VIEGAND MAAGØE

Lessons from Denmark's Municipal Climate Inventory

From municipal coherence to shared decision infrastructure

Interreg Baltic Sea Region
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ENERGY TRANSITION
Climate-4-CAST

Viegand Maagøe

Strategic and operational advice on sustainability across dimensions

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Viegand Maagøe

- SUSTAINABLE PRODUCTS AND BUILDINGS
- CERTIFICATION AND LABELING
- DIGITAL SOLUTIONS IN GREEN TRANSITION
- ENERGY AND PROCESS OPTIMIZATION
- ESG-STRATEGY AND DUE DILIGENCE
- EU ADVISORY AND POLICY
- CLIMATE ACTION PLANS
- COMMUNICATION ABOUT THE GREEN TRANSITION
- PROJECT IMPLEMENTATION
- SOCIO-ECONOMIC AND SYSTEM ANALYSES

Sharing the best practices from Denmark

On the menu today

- ❑ What is Denmark's Municipal Climate Inventory
- ❑ Why it started
- ❑ How it's built and run
- ❑ What value it brings
- ❑ What we've learned … so far
- ❑ Where we are going next
- ❑ How to get started

It all starts with questions...

1. How much CO_2 do we emit as a municipality, and where does it come from?

2. How do we coordinate our efforts with our colleagues in other municipalities when they approach climate differently?

3. Which measures can deliver the largest reduction in our emissions over the next 5-10 years?

If we could answer these we would get...

- A clear number for how much you emit and what the biggest sources are
- The ability to focus where it matters most in terms of CO_2
- A simple story to explain the situation to politicians and citizens

- An overview of whether you are moving in the right direction
- The chance to adjust your efforts in time if you are falling behind
- A short list of the most important actions to focus on

And if the municipalities used the same approach/tool to answer these quesitions, we would have a **common basis for climate accounting across all Danish Municipalities.**

Introducing Denmark’s Climate inventory

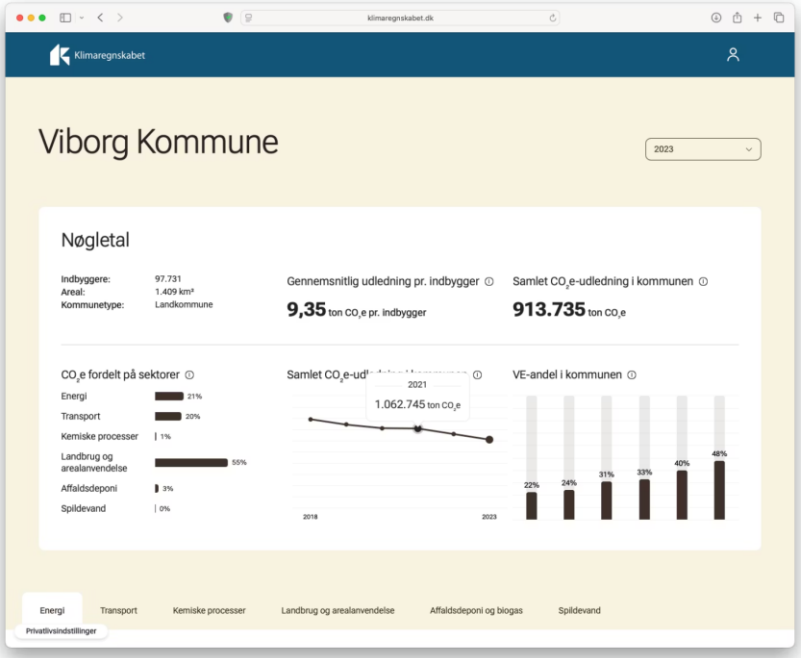
A rare success story in climate action

Denmark's Climate Inventory is a digital service that helps Danish municipalities calculate and analyze their energy consumptions and CO_2 emission and displays it across sectors.

Developed by the Danish government over a decade in collaboration with philanthropist Realdania, regions, and municipalities, this digital service has become the foundation for nearly all Danish cities' climate efforts.

Today, 95 out of 98 Danish municipalities use the Climate Inventory as the basis for their climate action plans—a level of adoption rarely seen in government digital services.

Find Climate Inventory at klimaregnskabet.dk.



Built iteratively, collaboratively and from scratch.

1

Initial Partnership

Government, Realdania, regions, and municipalities align on shared vision for climate data

2

Platform Development

Iterative creation of methodologies, data sources, and service functionality through continuous collaboration

3

Municipal Adoption

Climate Inventory becomes fundamental to Danish cities' climate efforts and essential for monitoring progress

4

Continuous Improvement

Municipalities work collectively to refine methodology, enhance data sources, and expand service features

Danish municipalities are now united around the Climate Inventory, working together to continuously improve the service's capabilities and effectiveness.

