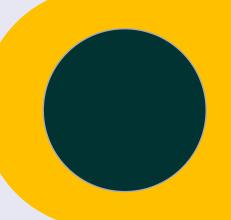


Toolkit walkthrough

a HOW TO guide for GENTE toolkit users



Josephine Harris - Hochschule Luzern (HSLU) May 2025

Contents

of the GENTE Toolkit walkthrough

- 1 What is it & Who is it for
- Overview of format & Methodology used to create it
- 3 Stages & Topics & Sections within the toolkit
- Use case examples of how the toolkit can be used & the types of information included
- Availability where the toolkit can be accessed





GENTE Toolkit

What is it

Connects together all the **outcomes**, **learnings**, **tools**, **services**, and **research** of the GENTE project.

Provides access to outcomes in a **user-friendly way**, directing users to relevant information quickly.

Who is it for

Anyone interested in joining, setting up, participating in, and/or operating a local energy community.



GENTE Toolkit

Who developed it



What is the source of the content

The content of the toolkit is made up of the reports, deliverables, code, data, test case results, and published academic papers that the CENTE project produced.

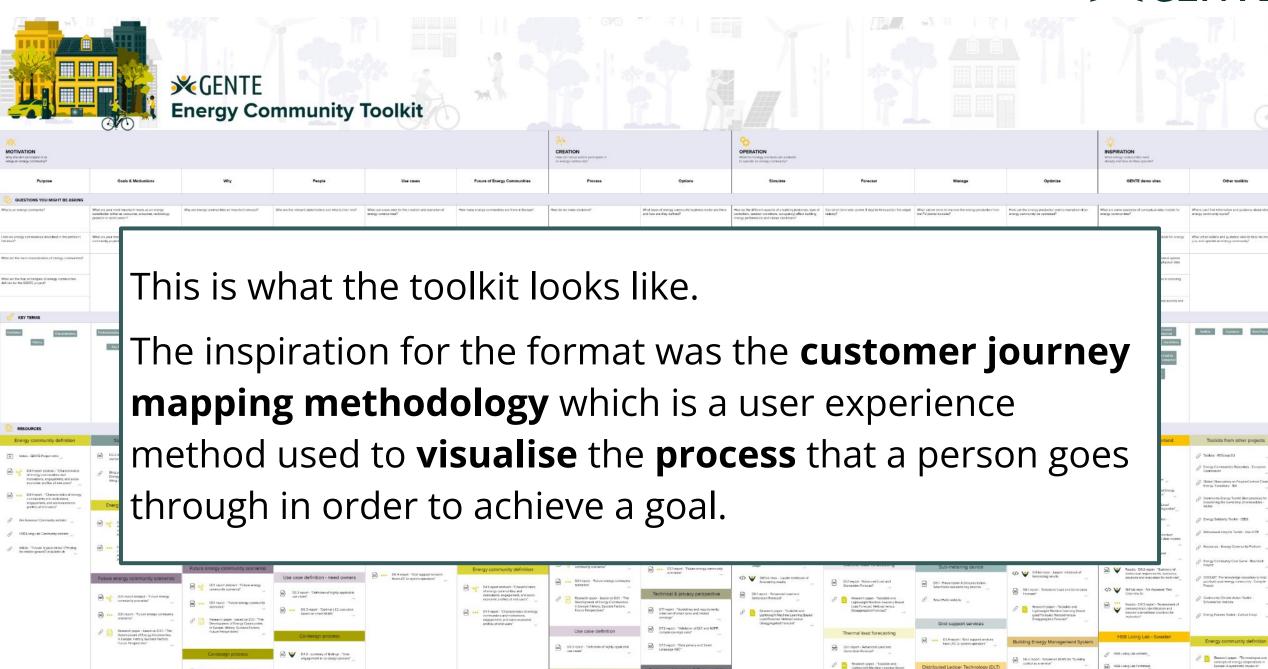




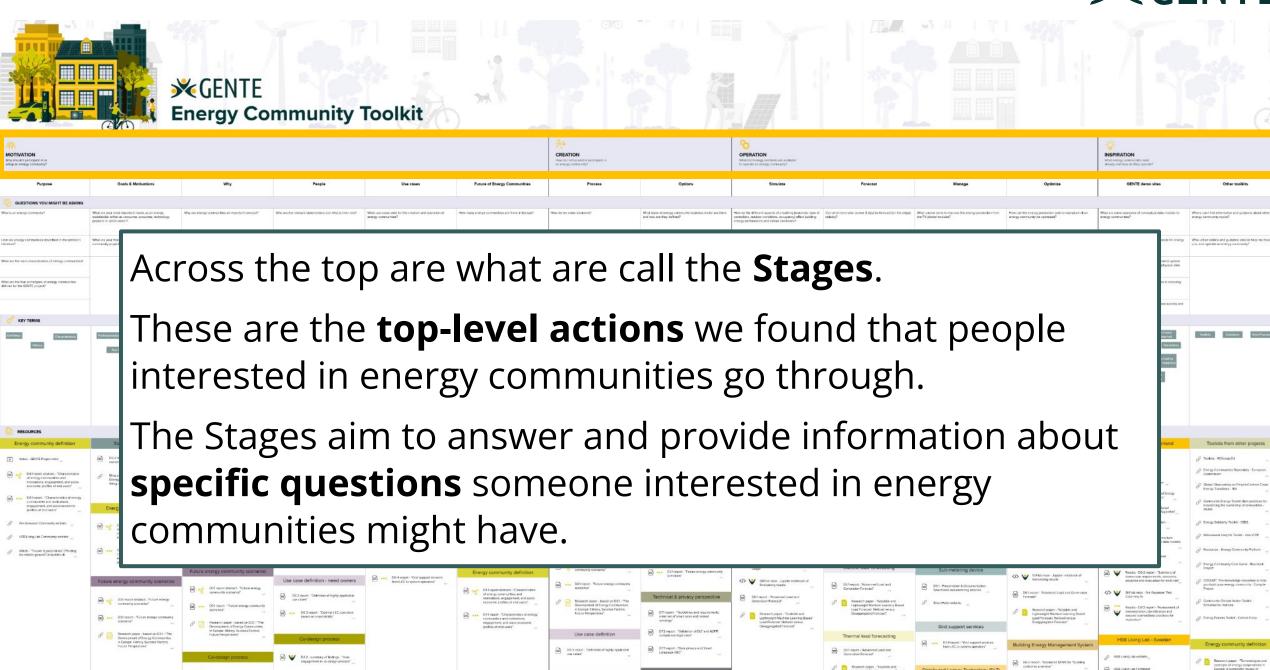
★GENTEEnergy Community Toolkit

MOTIVATION Why should participate in an wide an investige continues of						CREATION How do I bring ending participation in on energy continuating?		OPERATION What test reveige and basis are evaluated to operate an energy community?				INSPIRATION What energy communities and alwards and flood do they operate?	
Purpose	Goals & Motivations	Why	People	Use cases	Future of Energy Communities	Process	Options	Simulate	Forecast	Manage	Optimize	GENTE demo sites	Other toolkits
Q QUESTIONS YOU MIGHT BE ASKING													
What is an energy community?	What are your most important needs as an energy stateholder either as consumer, prosumer, technology greater or adold owen?	Why are energy communities an important concept?	Who are the relevant states of their and what is then now?	What use cores sets for the creation and operation of energy communities?	How many energy communities are there in Europe?	How do we make doublished!	What types of energy community business resides are there and how are they defined?	How do the different expects of a traffiling limiterate, tope of controllers, custoon conditions, occupancy) affect building overgy performance and indoor conditions?	Can short term salar power (I displice forecast (on the edge) reliably?	What can be done to improve the energy production from the PV plants/modules?	How can the energy production and consumption of an energy community be optimized?	What are some examples of conceptual date models for energy communities?	Where can I had information and guidance about other energy continuintly to pice?
How are energy communities described in the pertinent towards #?	What are year motivations for puricipating a local energy sommanily proyects?	Why choose to join or create an energy community?	How can one usors and other station others as involved in the establishment and steages of as every grown unity?	What business model is best suited to you?	How have energy communities developed over lime?	How do lifted other people to get involved?	Whol are the guidelines and requirements for traction range, a statistical of intercept colde, and provide always constraints?	Whet are the benefits of structeding building and energy systems, during the design process?	How can renewable strongly generation (a.g. PV output) be accurately predicted to optimize its obeyodoos with the gishi-	What is the under-partements level of the PV modulus! plants, and why are they under performing?	Minut loads exist to opinion energy production?	What are corns complex of region data mocks for energy communities?	What other lookers and guidance used to help me create, μ in , and operate an energy community?
What are the numericantees of energy communities?			Whet are the benefits of installing an energy management system from the enclusions, actions and aggregator perspective?	How can energy communities help ESOs with grid sensices?	What factors influence the development of energy communities?	Writingsolutions apply?	How can an energy community handle present informalism in a private, occurs, traditionity leasy?	When value could adding a bred pump system in a building toway?	What is the most reliable way to forecast electricity desard and supply for efficient energy balancing?	How to schedule devices within a building to minimize cost and peak load?	What too's exist to optimize everyy consumption?	What are some examples of a data remagnish it system against to real-world energy communities (physical data models)?	
What are the four archetypes of energy continuedes defined for the GENTS project?				What are the motivations for energy communities participating in grad services?	What are the key factors that create an enabling environment for energy communities?	How can and users and other stateholders be involved in the establishment and design of an energy community?	What types of technologies are used to develop secure, private, distributed energy management systems?		Flow can heat load forecasting support efficient operation of distinct feeding systems or heat pumpin?	How to handle uncertainties related to PV and load flave, sals?	What goeb and it services can energy construides be optimized to 6,49?	What is the polaritial for energy construction in recluding CO2 emissions?	
