

Digitalisation for the Green Deal

Module 7

Digitalisation as an enabler for the green deal

Agenda

- 7.1 Mainstreaming digitalisation for the Green Deal in partner countries
- 7.2 Deep dive: information management
- 7.3 Environmental monitoring
- 7.4 Digital technologies to promote environmental diplomacy
- 7.5 Digital communities

Digitalisation for the Green Deal

Module 7.1:

Mainstreaming digitalisation for the Green Deal in partner countries

Discussion



15 min

Mainstreaming digitalisation for the Green Deal in partner countries

What are the key **priorities** to capitalize the potential of digitalisation to support the Green Deal in the partner countries?

What could be the best **entry points**?
What the **barriers**?

Digitalisation for the Green Deal

Module 7.2:

Deep Dive: Information Management

Agenda

Module 7.2: **Deep Dive: Information Management**

- Structuring adequate information management for resilience building
- Live Q&A

Case Study from Afghanistan

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Digitalisation for the Green Deal

Module 7.3: Environmental Monitoring

Agenda

Module 7.3: Environmental Monitoring

- Digitalisation and Environmental Monitoring
- Different strategies and technologies

Environmental monitoring

- Digital technologies are a critical enabler for attaining the sustainability goals of the Green deal in many different sectors.

Digitalisation presents new opportunities for:

- Distance monitoring of **air and water pollution**
- Monitoring and optimising **how energy and natural resources are used**

Different strategies to support environmental monitoring

- Different technologies
 - **In-situ sensors**
 - **Remote sensing (e.g. satellite-based indexes)**
 - **Big Data techniques (byproduct of data as a proxy)**
- Opportunities to engage citizens for active citizen science supporting Green Deal goals

Air pollution monitoring

- Launched in 2017 in response to a lack of data on air quality in African cities, **sensors.AFRICA** uses locally assembled sensors to measure and record air pollutants.
- Data are provided to journalists who can back up their coverage of related health and environmental concerns.
- Data has been used by local news outlets to report on pollution levels, and community activists have used it to advocate for cleaner air.

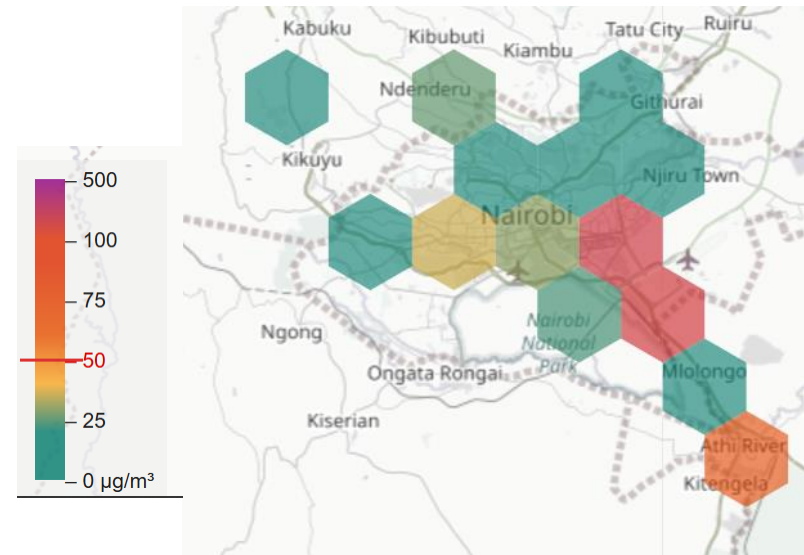
Air pollution monitoring

- **sensors.AFRICA** is a project of **Code for Africa & International Center for Journalists (ICFJ)**.
- Code for Africa's team of technologists have assembled and deployed the sensors in various locations, Nairobi, Kisumu, Lagos, Kampala, Dar es Salaam, Durban and Johannesburg.



