Michael Kristensen

Samsø Energy Academy and
Samsø Municipality

COO/Project coordinator
Member of the Environmental and
Technical committee

Working with local stakeholders on land use for Samsø's climate neutrality

Spatial energy planning for the decarbonisation of islands and rural areas – methodologies, techniques and best practices.

A holistic plan that brings the stakeholders to plan together.

ENERGY ACADEMY

Samsø Kommune

SAMSØ KOMMUNE
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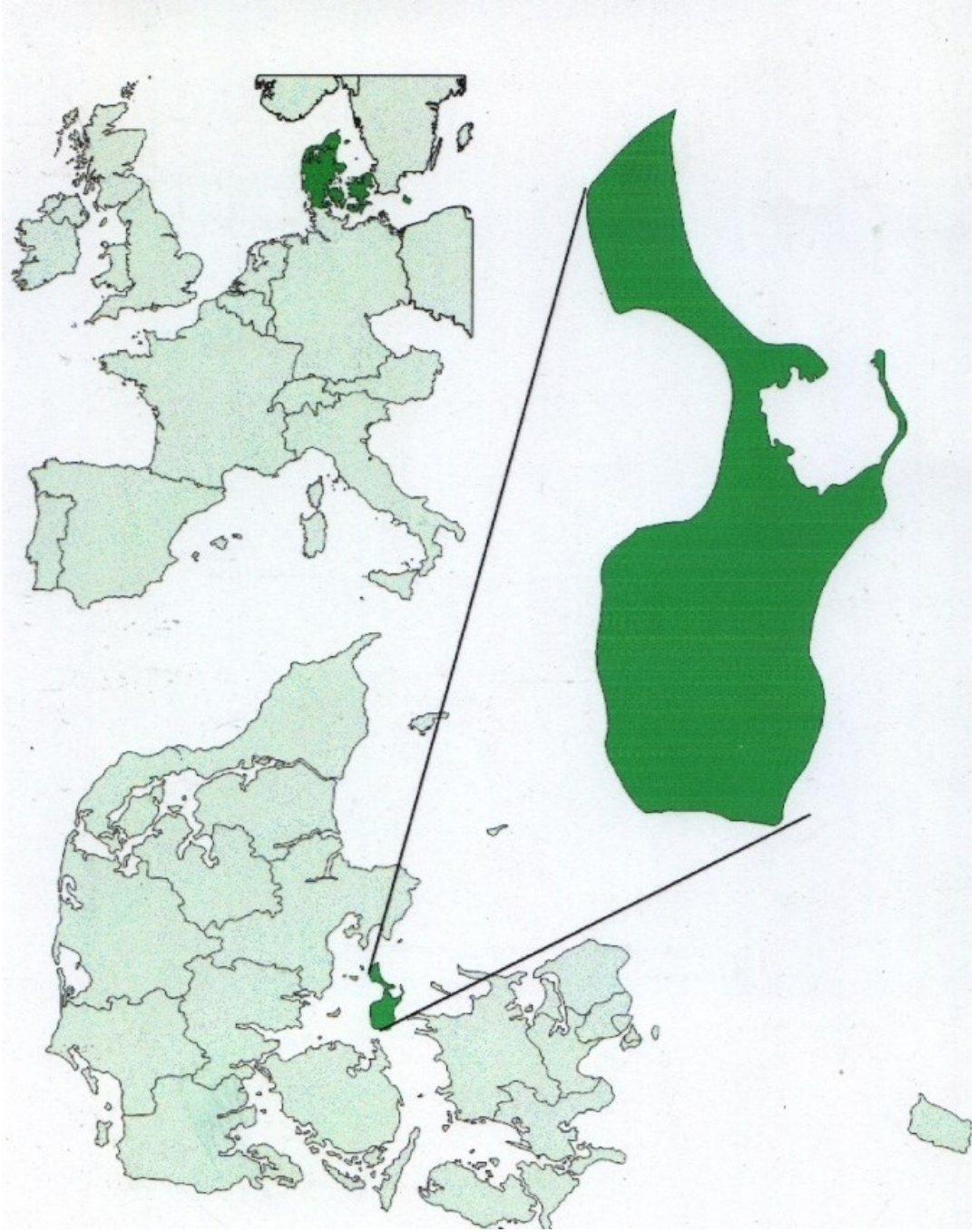
Tourism, Farming
Renewable energy*, and …
3650 people

3rd smallest municipality in Denmark out of 98



*) Electric cable to the mainland

Citizen's meetings:
Energy, Climate and the collaboration with DK2020, Land use and multifunctional land distribution

