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PASSION FOR INNOVATION

Applied Data Science Project

Politecnico di Torino

L13 - SDGs and data science project examples

ellis
European Laboratory for Learning and Intelligent Systems

Impact and Values

Develop a project that generates value to people, planet while being profitable

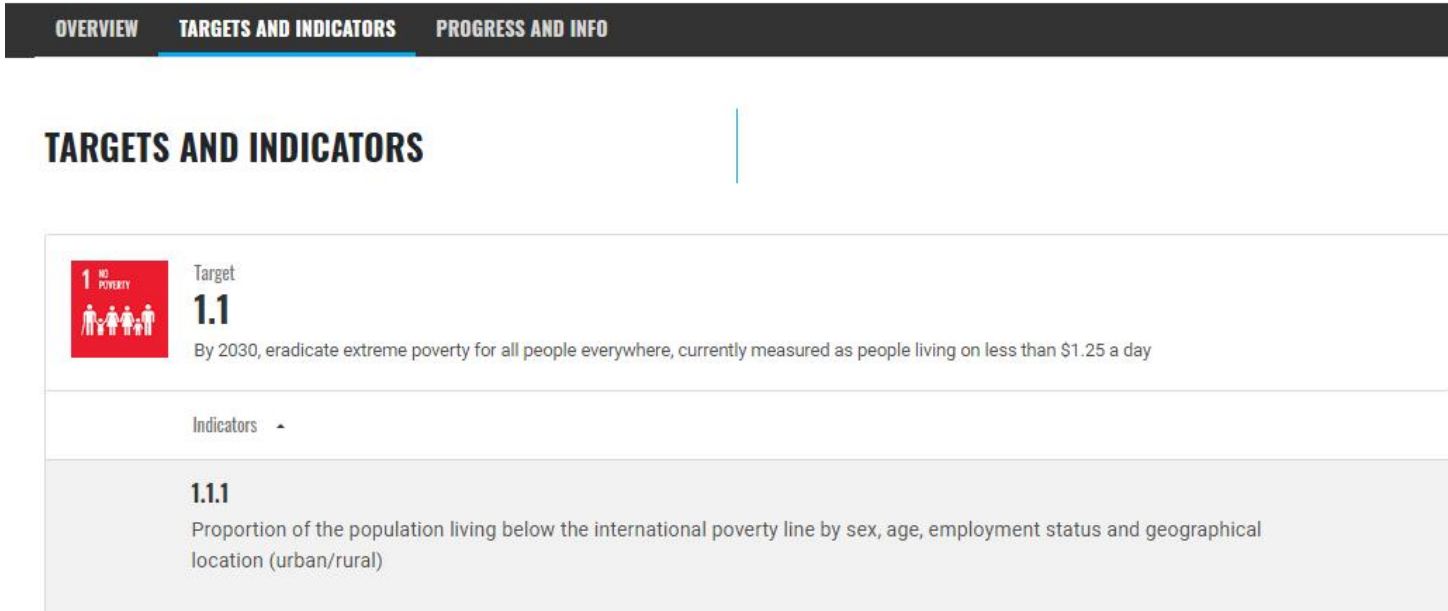
United Nations Sustainable Development Goals

Targets and indicators

Each goal is featured by a certain number of targets and indicators

In total, we have 169 targets

For instance, SDG 1 has 7 targets and 13 indicators



The paradigm of Goal – Target – Indicator

This is a paradigm that sets the ambition, the beneficiaries, and the quantifiable indicators to understand whether a project is applicable, and can generate a value for the beneficiaries

Applied Data Science Project for SDG

Awareness – by analyzing existing patterns gathered from real world data and informing the relevant stakeholders

Support – by making tools to address (even partially) the challenges related to the goals

Scale – by utilizing the tools continuously, scaling in numbers of adoptions, creating standard of how to address a problem, and foster a general adoption