Air pollution monitoring

- Sensors showed that pollution levels in the neighborhood were consistently higher than daily average levels recommended by the WHO
- Residents partnered with a popular local blogger to launch an intensive campaign on social media #StopEndmorPollution



Project's Air Quality Map

Using Big Data as a proxy

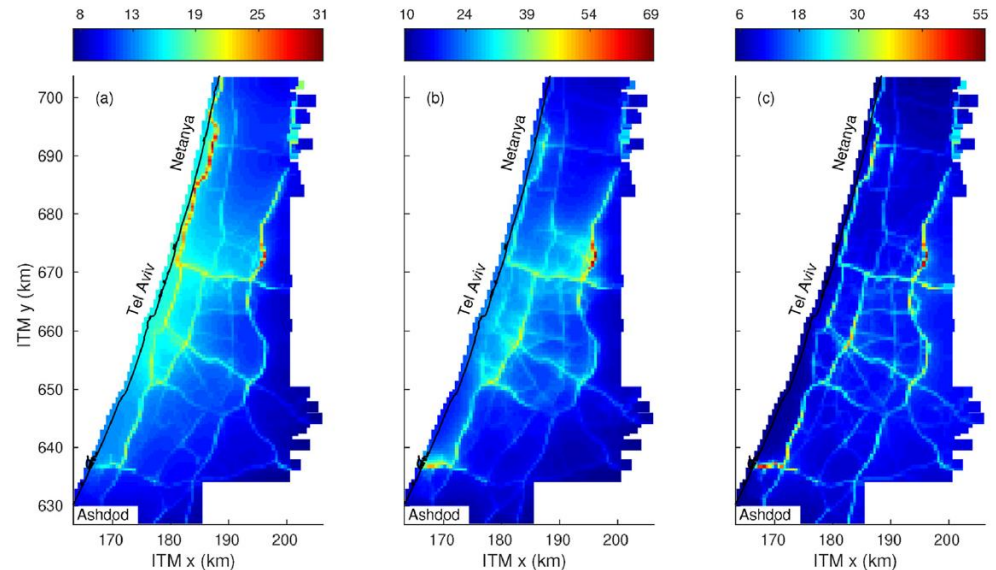
- In São Paulo, Brazil, **air pollution** levels can be predicted with 24 to 48 hours in advance
- What do you think the data source may be?

Using Big Data as a proxy

- In São Paulo, Brazil, **air pollution** levels can be predicted with 24 to 48 hours in advance
- Telefónica provides anonymised mobile data, algorithms and tools
- Data: weather, traffic and pollution sensors, to monitor and predict pollution levels over the entire city.
- Municipalities of São Paulo integrate them into their traffic and pollution management processes
 - **Taking preventative steps if nitrogen dioxide (NO₂) emissions could endanger human health**

Using Big Data as a proxy

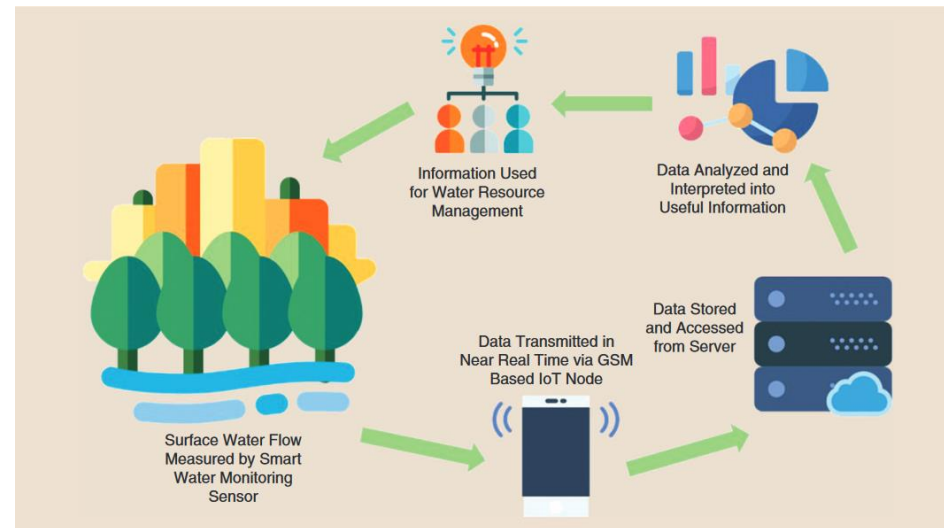
- Aggregated GPS tracking of vehicles can be used as a proxy of traffic-related air pollution emissions
- Maps of NO₂ concentrations (ppb) for routine workdays



Chen et al. (2016)

