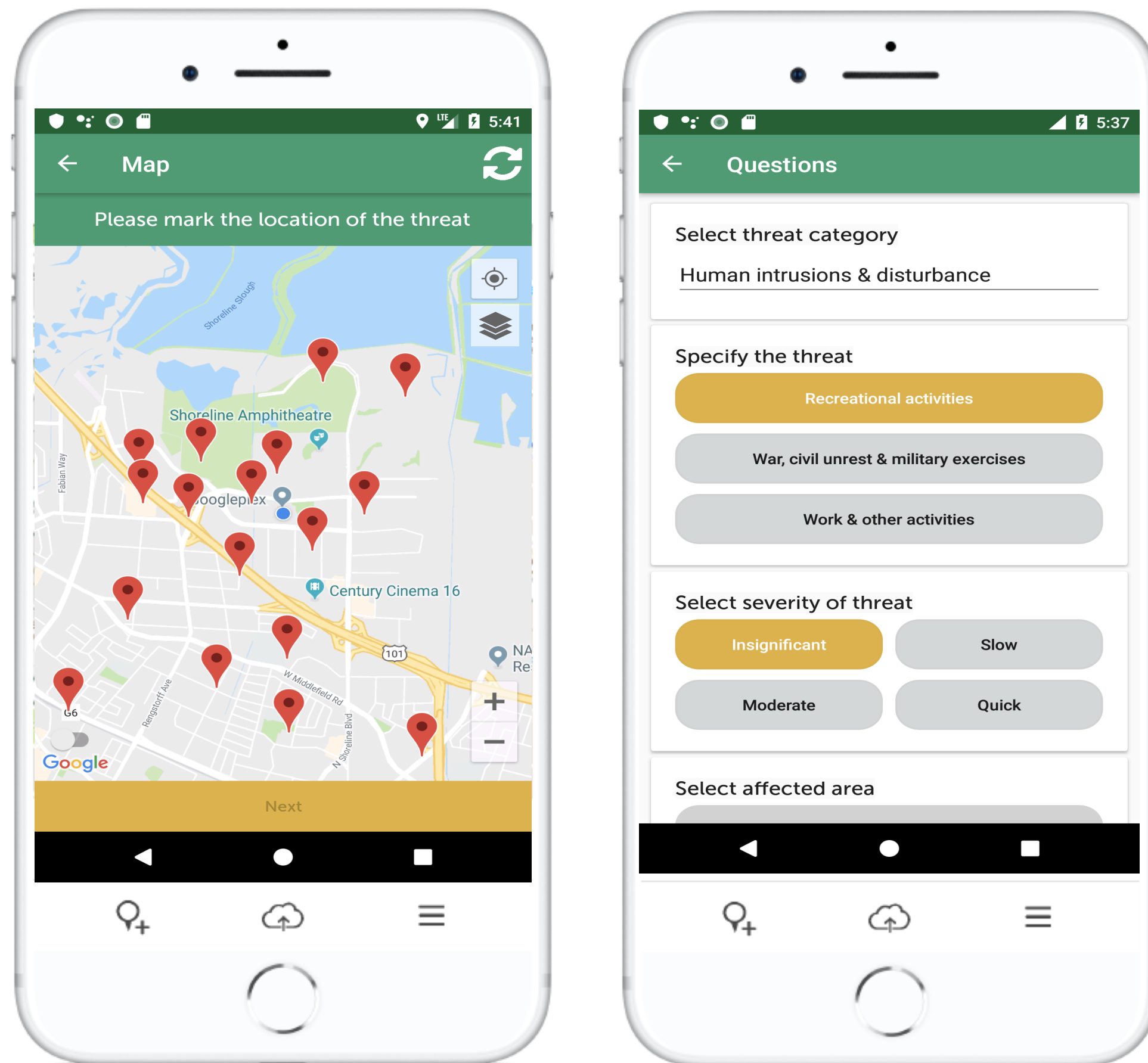University of Natural Resources and Life Sciences, Vienna