Some examples of projects

SDG 1: No Poverty

End poverty in all its forms everywhere

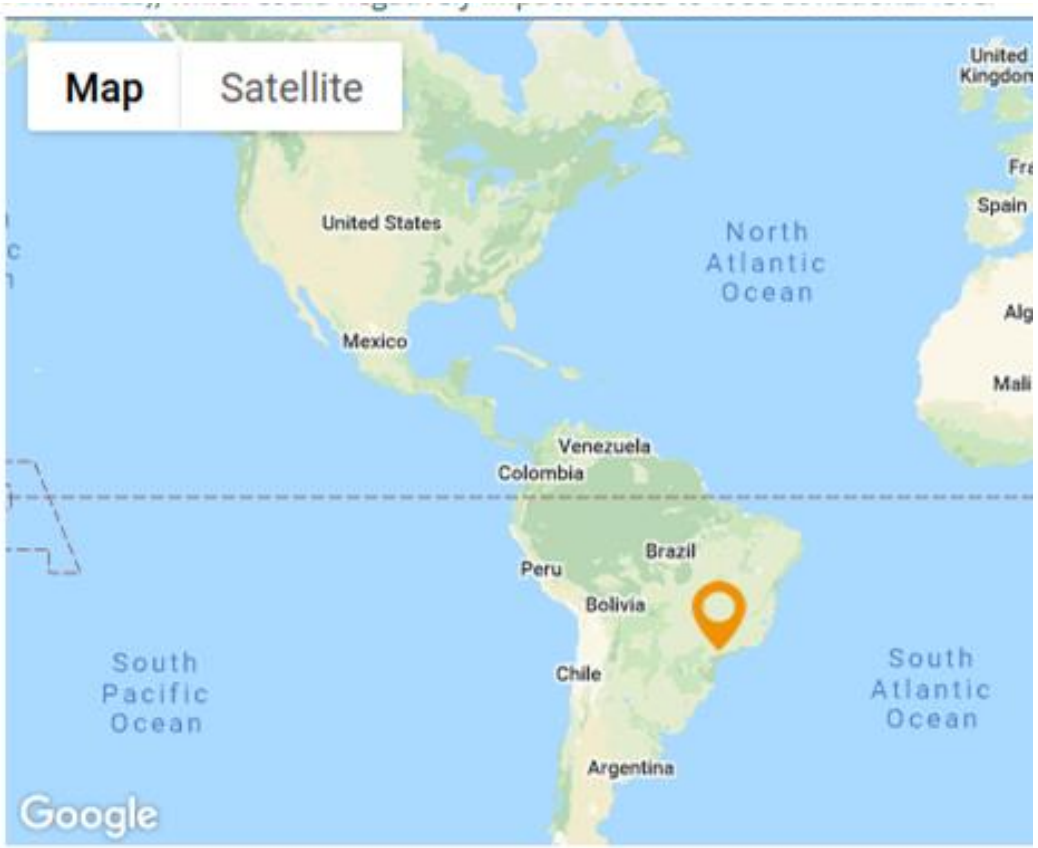
Spending patterns on cell phone services in urban/rural locations can provide proxy indicators of income levels

SDG 2: Zero Hunger

End hunger, achieve food security and improved nutrition and promote sustainable agriculture

DOMESTIC PRICE WARNINGS

Countries where prices of one or more basic food commodity are at abnormal high levels in main markets (identified by the Indicator of Price Anomalies), which could negatively impact access to food at national level