Water pollution monitoring

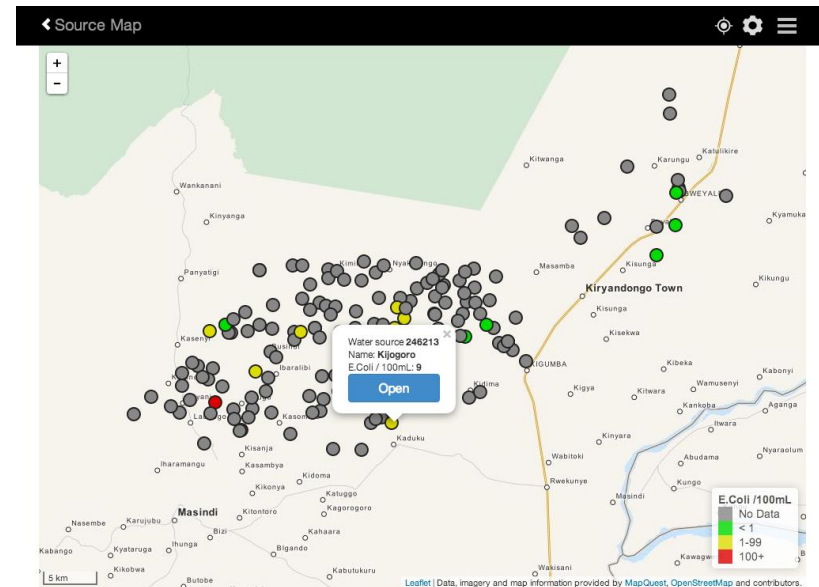
- High-resolution, smart water-monitoring equipment needed to measure the flow and quality of natural water sources is often expensive and prone to vandalism and theft
- Researchers from the University of Cape Town, South Africa, developed a **smart low-cost remote-monitoring flow sensor** to measure the flow of surface water.



System used to monitor the Stiebeuel River catchment

Water pollution monitoring

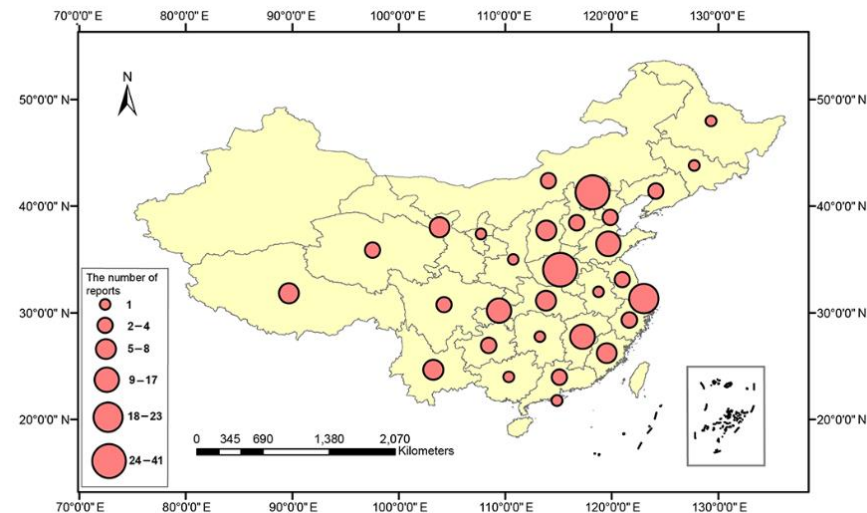
- Applications like **mWater** allow integrating different datasets to validate data collection performed by different actors and multiply the benefits of local data collection campaigns



mWater
www.mWater.Co
Twitter: @mWaterCo
Facebook: mWaterCo

Using Big Data as a proxy

- In China, the Tsinghua Environment Monitoring Platform (based on WeChat) allow citizens to describe and take photos of river and lake waters, reporting possible surface water pollution
- Research indicates that citizens-generated water quality data are relatively credible if the volunteers are trained in water quality monitoring



TEMP: Reports across China
Source: Zheng et al., 2017

Environmental Monitoring

Quick fire round

- Do you know any initiatives in the countries where you work?