				What harmonous are required for energy communities participating in grid services?	What concepts will be emportant to energy community development in the future?	Whet are the possibilities and limits of a co-design approach for dealing a potential energy community?	What open source tools and services and to help manage community and parsonal data in a passate, secure, is shortly way?			How much ficate by can be provided by buildings?		Could an energy community fielp mit increase autority and self-consumption of my PV install above?	
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RESOURCES													
Energy community definition	Stakeholders - needs	Why energy communities are important	Stakeholders	Use case definition	Future energy community scenarios	Co-design process	Business models	Digital twin	Generation forecasting	Building Energy Management System	Optimizer	Am Aawasser - Switzerland	Toolkits from other projects
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	Future energy community scenarios	Future energy community sconarios	Use case definition - need owners	EN 4 report - "Grad support renvices from LEC to system operators"	Energy community definition	DB1 report ancests: "Future energy continuents scenerios" DB1 report: "Future energy continuents scenerios"	D23 report - Tulture energy community scretarios	forecast PV perenders and electricity using Skifful rears - Justice notebook of forecasting results.	Blectric load forecasting Disreport Subscreet Load and	Sub-metering device	Gifthio repo - Japyter roterbook of surrotating security	Founds - CO.2 report - "Suremary of demo case requestives, sometics, solutions and evaluation for each start"	Promy Community Card Game - Reschool Project COOLET: The knowledge repository to histo you build your every community. Compile
	into report obstact - "Future energy community committee"	D01 report electrics: "Future energy community scenarios" D01 report: "Future energy community scenarios"	(SCI3 report - 'Deliminar of regrey applicable use rates'		D41 report abstract - "Characteristics of energy communities and monitors, engagement, and socioconomic profess of energiators"	Pleasanth super - based on \$33 - The Development of French Communities.	Technical & privacy perspective	DGI report. Yoursened Load and Generation Personal?	Generation Forecast* S Sense arch paper - Scalable and Laboure Storest Nacional Laboure Storest	DS1 - Presentation & Decumentation— Smarthless sub-eastering courses	D61 report - Vulvenced Load and Generation Porsoser*	GS risks report Ann Assurance Test Code reful to	Project O Community Disnate Action Toolet Schumscher Institute
	D31 report. To but energy constructs construct.	Pleasearch paper - based on D31 - The Development of Frency Communities	DE3 report "Operative"		641 report - "Characteristics of energy communities and nephrotisms, engagement, and recoverance profiles of wed users"	in Europe: Hatory, Success Factors. Fusure Perupectives*	D71 report - "Suddehms and requirements, enter late of answt raises and related entology"	Service Control pages - "Scalable and Updervision Muchine Learning David Load Forecast Medical serval Disaggregated Forecast"	Load Forecast Netbad wests Disaagregated Percost*	Grid support services	Research paper - "Scilables and Lightweight Machine Learning Based Load Forecast National varies Disaggregated Forecast"	emocatorion, democatorio and inscribini de implicabilità	G Stating Februs Societ - Carbon Coop
	Street on Day of the Development of Energy Communities in Europe Hettery Success Factors.	in Europe History Success Factors. Future Perspectives*	Co-design process			Use case definition	D72 report: "Validation of DUT and GDPR compliance legal rated"		Thermal load forecasting	O Blanck Valence		HSB Living Lab - Sweden	
	in Europe Hettory Success Factors, Pulsan Perspectives*	Co-design process	DH3 - surroway of Studengs - "User engagement in co-county process"			USS 3 report - 'Detention of nightly applicable use cases'	B73 report - Their privacy and Smart Limitation 480°		Db1 report - "Advenced Load and Generativa Forecas"	DS 4 report - "Git support sendons from USC to system operation"	Building Energy Management System	@ HSSELWING Like WYCKERS	Energy community definition Processor paper Terminologies and
		(A2 - summary of firstlegs - Voye				Ourigens weedels	System architecture & Data models		Research coper - "scattle and Lighton light Machine Learning Blased Load Powercast Netfood versus	Distributed Ledger Technology (DLT)	D6 2 report - "Managed BEMS for "Building control as a service"	HSSI Liveng Lab Factobines	Persearch paper - Terromologies and concepts of energy cooperations in Europe - A systematic necessary of the schedule, polenifields, and



