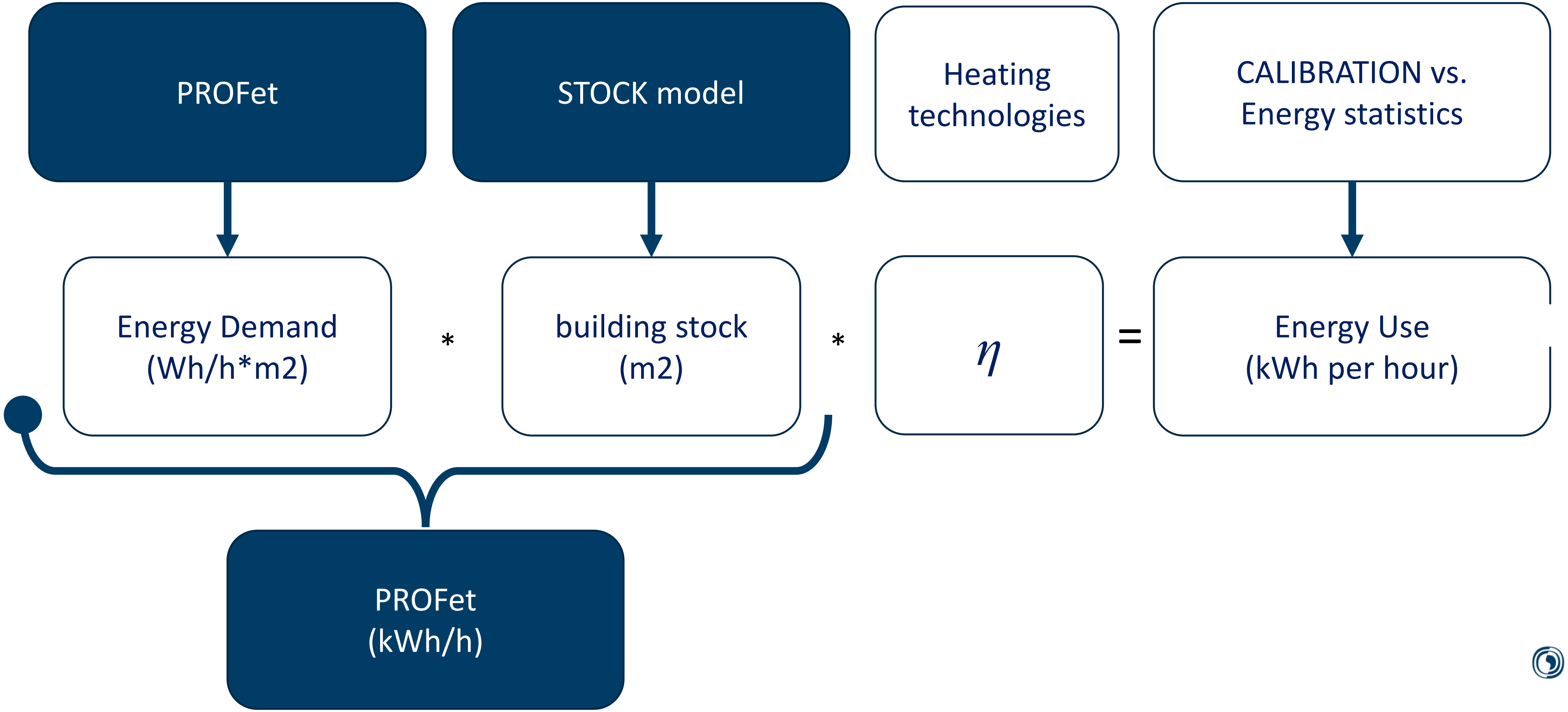
SINTEF
70 years
1950-2020

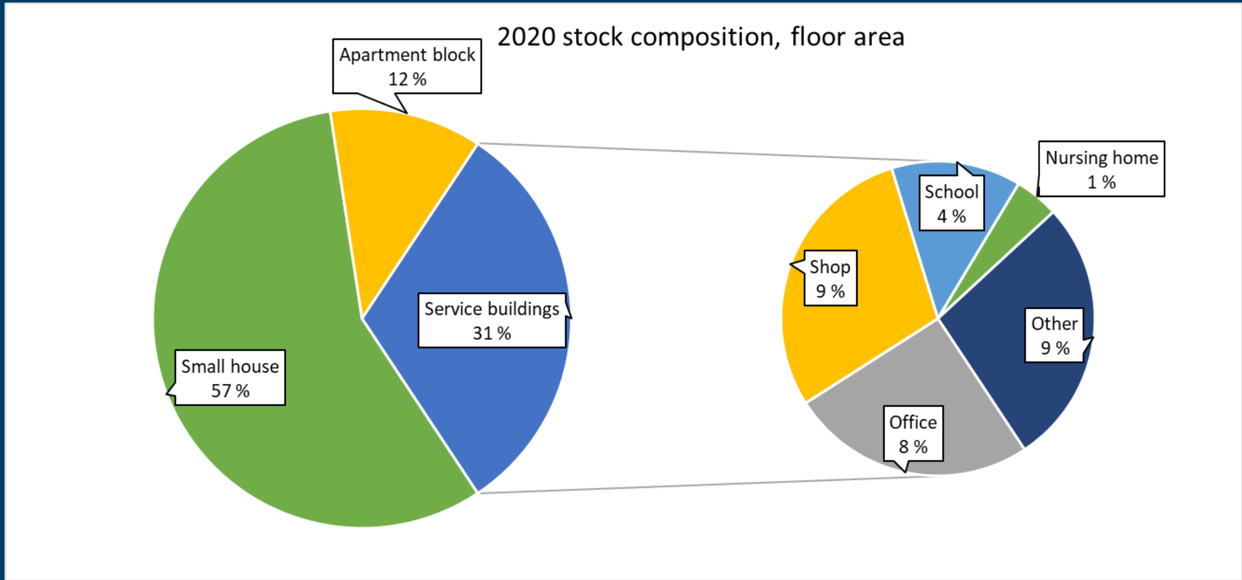
BUILDING STOCK EVOLUTION AND CALIBRATION

Flexbuild Workshop 9 March 2021

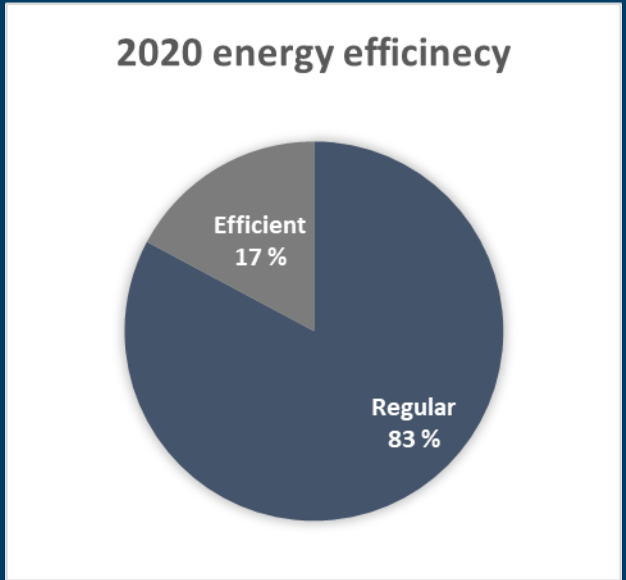
Methodology



Building stock



- 2020: 386 million m2
- Small house, apartment block, service buildings
- 2020-2050
  - New: efficient or very efficient
  - Renovated: regular or efficient
  - Unchanged: regular