Participate as a citizen scientist
Ground-based observations

Natura Alert

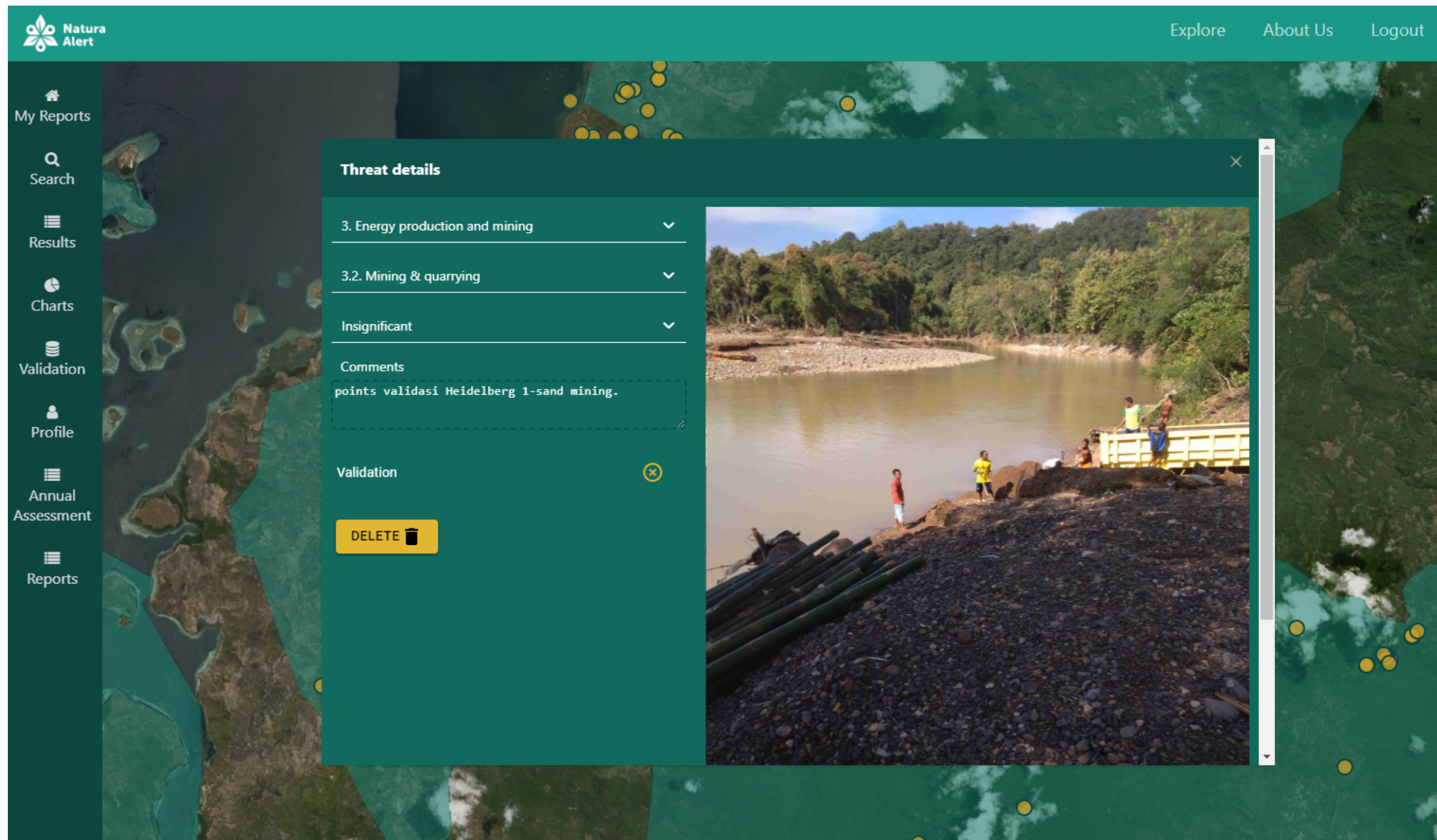Biodiversity threat monitoring in Spain & Indonesia

