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RIGEITIES Midterm Presentation, Paris 14 06 2022





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Agenda

AMBITION | PROBLEM | SOLUTION

CO2 REDUCTION POTENTIAL / HOW DO WE VERIFY IT

HOW THE AI IS BRINGING ADDED VALUE

PHASE 3: GOALS, DELIVERABLES, STATUS, NEXT STEPS AND BLOCKING POINTS

SHORT PRESENTATION OF THE CURRENT RESULTS (DASHBOARDS, DEMO, VIDEO, ETC.)



Massively scale city solar energy by making it a better deal - for all



Centralised Energy System

Solar Cities

Climate Neutral Cities

Source of illustration: Elia 2021

Vision



Net Zero Energy Districts

It all starts with massively scaling city solar and rewarding the sharing of Solar Surplus



Local Solar Energy tracking & sharing Collective Self Consumption **Revenue** sharing



TODAY

SIZED FOR MY OWN CONSUMPTION

TOMORROW

SCALED FOR COLLECTIVE SHARING

"Today, there is lack of incentives for prosumers to invest in surplus, that needs to change" Al4cities Municipality

Problem: How to incentivize prosumers to invest more and automatically reward them for sharing their solar surplus?



Solution: We predict the potential of solar surplus, assess its true value and channel it to prosumers investing in solar PVs



ENABLING NEW PROSUMER-CENTRIC BUSINESS MODELS

Co-ownership of solar PVs & batteries



Energy Sharing & Collective self consumption



Sustainabilitylinked financing of shared energy assets

CO2 emission reduction potential and verification

HOLONI

IMPACTS SOLAR UPTAKE	REDUCES CO2 EMISSIONS BOOSTS COLLECTIVE ACTION		
Greater returns for prosumers investing in city solar	Replaces energy inflow in the city with local green generation	Positive Energy Districts (PED) & green self-sufficient cities	
Increased net energy savings for solar buildings	Enables net energy savings from collective self consumption	Renewable Energy Communities (REC)	
Solar Surplus available for local consumption in the district	Stimulates expenditure in local low-carbon economy	Urban Peer-to-Peer Local Energy Markets	

ENERGINET

ENERGY TRACK & TRACE

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CO2 emission reduction - philosophy and calculation

1. Scale solar production \rightarrow **kWh**



2. Direct emission factor \rightarrow t CO2e

3. Direct citizens engagement \rightarrow Social acceptance

4. Hourly verification and self-consumption \rightarrow Digital trust

5. Aligned interest and business opportunities \rightarrow Positive spiral

Example Copenhagen

Official target 3% of electricity from solar in 2025

= 75.000' kWh/y * 167g CO2e/kWh¹ = <u>12 525t CO2e/year</u>

Same production in Germany would lead to = 75.000' kWh/y * 692g CO2e/kWh² = 51 900t CO2e/vear

From year to hour - it matters!

Case studies² show that, when comparing traditional Guarantees of Origins with hourly verification, the real emission factor are likely to be much higher, sometimes as much as 500g CO2e/kWh higher.

Zero Emission Cities will have to adapt to hourly verification methods, such as Energinet's Track & Trace.

TRACK GREEN ORIGIN 24/7

Holoni will help cities to learn, adopt and act.

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How does AI bring value?



How does AI bring value?



Phase 3 Pilot - Goals, Expected Results



Expected results

- Development, testing of a reward scheme proof of concept using real
- world data in CPH
- 3. Establishment of the startup and new business opportunities beyond Al4cities geographies / scope



Rewarding citizens and local businesses for their solar surplus





Blocking Points for the realisation of the Pilot

Data Access & Al Processing	Access to data for public building Processing of multi tenant buildings Validation of non residential buildings and high variance of consumption profiles No info about exclusion zones / rooftops
Detailed User Preferences	Preferences with regards to filters Preferences with regards to analytics / decision making flow from the municipality Upcoming engagement with other user groups (prosumers and energy consumers)
Integration with Energinets ORIGIN	Energinet ORIGIN is a proof of concept no longer maintained as a new production ready development called Energy Track & Trace (ETT) is under development This makes it difficult for HOLONI to integrate easily with ORIGIN and plan ahead towards future integration with ETT

