IOTWeek

Dublin — June 20-23, 2022

Enabling new citizen netzero metrics leveraging edge IoT & Cloud technologies

Laurent SCHMITT

Digital4Grids, president

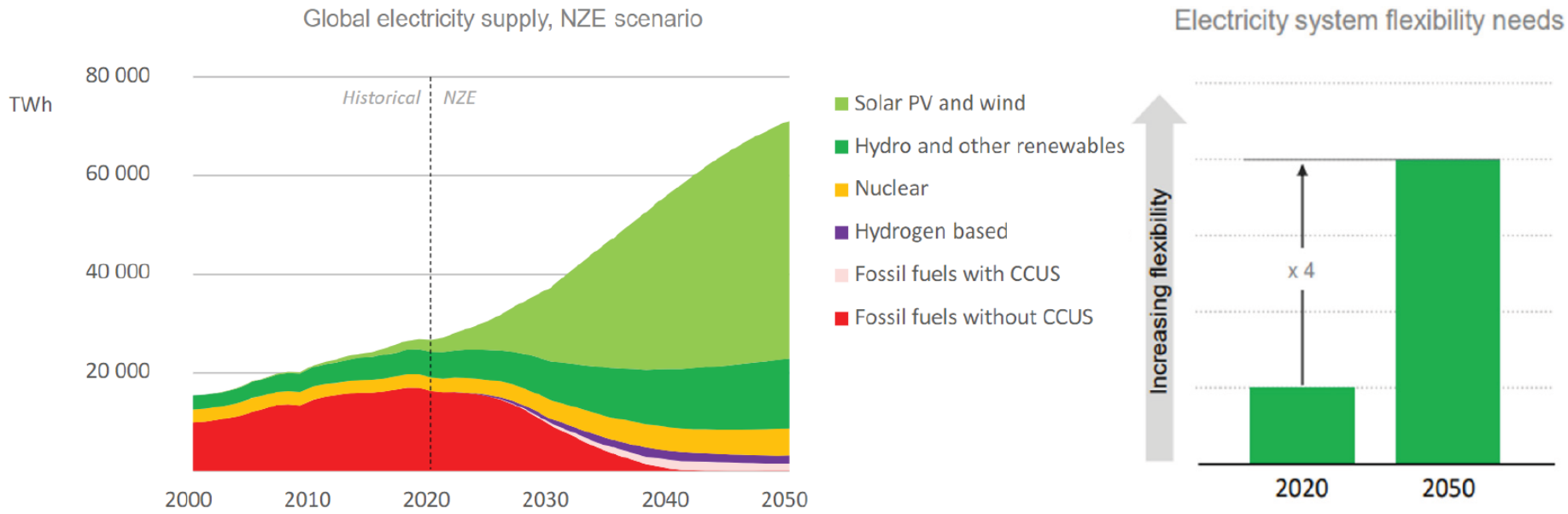
GLOBAL VISION:

IoT TODAY AND BEYOND

IOTForum

The Context of the European Energy transition

Figure 11: **Outlook for global electricity generation and associated flexibility needs towards a 2050 net zero trajectory**



Source: Net Zero by 2050: a Pathway for the Electricity Sector, IEA May 2021

1. Significant growth of wind & solar capacity (x4 installations required/year)
2. New revenues from grid flexibility (x4 system flexibility needs)
3. The Ukrainian war is another accelerator

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A new Prosumer centric Market design is required

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System Efficiency First!

To the grid

- Minimise network constraints
- Minimise renewable curtailment
- Minimise grid investments

Up to €5bn/year of avoided investments by 2030

- Maximise renewable energy usage
- Enable new flexibility revenue from smart assets
- Establish new carbon footprint metrics

Create value for prosumers

To the consumer

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New Cloud Grid datasets available to measure Carbon footprint 24-7

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PUBLIC DATA

Standardized data collected hourly from over 70 data providers

- Electricity Generation
- Electricity Prices
- Electricity Exchanges
- Weather

available as hourly CSV files, additionally as API with forecasts

FLOW-TRACED DATA

Data based on our proprietary flow-tracing models

- Origin of electricity (by zone)
- Origin of electricity (by plant type)
- Carbon intensity

available as hourly CSV files, additionally as API with forecasts

MARGINAL DATA

Data based on our proprietary machine-learning models

- Marginal origin of power (by zone)
- Marginal origin of power (by plant type)
- Marginal Carbon Intensity

available as hourly CSV files, additionally as API with forecasts

entsoe

Electricitymap published research on this topic can be found here: Tranberg et al. (2018) "Real-Time Carbon Accounting Method for the European Electricity Markets"
https://arxiv.org/abs/1812.06679

electricityMap
Real-Time Carbon Footprint of Electricity Methodology

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Opportunity to leverage Edge IoT measurements for Asset Carbon Metrics

