



SPARCS

Sustainable energy Positive & zero cARbon Communities

Skipulagning á þátttöku RVKborgar og OR

Dr. Jón Steinar Garðarsson Mýrdal



OR Orkuveita
Reykjavíkur



on



Horizon 2020
European Union funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 864242
Topic: LC-SC3-SCC-1-2018-2019-2020: Smart Cities and Communities

- SPARCS er 5 ára verkefni fjármagnað af Horizon 2020.
- Hófst haustið 2019.
- Hvernig þróast borgarsamfélög í átt að kolefnishlutleysi?





SPARCS pátttakendur



Stadt Leipzig



CÂMARA MUNICIPAL DA MAIA



KLADNO



ΔΗΜΟΣ ΚΗΦΙΣΙΑΣ



ESPOO



SIEMENS



PLUGIT

CITYCON

ril

ADVEN

Fraunhofer

BABLE



Wohnen & Service Leipzig GmbH

Leipziger Stadtwerke

CENERO

seecon Ingenieure



UNIVERSITÄT LEIPZIG



Sociedade Portuguesa de Inovação



中国三峡

OR Reykjavik Energy



CZECH TECHNICAL UNIVERSITY IN PRAGUE

Suite5 We Deliver Intelligence



БІВІАВТОДОР

CiviESCO



MEMBER OF GOPA CONSULTING GROUP



Horizon 2020 European Union funding for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 864242 Topic: LC-SC3-SCC-1-2018-2019-2020: Smart Cities and Communities



SPARCS Reykjavíkur teymið



Reykjavíkurborg



Samstarfsaðilar:



Meðlimur í ráðgjafaráði:

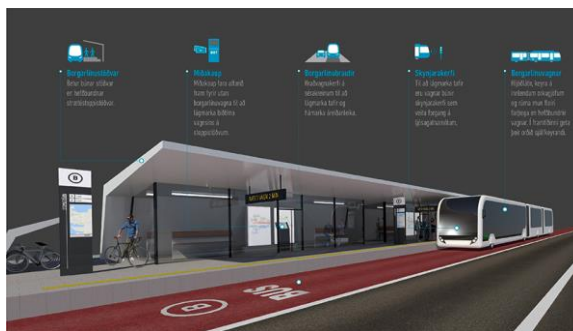


Horizon 2020
European Union funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 864242
Topic: LC-SC3-SCC-1-2018-2019-2020: Smart Cities and Communities



- SPARCS er verkfæri sem Reykjavík getur nýtt sér í vegferð sinni í átt að kolefnishlutleysi.
- Verkefnið hefur snertifleti við margar stefnur og markmið Reykjavíkur.



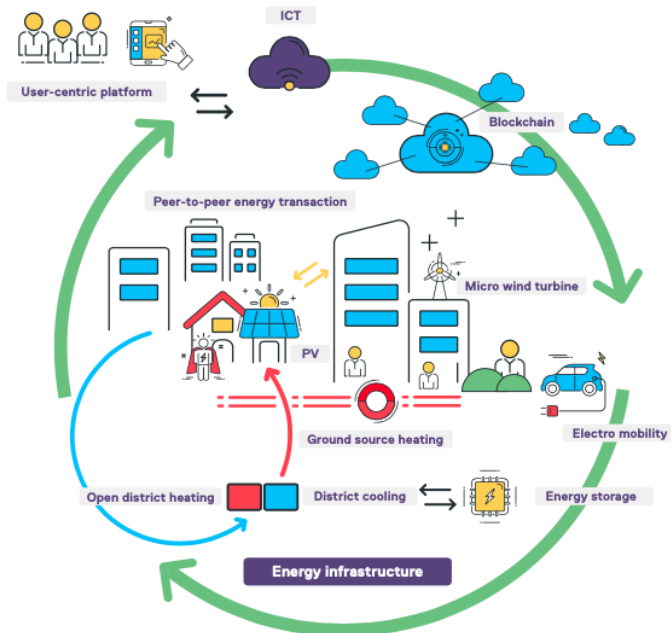
Horizon 2020
European Union funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 864242
Topic: LC-SC3-SCC-1-2018-2019-2020: Smart Cities and Communities



SPARCS

- Kyndilborgir þúna að skilgreina aðgerðir í 5 hverfum.
- Þáttökuborgir fara í gegnum vinnustofur til að velja réttu aðgerðirnar fyrir okkur.