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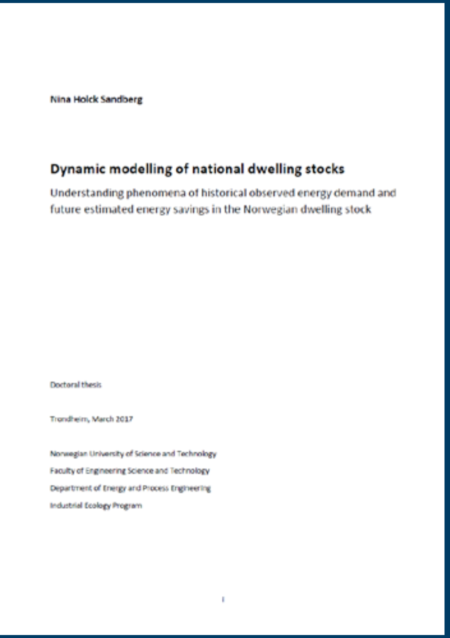
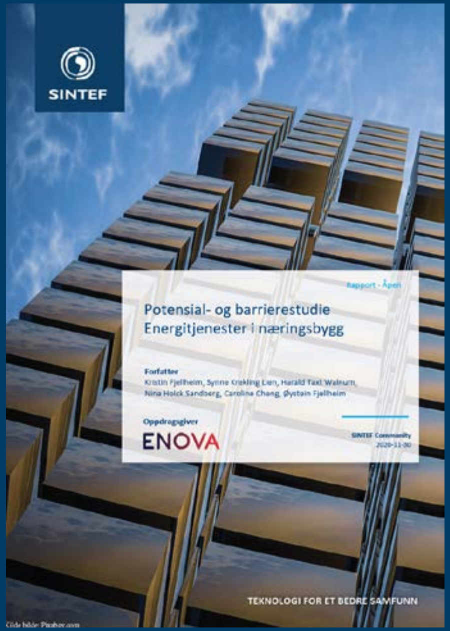
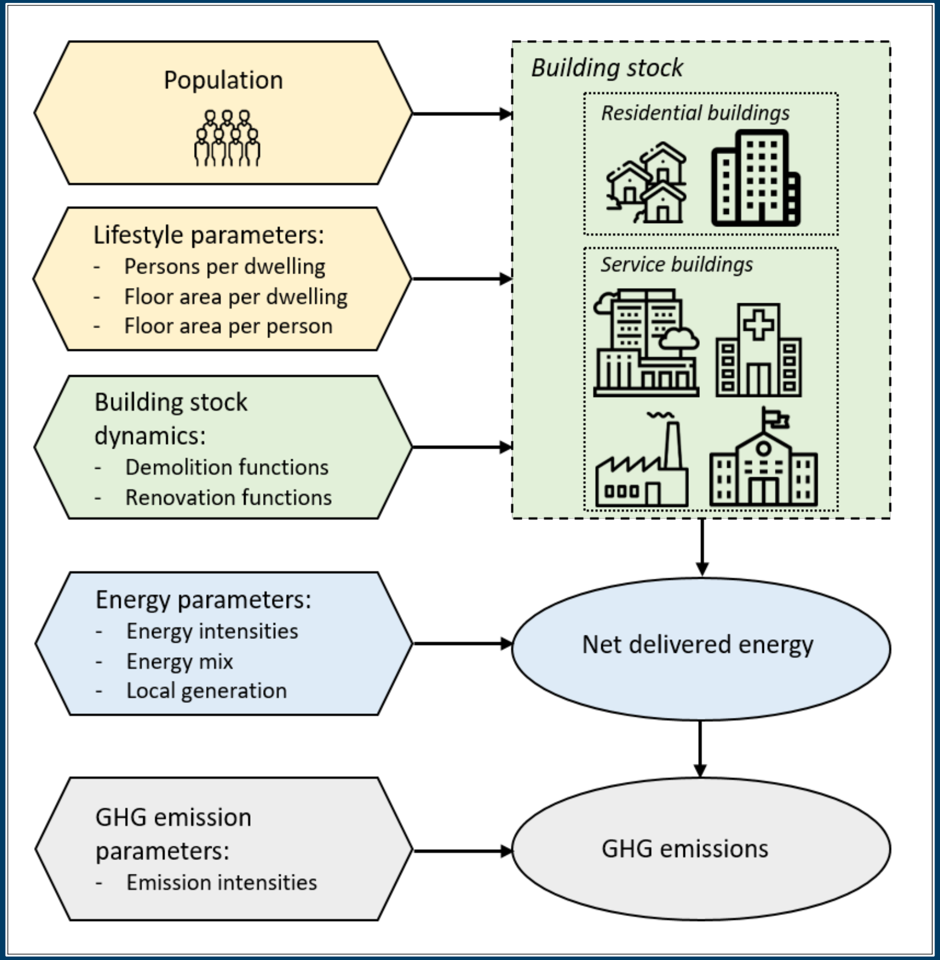
Building stock model: RE-BUILDS







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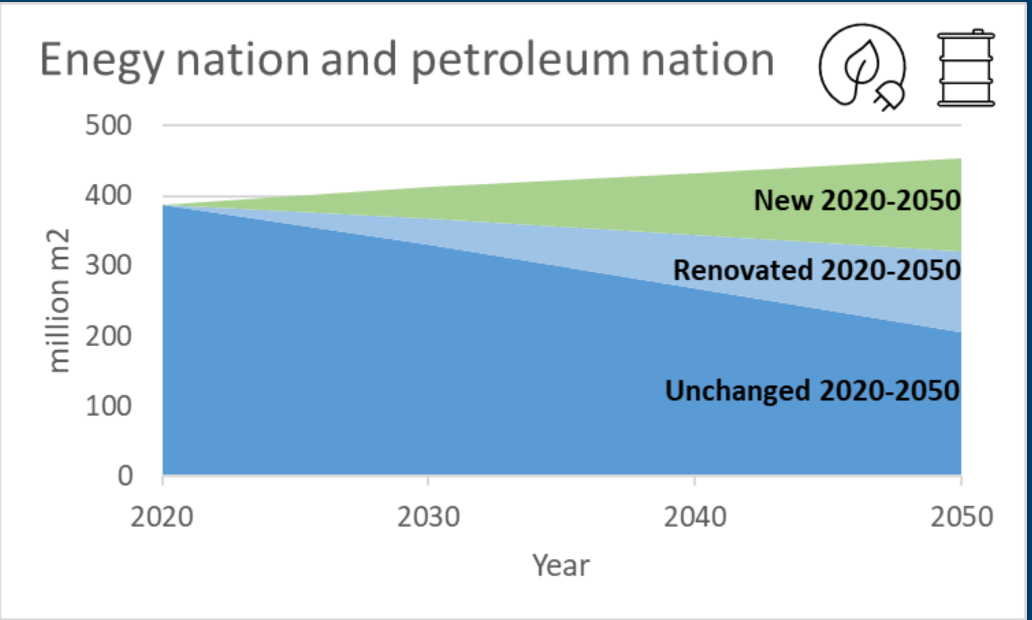
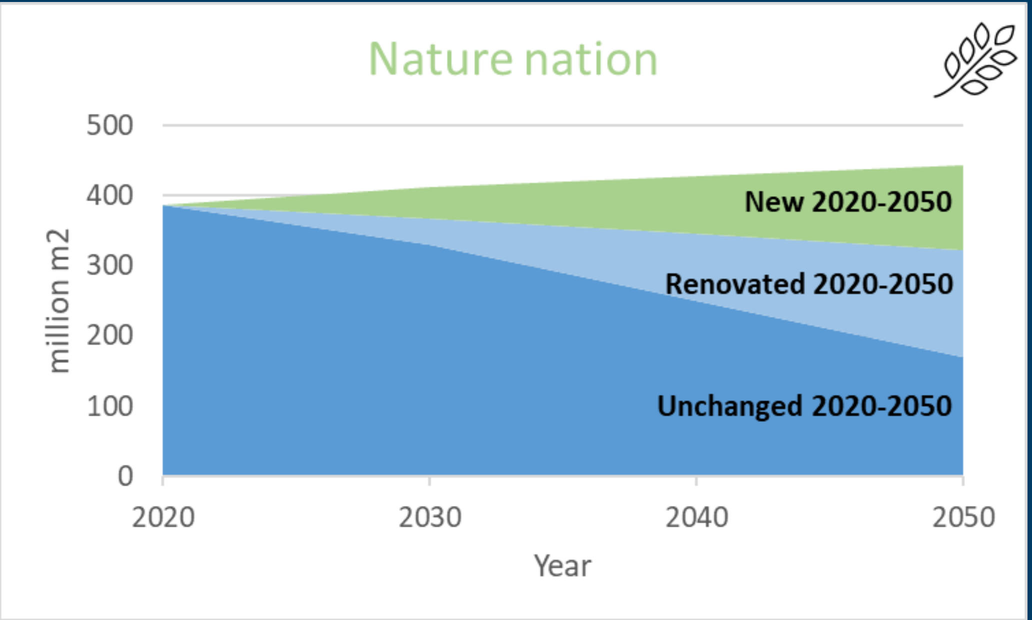
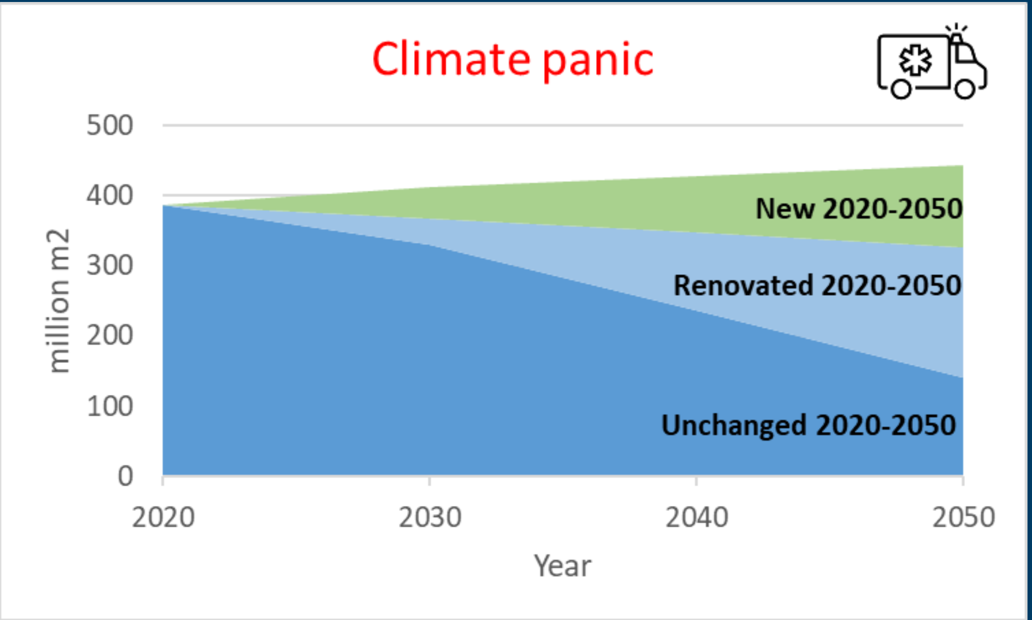
Building stock
Storyline assumptions 2020-2050