3 min

Digitalisation for the Green Deal

Module 7.4: Environmental Diplomacy

Agenda

Module 7.4: Environmental Diplomacy

- Digitalisation as a great excuse to promote environmental diplomacy
- Case studies

Environmental Diplomacy

Environment as a driver of conflict

- Cross-border water & grazing rights: Senegal vs Mauritania, Central African Republic vs Chad, Ethiopia vs Kenya vs Uganda
- Land distribution & soil erosion: Chiapas, Mexico
- Access to water (Near East)

Environment as a source of cooperation

- 1950-2000: 1228 cooperative events vs 507 conflict episodes in water management.
- Technical cooperation on water: EXACT-ME (Jordan, Israel, Palestine)
- "Peace Parks"
 - **KAZA, Great Limpopo TF Park, Ai-Ais/Richtersveld TF Park**
 - **Siachen Glacier, northern Kashmir**

How can Digitalisation help?

1. *Monitor the state of natural resources (e.g. water), including quality and use, for conflict prevention*
 - **Shared water data banks for climate adaptation**
2. *Collaboration and networking for conflict resolution*
 - **Conflict prevention over the use of Syr Darya & Amu Darya rivers among Upstream vs Downstream countries**

How can Digitalisation help?

3. *Support to policy making* towards a sustainable use of natural resources & post-conflict recovery
- **USAID-sponsored DSS to manage water quality degradation in Upper Litani River, Lebanon**
 - **Remote Sensing, DSS & GeoDB to plan equitable management of Bung Boraphet water basin, Thailand**
 - **Participatory GIS to design water service provision in peri-urban areas of post-conflict Angola**

Case study #1

EXACT-ME

- Low collaboration among Water Authorities of Israel, Palestine, and Jordan
- Pitch: climate change requires data to allow precise downscaling, hence cooperation is of mutual interest; digital technology is an enabler of better data
- Bilateral and Joint meetings identified pain points for each Water Authority, opportunities they were interested in
- Project proposal was agreed and signed by all parties

Feasibility study



Information and Communication
Technologies to Support Climate Change
Adaptation in the Water Sector in
Countries Member Of EXACT

Workgroup:

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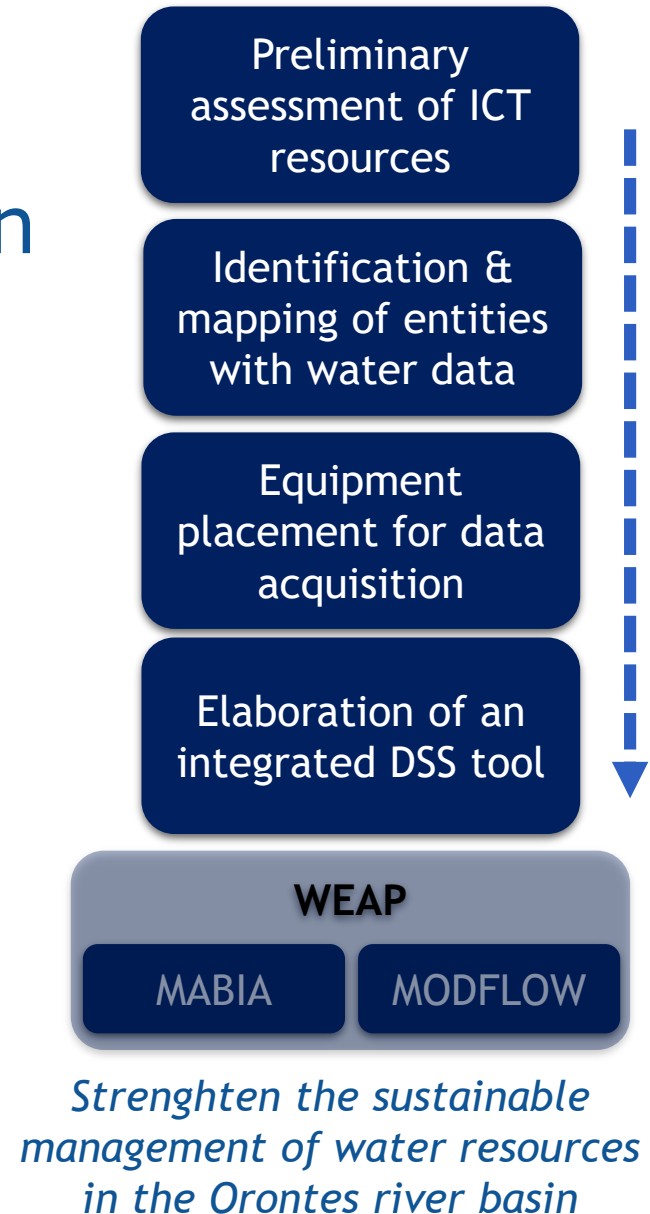
dr Simone Sala simone.sala@unimi.it