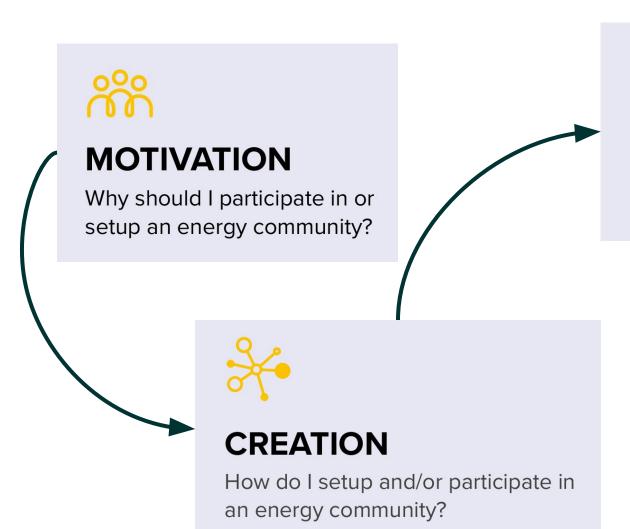








GENTE Toolkit - Stages





OPERATION

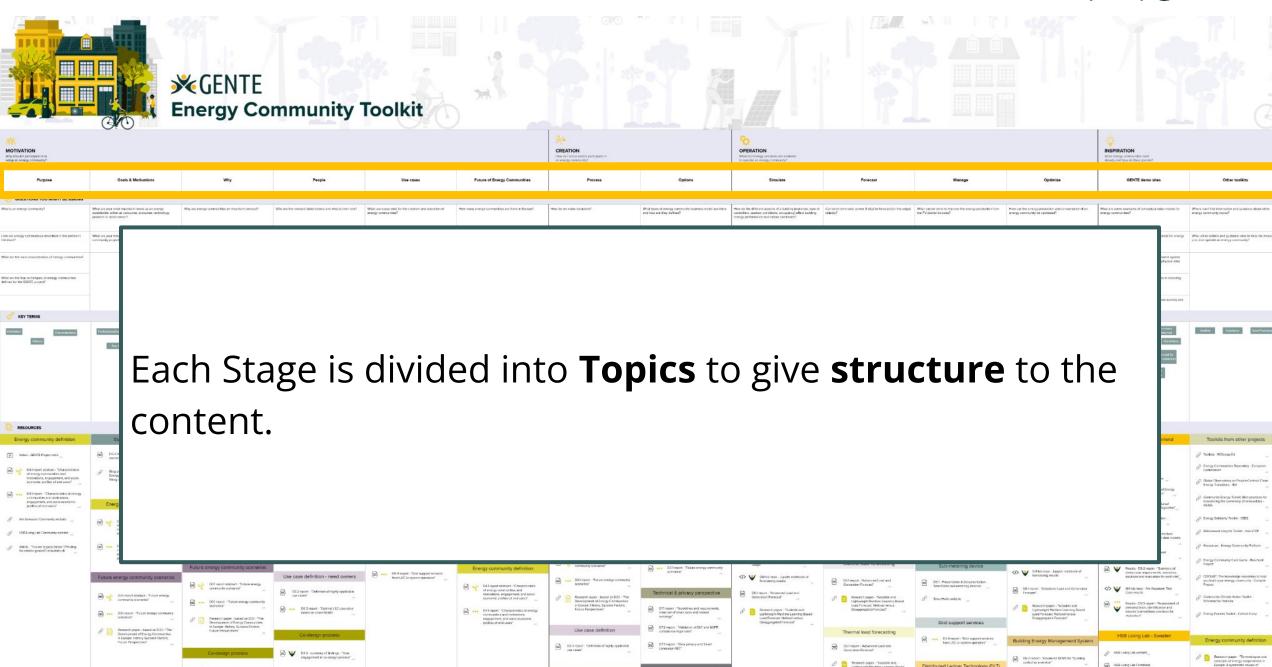
What technology and tools are available to operate an energy community?



INSPIRATION

What energy communities exist already and how do they operate?









MOTIVATION

Why should I participate in or setup an energy community?

Purpose

Why

People

Use cases

Goals & Motivations

Future of energy communities

what energy communities are for what they do what goals they can help fulfil the stakeholders involved what type of cases they can be applied to how they might contribute in the future to the energy transition





CREATION

How do I setup and/or participate in an energy community?

Process

Options

the process involved in creating a new community

what options exist for the setup of a new community, such as business models, organisational models, regulations that exist in your locality, etc





OPERATION

What technology and tools are available to operate an energy community?