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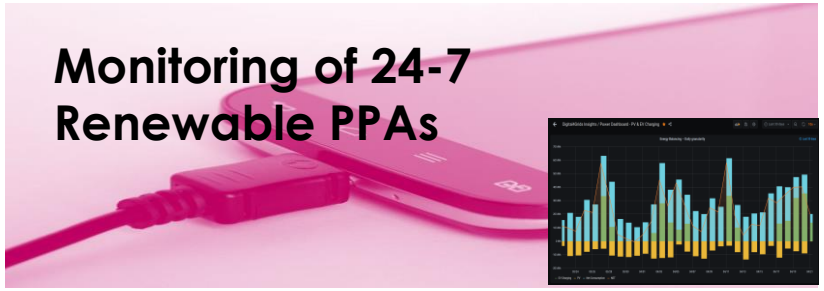

Hourly Renewable PPA Monitoring

Hourly Netzero position monitoring

24-7 streaming of grid carbon metrics

Real-time monitoring of site sub consumptions

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POC#1 : Tracing EV drive Carbon emissions

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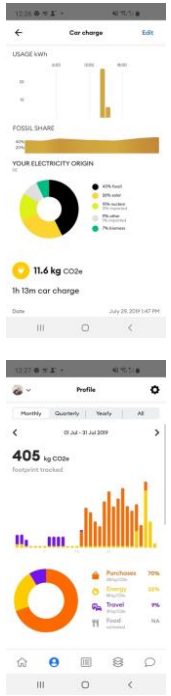
Tracking of CO2 emissions per km using real-time information on time and location of Charging

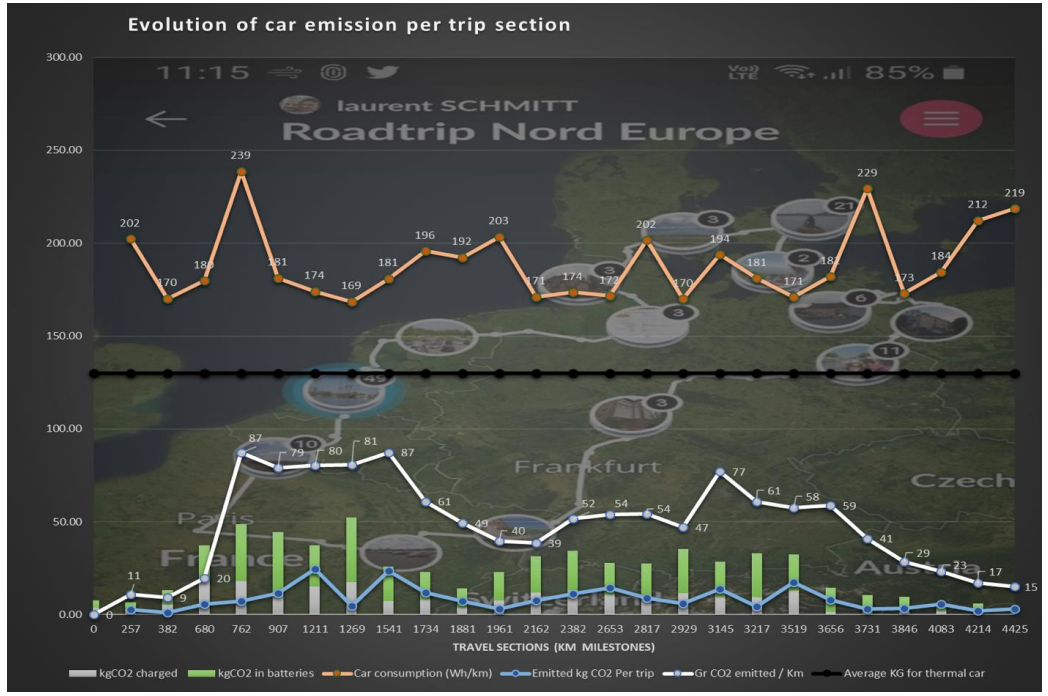
Typical example of an eV drive across Europe :

- 4 425 Km
- Average car consumption : 186 Wh/km
- 211Kg of CO2 emitted from wells to wheels

representing 260g/Kwh or 47,74g/km

(vs 140g/km for an average thermal engine)





electricityMap
Real-Time Carbon Footprint of Electricity Methodology

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POC#2 : Carbon Footprint analytics for Citizen Energy Communities