Case study #2

Al Assi river basin, Lebanon

- Climate Change makes traditional schemes to allocate access to water obsolete (both at domestic and international level)
 - **Need to re-assess resources available**
 - **Make agreements climate-proof**

→ *Digital tools are essential*



Case study #2

Al Assi river basin, Lebanon

▼ Places

- My Places
 - Tour panoramico
 - Verifica che il livello Edifici 3D sia selezionato
- Temporary Places
 - GDHER-MEW ICT Project2014.kmz
 - New technologies (ICT) for an integrated and sustainable management of natural resources in Lebanon' Project**

The project was funded by the Directorate General of Cooperation for Development (DGCD)

 - 1. CADASTRAL**
 - 2. TOPONAMES**
 - 3. MORPHOLOGY**

The morphological analysis was performed on ASTER GDEM V2 data through the use of LANDSERF software
 - 4. HYDROGRAPHY**

The hydrological analysis was performed on ASTER GDEM V2 data through the use of GRASS GIS software
 - 5. METEO DATA**

Agro-meteorological data was collected thanks to three meteo stations installed and maintained by GDHER-MEW ICT Project since December 2009 and January 2010.

 - 5.1 Average Rainfall
 - 5.2 ICT Project Stations
 - 5.2.1 Location
 - 5.2.2 Rain / Temp graph
 - Younine
 - Jabbouleh
 - Fekha
 - 6. GEOLOGY - HYDROGEOLOGY**

The section presents simplified geological and hydrogeological maps of the northern Bekaa, showing the main stratigraphic units and faults, and the location of the well stratigraphic logs collected in the study. The maps also show qualitative transmissivity ranges, main
 - 7. FLOW MODEL**

The section presents the mathematical model grid of groundwater flow in the Bekaa valley, built with the MODFLOW-2000 finite difference code (U.S.G.S., 2000). Simulated groundwater head contours for model layer 1 (neogenic aquifer) and 5 (cenomanian aquifer)

 - 7.1 Model Grid

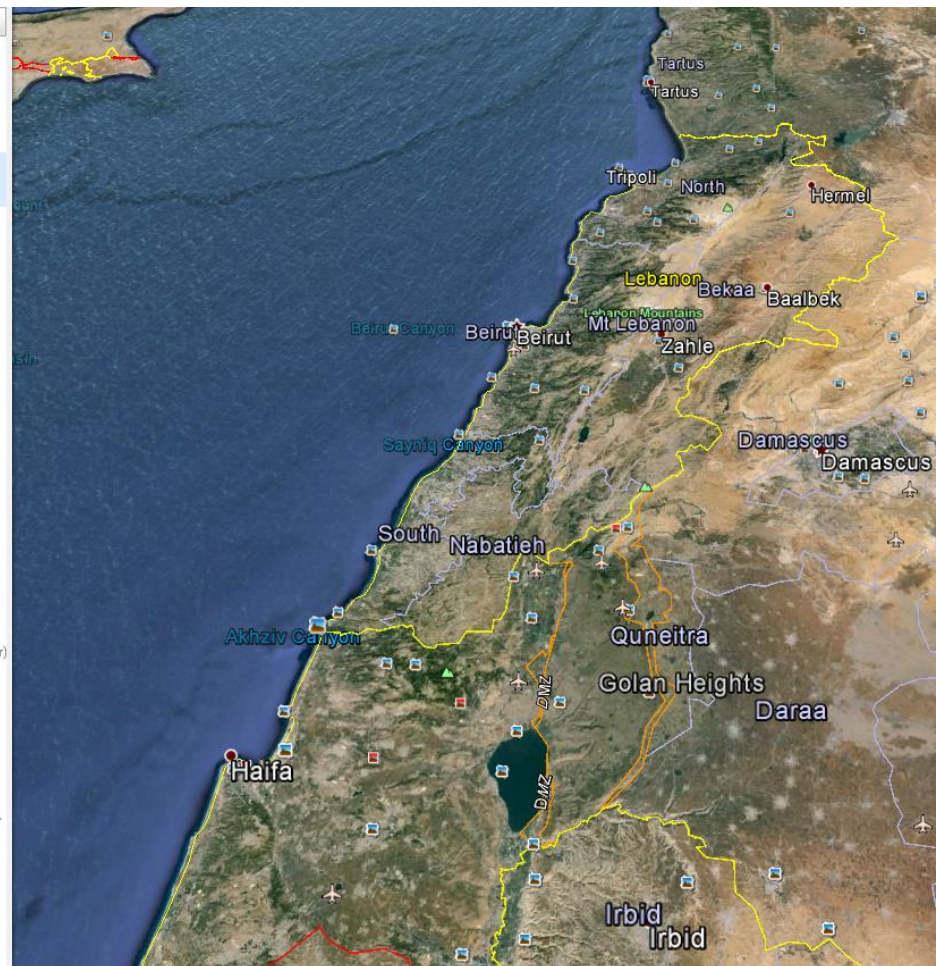
The mathematical model of groundwater flow in the Bekaa valley was built with the MODFLOW-2000 finite difference code (U.S.G.S., 2000)
 - 7.2 Grounwater Head Contour Maps