Simulate

Manage

Forecast

Optimize

how energy communities can be simulated to help define the optimal setup and operation

how production and consumption can be forecast in various ways

tools for managing energy communities methods for optimising the operation of communities to maximise on achieving the goals of the community





INSPIRATION

What energy communities exist already and how do they operate?

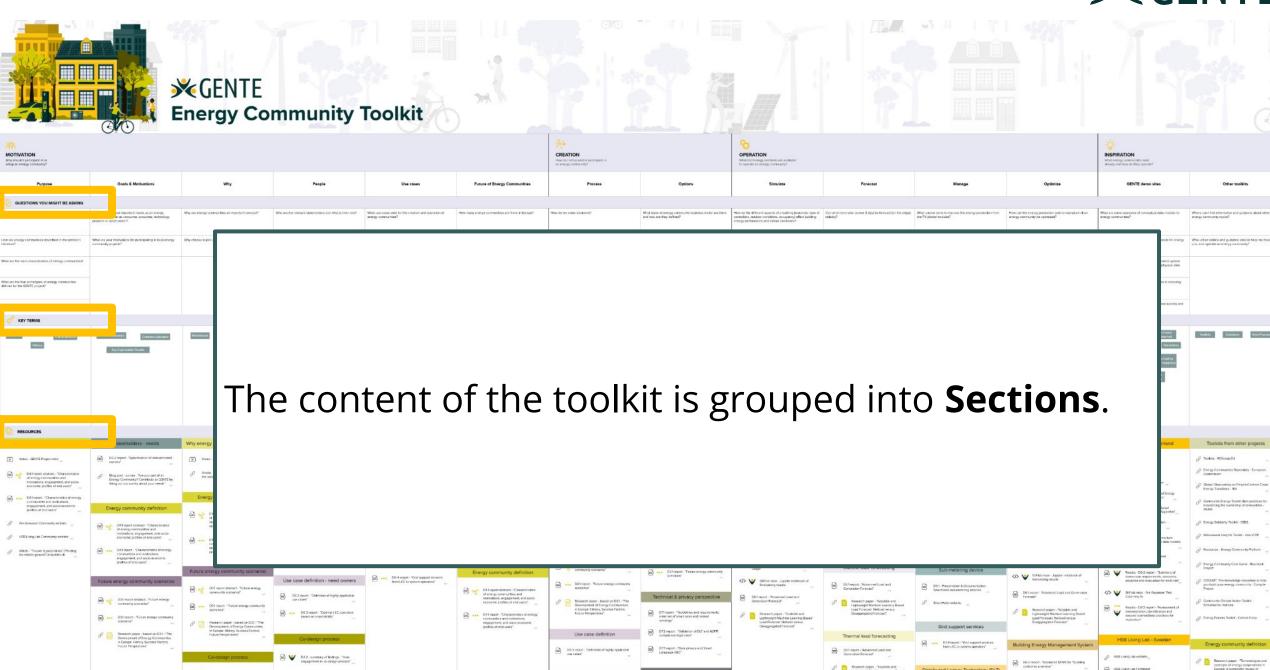
GENTE demo sites

Other toolkits

the GENTE demo sites

toolkits created by other projects to provide more extensive / broader set of information than just GENTE can provide







GENTE Toolkit - Sections



QUESTIONS YOU MIGHT BE ASKING

Identify Stages that will help answer your specific questions

Provides insight into the types of questions the content of the toolkit aims to answer



KEY TERMS

Identify Stages that relate to particular topics you are interested in

Used to aid in searching for content in topic areas of interest



RESOURCES

Links to relevant information, reports, findings, outcomes, results of test cases & KPIs, videos, code, data, and articles developed in GENTE for each Stage

Toolkit Use Cases

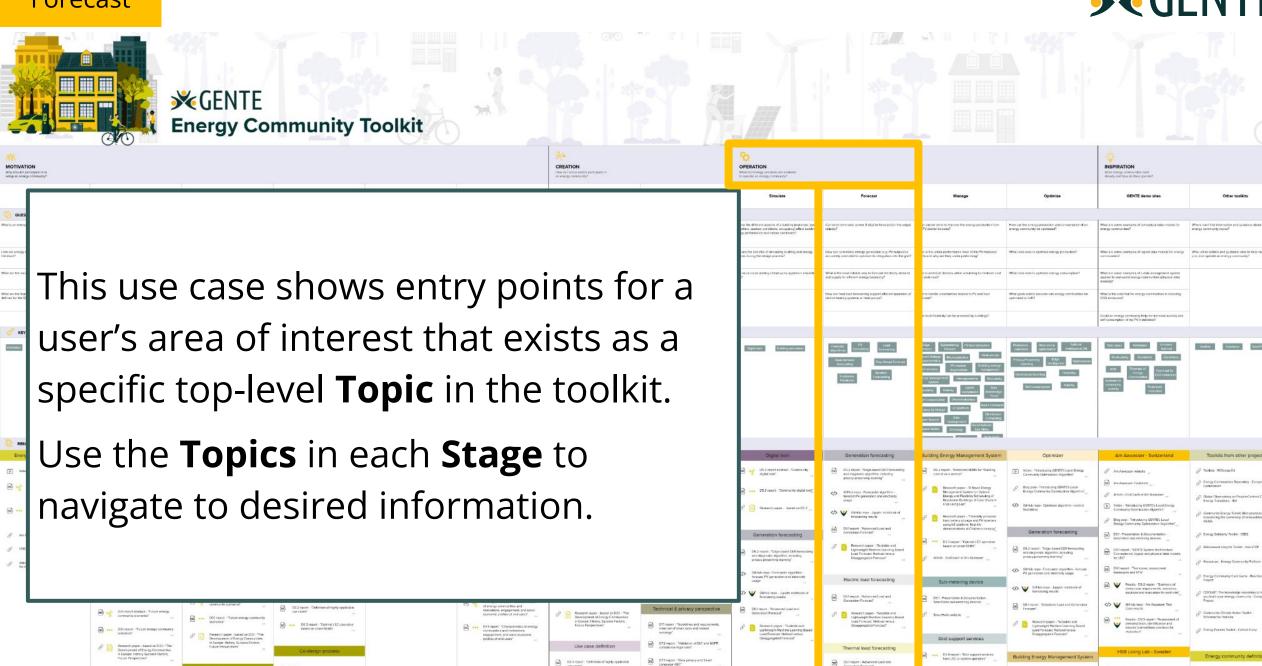
Explain how the toolkit can be used & types of information included