Storyline assumptions	Energy nation		Petroleum nation		Nature nation		Climate panic	
	2020-2029	2030-2050	2020-2029	2030-2050	2020-2029	2030-2050	2020-2029	2030-2050
Share of new being Efficient	100.0 %	0.0 %	100.0 %	100.0 %	50.0 %	0.0 %	100.0 %	0.0 %
Share of new being Very efficient	0.0 %	100.0 %	0.0 %	0.0 %	50.0 %	100.0 %	0.0 %	100.0 %
Share of renovated being Regular after renovation	80.0 %	67.0 %	80.0 %	80.0 %	50.0 %	50.0 %	80.0 %	0.0 %
Share of renovated being Efficient after renovation	20.0 %	33.0 %	20.0 %	20.0 %	50.0 %	50.0 %	20.0 %	100.0 %
Renovation rate, service buildings	1.3 %	1.5 %	1.3 %	1.5 %	1.3 %	2.1 %	1.3 %	2.6 %
Renovation rate with energy-efficienty rate, service buildings	0.3 %	0.5 %	0.3 %	0.3 %	0.7 %	1.0 %	0.3 %	2.6 %
Demolition rate, service buildings	0.5 %	0.5 %	0.5 %	0.5 %	0.5 %	0.5 %	0.5 %	0.4 %
Construction rate, service buildings	1.1 %	0.9 %	1.1 %	0.9 %	1.1 %	0.9 %	1.1 %	0.8 %
Renovation rate, dwelling stock	0.9 %	0.9 %	0.9 %	0.9 %	0.9 %	1.5 %	0.9 %	2.0 %
Renovation with energy efficiency rate, dwelling stock	0.2 %	0.3 %	0.2 %	0.2 %	0.5 %	0.8 %	0.2 %	2.0 %
Demolition rate, dwelling stock	0.6 %	0.7 %	0.6 %	0.7 %	0.6 %	0.7 %	0.6 %	0.7 %
Construction rate, dwelling stock	1.4 %	1.4 %	1.4 %	1.4 %	1.4 %	1.4 %	1.4 %	1.4 %
Average floor area per person, dwelling stock (m2)	50.7	52.1	50.7	52.1	50.6	51.2	50.7	51.4

Building stock development 2020-2050

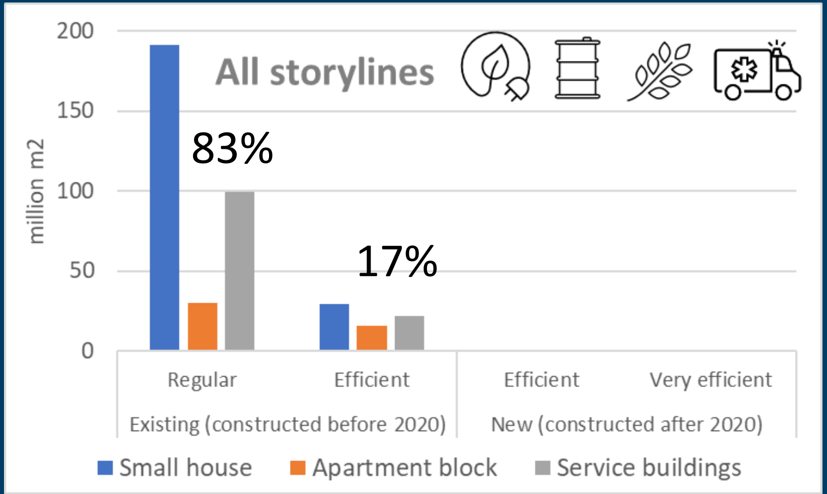




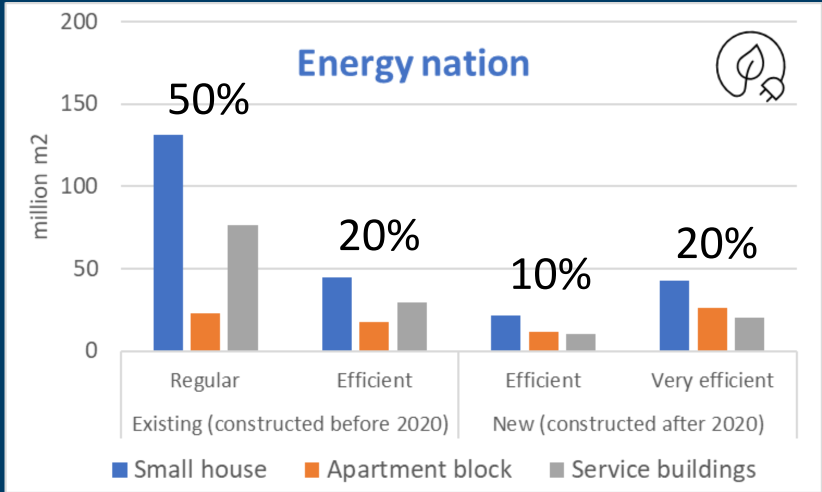


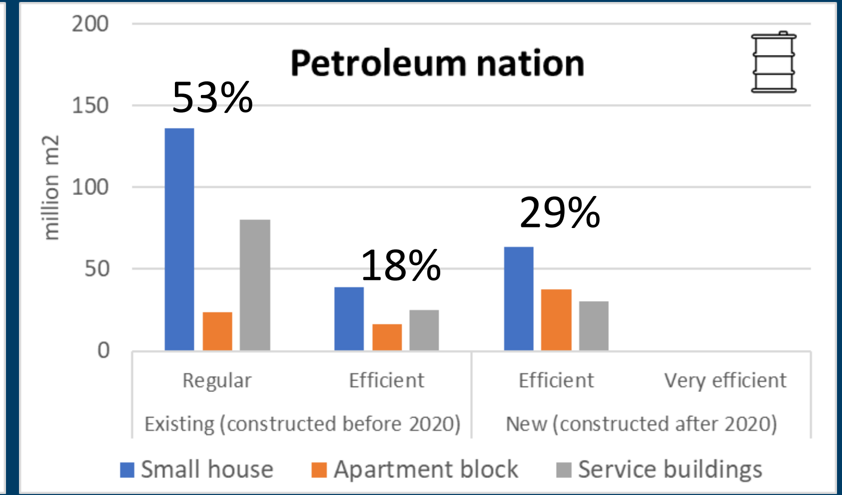
Energy efficiency (m²)