Participate as a citizen scientist
Ground-based observations

Natura Alert

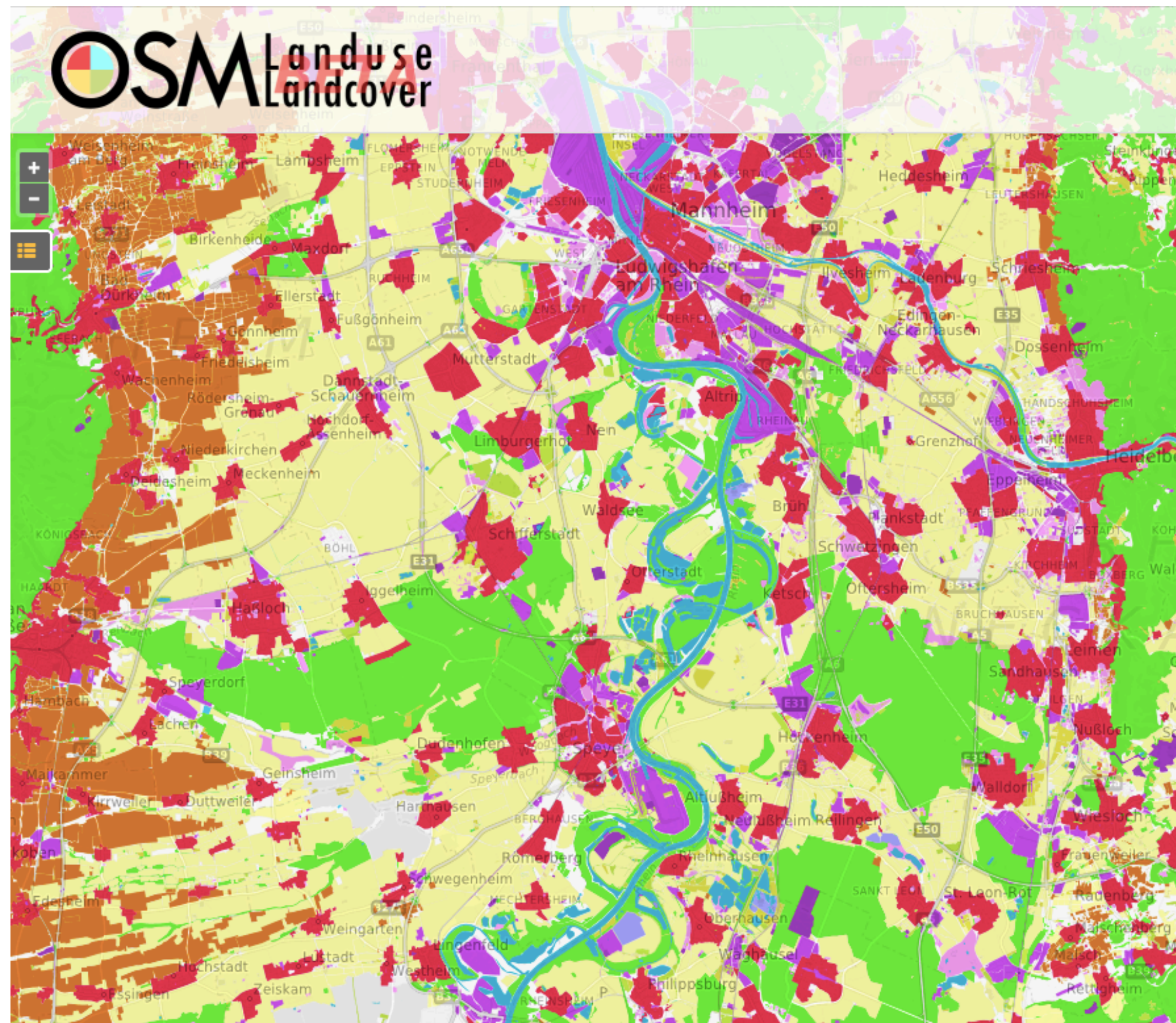Community-driven monitoring of land cover change