Workshops

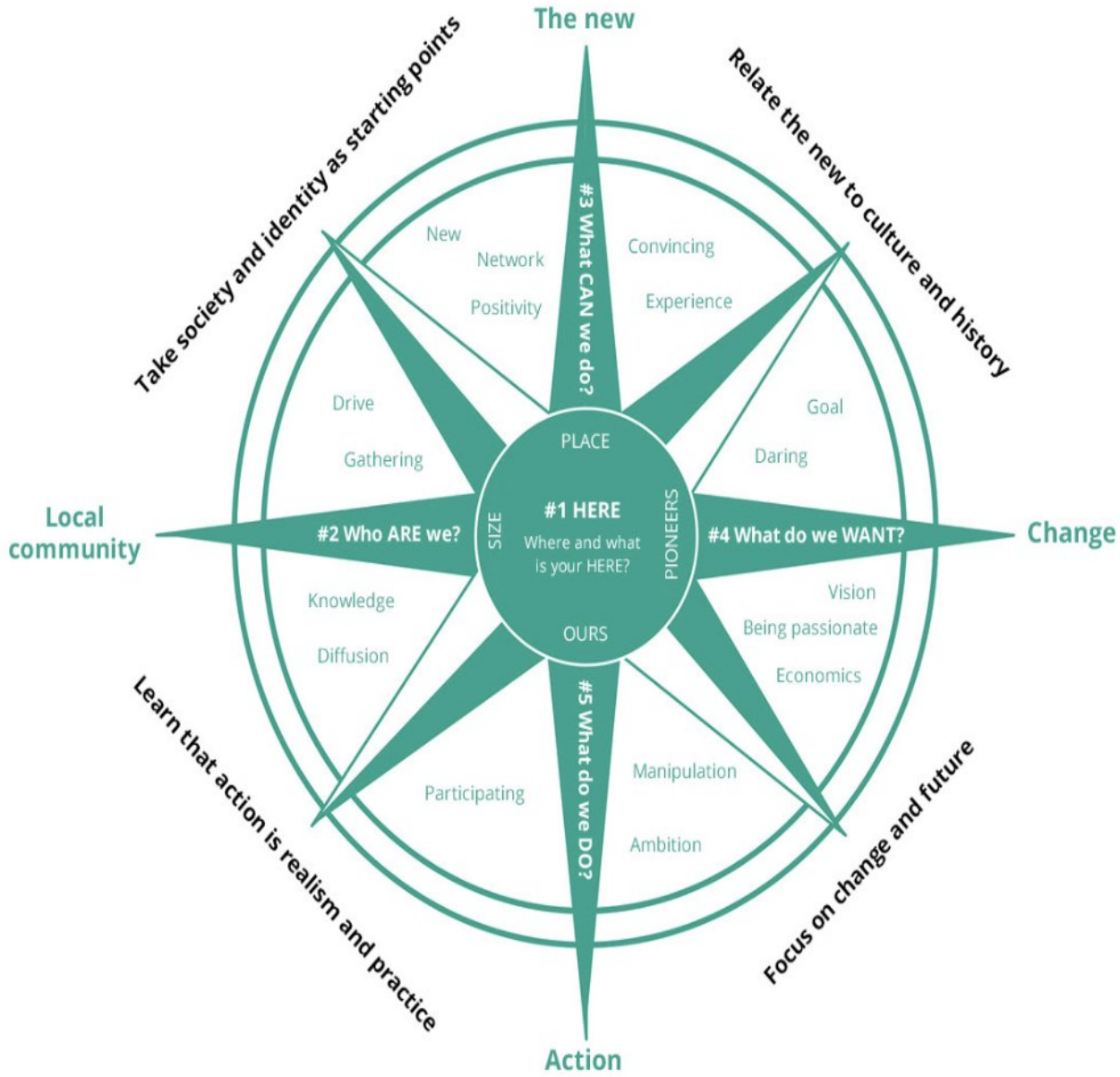
Torsdag den 6. februar 2025	Landbrugets klimaomlægning
Onsdag den 5. marts 2025	Klimafokuseret turisme- og erhvervsudvikling
Mandag den 10. marts 2025	Energiomstilling og CO2reduktion i landsbyer og sommerhusområder
Mandag den 31. marts 2025	Fremtidens arealanvendelse

THE VISION OF SAMSØ AS A CLIMATE-NEUTRAL ISLAND

- 1997 – Denmark's renewable energy island
- 1997 – 2007 100% self-sufficient in renewable energy
- 2007 - 2030 Fossil-free island
- In 2030, Samsø will reduce greenhouse gas emissions by 70 percent compared to 1990.
- Samsø must be a climate-neutral island in 2050. Municipal board decision – 100% more renewable energy than own consumption
- In 2030, Samsø must be an island that has and will continuously adapt to and mitigate climate change – a climate-robust island.

Collaboration between sectors is a necessary condition for a successful sustainable transition.

Dialogue — At Samsø Energy Academy we mobilise the community and facilitate the ability of the community to carry out complex tasks in collaboration between the citizen, the administration and the private sector. Four examples of our work.