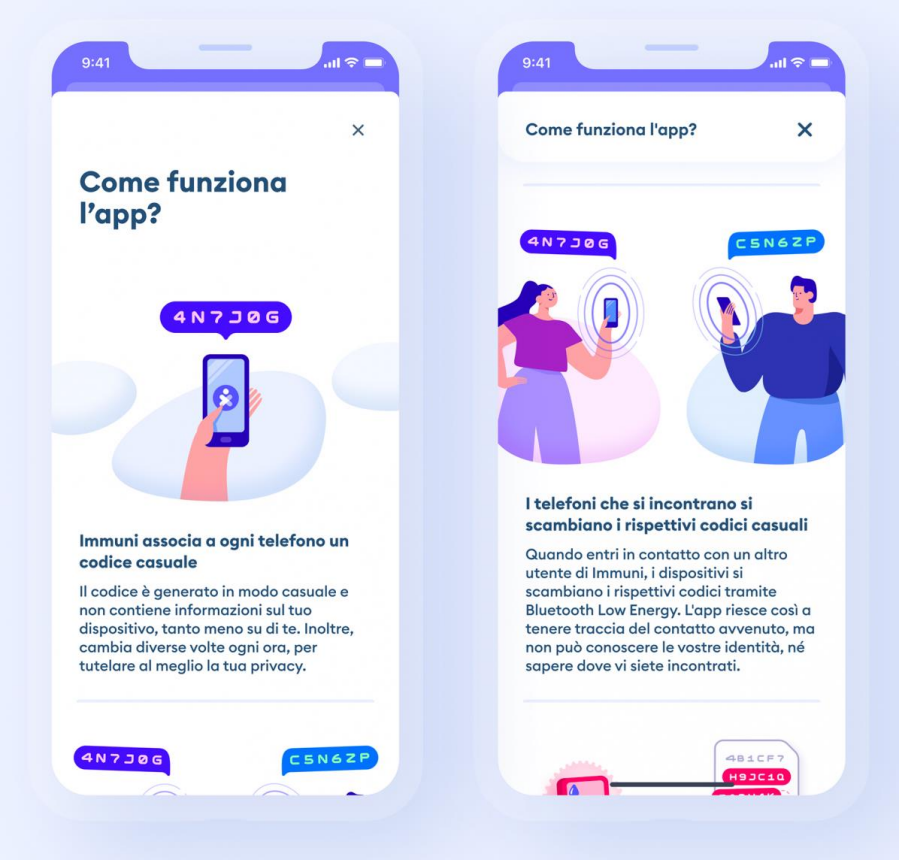
Price warning level: High Moderate [Based on GIEWS analysis]

Crowdsourcing or tracking of food prices listed online can help monitor food security in near real-time

Food and Agriculture Organization of the United Nations

SDG 3: Good Health and Well-Being

Ensure healthy lives and promote well-being for all at all ages



Mapping the movement of cell phone users can help predict the spread of infectious diseases

SDG 4: Quality Education

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Citizen reporting can reveal reasons for student drop-out rates

SDG 5: Gender Equality

Achieve gender equality and empower all women and girls

Analysis of financial transactions can reveal the spending patterns and different impacts of economic shocks on men and women