SPARCS Energy district



Horizon 2020
European Union funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 864242
Topic: LC-SC3-SCC-1-2018-2019-2020: Smart Cities and Communities

How we aim to do it

BUILDING BLOCK LEVEL INTERVENTIONS - LIGHTHOUSE CITIES



RES integration



Energy storage



Buildings as prosumers



2G EV charging stations for advanced control and services



Predictive building control strategies, load shifting, user-centric apps



Shared RES ownership, participation in alternative markets

DISTRICT LEVEL INTERVENTIONS



Bidirectional district energy infrastructure, virtual power plant



District energy storage



EV sharing, last E-mile strategy



User-centric platform, virtual energy community



AI prediction of energy demand, people flow prediction, EV peak load control



Peer-to-peer energy marketplace

MACRO LEVEL INTERVENTIONS



Positive Energy District strategy in urban planning



Fostering EV uptake through urban planning



Innovation ecosystem hub



Regulations

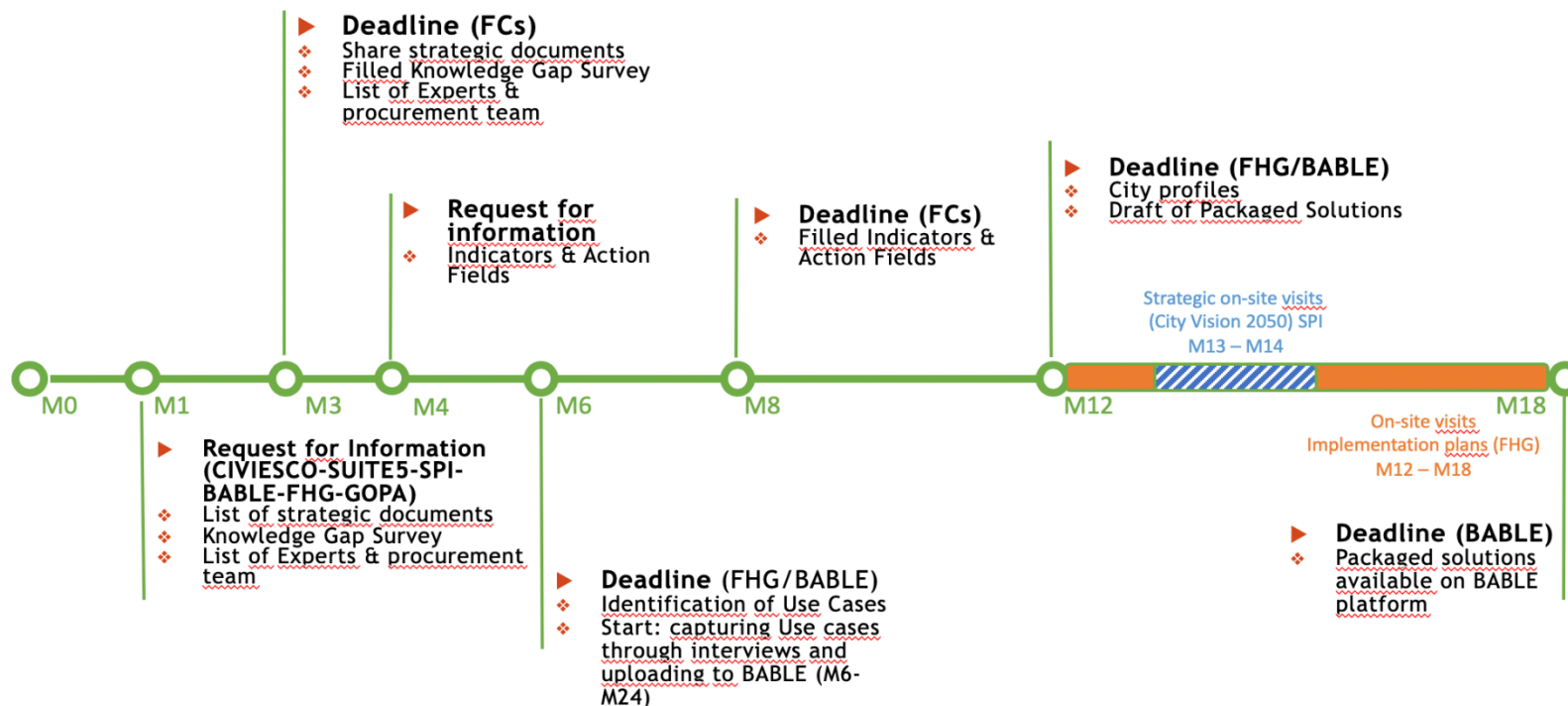