FOCUS AREAS / STAKEHOLDERS

INFRASTRUCTURE/TRANSPORT

Samsø Shipping Company (municipal)

Samsø Transport (municipal)

Samsø Electric Transport Association (citizens)

Samsø Energy Academy (NGO)

HEATING

Green Heating Samsø (municipal)

Ballen Brundby District Heating (Cooperative society)

Onsbjerg District Heating (private)

The Craftsmen's Association (Citizens)

Samsø Energy Academy (NGO)

Samsø Broadband connection (Commercial)

ENERGY

Samsø Renewable Energy (municipal)

Samsø Energy Academy (NGO)

Central Denmark Region/Danish parliament

AGRICULTURE AND LAND USE

Samsø Farmers' Association/Organic Agriculture Fund

University of Copenhagen and Samsø Energy Academy (Plan 22+)

Central Denmark Region/Danish parliament

CLIMATE ADAPTATION

Samsø Wastewater

Samsø Farmers' Association

Central Denmark Region/Danish parliament

SAMSØ KOMMUNE
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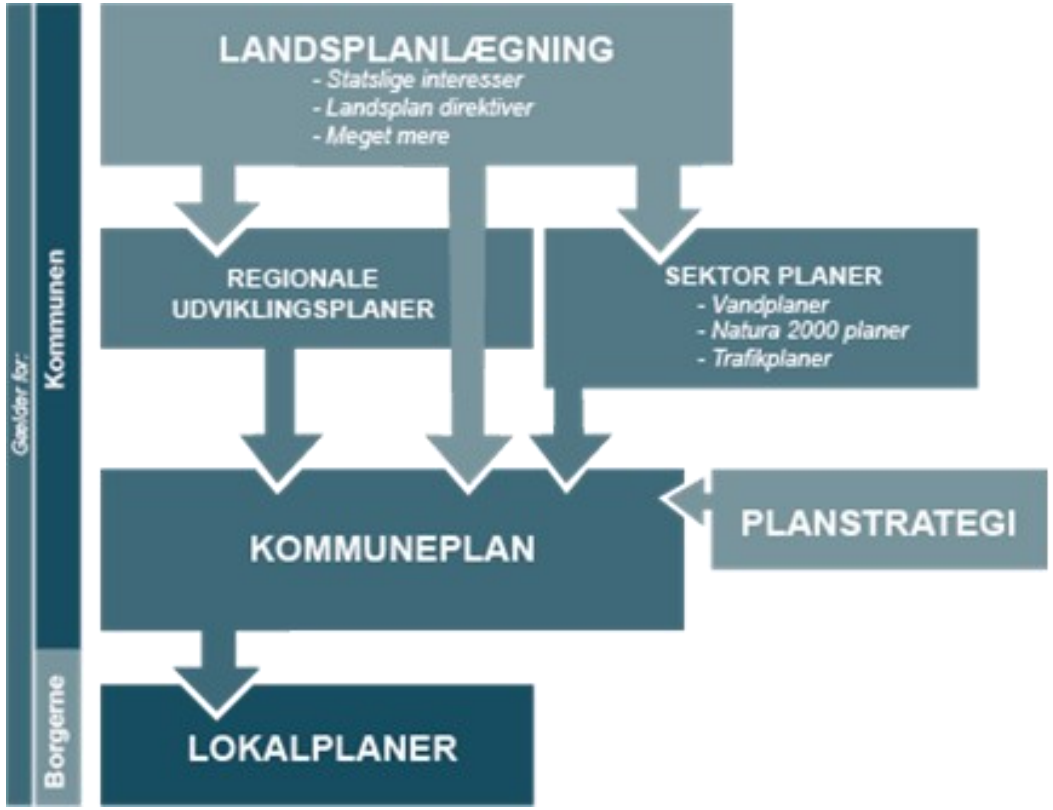
The plan hierarchy