- 1 Forecast
- 2 Co-design
- 3 Optimize
- 4 Example of energy communities



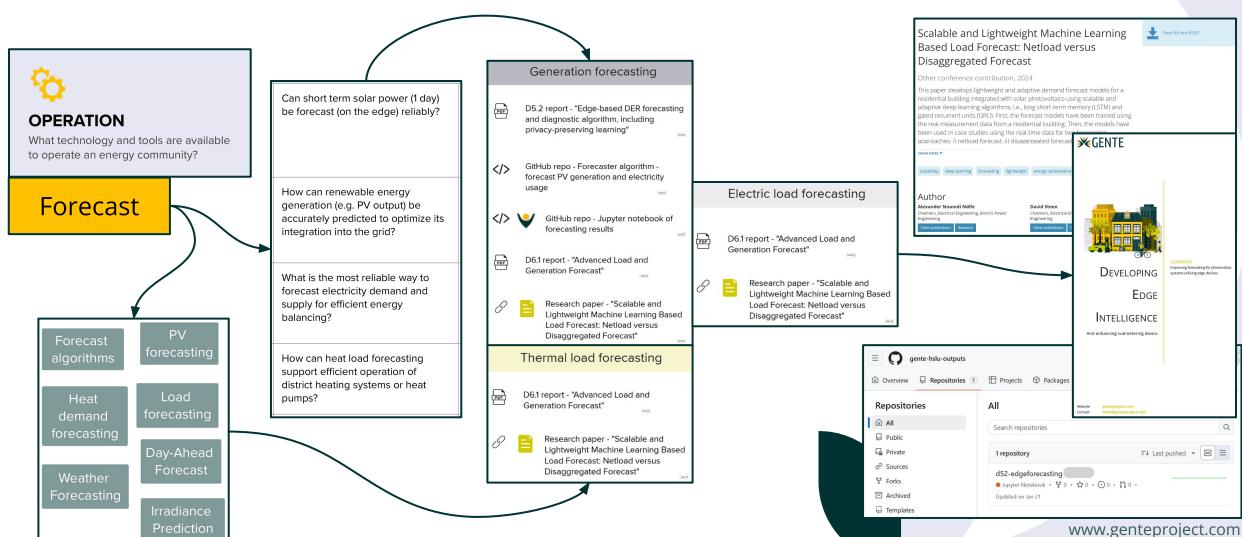








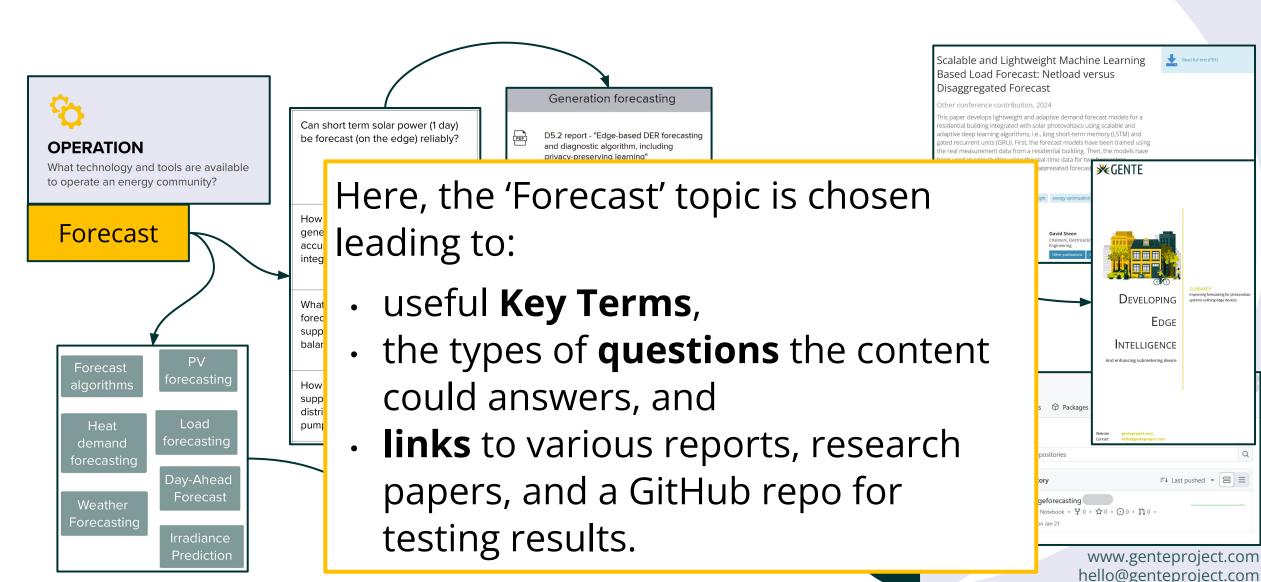
GENTE Toolkit - Use case: Forecast



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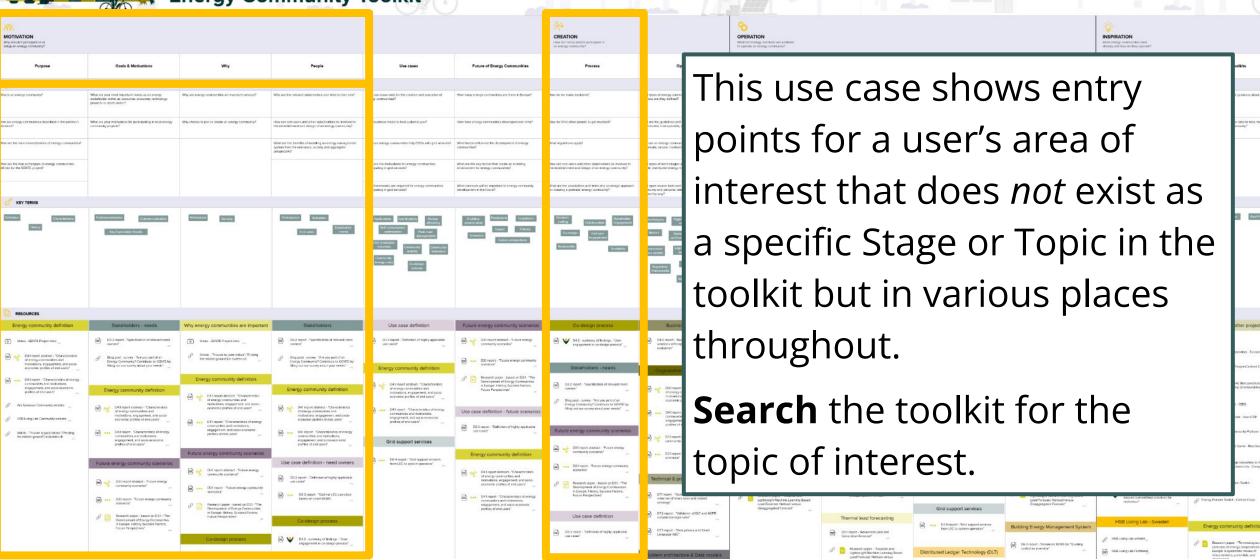