Current Results

CLOUD DEMO OF THE	ONGOING DESIGN OF THE	INCUBATION / LAUNCH OF	FOLLOW UP	IDEATING FUTURE
Solar Surplus	SHOWCASE OF THE	Holoni as a new	OF FIRST BUSINESS	PRIVACY-PRESERVING
Predictor V 0.1	REWARD SCHEME	Startup	OPPORTUNITIES	AI MODEL
 Concept video from Phase 2 Al model continue with new data Municipality feedback towards reference dashboard and functionalities Validation of the Al model 	 Integrated Business Model with Solar Surplus predictor Detailed roles and User Journey Detailed integration with Energinet's Origin IT development of the blockchain based 	 Team onboarding Product Dev and R&D Roadmap Draft Business Plan Acceleration through startup launchpad and mentoring (ending mid June) Scheduling client and partner roadshow from Mid August 	 Ongoing feasibility study for the sharing of a solar + battery asset as part of an new eco-village real estate project in Norway Pre-qualification dialogue towards multi-stakeholder demonstrator projects Inviting municipalities to apply for EU facility grant to develop new solar surplus incentive scheme 	 To perform Al modeling without having direct access to private energy data and overcome barriers of enterprise digital silos Starting to explore new future algorithms based on latest deep tech development Will discuss potential research avenues on the 17th June at the University in Oslo with researchers of the UiO Blockchain Lab

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Exploring new tech solutions & business models to massively scale city solar energy by making it a better deal - for ALL

Context

The EC accelerates
the rollout of
renewables

Proposal to increase the EU 2030 target for renewables

- <u>EU Solar Strategy</u>: Solar PV x 2 by 2025, + 600 GW by 2030
- A phased-in legal obligation to install solar panels on new public and commercial buildings and new residential buildings

The EC catalyses a citizen driven energy transition

- Collective self consumption / energy communities
- 100 Climate Neutral City Mission
- Positive Energy Districts

Value Proposition Example

We help cities, energy companies and cooperatives serve the growing needs of prosumer communities by:

- Assessing the potential and value of solar surplus
- Facilitating co-ownership in solar assets
- Optimising local sharing of solar surplus
- Distributing revenues and third party rewards

Next step suggestion: Grant application for innovative incentive scheme in CPH for collective self consumption based on local solar



EUROPEAN CITY FACILITY

Applicants: Municipalities and local authorities, groupings of municipalities/local authorities as well as local public entities aggregating municipalities/local authorities

Grant: 60 000 EUR

Deadline: from 9 June to 30 September 2022

Scope: Development of investment concepts.

The grant amount can be used for in-house staff if internal capacities are sufficient, for external experts/sub-contractors or for other positions that are necessary for the investment concept development.

Among the activities that can be funded are feasibility studies, engineering analyses, legal analyses, social studies, market studies, financial analyses, and further supporting tasks.

Focus:

- Municipality-backed incentive scheme
- To reward prosumers for local green surplus generation and intra city sharing.
- Based on HOLONI's automated digital reward scheme

Activities:

- Feasibility / Social study
- Financial modeling & analysis
- IT architecture design and Proof of Concept
- Legal analysis: Financial, Data protection and Energy regulators

Key Components:

- Revolving Fund managed by local authorities
- Fund would be distributed based on results (ORIGIN/DATAHUB) in the form of programmable digital money based on HOLONI
- Rewards to be used as discounts for energy saving measures and or local green economy

Source: https://www.eucityfacility.eu/fileadmin/user_upload/2022_06_03_D2.7_EUCF_Guidelines_for_Applicants.pdf