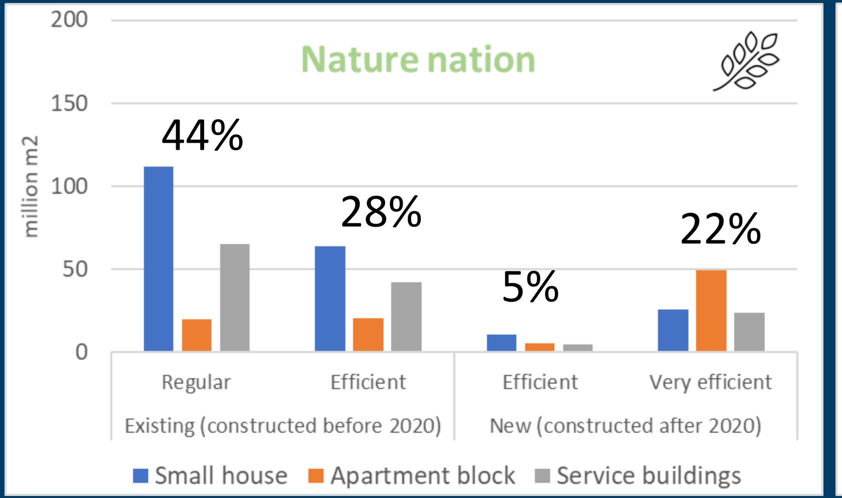
2020

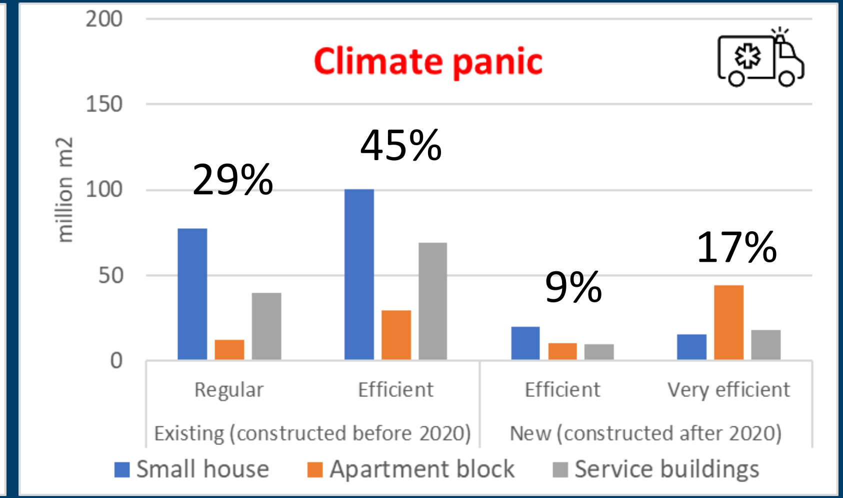


2050



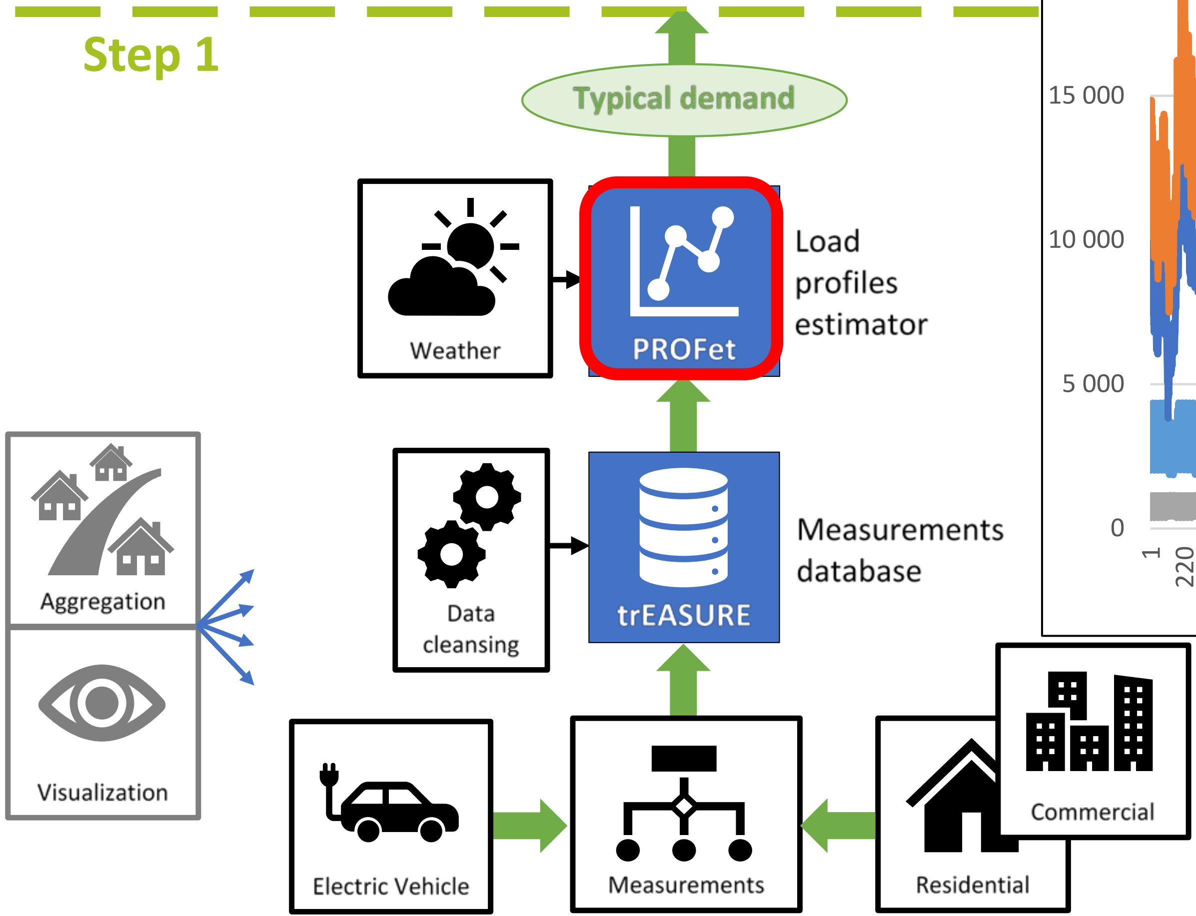


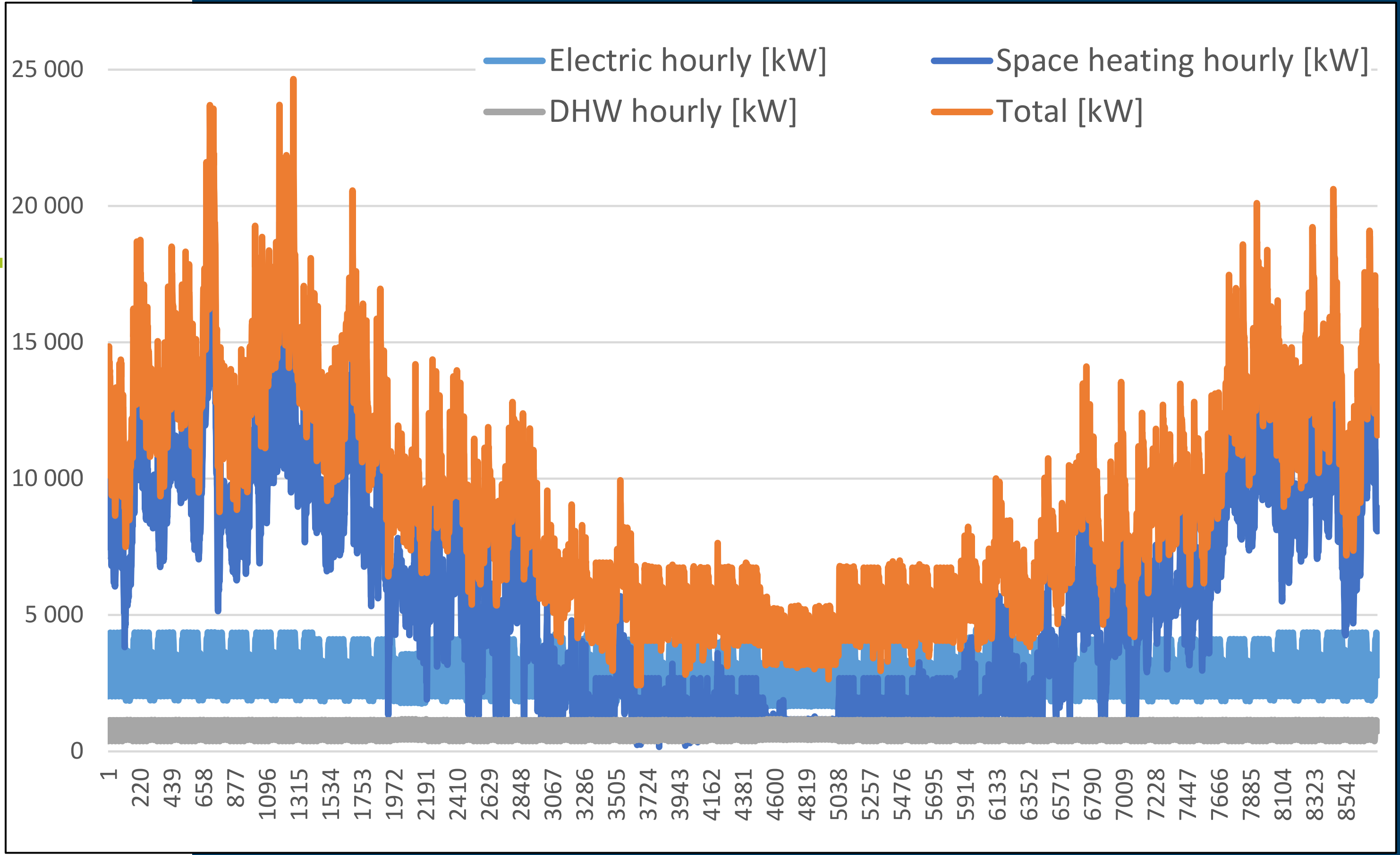




PROFet