Energy community platforms, integrated GIS service for urban planning



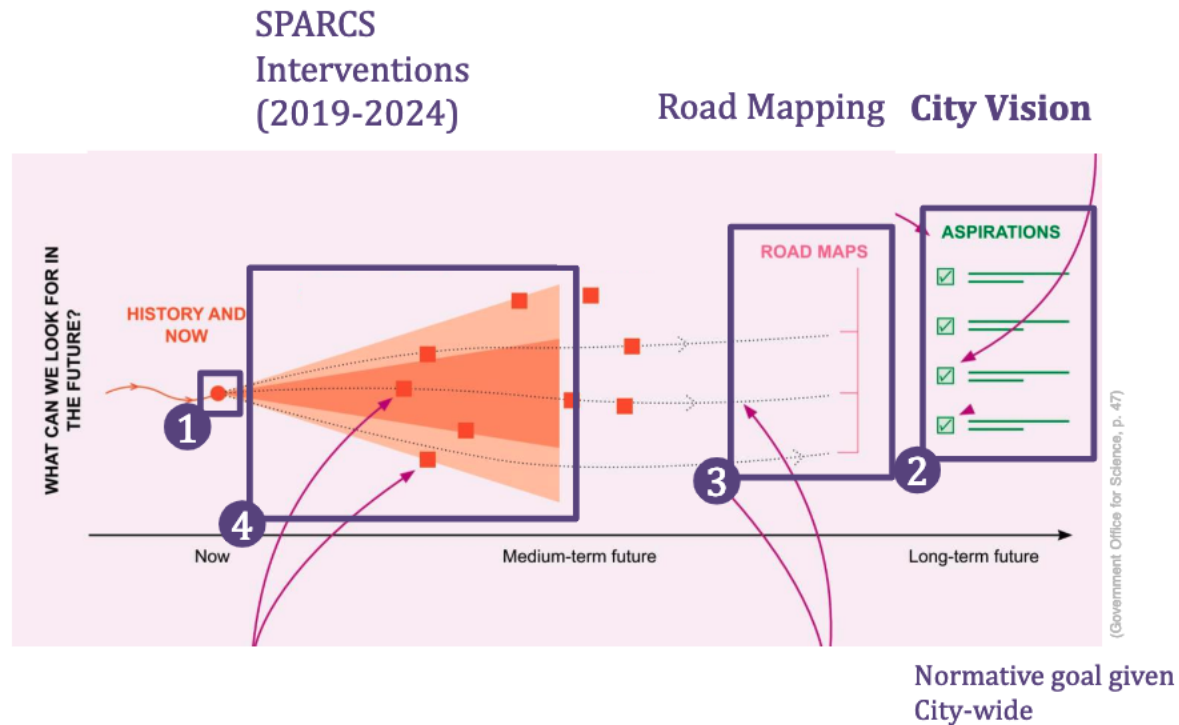
Urban transformation financing & governance models

Tímalína fyrir þáttökuborgir M0 - M18



SPARCS framundan.

- September 2020; fáum heimsókn frá Fraunhofer teymi.
 - Viðtöl við hagaðila til að leggja fram hugmyndir að verkefnaáherslum.
- Október 2020; City Vision vinnustofu.



Horizon 2020
European Union funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 864242
Topic: LC-SC3-SCC-1-2018-2019-2020: Smart Cities and Communities



Takk fyrir!



Horizon 2020
European Union funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 864242
Topic: LC-SC3-SCC-1-2018-2019-2020: Smart Cities and Communities



SPARCS

Sustainable energy Positive & zero cARbon Communities

Viðbótar efni:



OR Orkuveita
Reykjavíkur



on



Horizon 2020
European Union funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 864242
Topic: LC-SC3-SCC-1-2018-2019-2020: Smart Cities and Communities



Jón Steinar Garðarsson Mýrdal – verkefnastjóri SPARCS hjá RVK (PON)
Inga Dóra Hrólfsdóttir – verkefnastjóri SPARCS hjá OR (OR)