Simulated groundwater head contours for model layer 1 (neogenic aquifer) and 5 (cenomanian aquifer).
 - 8. WEAP**

Land use dynamics and irrigated areas in the Orontes river basin area shown. Based on such data, a series of simulation were developed via WEAP software to assess water allocation and planning in the river basin.

 - 8.1 Land use
 - 8.2 Irrigated areas
 - 9. VERSION OF THE ICT PLATFORM**

Version 1.0 (May 20, 2014)



Digitalisation & Environmental Diplomacy

Quick fire round

- How relevant this may be for your work?



3 min

Digitalisation for the Green Deal

Module 7.5: Digital Communities

Agenda

Module 7.5: Digital Communities

- Mobilizing communities for a Greener Planet
- Global initiatives

Mobilizing communities for a greener planet through digitalisation

Key functions

- Educate and influence people
- Increase citizens' awareness about environmental issues
- Enable citizens' sustainable consumption choices
 - **Sharing information about the products' environmental footprint**
- Engage citizens to become co-creators of knowledge and evidence that decision-makers, businesses, investors and other citizens can use.
- Put pressure on the market to demand green(er) solutions

Mobilizing communities for a greener planet through digitalisation

Caveat

- Citizens need to have **access** to digital tools
- Citizens need to have access to the needed **skills** to make use of digital tools

... Otherwise, they become invisible.

Mobilizing communities for a greener planet

Risks

- Not all digital tools are in line with the EU's approach to digitalisation.
- China's social credit-score is an example of how people could be monitored, rewarded and punished based on their behaviour



Co-creation Climate Action Challenge (UN)

BBVA

DATA & ANALYTICS



Crimson Hexagon

EARTH
NETWORKS

nielsen
.....



orange™

planet.