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The users own the tool, own the process, and own the decisions

What it looks like in practice

Technical aspects

- Experts collect and process raw data
  - Transportation surveys
  - Energy production data
  - Horses in Denmark
  - Updated emission factors etc.
- Data is fed to a core climate accounting model
  - One main data source (~80 raw data sources)
  - Municipal level model versions
- The model shows a detailed breakdown of energy and emissions

What it looks like in practice

Methodology

- Data is processed according to centrally decided methodology.
  - Some methodology is applied in pre-processing of data
  - Some is applied in core model
- User representatives decide on methodology changes
  - Experts can implement minor adjustments
  - Main decisions are made by user representatives
- User needs and challenges define the development
  - Every new feature starts from the users

What it looks like in practice

Organizational set-up

- Technical experts
  - Viegand Maagøe throughout the years
- Steering committee
  - Representatives from municipalities
  - Main methodological decisions
  - Economic and developmental prioritizations
- Communal working days
  - Input from all municipalities
  - Presentations from experts on changes
  - Open dialogue regarding development

What it looks like in practice

Day-to-day operations:

- Municipalities use the model as the main overview of emissions
- Experts offer continuous user support
- Political decisions are made based on model outputs
- Communal ‘Working days’ with representatives from each municipality to present and discuss new functions
- Yearly development plan based on user input, qualified by expert group and selected by steering committee
- Municipalities have a shared language and foundation – and can support each other too

What we learned along the way

Organizational setup

- Methodological ownership must be clearly anchored.
- Shared standards reduce duplication and increase trust.
- Experts are crucial, but they should operate as collaborators supporting user needs.

Technical core concepts

- Scope and geography must be clear.
- Data collection needs a common logic.
- Accounting should be bottom-up where it adds value, and top-down where that is sufficient and efficient.
- Transparency matters more than technical complexity for its own sake.

Process and workflow

- The account must support recurring updates, not one-off reporting.
- Users need to be involved not only in operations, but also in development.
- Annual planning should connect technical improvements, governance decisions, and user priorities.


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Adapting to a global context

Taking the Model Worldwide

Other nations needn't spend a decade developing similar capabilities. A convenient shortcut exists to achieve comparable results through the **Global Covenant of Mayors' Data Portal for Cities.**

Developed to implement the Climate Inventory vision at global scale, Data Portal for Cities enables states and regions worldwide to provide climate data and inventories to their cities—creating a foundation for active climate action and systematic follow-up.

Nations can adopt Data Portal for Cities at the national level, using it much as Denmark uses the Climate Inventory, but with flexible implementation models suited to different ambitions and contexts.

Adapting to a global context

Case study Brazil: Top-Down Climate Inventories at Scale

In Brazil, state governments, municipalities, and international organisations have united to use Data Portal for Cities as the foundation for urban climate inventories—demonstrating how the platform works at massive scale.

1

National Generation

Large government project develops inventories for all 5,000 Brazilian cities using top-down methodology

2

Local Distribution

Detailed accounts distributed to cities through Data Portal for Cities platform

3

City Refinement

Municipalities enhance inventories with supplementary data from Google Maps and local sources

4

Capacity Building

Bespoke online course for Brazilian climate practitioners on using the platform effectively

Flexible Implementation Models

Administration & Control

National-level management capabilities for overseeing users, communications, and data distribution across cities

Detailed Inventories

Distribution of comprehensive climate accounts to individual cities, providing granular data for local action

Scalable Ambition

Multiple models available depending on desired sophistication, detail level, and implementation resources

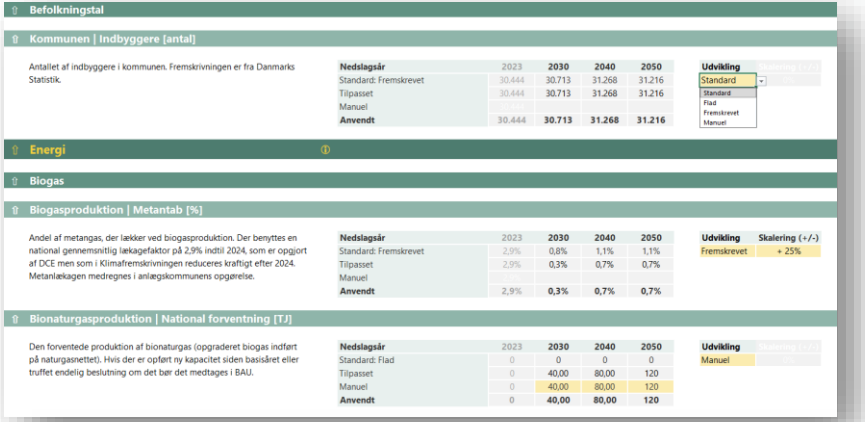
The model is designed to adapt to different national contexts, whether pursuing rapid rollout or comprehensive, detailed implementation.