energy demand load profiles estimator





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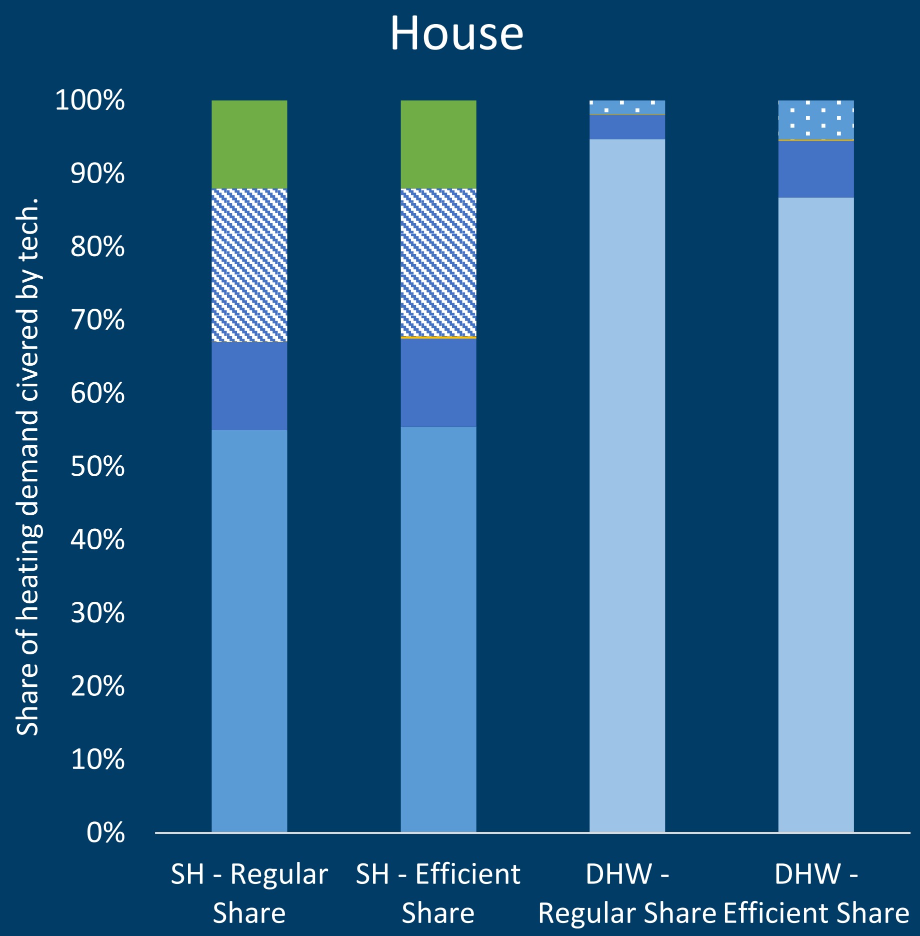
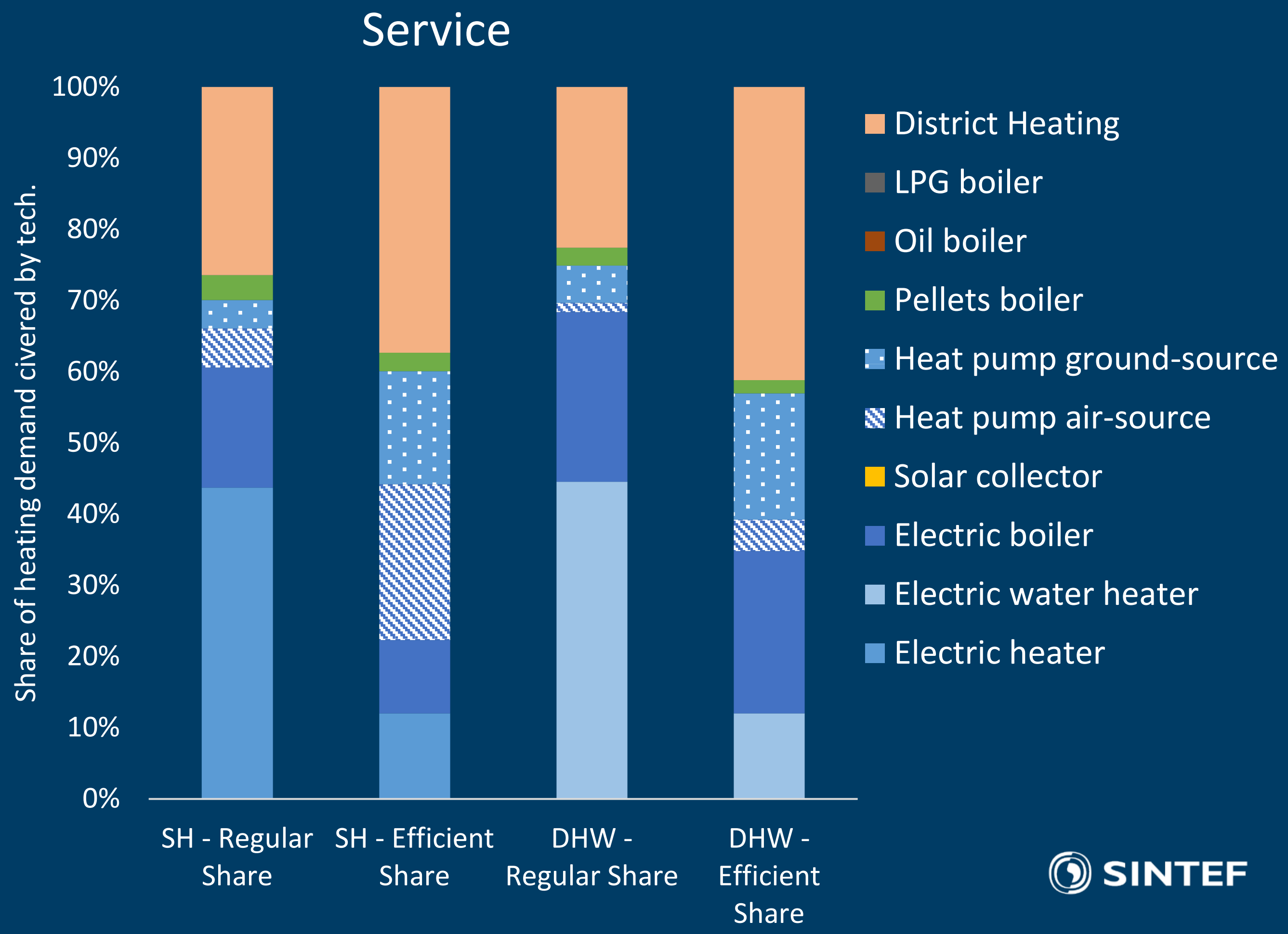
Heating technologies 2020