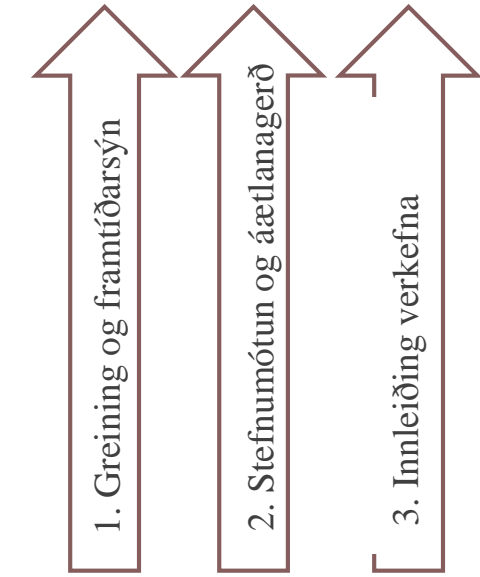
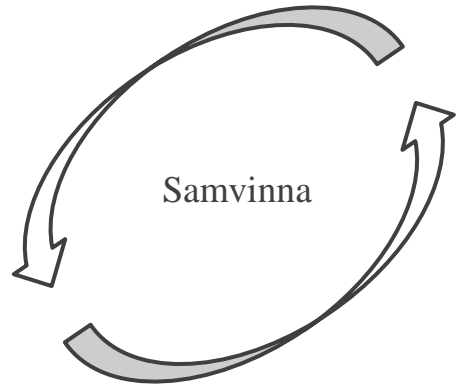
Hrönn Hrafnisdóttir - Verkefnastjóri stefnumótunar og þróunar (USK)
Guðmundur Benedikt Friðriksson - Skrifstofustjóri Umhverfissgæða (USK)
Grétar Þór Ævarsson - Verkfræðingur á skrifstofu Samgöngustjóra og Borgarhönnunar (USK)
Óli Páll Geirsson - Skrifstofustjóri Gagnþjónustu Reykjavíkur (PON)
Kristinn Jón Ólafsson - Verkefnastjóri Nýsköpunar (PON)
Kári Hreinsson - Sérfræðingur í nýsköpun og tækniþróun rafmagns, (Veitur)
Ólafur Davíð Guðmundsson - rekstrarstjóri hleðslunets, (ON)

Viljum bæta við fulltrúa út skipulagi, mögulega Ævari Harðarssyni (USK)



Horizon 2020
European Union funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 864242
Topic: LC-SC3-SCC-1-2018-2019-2020: Smart Cities and Communities



Espoo

1. Lausnir og nýsköpun

Nýsköpunarvístkerfi

2. Þróun heildarlausna

Nýtt hagkerfi



Leipzig

3. Virðislíkan og upptaka lausna

Stafræn samhæfing

Rafbílavæðing

Orkuskipti

Heildarlausnir








This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 864242
Topic: LC-SC3-SCC-1-2018-2019-2020: Smart Cities and Communities







SPARCS

DEMONSTRATION ACTIONS



- Positive energy transformation
- Electrical mobility
- Digital Integration
- New economy
- Urban innovation ecosystem


-  RES integration
-  Virtual building heat storage
-  Energy storages
-  Buildings as Prosumers
-  Smart meters solutions




-  Bidirectional district energy infrastructure
-  Virtual power plant
-  District Energy storages (Seasonal and batteries)






-  Positive Energy District strategy in urban planning

-  2nd G EV-charging strategies

-  EV-sharing
-  Last E-mile strategy (E-bicycling, E-buses, fast E-tramline)


-  Fostering EV uptake through urban planning



-  Predictive building control strategies
-  Load shifting
-  User centric Apps

-  User centric platform
-  Virtual energy community
-  AI prediction energy demand
-  People flow prediction
-  EVs peak load control

-  Innovation ecosystem hub: city planning departments, SMEs, large enterprises and research organizations
-  Regulations
-  Citizen inclusive governance
-  Carbon Free Vision 2050

-  Shared RES ownership
-  Participation in alternative market

-  Peer-to-Peer energy marketplace

-  Energy community platforms
-  GIS integrated service for urban planning

-  Urban transformation financing & governance models

Building block level interventions

District level interventions

Macro level interventions



Horizon 2020
European Union funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 864242
Topic: LC-SC3-SCC-1-2018-2019-2020: Smart Cities and Communities