SAMSØ KOMMUNE
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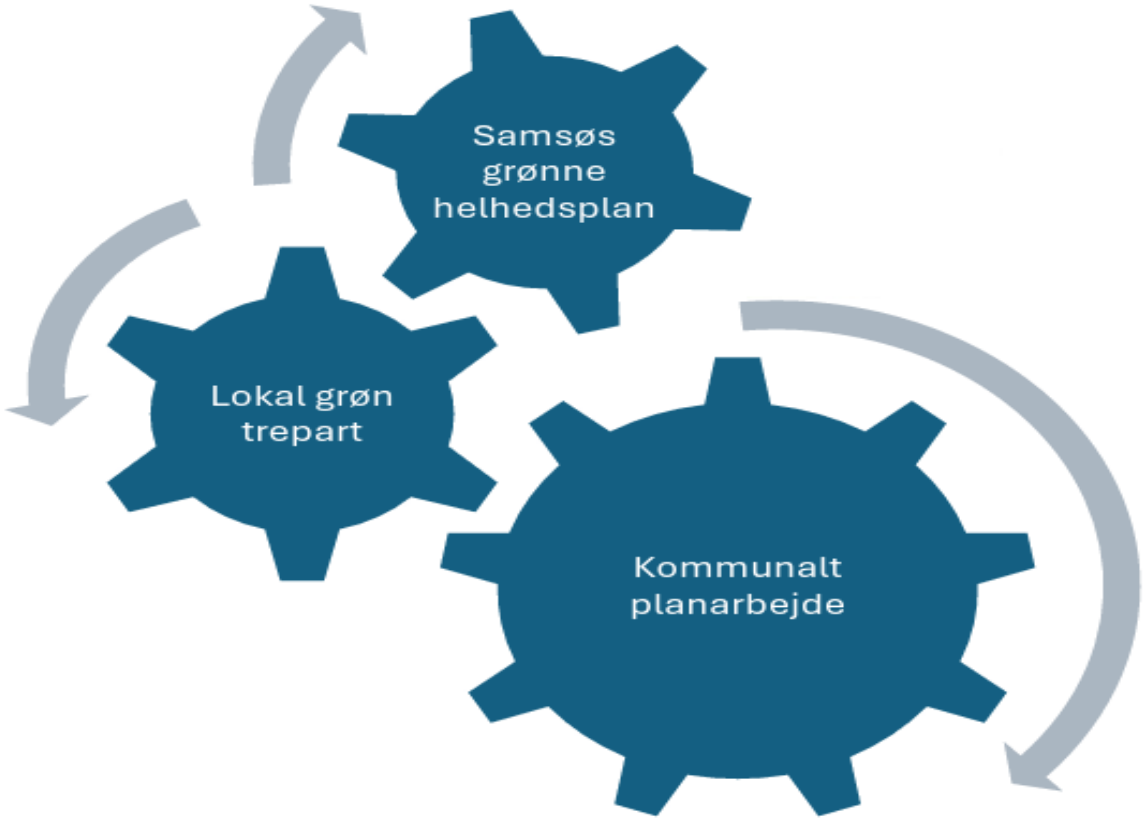
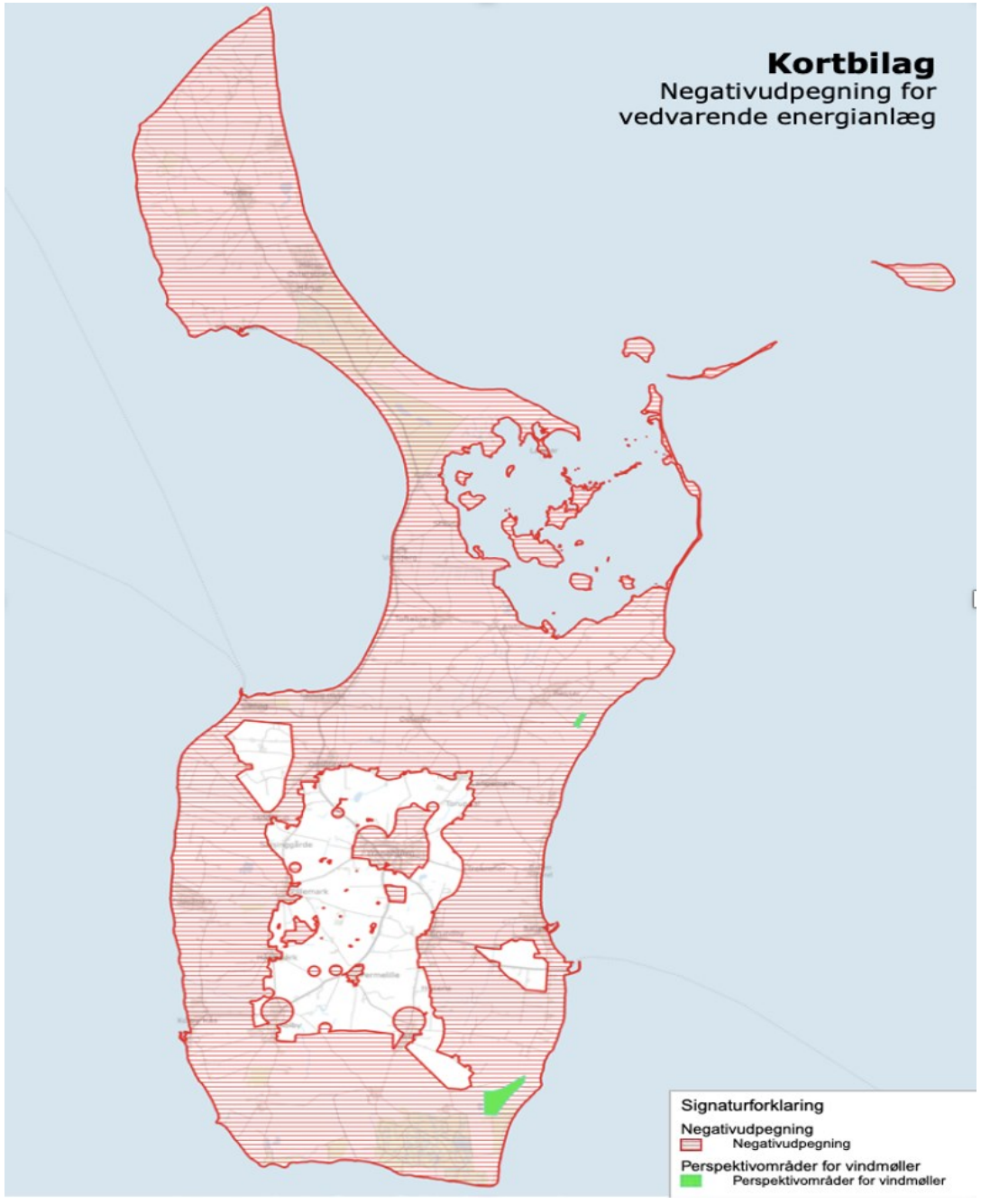