GENTE Toolkit - Use case: Forecast



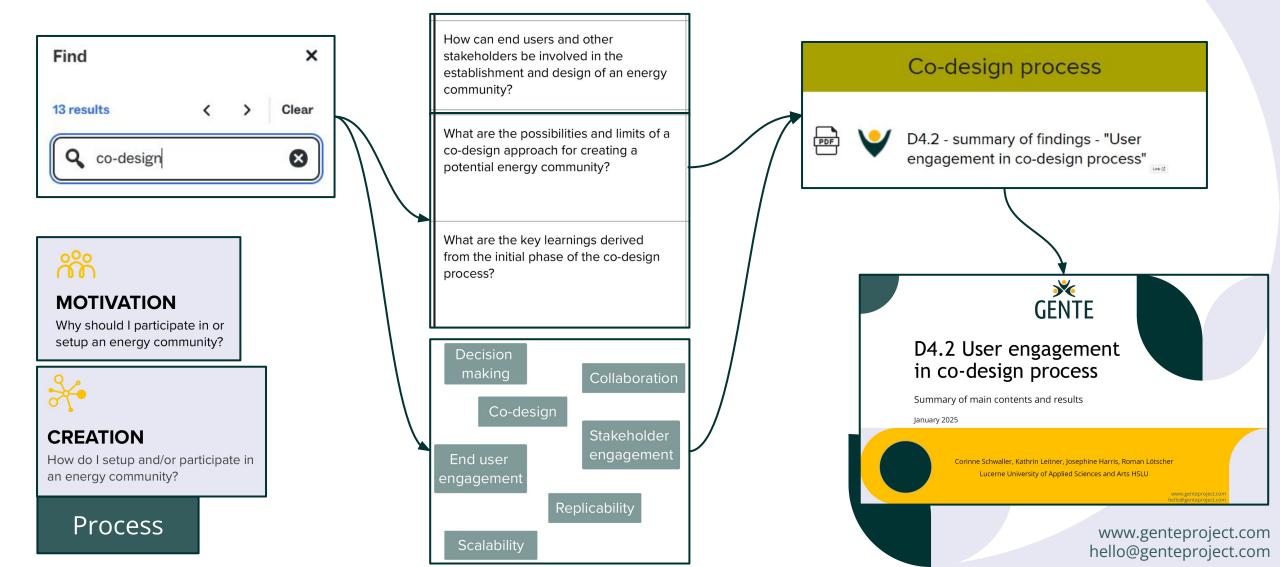








GENTE Toolkit - Use case: Co-design



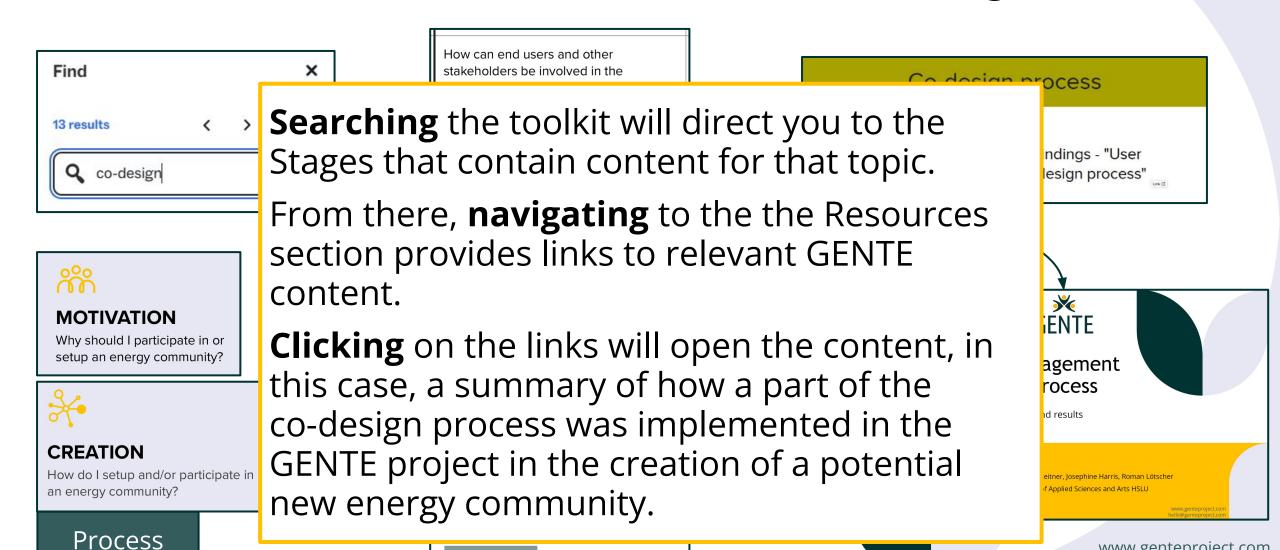


www.genteproject.com

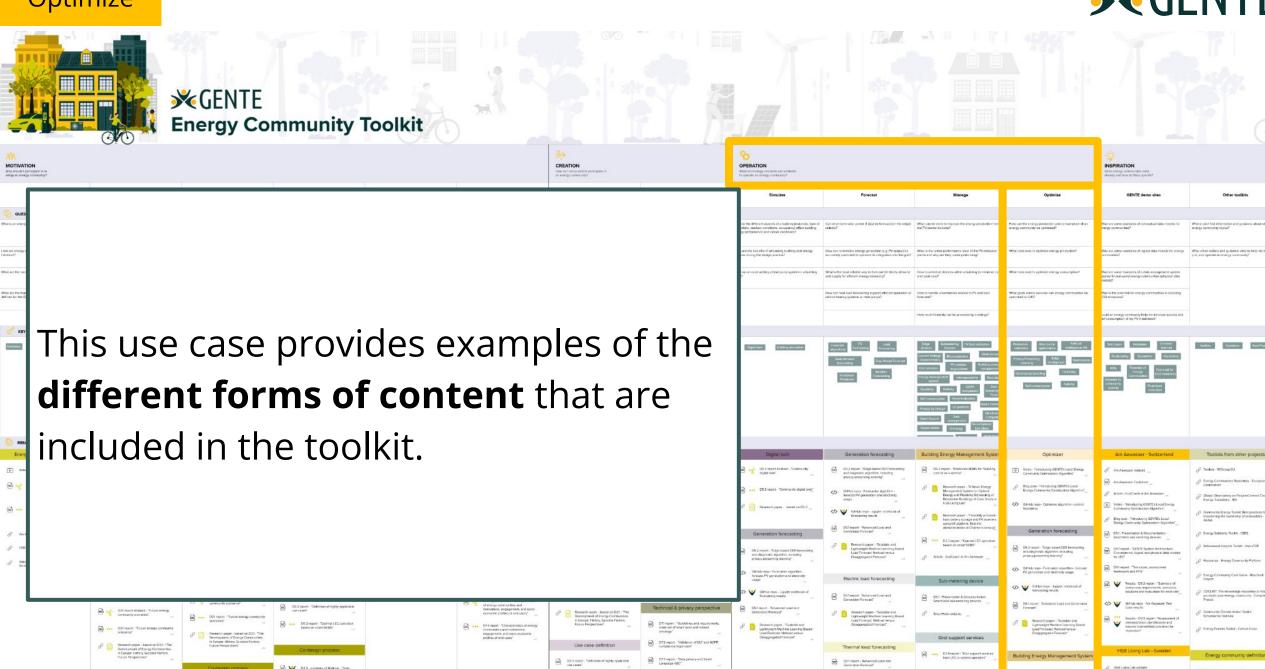
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GENTE Toolkit - Use case: Co-design

Scalability

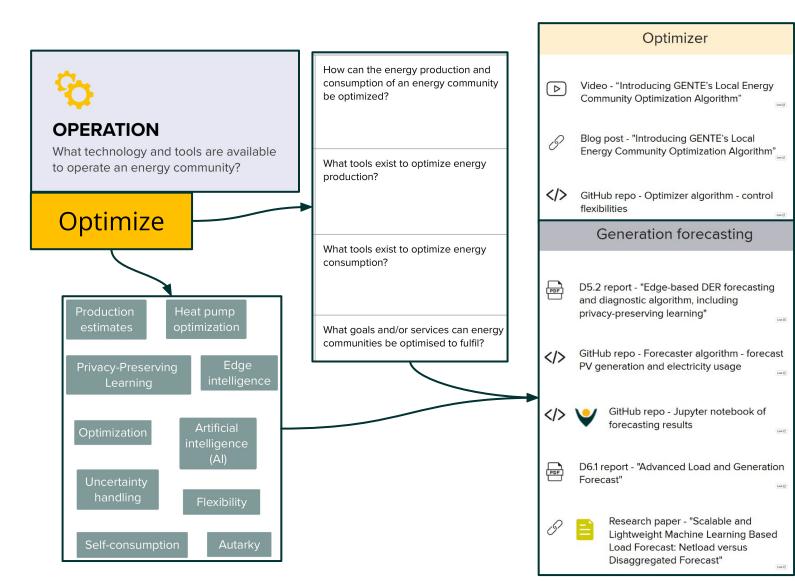








GENTE Toolkit - Use case: Optimize



The 'Optimize' Topic contains examples of all the **types of content** the toolkit includes, such as:

Videos

Blog posts & Articles

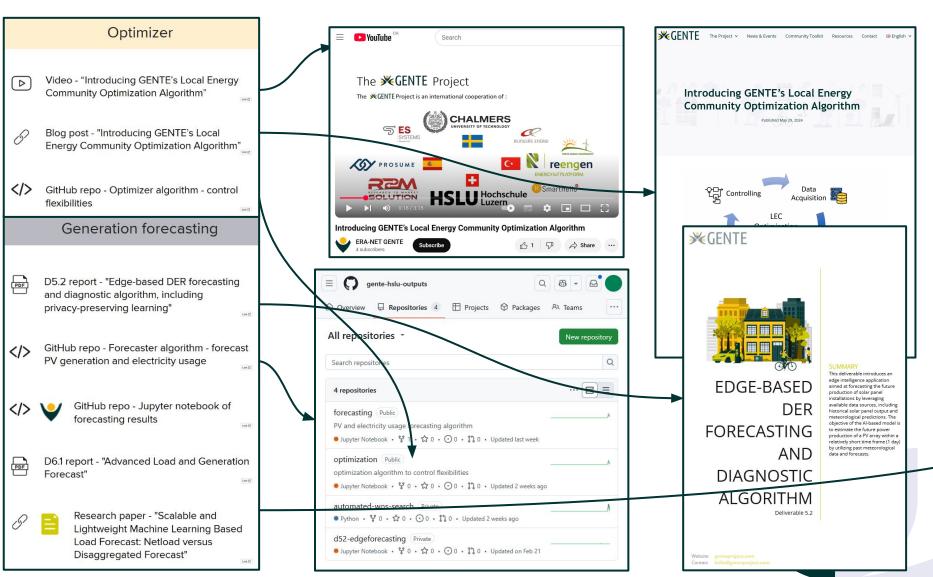
Code & data repositories

Reports

Research papers



GENTE Toolkit - Use case: Optimize



Scalable and Lightweight Machine Learning Based Load Forecast: Netload versus Disaggregrated Forecast

oeen trained uting the real measurement data from a residential building. Then, the models have been used in case studies using the real-time data for two forecasting approaches: i) netload forecast; ii) disaggregated forecasts, i.e., forecasting the load