- Sources: Based on "Potensial og Barrierestudien 2021" (SINTEF, ENOVA)





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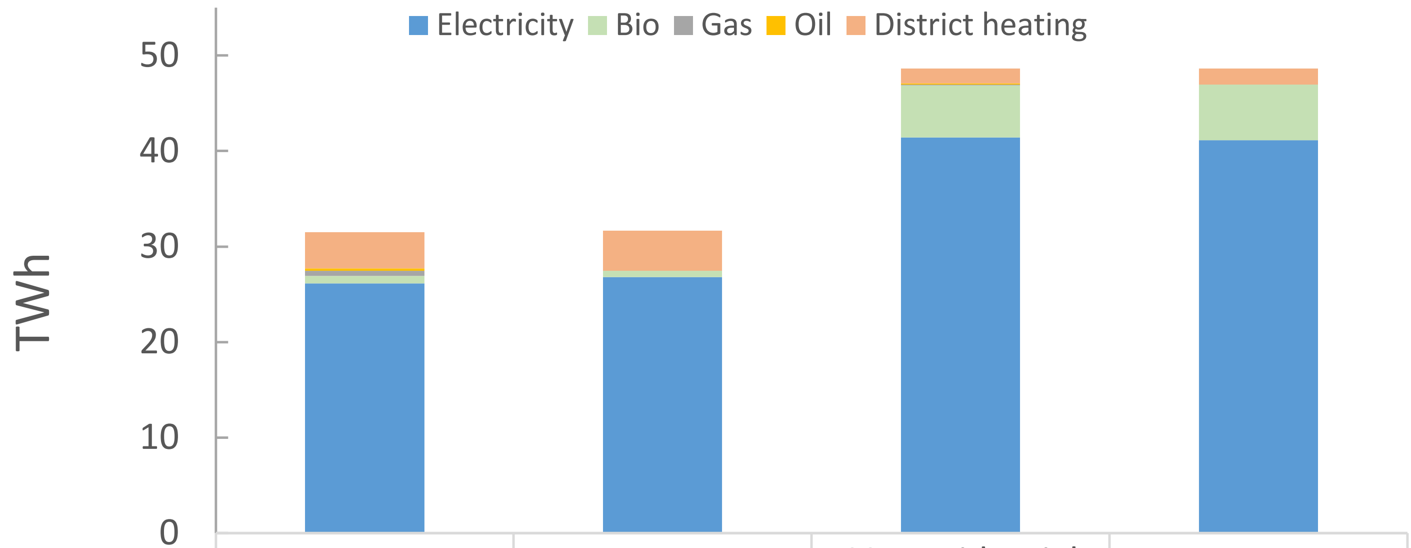
Calibration Results in year 2020



	SSB service 2019 (HDD adjusted)	PROfet service 2020	SSB residential 2019 (HDD adjusted)	PROfet residential 2020
SUM	31.5	31.7	48.7	48.7
District heating	3.8	4.2	1.6	1.7
Oil	0.3	0.0	0.1	0.0
Gas	0.5	0.0	0.1	0.0
Bio	0.8	0.7	5.5	5.8
Electricity	26.2	26.8	41.4	41.1