SPARCS Espoo district 1

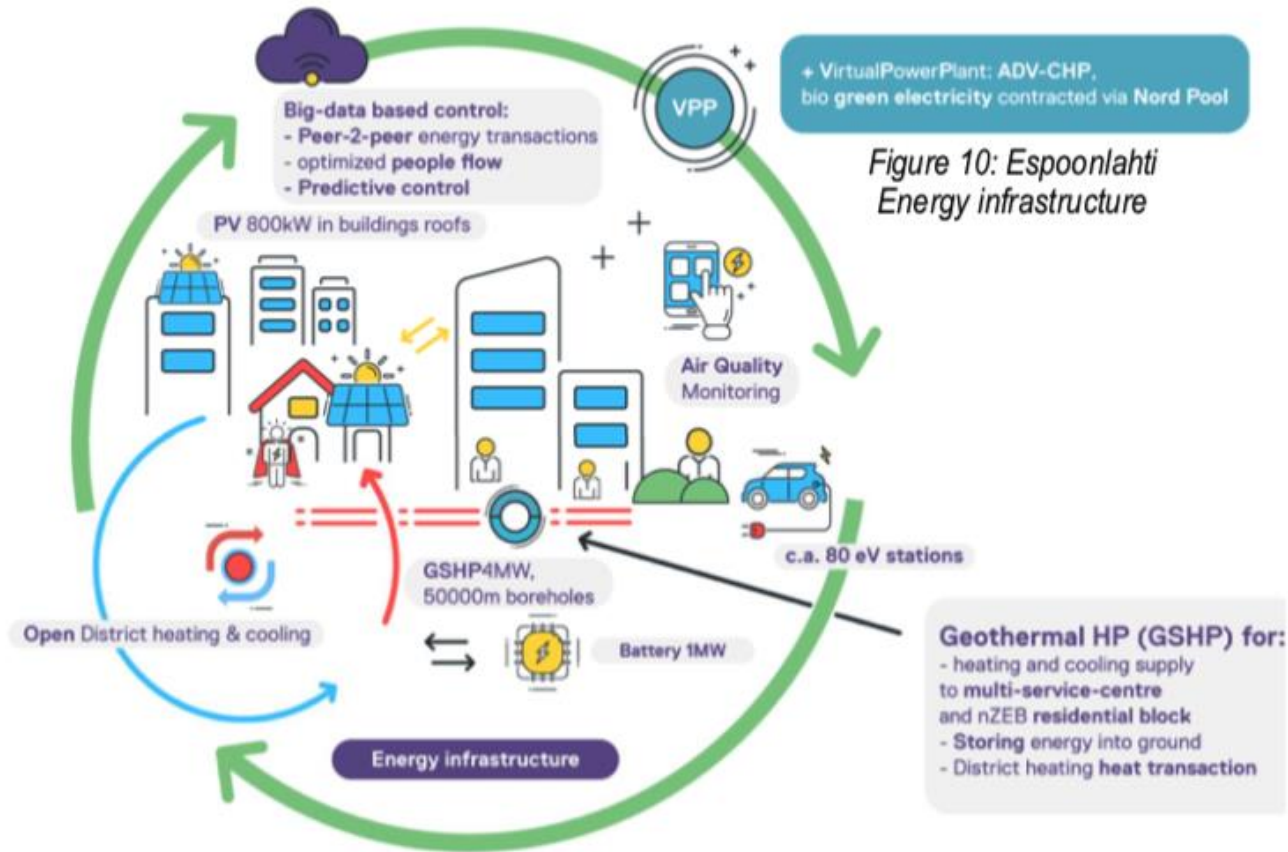


Figure 10: Espoonlahti Energy infrastructure





SPARCS Espoo district 2

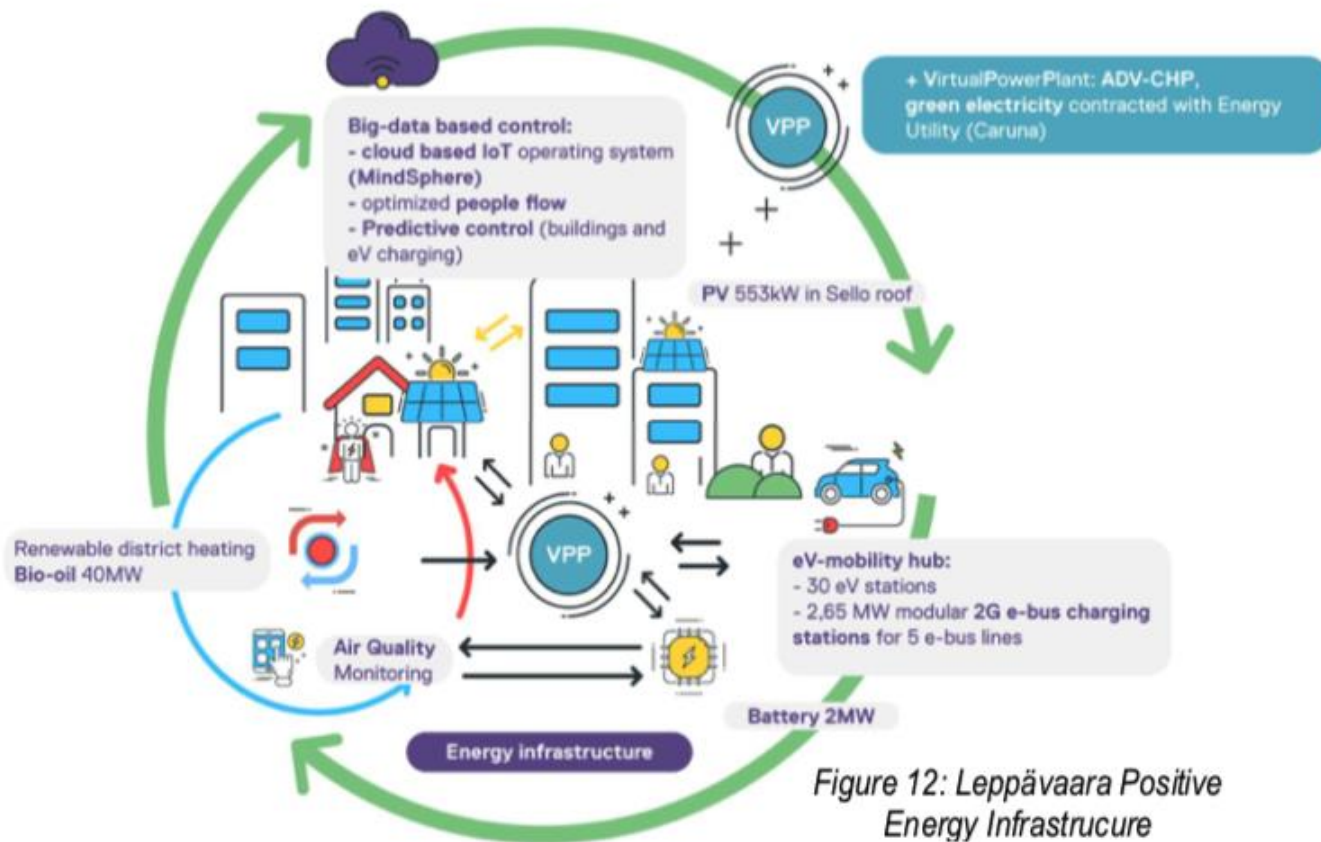


Figure 12: Leppävaara Positive Energy Infrastructure



Horizon 2020
European Union funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 864242
Topic: LC-SC3-SCC-1-2018-2019-2020: Smart Cities and Communities