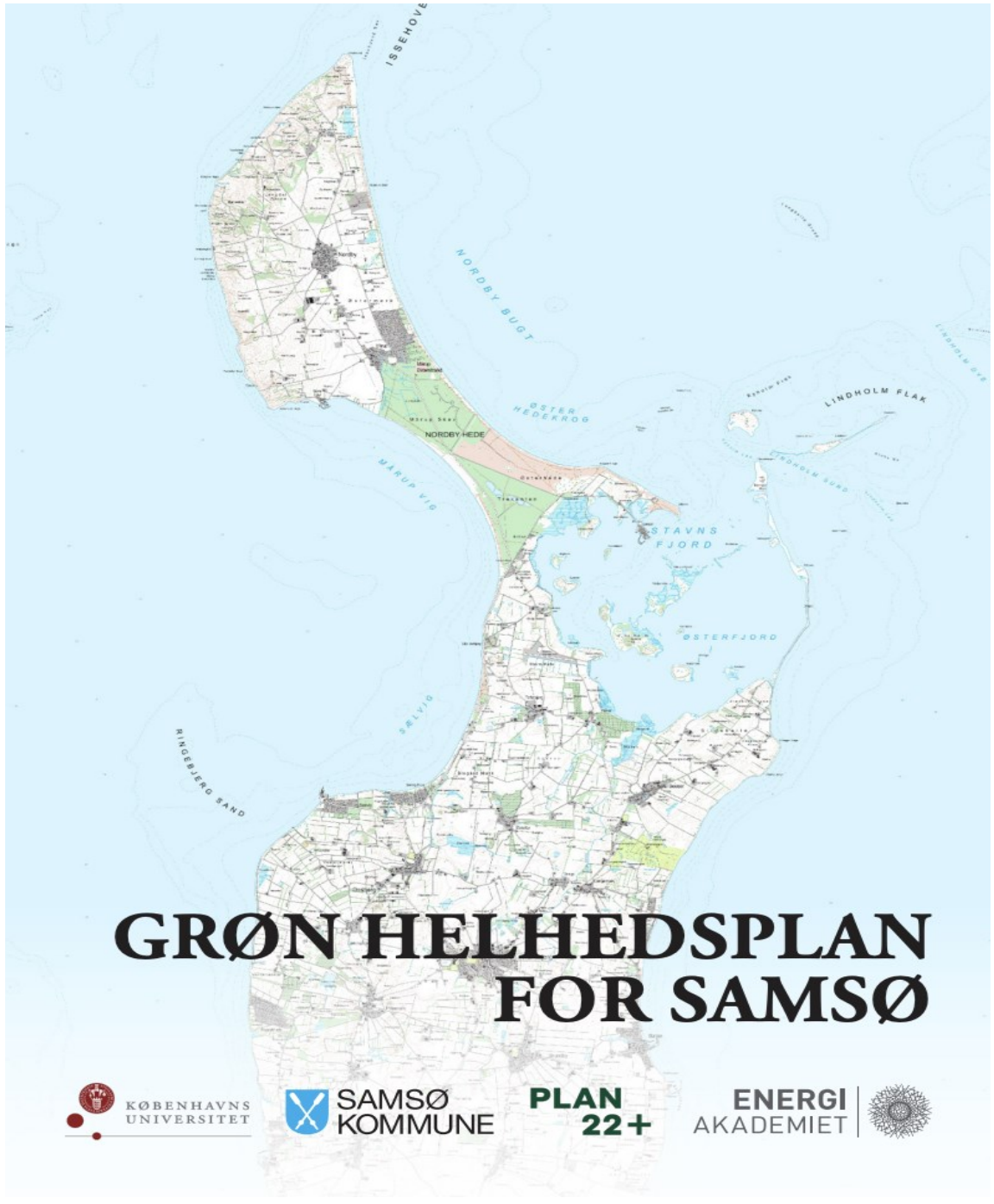
Municipal plan, Local green tripart and Samsø's green master plan




