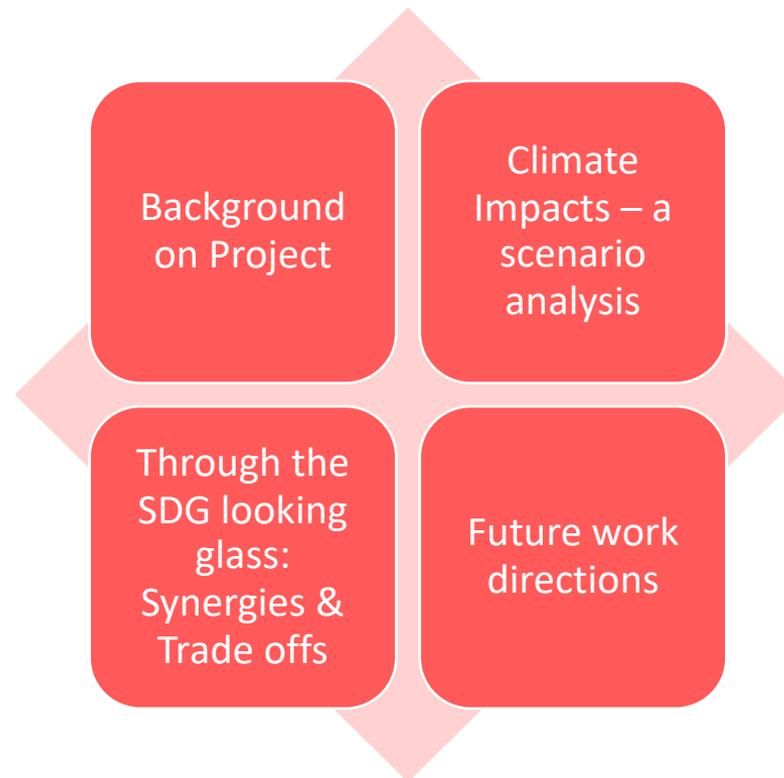


# Bridging Health and Sustainability: Through the Lens of SDG synergies and Climate Impacts

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# Laying the Ground

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# Bridging the Knowledge Gap between Distance Health/Social Care Solutions & Sustainability Impacts



**Two key components of work:** climate impact analysis of distance health solutions, as well as the SDG synergies analysis of these interventions



June 2020 – March 2021



Close collaboration with VOPD and Nord Regio



Co-creation workshop, data & systems analysis, desk research and interviews formed the bulk of the evidence base

# Climate Impact scenario analysis

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## Purpose of study

- Explore how healthcare and care through distance spanning solutions/services affect travel patterns.
- Show the potential climate impact of healthcare and care through distance spanning solutions.

## Case study

Storuman municipality  
(8234 km<sup>2</sup>)

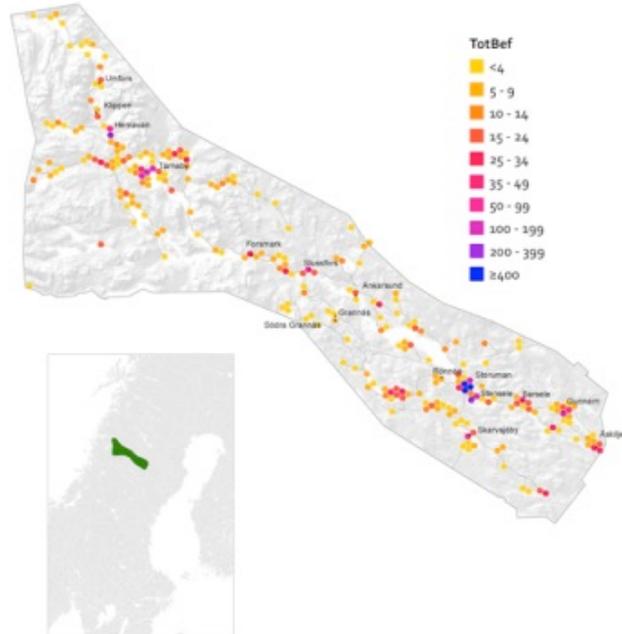
Remote and sparsely populated  
(40% live dispersed across the municipality)

8% of the population is > 80 years.

2 primary healthcare centers (HCs); and 3 virtual healthcare rooms (VHRs) or (Virtuella hälsorum) which are unmanned facilities offering health services.