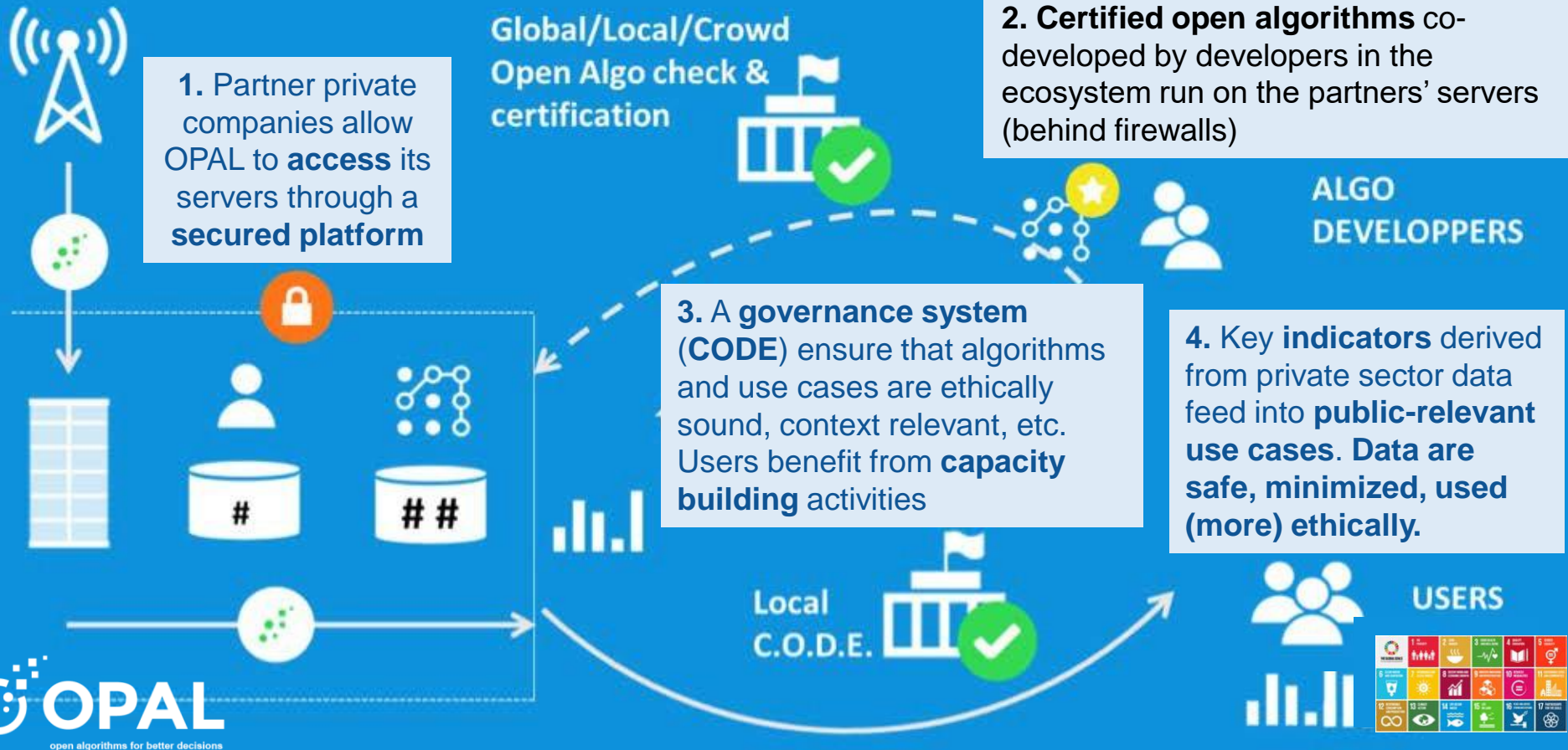
plume LABS

Schneider
Electric

waze

Link: <https://www.unglobalpulse.org/challenges-hackathons/data-for-climate-action/>

Co-creation – the OPAL project



Enable sustainable choices

My Little Plastic Footprint



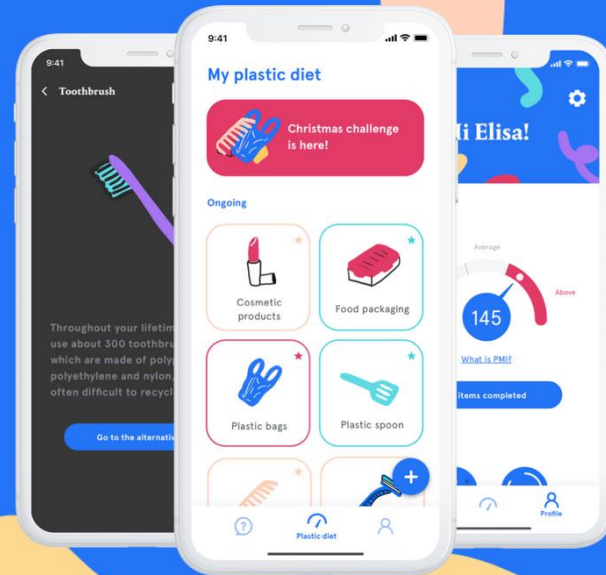
DOWNLOAD ▾ FEATURES CONTACT LANGUAGE ▾

Start reducing your plastic footprint

My Little Plastic Footprint is an app that helps you reduce your plastic consumption by going on a plastic diet. Reduce your plastic usage and choose sustainable alternatives. Download it today!