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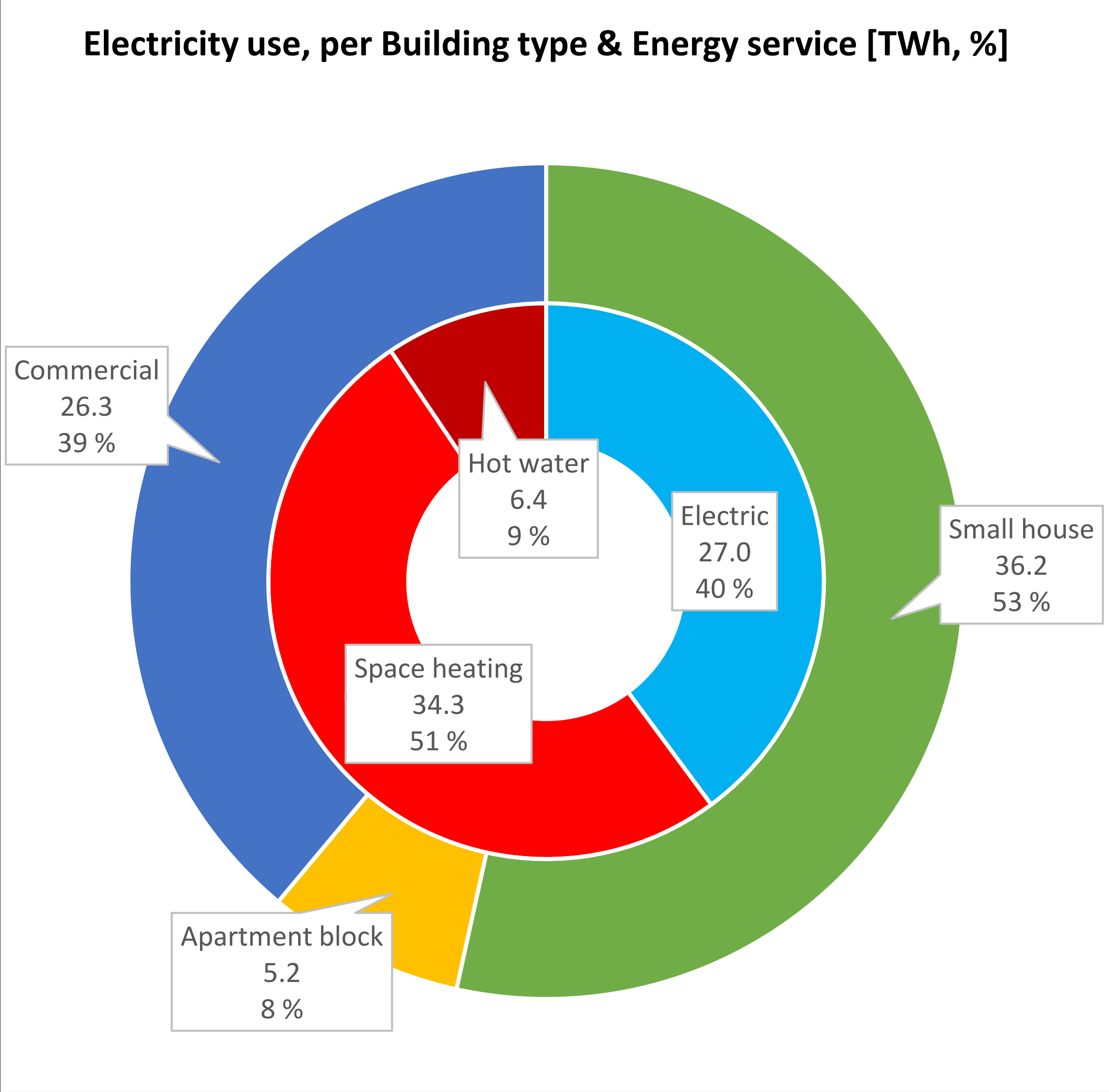
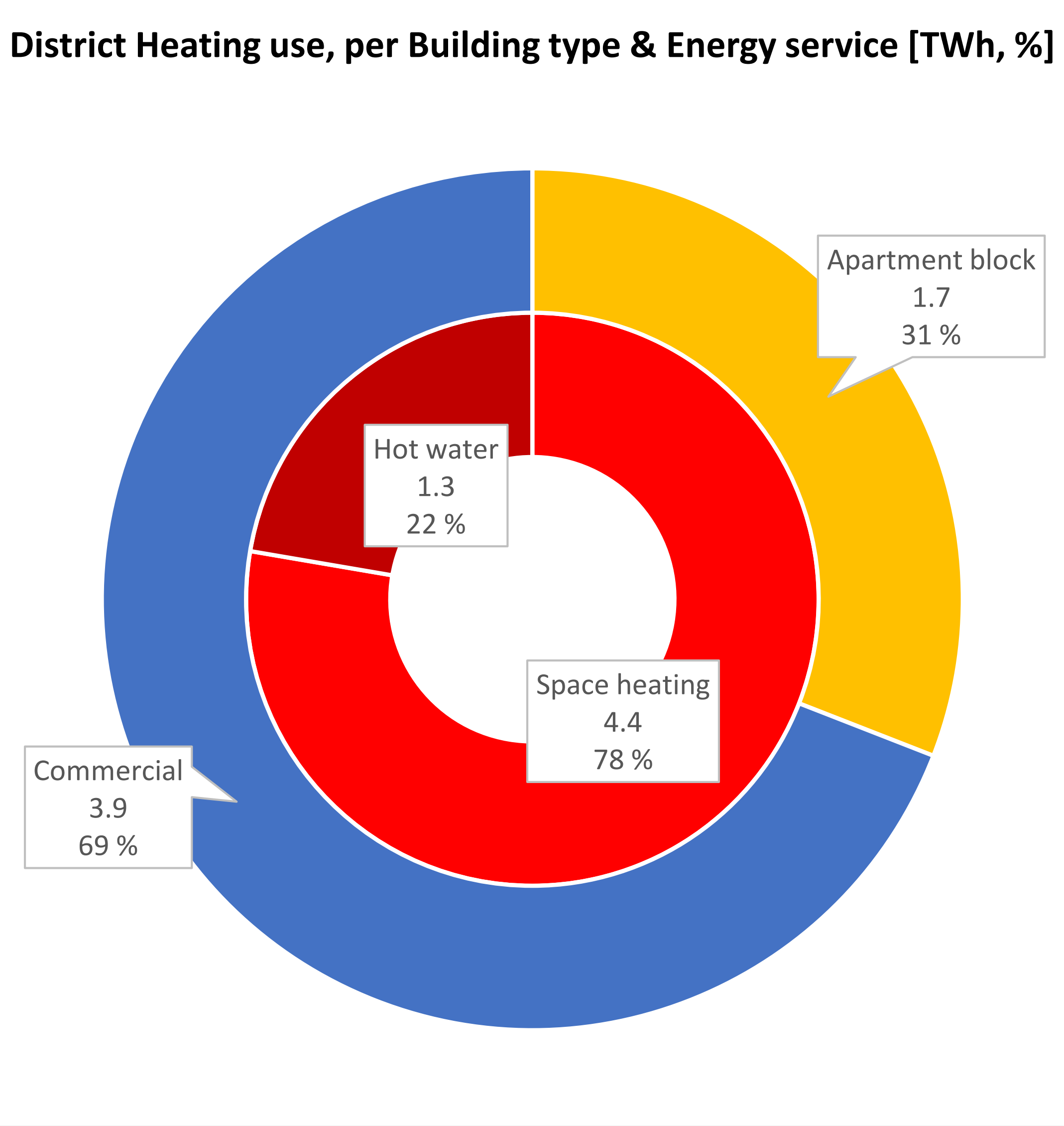
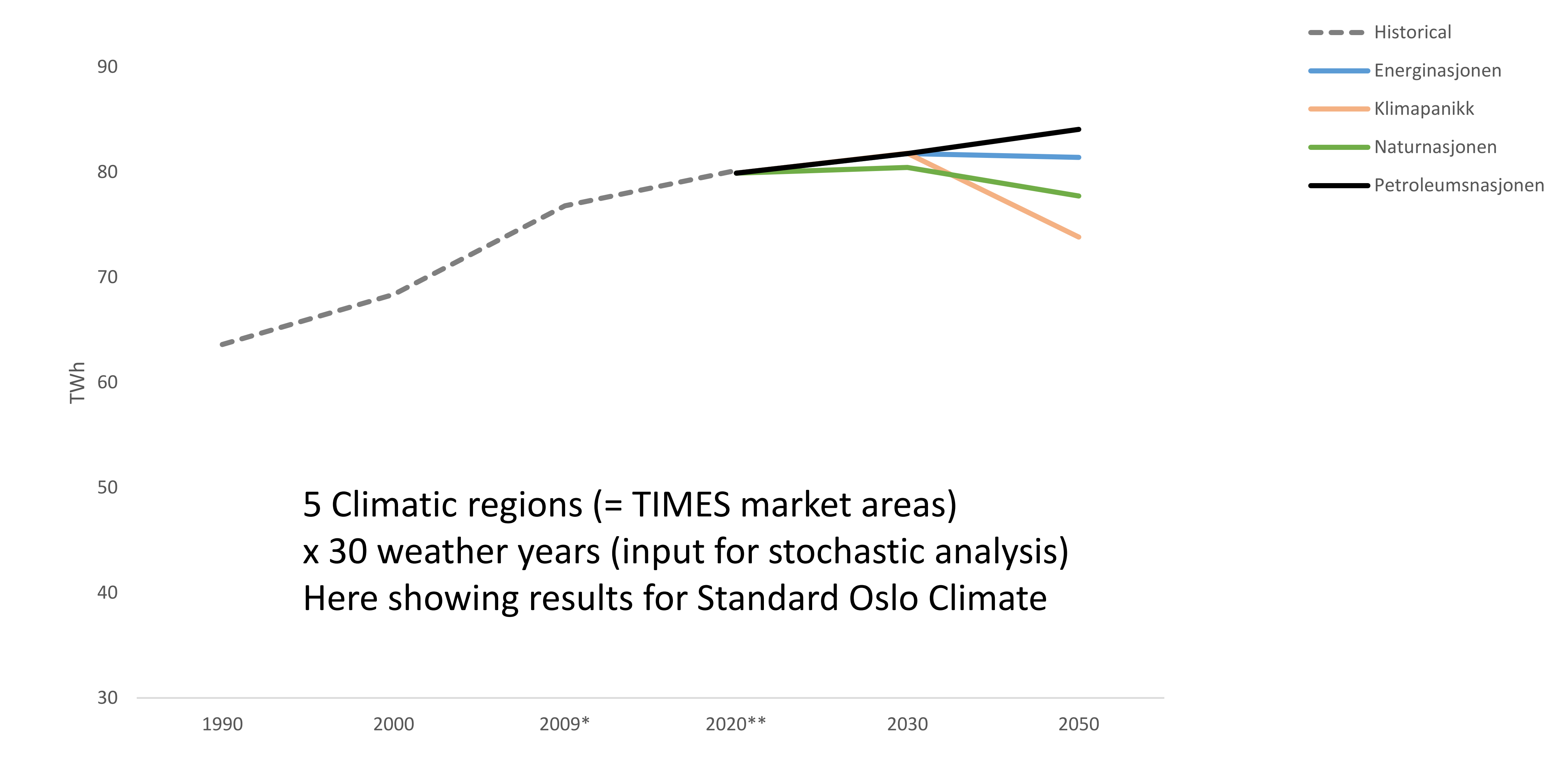
Energy use in 2020