# Storuman municipality

Population density in Storuman municipality



Location of health centers and VHRs



# Scenarios and assumptions

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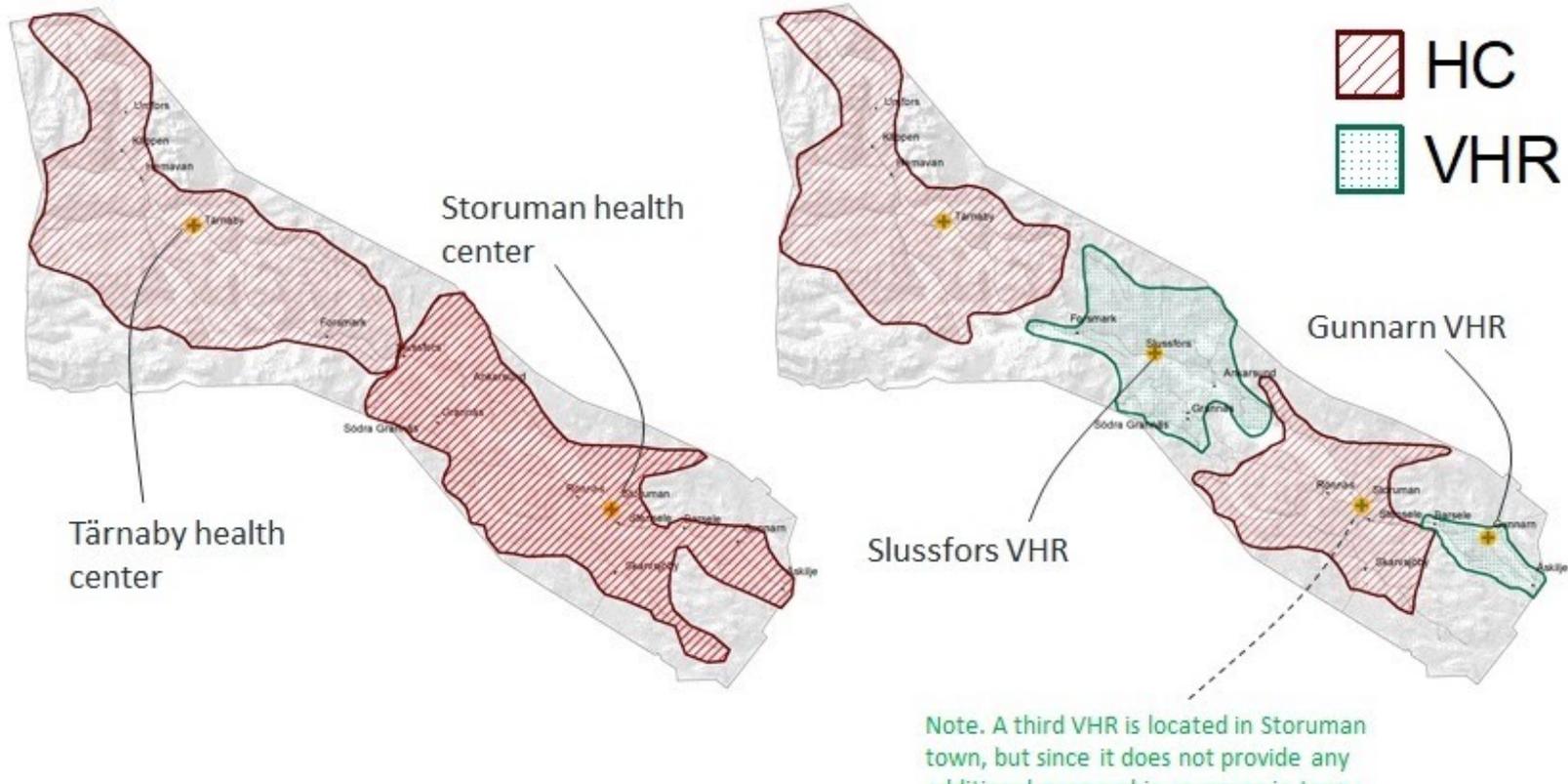
## Scenario 1 (VHR $\frac{3}{4}$ )

- Current situation with virtual health rooms (VHRs).
- Patients visit the closest health center (HC) once a year and visit the closest facility (HC or VHR) for the other  $\frac{3}{4}$  visits. This is based on the assumption that at least one visit per year must be made to a doctor for a face-to-face health check.