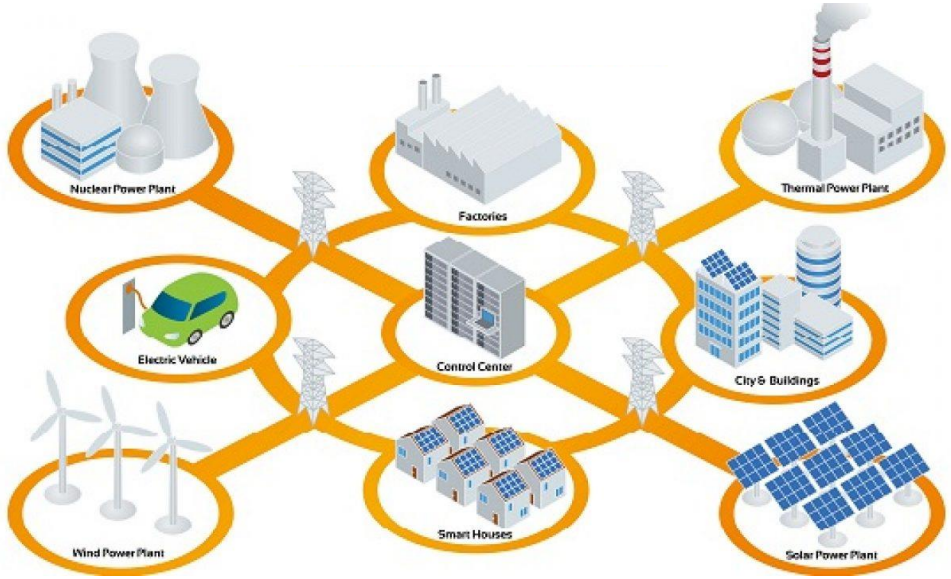
SDG 6: Clean Water and Sanitation

Ensure availability and sustainable management of water and sanitation for all

Sensors connected to water pumps can track access to clean water

SDG 7: Affordable and Clean Energy

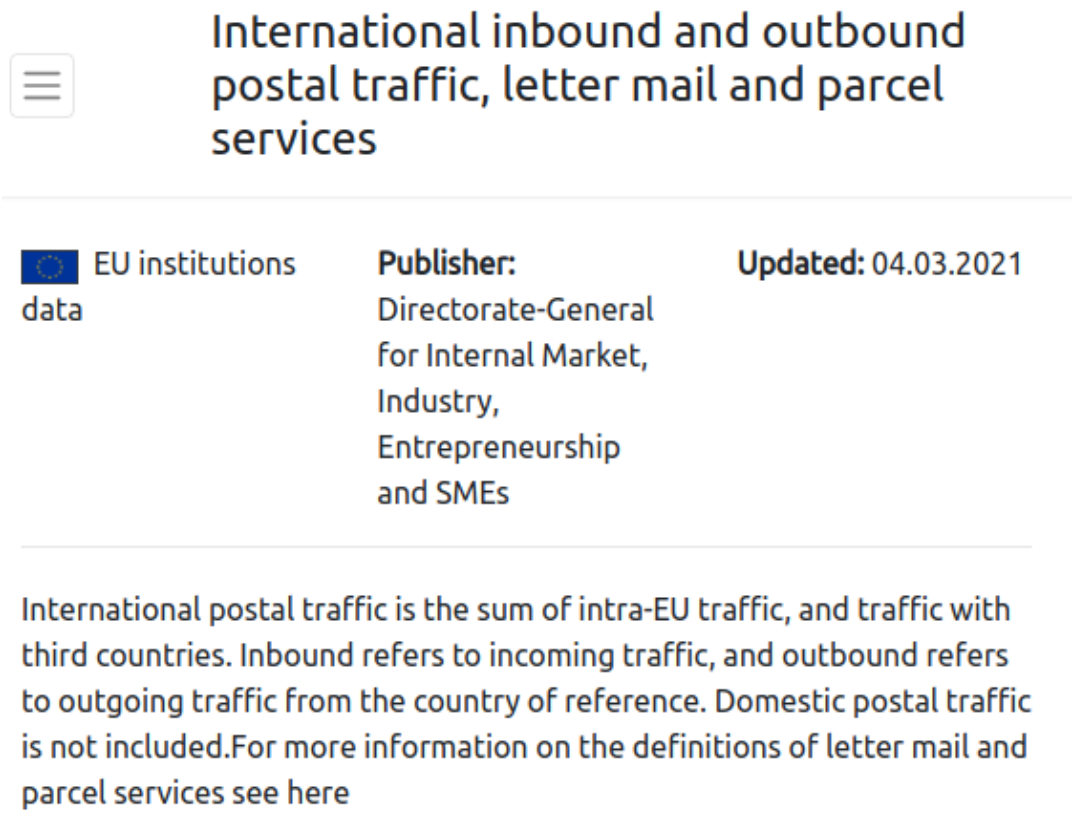
Ensure access to affordable, reliable, sustainable and modern energy for all



Smart metering allows utility companies to increase or restrict the flow of electricity, gas or water to reduce waste and ensure adequate supply at peak periods

SDG 8: Decent Work and Economic Growth

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all



International inbound and outbound postal traffic, letter mail and parcel services