TEF

Building stock Energy demand development in Storylines



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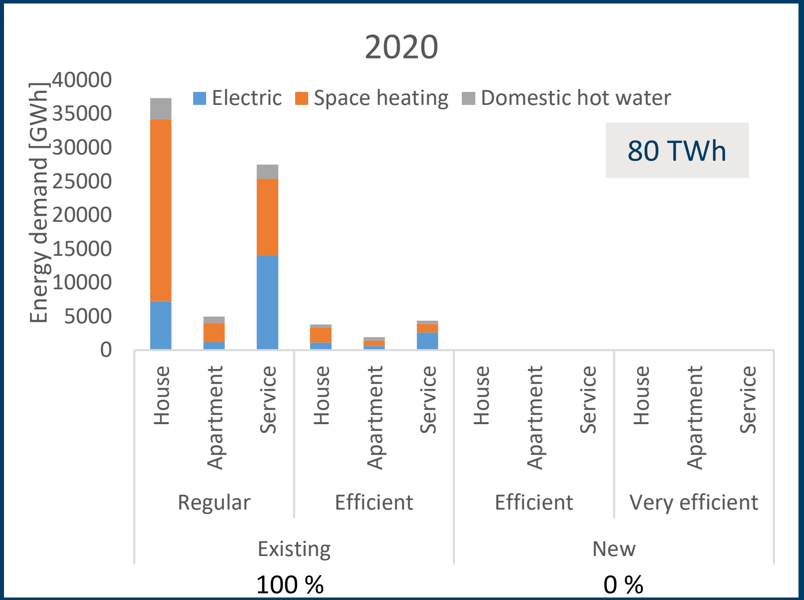
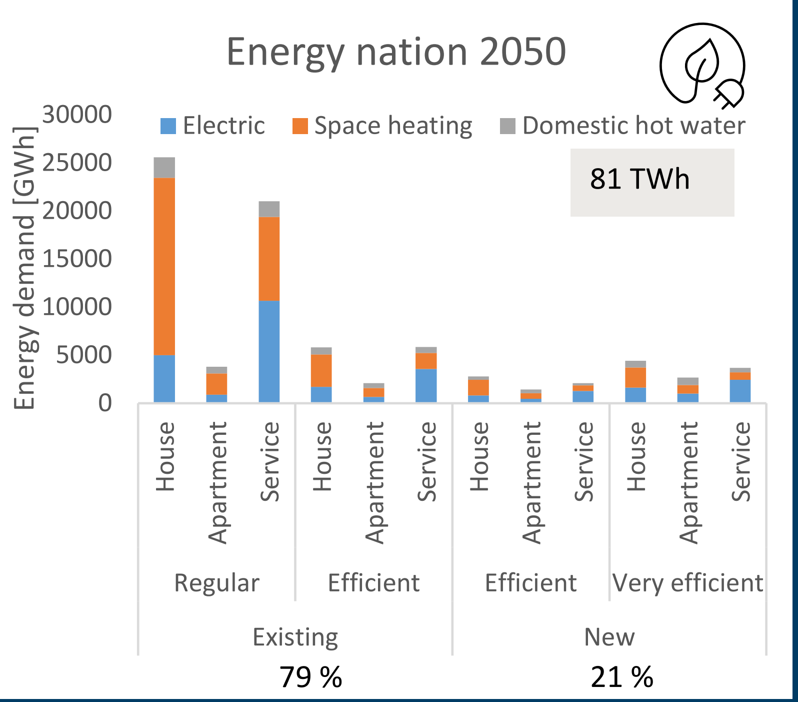
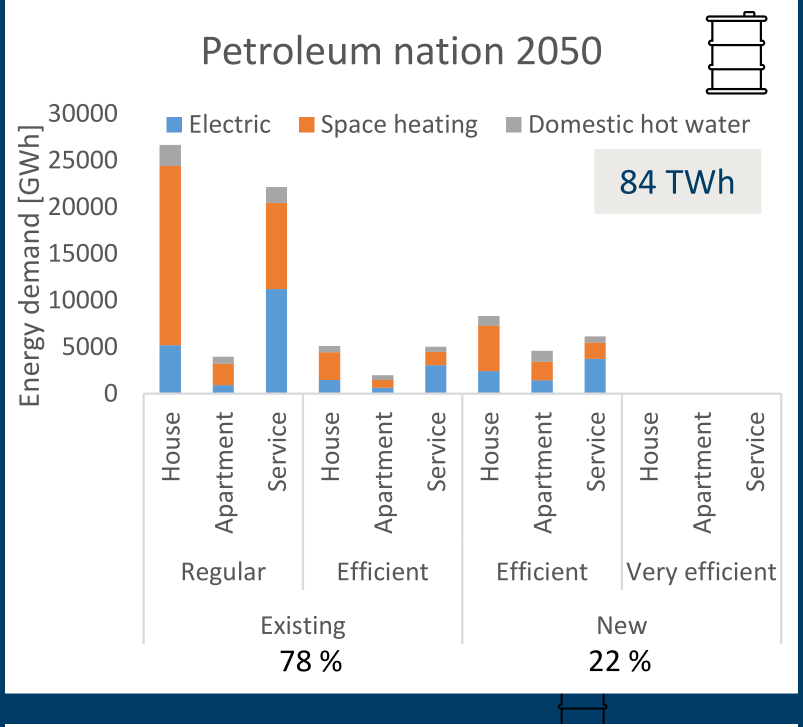
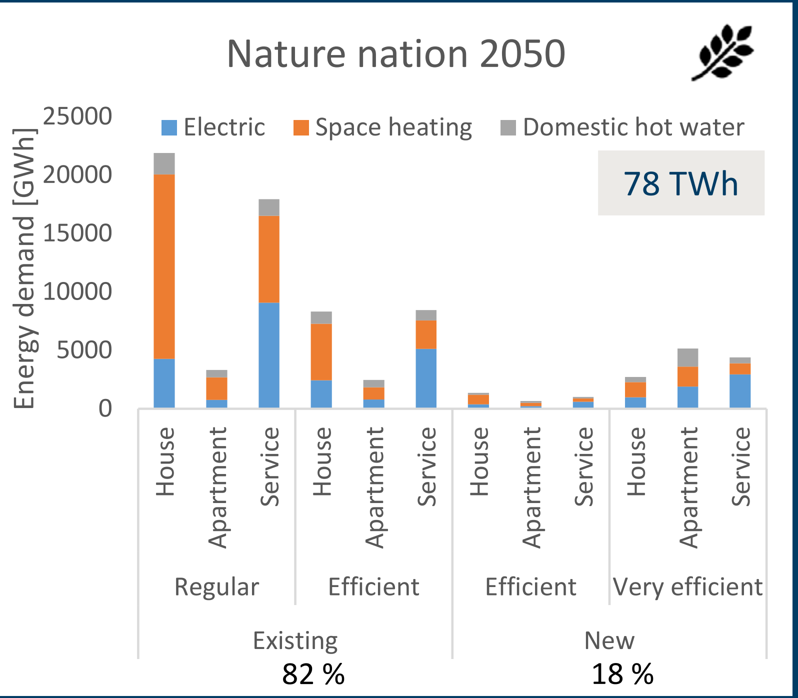
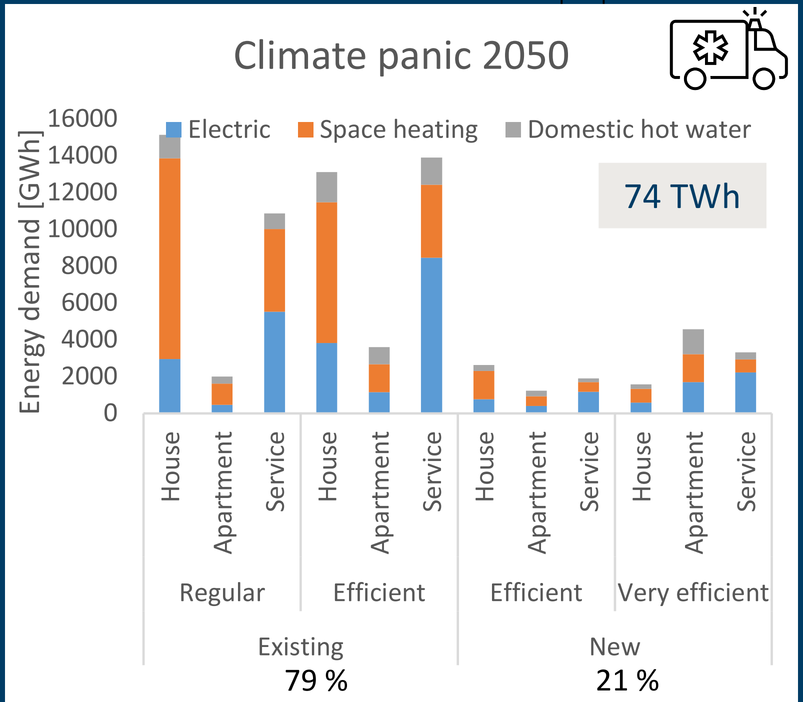
Total energy demand











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70 år

1950-2020

Teknologi for et bedre samfunn