## Scenario 2 (No VHR)

- Patients go to the closest HC for all their visits.
- No virtual health rooms (VHRs)

- 92% of population use primary health care facilities and the average number of annual visits for this share of population is 4,4.
- The proportion of the population visiting HCs is similar to the proportion visiting VHRs.
- People are listed at the nearest facility within the municipality.
- There are no difference in visit or visitor rate depending on how close from the facility people live.
- The data (from Storuman) on the number of visits and visitors is applicable to the entire municipality.
- At least once a year, everyone must make a face-to-face visit to the doctor (HC) for health check.
- Patients visit primary health care facilities using private vehicle.



## Catchment area – settlements closest to the HCs and VHRs

- Data sources:
  - Primary care facility location data for both HCs and VHRs.
  - Total population in a 100m grid aggregation.
  - Proportion of population visiting Storuman HC and frequency of visits to HC for 2017, 2018, 2019.
  - Road network data.

# Result: Annual climate impact

Based on the CO2 emission factor of 0.15kg CO2/km used in the SEI climate calculator  
(emission factor for an average car in Sweden/EU)

Scenario 1 (VHR ¾) – visits to the closest HC once and visiting the closest HC or VHR for the remaining visits	
Total distance covered by population visiting the closest HC once/year (km) (round trip) (1/4 of visits to the closest HC)	109 067,6
Total distance covered by population visiting the closest HC and/or VHR in one year (km) (3/4 of visits to the closest VHR or HC)	<b>505 727</b>
Emission factor in CO2/kg	0,15
CO2 emission (tons/year) from visits to the closest HC	<b>75,9</b>

Scenario 2 (No VHR) – people visiting the closest HC facility all year round	
Total distance covered (round trip) by the population visiting the closest HC/year (km)	<b>711 386</b>
Emission factor in CO2/kg	0,15
CO2 emission (tons/year) from visits to closest HC	<b>106,7</b>

Difference between the scenarios	
Annual savings from visits to VHR (km)	<b>205 659</b>
Annual savings from visits to VHR in terms of CO2 emission (tons)	<b>30,8</b>



# Key insights

- Savings of CO2 emission is about 31 ton/year (i.e about 5kg/person/year).
- Following SEI's downscaling municipal model for consumption-based emissions, this is equivalent to:
  - 0.5% of total car emissions
  - 1.5% of total electricity emissions
  - 1% of district heating and house heating emissions
  - 0.5% of total food emissions
  - 0.1% of total household consumption-based emissions (excl. governmental emissions).
- Assuming average driving speed of 50-90km/h, the total number of saved hours would be between 2300-4100 hours. An average of 3200h saved translates to about half an hour per person.

# Conclusion and limitations

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Study gives an indication of the potential reduction of CO<sub>2</sub> due to distance health spanning interventions (in line with other studies).