- Village Authorities: leader of 4 villages
- Government agencies at district level: Forest Management Unit, Environment Agency, Planning Agency, Nature Reserve Authority, Agriculture Agency

Participate as a citizen scientist
Online interactive mapping

Validation of OSM LandUse Map via a series of mapathons across Europe

Participate as a citizen scientist
Online interactive mapping

Picture Pile

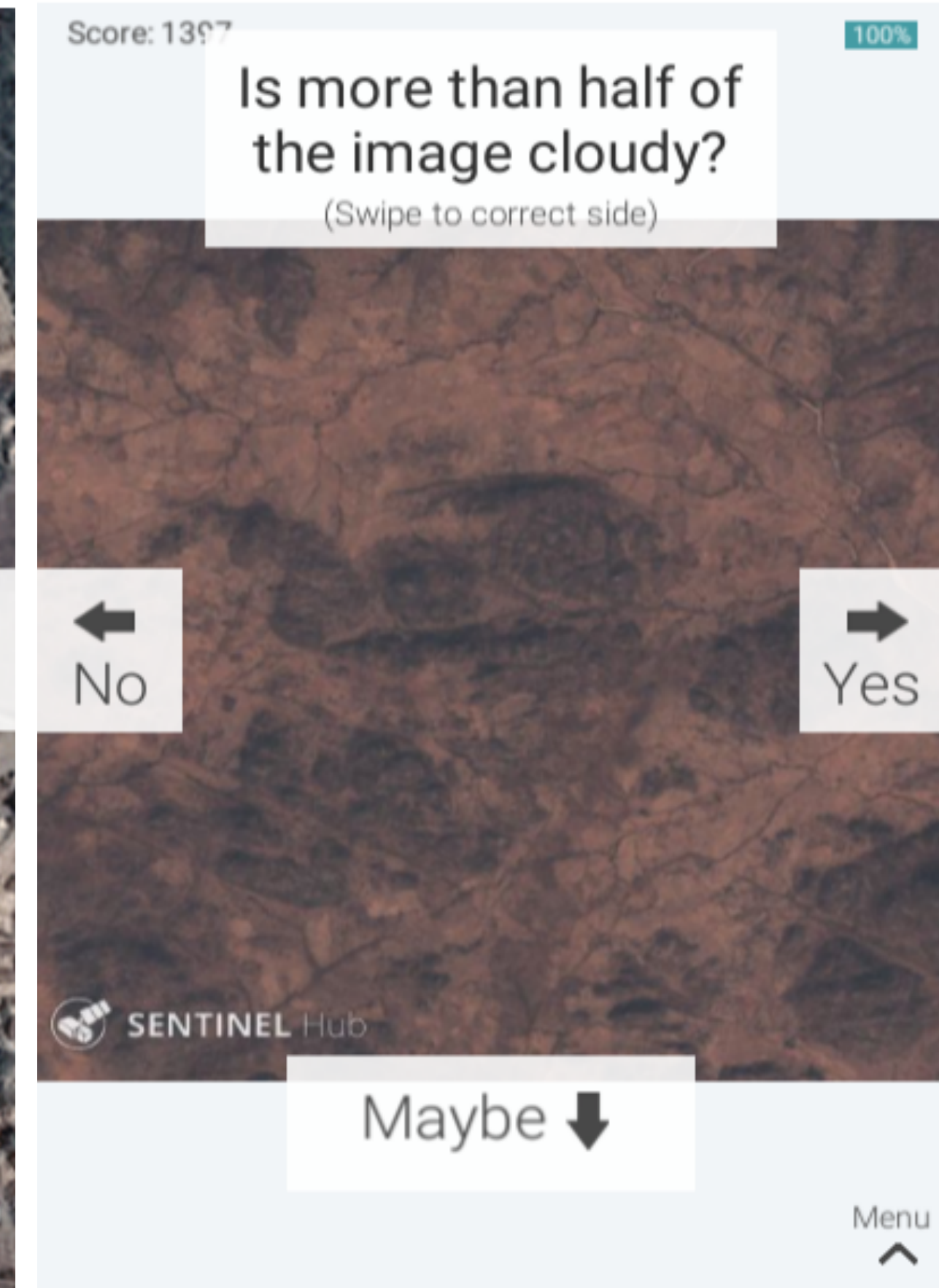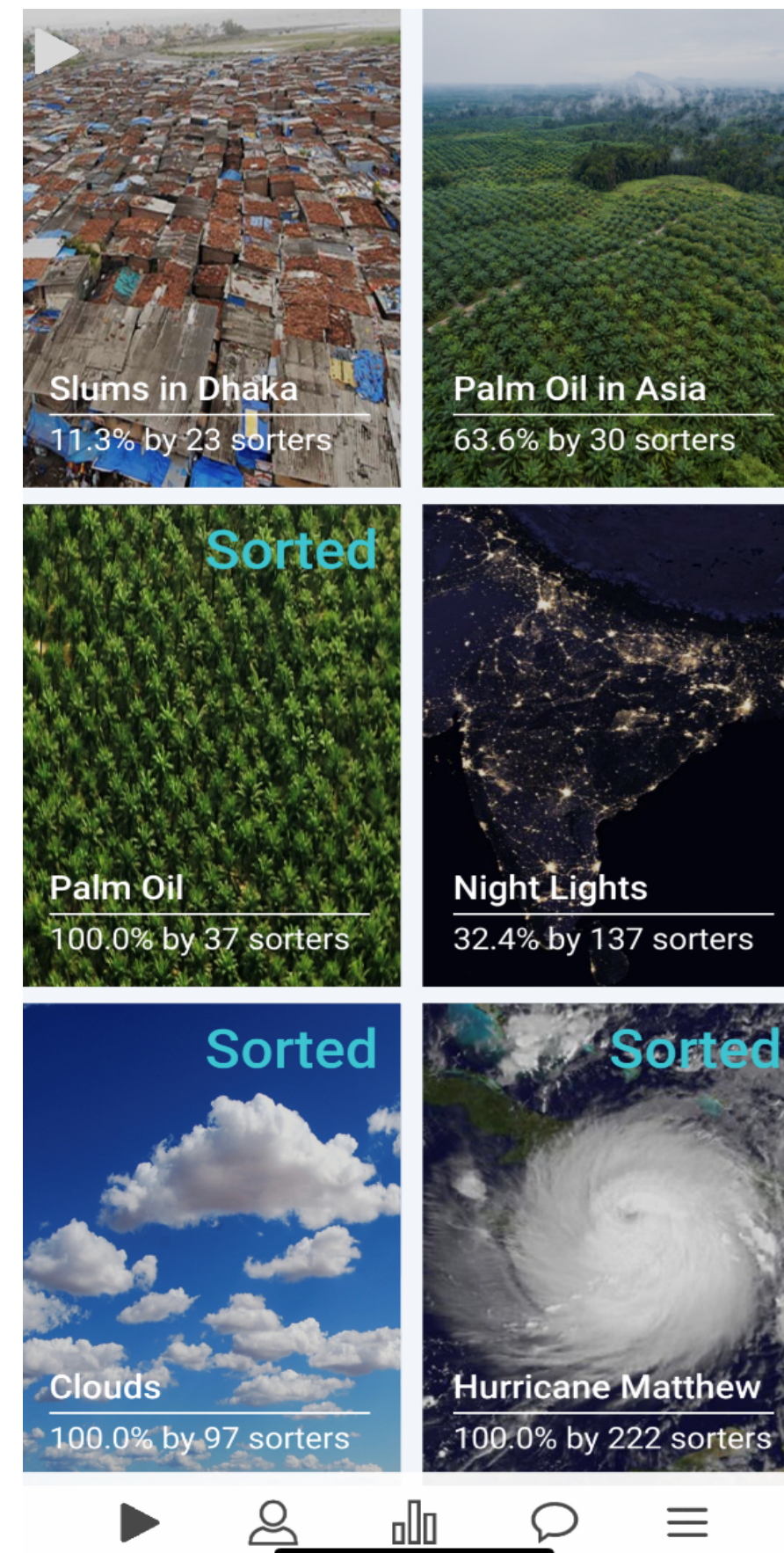Rapid image assessment tool based on visual interpretation