Kortbilag
Negativudpegning for vedvarende energianlæg
Signaturforklaring
Negativudpegning
Negativudpegning
Perspektivområder for vindmøller
Perspektivområder for vindmøller


ISSEHOVE
NORDBY BUGT
ØSTER HEDEKROG
NORDBY HEDE
LINDHOLM FLAK
MÅRUP VIG
STAVNS FJORD
ØSTERFJORD
SELVIG
RINGEBJERG SAND
GRØN HELHEDSPLAN FOR SAMSØ
KØBENHAVNS UNIVERSITET
SAMSØ KOMMUNE
PLAN 22+
ENERGI AKADEMIET

Samsø Klimahandlingsplan 2020

Besluttet af Kommunalbestyrelsen på Samsø den 26. maj 2020.

GODKENDT
DK2020
AF C40 & CONCITO

Climate action plan, status and goals

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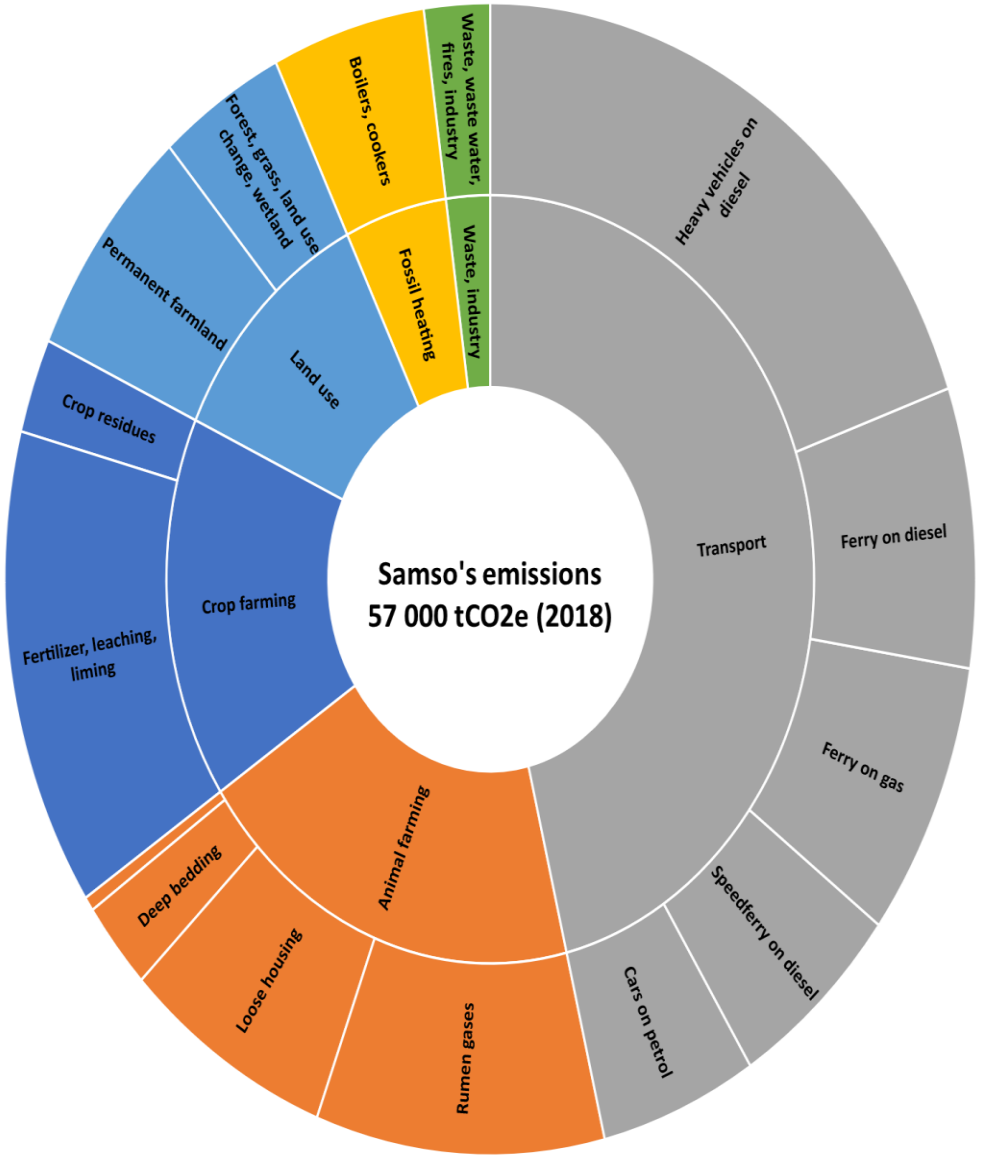
Indsatsområde	Mål for 2025	Status 2020	Planer 2021
Landtransport 10.000 ton CO2e	Elbiler 15% af personbilerne kører på el [600 t CO2e] Busser på biodiesel [200 t CO2e] Skraldebiler på biodiesel [100t CO2e] Busser på biodiesel [200 t CO2e]	Elbils procent primo 2020: 3% Nyindkøbte el/hybridbiler i 2020: xx antal Klar til elbil projekt startet (NRGI) Renovationsbiler på biodiesel i 2022 udbud gennemført	Kampagne for el-biler Dialogmøder med erhvervslivet/ transport branchen Kampagne for erhvervslivet
Færger 13.000 ton CO2e	Bilfærge på øst ruten – biogas elhybrid [6.800 t CO2e] Bilfærge på vest ruten –biogas elhybrid [4.700 t CO2e]	Projektansøgning om biogas/ batterihybrid færger sendt til EUDP Ansøgning sendt tl EUCF	forundersøgelser kører, med eller uden ekstern finansiering
Opvarmning 3.000 ton CO2e	Udfasning af oliefyr 100% [400 tCO2e]	Grøn Varme Samsø; 8 olieforbrugere på fjernvarme EU projekt på 'Energy poverty' søgt for at skabe forretningsmodel Statslig pulje til konvertering åbnet	Kampagne køres - måske nyt projekt med 'kold fjernvarme'
Brug af land 20.000 ton CO2e	Klimaskov [24 t CO2e] Biokul til jorden [1.500 tCO2e] Udtagning af landbrugsjord [400 tCO2e] Landbrugsjord til skov, solceller, vådområde [1.100 tCO2e] Nitrifikationshæmmere i planteavlen [200 tCO2e] Pløjefri dyrkning [200 tCO2e] Efterafgrøder [200t CO2e]	SKovrejsningsområder 5-doblet Klimaskov projektet startet, træer forventes plantet 2021 Projekt STABIL med Biokul bevilget Besser Made fundraising	Dialog køres med landbrugserhvervet STABIL biokul prod. startet Klimaskovampagne for lokale virksomheder - og private privat skovrejsning
VE eksport -32.500 ton CO2e	Batterier - peakshaving Vedvarende Energieksport	SMILE projektet i Ballen fortsætter 2 EU projekter om batterier/energi i kommunale bygninger indsendt ansøgning om solceller behandles	Faldende effekt af VE eksport kan Samsø ikke ændre