I. INTRODUCTION

Demand forecasting for buildings is becoming one of the ortant elements in the energy management system of (e.g., solar photovoltaics - PV), new types of loads such as e.g., solar photovoriace: Fv), new types or losses such as eal-pumps, battery energy storages, electric vehicles, etc., re being integrated to buildings. Accurate load forecasts ould lead to a reduction in both operational and maintenance osts for buildings. From the end-users' perspective, reliable costs for buildings. From the end-users' perspective, reliable forecasts will help in daily energy management and scheduling with potential cost and energy awaye. Therefore such a such as the protection of the energy awaye such as the such as that potential high volutility and uncertainty associated with energy loads and building integrated PV's integrated with energy loads and building integrated of the energy loads and building integrated and the energy loads and building the energy loads and building the proceeding buildings can be done by forecasting the nethod or by forecasting buildings can be done by forecasting the nethod or by forecasting buildings can be done by forecasting buildings and building buildings and buildings and buildings and buildings are being a support of the s The main question here is which approach would be better

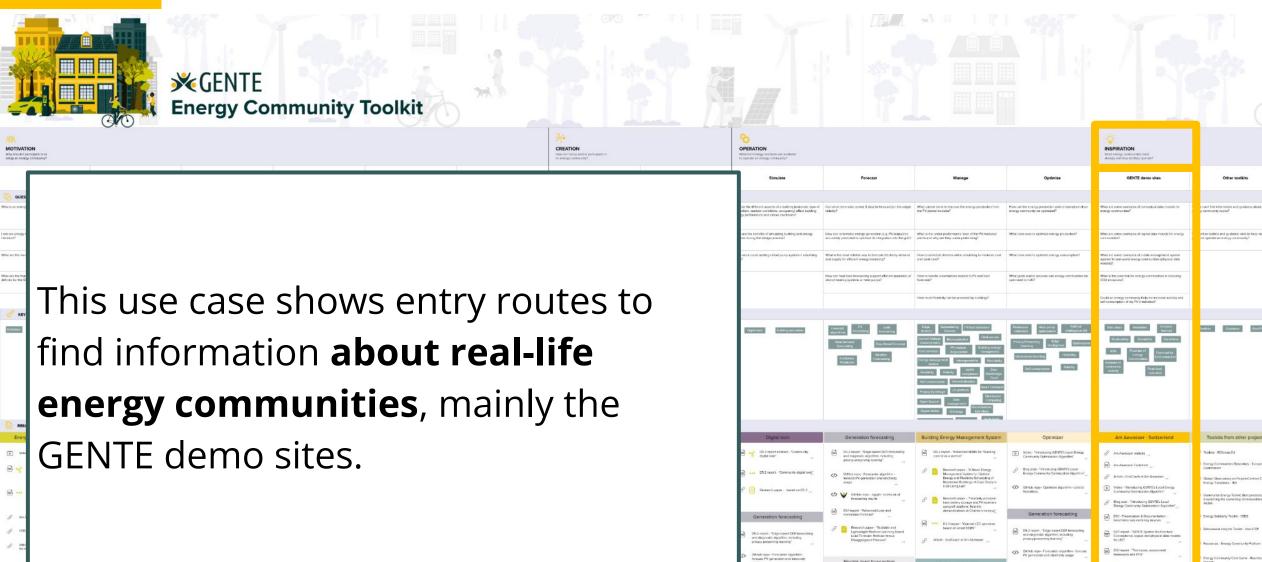
Efforts have been made in load forecasting but not much

for individual components of the netload and the netload its [1]. However, it is not clear whether aggregating sever forecasts to obtain the netload is more beneficial or aggregate the input data to forecast the netload with or approach directly. With netload, the knowledge of it



idded up the resulting values as aggregated users in a larg cale prediction. [4] used data-driven approach to decompo ne netload for easy modeling and forecasting. A blend





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HSB Living Lab - Sweden

Energy community definite

2. Hallowing lab window,

3. Hallowing lab window,

4. HSB Living Lab Framework

5. HSB Living Lab Framework

6. HSB Living Lab Framework



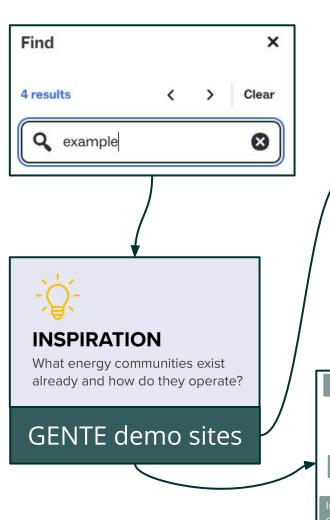
GENTE Toolkit - Use case: Examples

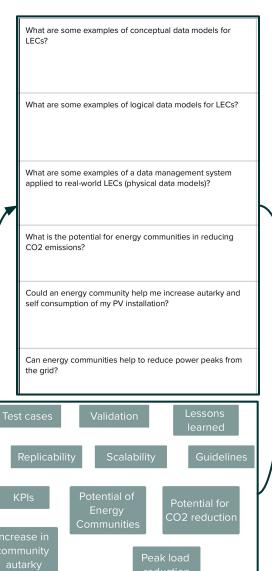


Use the **search function** in Mural or your PDF viewer to find where your **search term** occurs in the toolkit.



GENTE Toolkit - Use case: Examples







Results - D9.3 report - "Assessment of

demonstration, identification and lessons learned/best practices for

The term 'example' leads you to the extensive resources gathered throughout the project about the **GENTE** demo sites.

> www.genteproject.com hello@genteproject.com

Toolkit Availability

Where the toolkit can be accessed

- On the GENTE website https://genteproject.com/community-toolkit/
- 2 As a Mural board GENTE toolkit
- 3 As PDFs <u>Toolkit PDFs folder</u>







Recommended citation for this guide:

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