SPARCS Espoo district 2

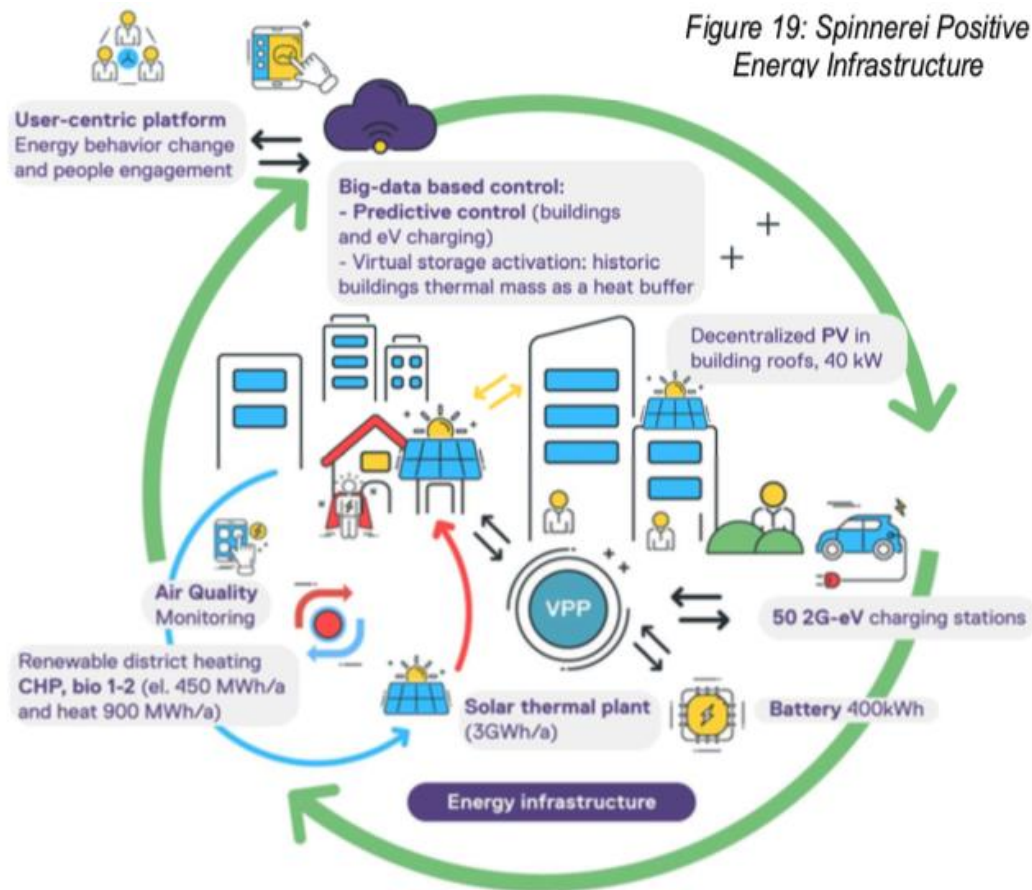


Horizon 2020
European Union funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 864242
Topic: LC-SC3-SCC-1-2018-2019-2020: Smart Cities and Communities



SPARCS Leipzig district 1



Horizon 2020
European Union funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 864242
Topic: LC-SC3-SCC-1-2018-2019-2020: Smart Cities and Communities