CO2 Footprint of Samsø

Samso municipality got a CO2 accounting system in 2020



Value for the money!

2025 Handlinger	CO_{2e} reduktion i tusinde ton	mio kr til plan og proces	mio kr i samfunds-investeringer
Biogasanlæg på Samsø – gylleeffekt	1,3	0,4	60
Forflydning af biogas til transport*	0	0,1	20
Power to X - metanisering til biogas*	0	0,25	20
Færge på vestruten til Jylland - biogas elhybrid	6,8	0,1	25
Færge på østruten til Sjælland - biogas elhybrid	4,7	0,1	0,5
Elbiler 15% af personbilerne kører på el	0,6	0,3	50
Busser på biodiesel	0,2	0,1	0,5
Skraldebiler på biodiesel	0,1	0,25	0,5
Besser Made - Natur- og klimagenopretning	0,2	0,3	2,5
Klimaskov	0,0	0,15	0,1
Termisk forgasset biokul til jorden	1,5	0,25	8
Udtagning af landbrugsjord (300 ha)	0,4	0,2	15
Landbrugsjord til skov, solceller, vådområde (300 ha)	1,1	0,2	2
Nitrifikationshæmmere i planteavlen	0,2	0,1	0
Pløjefri dyrkning + 20% areal	0,2	0,25	0
Efterafgrøder + 20% areal	0,2	0,25	0
Batterier – peakshaving	0,0	0,1	5
Vedvarende Energieksport	0,0	0,1	300
Klimatilpasning - Sørenden og Ålebækken	0,0	0,3	10
I alt	***17,6***	***3,8***	***519,1***

09

POLITICAL PRECISION — BOTTOM-UP

Radical societal development calls for top-down and bottom-up to walk hand in hand.

Dialogue — The ambition of creating radical societal development, such as green transitions, requires national political frameworks and objectives which can facilitate a solid bottom-up integration process ultimately strengthening the local community.