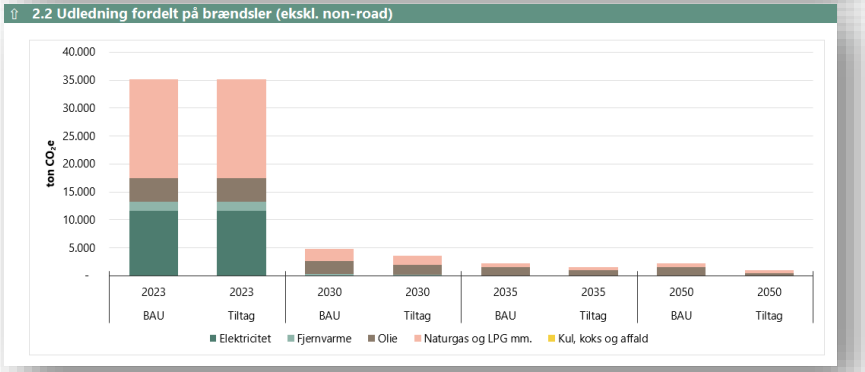
Questions before we head into the future?

What about future emissions?

Scenario tools shape the path forward

- Built on the climate account, we have developed a **detailed sectoral scenario tool to forecast future emissions and assess climate initiatives**
- On this shared foundation, each municipality has a **business-as-usual pathway** that can be adapted to local ambitions and initiatives
- As with the climate accounts, experts work with user-defined methodologies, while central decision-making ensures **consistency across all municipalities**





Simplicity in the front

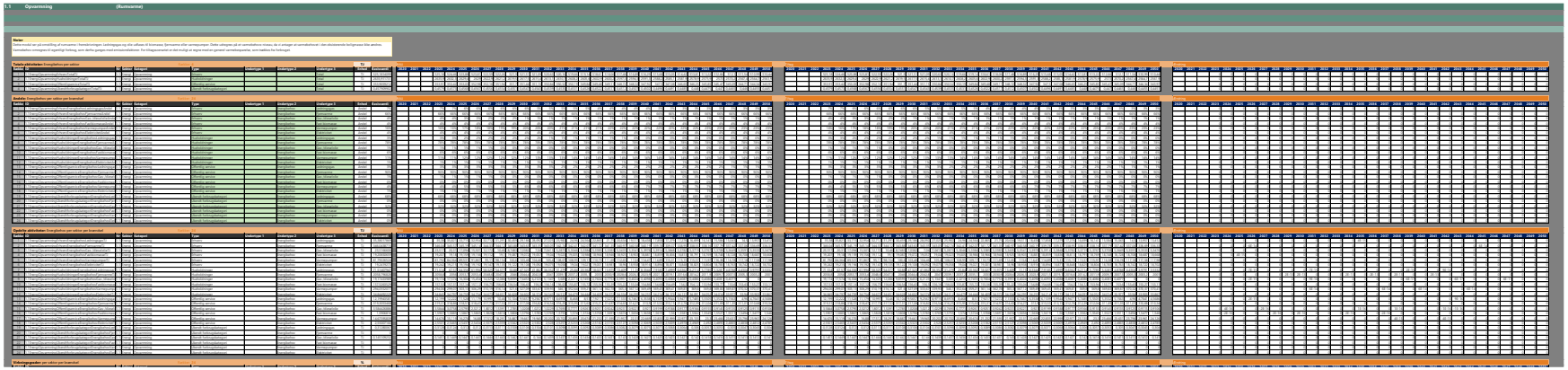
Complexity in the back

⇧ Bionaturgasproduktion [TJ]

Justering af bionaturgasproduktion pga nye bionaturgasanlæg eller anden kapacitetsændringer

Nedslagsår	2023	2030	2040	2050
BAU	1.419	1.419	1.419	1.419
Relativ ændring (%)	0%			+ 75%
Manuel				
Anvendt	1.419	1.695	2.089	2.484

Justering	Tiltag aktivt?
Relativ	☑



The future of climate accounting tools in Denmark

Climate budgeting* is a growing interest

Creating a link from emissions directly to budget discussions and economic priorities

We develop based on the shared municipal setup, adding relevant data (including scope 3) while keeping methods consistent

Our models are **scalable by design**, built from user needs to work both now and in the future – possibly using CADS as a visualization tool

How to get started without overdesigning

1

Define partners and shared ambition

Establish collaboration around desired sophistication and detail level for inventories, determine scope of supplementary data to include in baseline national dataset.

2

Organise Project

Structure governance involving municipalities and regions, define communication strategy and training requirements.

3

Develop Dataset

Create complete climate inventory dataset for cities using national data and distribution models.

4

Launch & Communicate

Roll out platform and inventories to relevant municipal staff with comprehensive support materials.

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Do not wait for a perfect model.
Build a usable one with the right ownership and expand together.

Where to go next?

We continue to improve and expand the Danish model

- → More scenario support.
- → Possible economic dimension.
- → A lot of collaboration all around.

Increasing number of countries, cities and regions are using climate accounting models to support their work. To get started **reach out to your neighboring city** – start the discussion on shared ambitions.

Share your process with others on the same path.

Specific questions?

If you want our eyes on your situation or project, feel free to reach out.

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Questions?

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