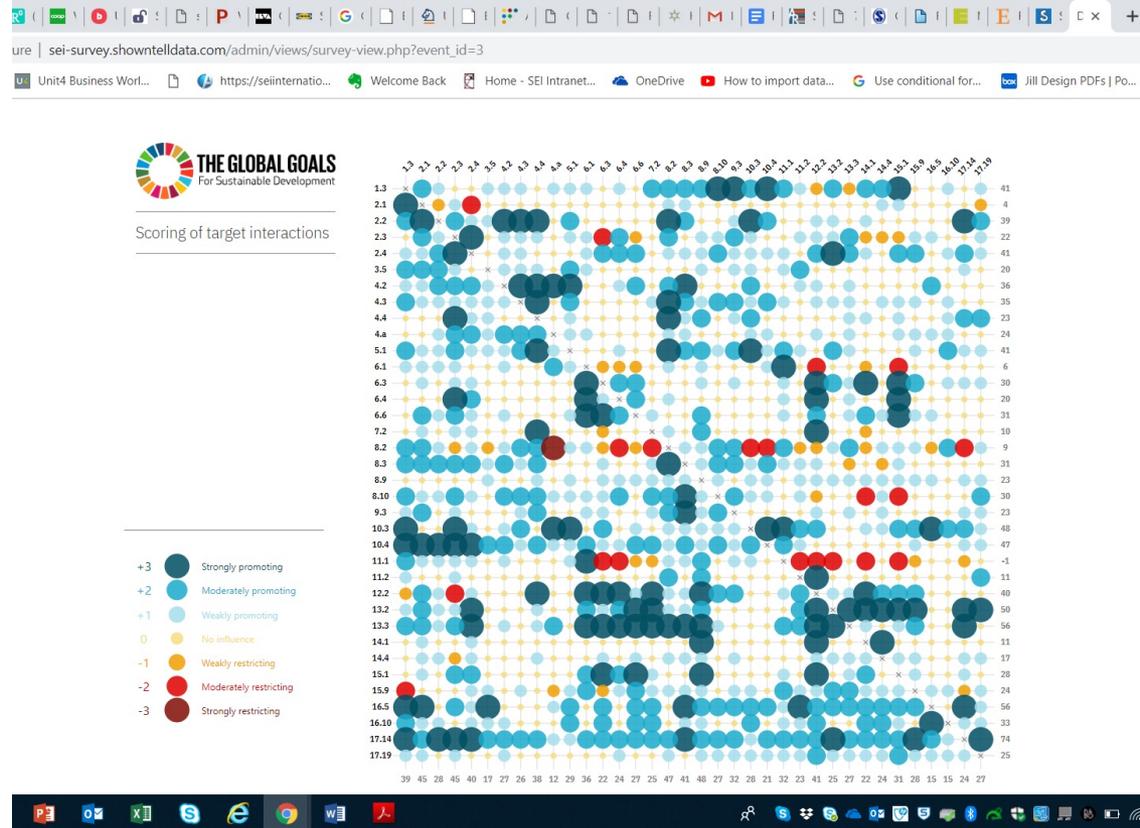
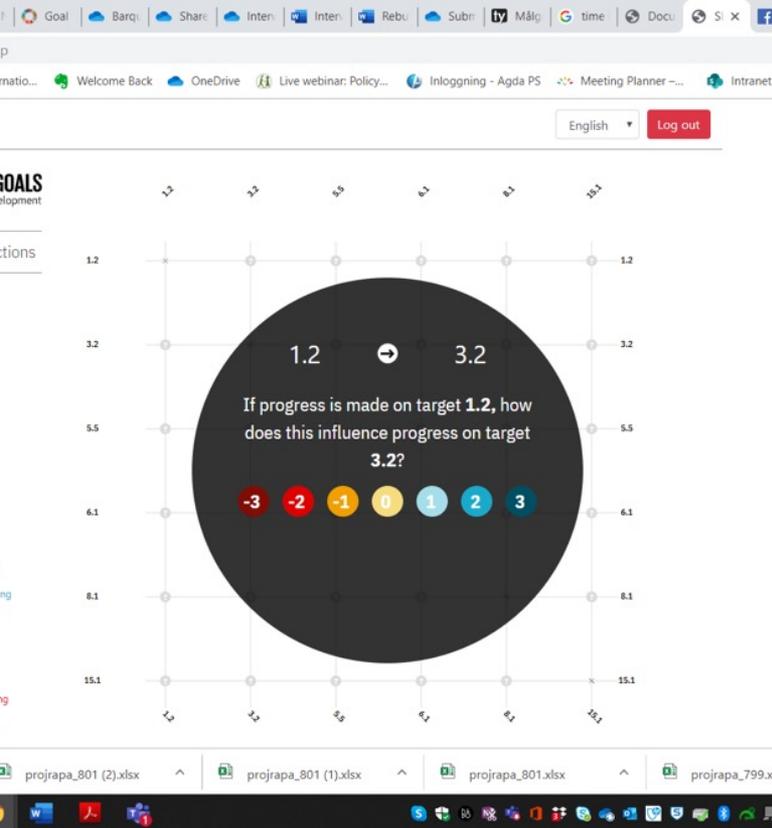
A broader scope of analysis to include other sustainability criteria would be more informative on the impact of interventions.



Health personnel travel was not considered in the analysis.