97 volunteers

27K

272K validations

Collaborate as a practitioner

Register your app and benefit from our tech

Change Detection

Integrate satellite-based change maps into your app for up-to-date environmental monitoring

Quality Assurance

Assess the quality of citizen contributions to create robust and reliable datasets

LandSense Campaigner

Launch your own citizen science campaign and mobilize the LandSense community

LandSense Federation
Single-Sign-On with LandSense partners, Google, Facebook, Academic Federations

2500+ Organizations Worldwide

eduGAIN

> Log on with existing credentials and contribute across various LandSense campaigns

> Launch your apps (i.e. target academia)

> Overcoming data and user silos

> Sustainability beyond project (i.e. LandSense does not manage user databases)
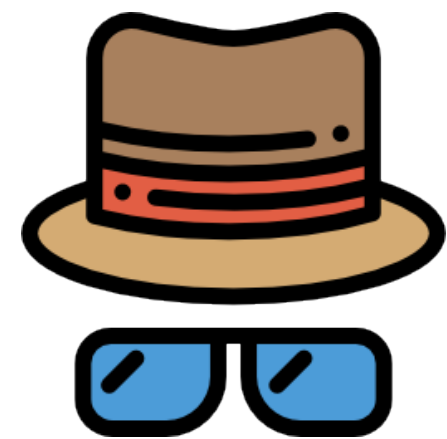
LandSense Authorization Server

GDPR compliant broker for authentication statements
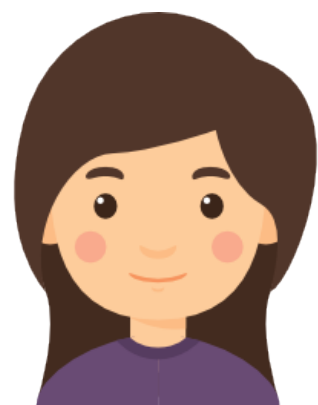
Authenticated Login
(No personal data)

▶ Promotes anonymous contribution

Cryptoname Login
(No personal data)

▶ Promotes anonymous contribution but allows aggregation

Login (includes personal data)
i.e username, email address

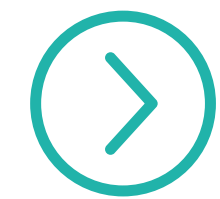▶ Promotes GDPR-compliant identified contribution

Key Achievements

> Deliver low-cost solutions and innovative in-situ monitoring strategies to key stakeholders

> Emphasize quality assurance of citizen observations (i.e. contributor agreement, GDPR compliant data)

> Establish a scalable federation for citizen science & crowdsourcing

> Foster partnerships to sustain LandSense solutions

Challenges

❯ Translating awareness into contributions for the case of mobile applications (i.e onboarding and sustaining participants)

❯ Generating buy-in from public authorities (i.e. overcoming lack of resources in city administration)

Challenges
Acceptability

⟩ Establishing quality assurance measures for citizen science data to increase trust & recognition (i.e. harmonize with traditional sources)

⟩ Addressing privacy & traceability issues of citizen-based contributions (i.e. federated system)

Challenges
Sustainability

⟩ Creating mechanisms/partnerships for continuing project outputs
(i.e. leverage NGOs with existing networks)

⟩ Delivering cost-effective solutions to data providers for SDG monitoring
(i.e. untapped data sources to support custodian agencies)

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