APP STORE

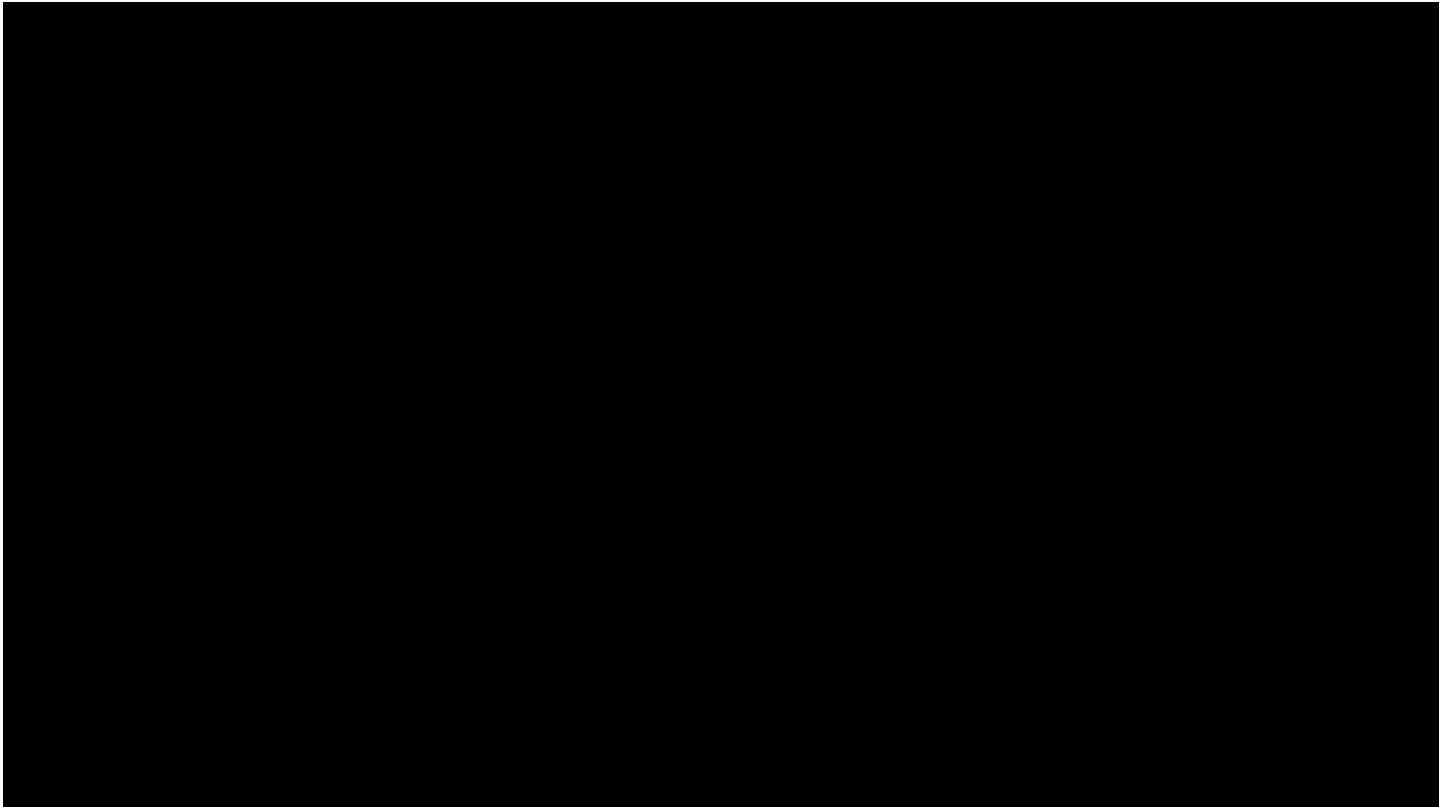
PLAY STORE



Link: <https://mylittleplasticfootprint.org/>

Mobilizing a global community

Global Forest Watch



Link: <http://www.globalforestwatch.org>

Awareness Raising

HabitatSeven



3 min

- Challenge: create a data delivery system and user interface for non-scientist decision makers for them to include climate risks into their planning and financial decisions.
- Explore the website: <https://climatedata.ca/>
- Ask yourself: what is the meaningful story to make climate data relevant in the country where I work?