EU institutions data

Publisher: Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs

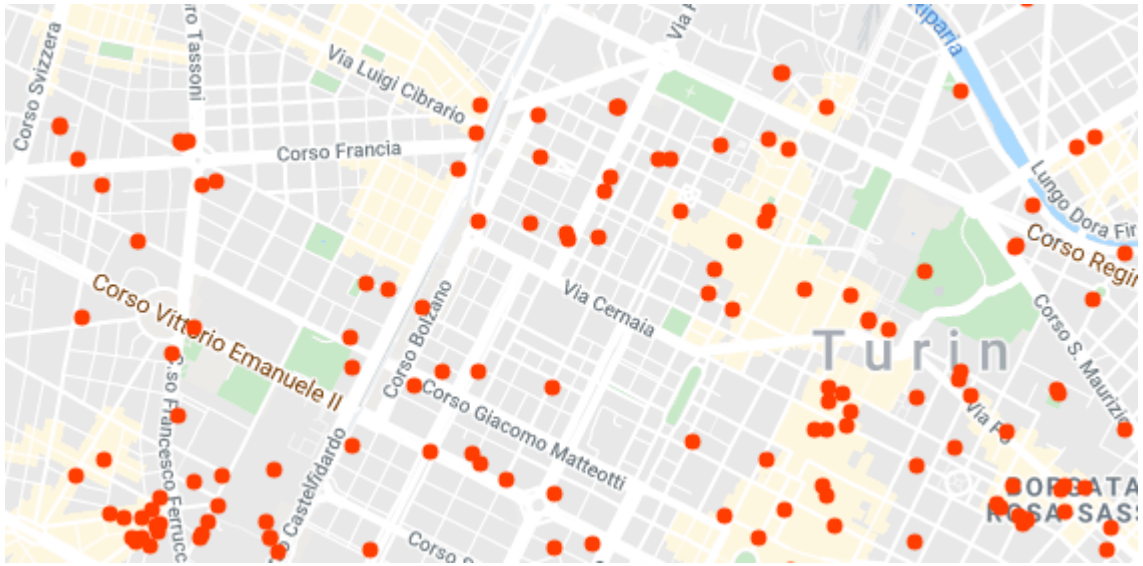
Updated: 04.03.2021

International postal traffic is the sum of intra-EU traffic, and traffic with third countries. Inbound refers to incoming traffic, and outbound refers to outgoing traffic from the country of reference. Domestic postal traffic is not included.For more information on the definitions of letter mail and parcel services see here

Patterns in global postal traffic can provide indicators such as economic growth, remittances, trade and GDP

SDG 9: Industry, Innovation and Infrastructure

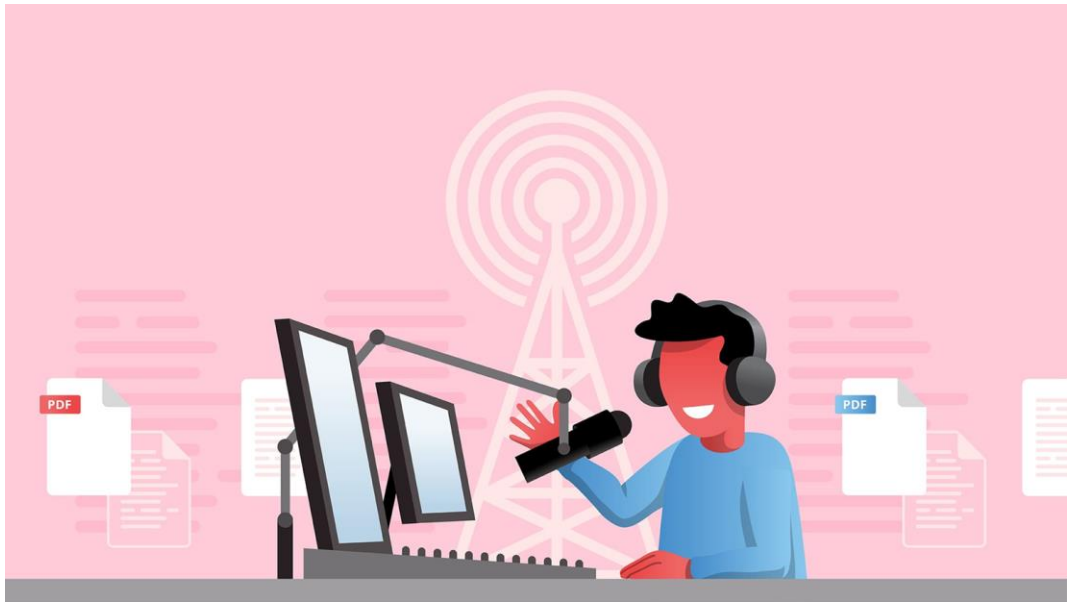
Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation



Data from GPS devices can be used for traffic control and to improve public transport