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Forecast & Simulation

Benchmarking & CO2 allocation

24-7 Carbon analytics

Cities, End Users, Utilities

User Access

Real-time Market APIs

New generation Event Streaming orchestration

Renewable PPAs

Grid Energy Supply

Energy Positive Buildings / Data Centers

Car Charging Infrastructures

Community Storage

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Advanced Drill-down analytics down to Community DERs

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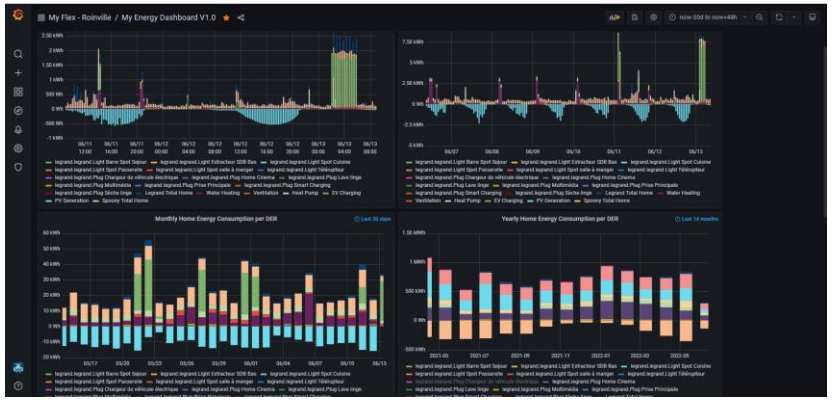
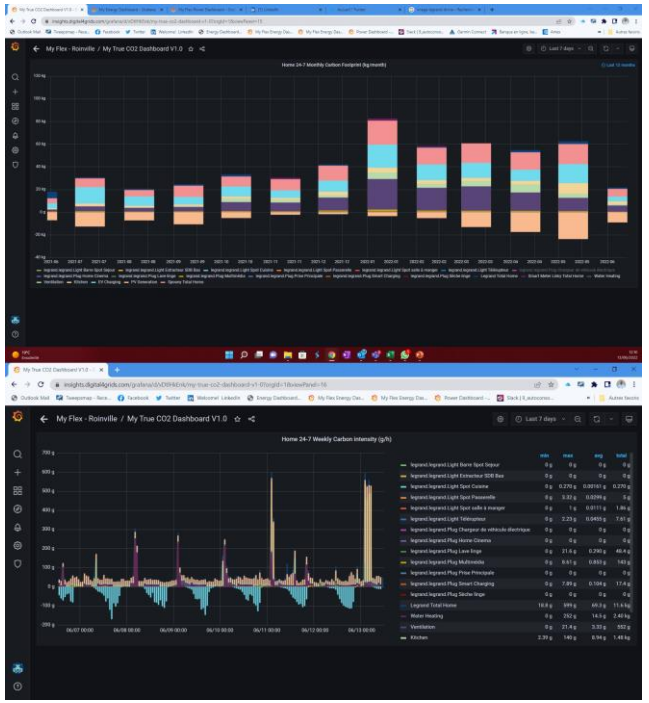
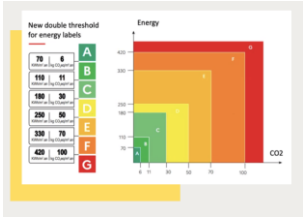
MyEnergy Insights



INTERFACE



MyCO2 Insights



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MyGridFlex Insights

Opportunity to cascade #Netzero metrics down to citizens

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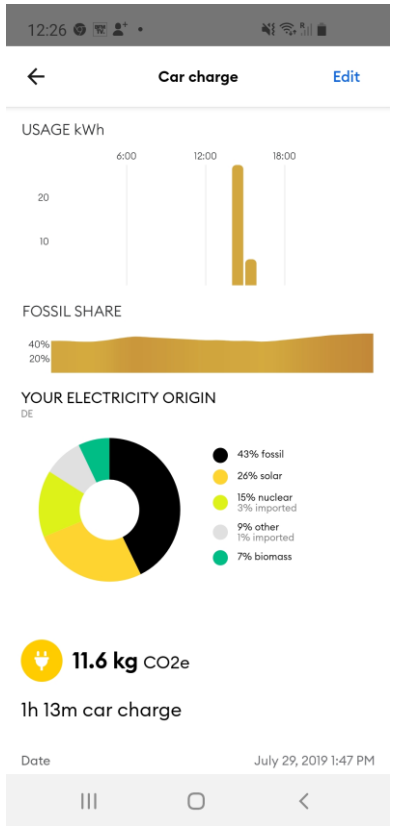