SPARCS Leipzig district 2

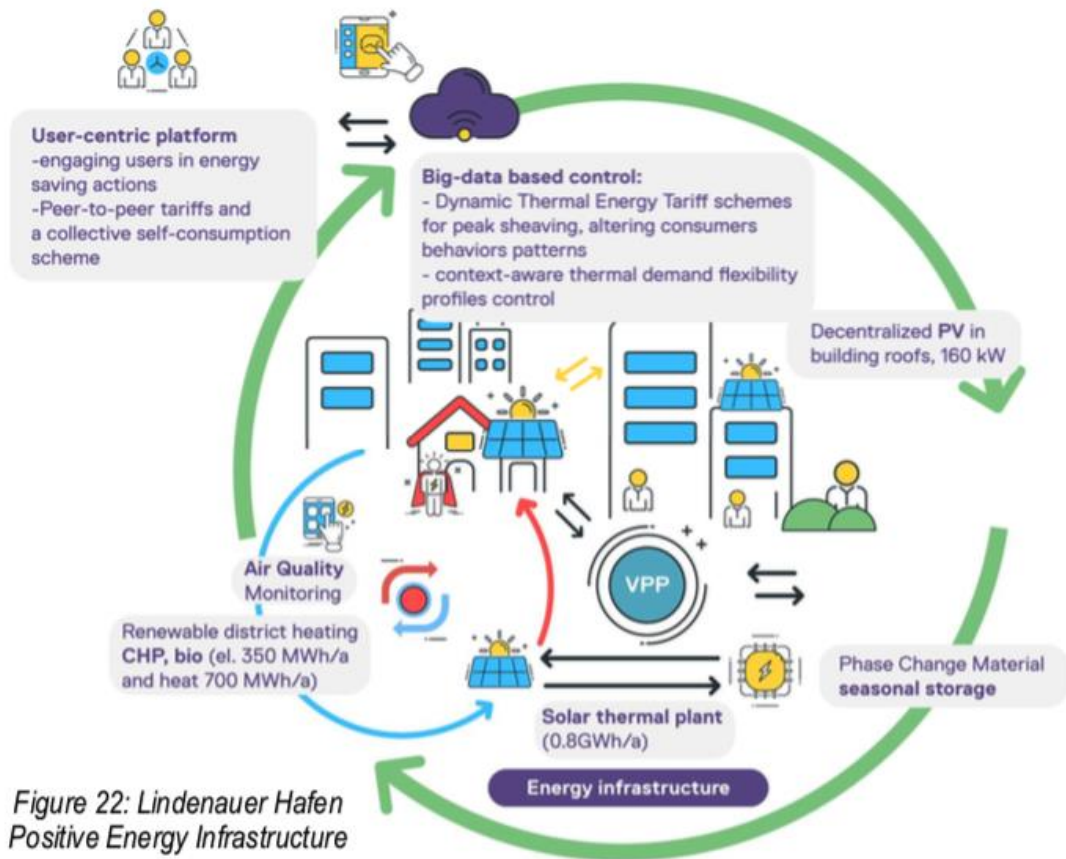


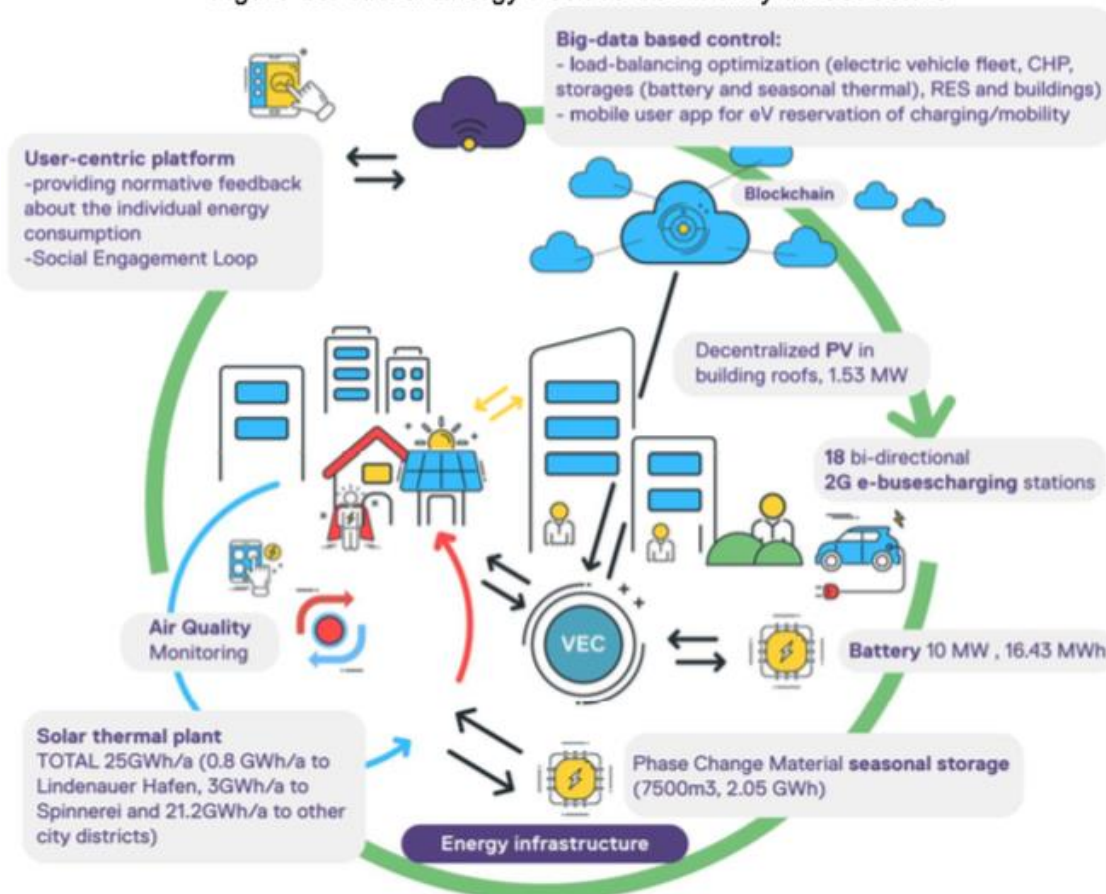
Figure 22: Lindenauer Hafen Positive Energy Infrastructure





SPARCS Leipzig virtual district

Figure 23: Virtual Energy Positive Community Infrastructure



Horizon 2020
European Union funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 864242
Topic: LC-SC3-SCC-1-2018-2019-2020: Smart Cities and Communities

Umfang og ávinningur

SPARCS <u>Kostnaðarliðir</u>	RVK	OR
<u>Mánuðir unnir</u>	66.5	45
<u>Launakostnaður</u>	€462,175	€468,675
Annar beinn kostnaður	€39,000	€146,525
Óbeinn kostnaður (25%)	€125,294	€153,800
Samanlagður kostnaður	€626,490	€769,000
Styrkhlotfall	100%	70%
<u>Greiddur styrkur frá ESB</u>	€626,469	€538,300