SDG 10: Reduced Inequality

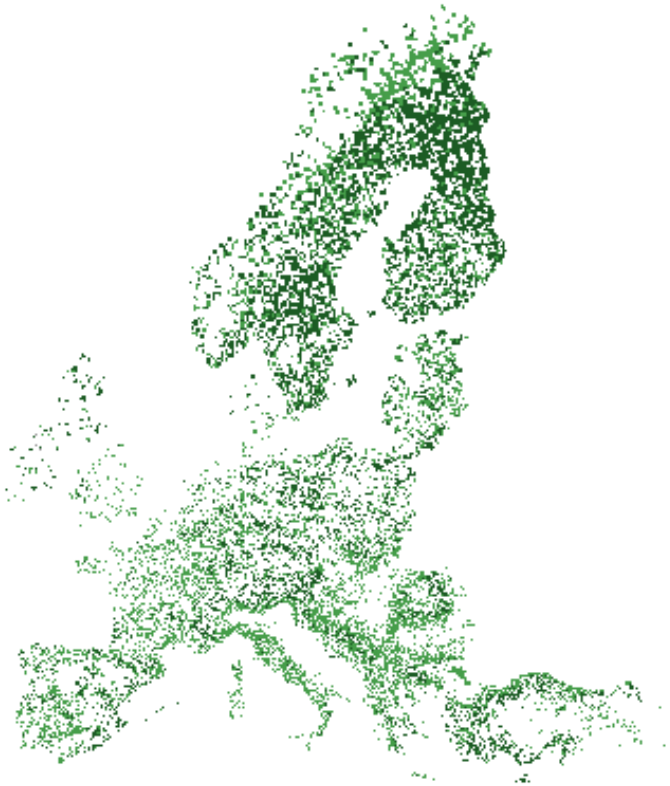
Reduce inequality within and among countries



Speech-to-text analytics on local radio content can reveal discrimination concerns and support policy response

SDG 11: Sustainable Cities and Communities

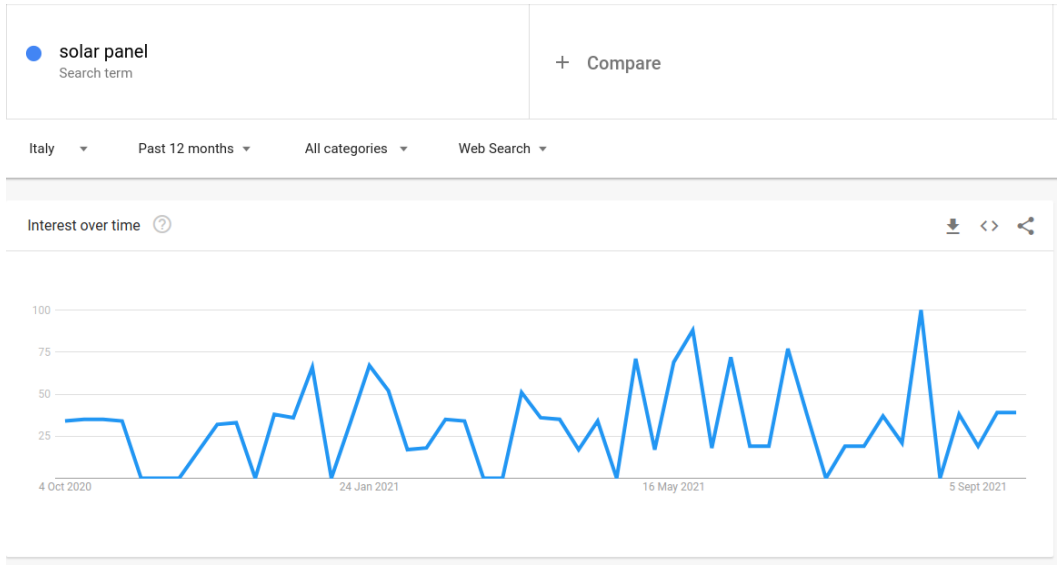
Make cities and human settlements inclusive, safe, resilient and sustainable



Satellite remote sensing can track encroachment on public land or spaces such as parks and forests

SDG 12: Responsible Consumption and Production

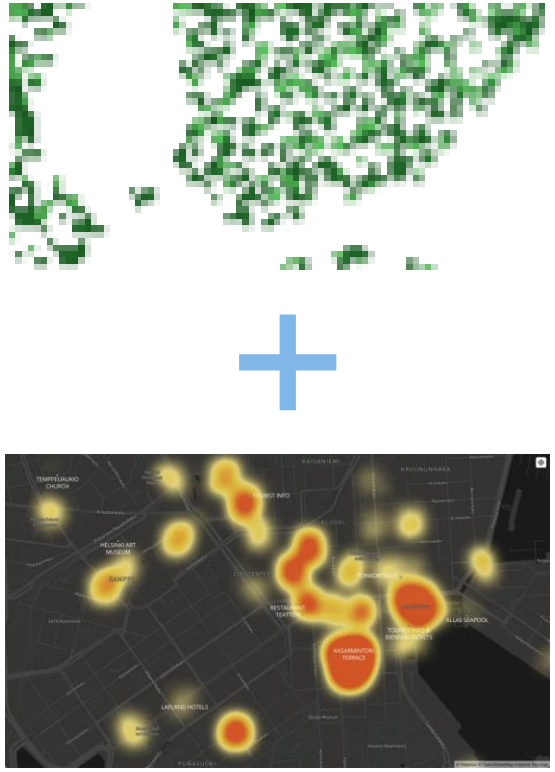
Ensure sustainable consumption and production patterns