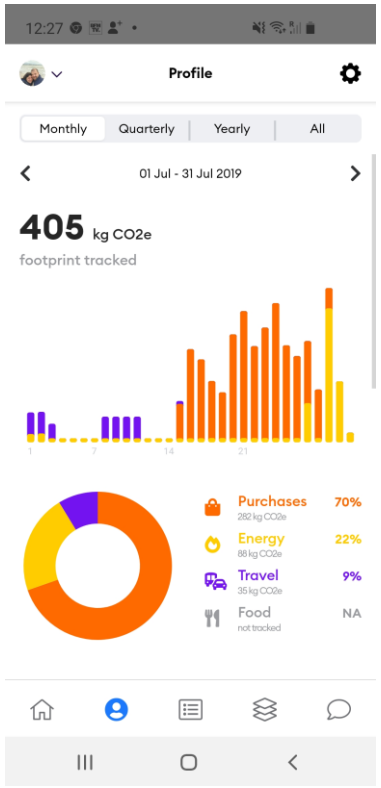

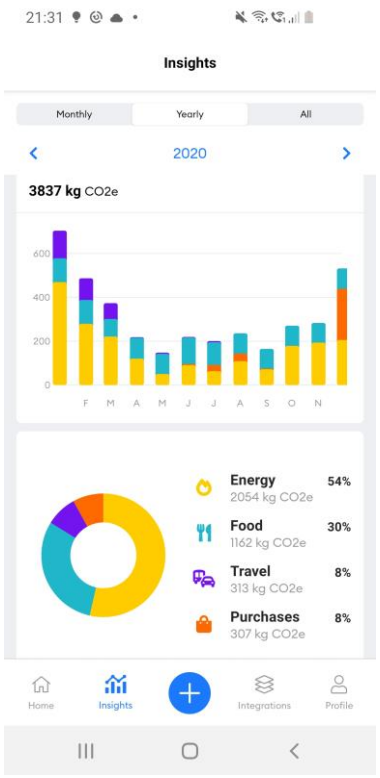

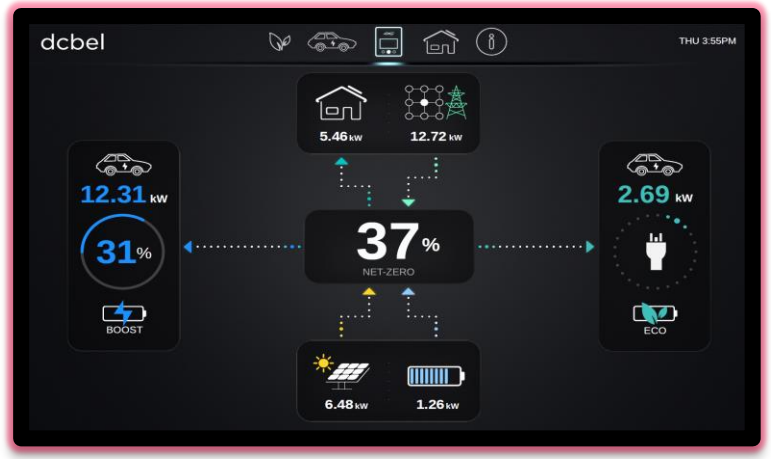

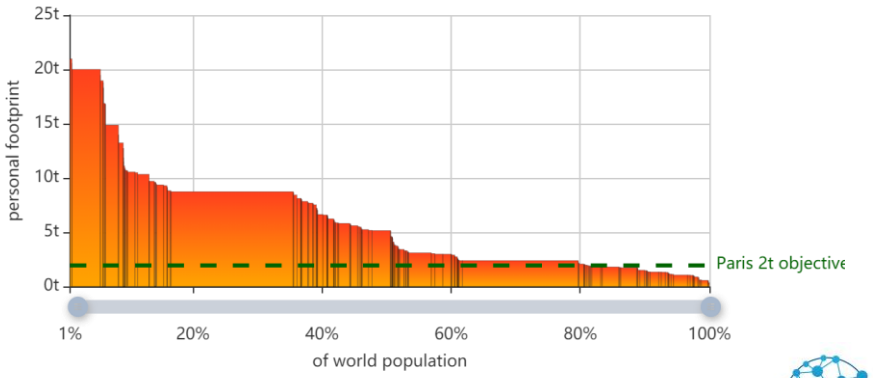

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Thank you!

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