Freedom in a common brings ruin to all

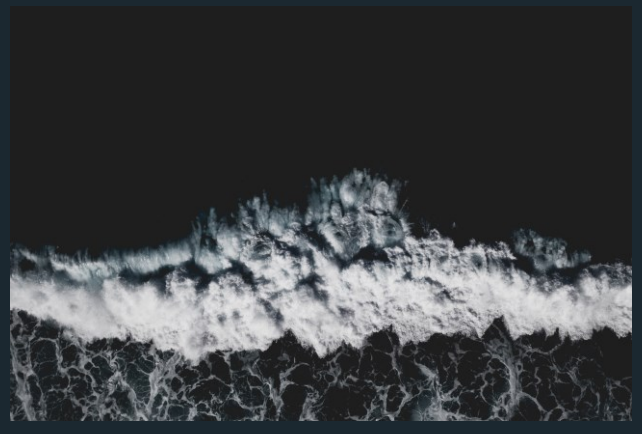
(Hardin 1968)

CEBW - FUTURE WITHOUT WASTE

With the grip of the circular economy and a budget of DKK 125 million, 39 partners from all over Denmark are creating the basis for a society where waste prevention as well as more reuse and recycling become a practical option. Both for companies, systems and ordinary people. (2022-2029)

INTERREG ReNutriWater

The green frontrunner island of Samsø has long worked with circular processes on the island. Now the wastewater must also be recycled. And the best solutions for recycling are to be found in European cooperation. (2023-2026)



BARREEF: Coastal protection with artificial reefs to be tested on Samsø

Samsø has been chosen as a pilot municipality in the DTU project BARREEF. The project investigates whether new reefs in the sea can protect the coasts from erosion and at the same time create better marine habitats for marine life. (2023-)

Participation in complementary applications submitted spring 2024 :

- EU HORIZON DISCWATER decentralized water management (Wastewater)
- EU HORIZON 4 draught – Naturebased solutions irrigation. SE
- EU LIFE ACT – SECAP (water, drought, pyrolysis etc.)
- EU INTERREG ØKS Solar Farming, Living Lab (AgriPV) - SE
- EUDP Battereuse - 2nd lifecycle batteries (Balance capacity)
- Innovation Fund PROTECT – groundwater project (Drone project)

Challenges for Samsø Municipality

Financing: Securing sufficient funds to implement the necessary projects and investments – especially in light of the size/critical mass.

Technological development: The need to keep up with the rapid development in technology and innovation in order to implement the most effective solutions.

Behavioural change: Getting all citizens and businesses to change habits and take part in climate action.

Coordination and collaboration: Effective coordination between different actors and levels of government to ensure coherent efforts.

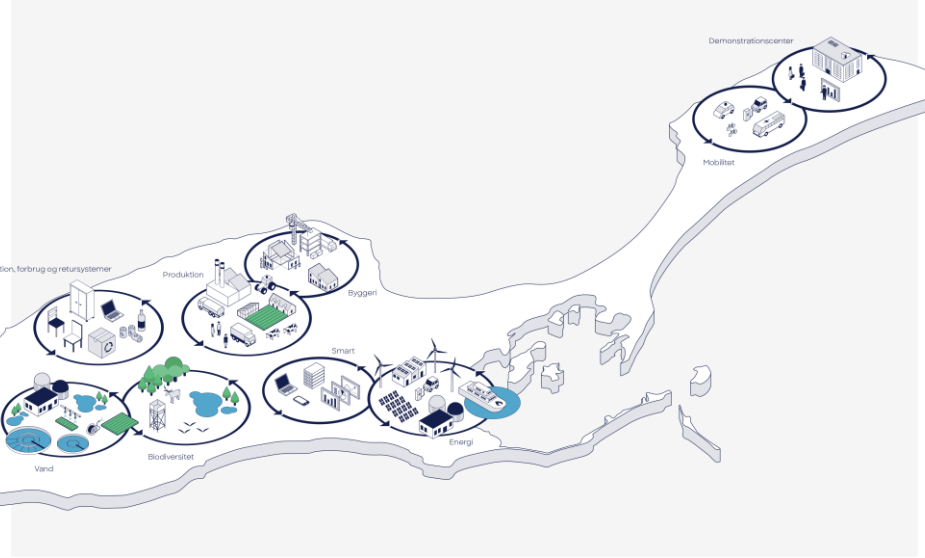
Conclusion: Spatial planning as a Driver for Settlement and Local Economy on Samsø

✓ Active participation in the Spatial energy planning, Green Master Plan & Local green tripart enables:

🟢 Attractive conditions for new residents – Young families with kids
– Clear planning and bold visions attract families and newcomers
– A unique blend of green energy, nature, and village life supports quality of life

🟢 A stronger local economy
– New jobs in green industries and construction
– Increased activity in local businesses, crafts, and tourism

🟢 Long-term value creation for Samsø
– Land use as a strategic tool for sustainable development
– A green and resilient island community – for people and nature alike
– Survival of the island as a thriving whole year society!



Samsø leads the way again as a green development island – where holistic plans become reality

SAMSØ KOMMUNE
- vi gør det sammen

Thank you for your attention!

ENERGY ACADEMY

Michael Kristensen