Online search patterns or e-commerce transactions can reveal the pace of transition to energy efficient products

SDG 13: Climate Action

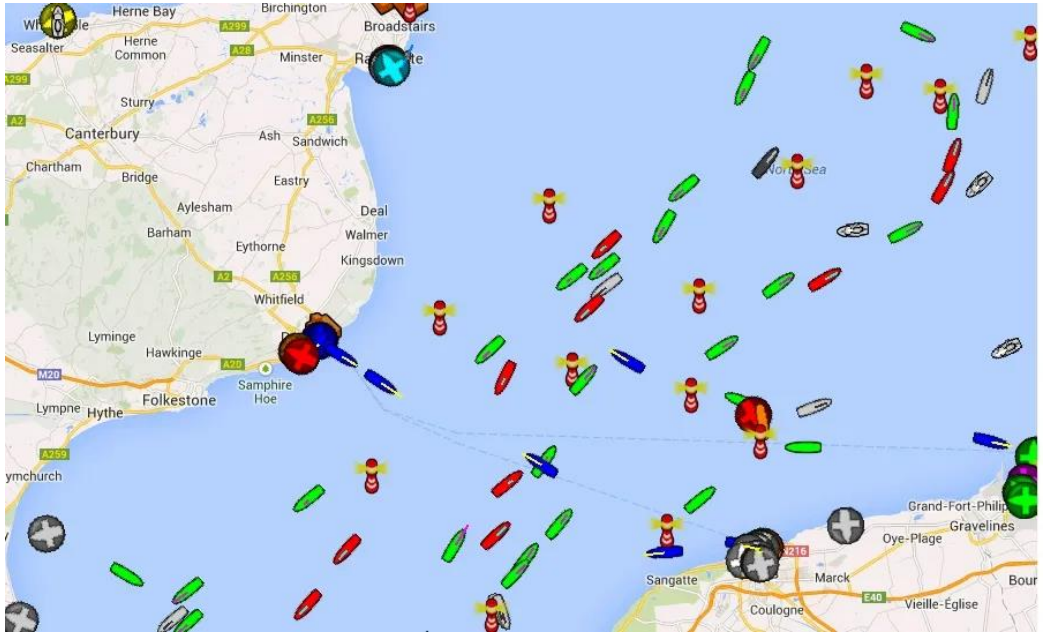
Take urgent action to combat climate change and its impacts



Combining satellite imagery, crowd-sourced witness accounts and open data can help track deforestation

SDG 14: Life Below Water

Conserve and sustainably use the oceans, seas and marine resources for sustainable development



Maritime vessel tracking data can reveal illegal, unregulated and unreported fishing activities

SDG 15: Life on Land

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Social media monitoring can support disaster management with real-time information on victim location, effects and strength of forest fires or haze

SDG 16: Peace, Justice and Strong Institutions

Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Sentiment analysis of social media can reveal public opinion on effective governance, public service delivery or human rights

SDG 17: Partnerships for the Goals

Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

Partnerships to enable the combining of statistics, mobile and internet data can provide a better and real-time understanding of today's hyper-connected world

Enablers for sustainability

The examples we listed in this presentation are taken mostly from https://www.un.org/en/global-issues/big-data-for-sustainable-development

Think of any further project that concerns an application of data science as falling into the scope one of these 17 goals

It is a valid exercise to understand the value of the project and its need (if it can be linked to one of those goals, then you have one greenlight)

Further references

Find out more about https://sdgs.un.org/

Be inspired by the targets that each goal brings, for instance https://sdgs.un.org/goals/goal1 and many others

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Thank you for your attention.

Questions?

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