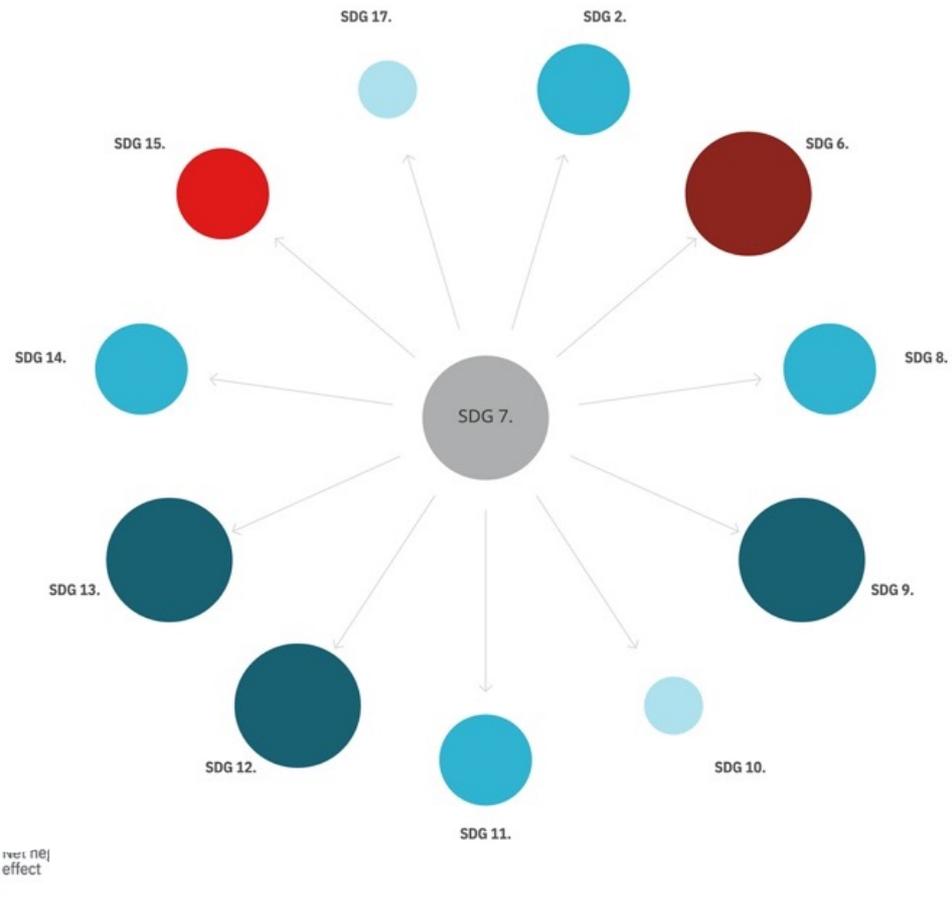
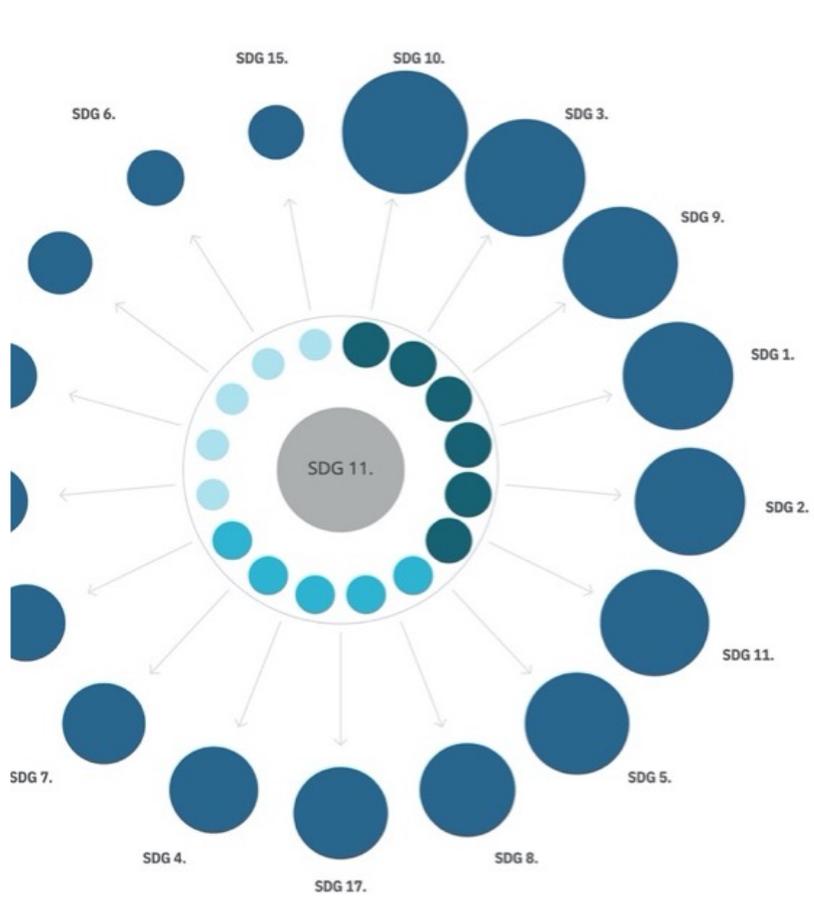
SEI climate impact factor (CO<sub>2</sub> emission of 0.15kg CO<sub>2</sub>/km) only gives an estimate of total CO<sub>2</sub> saved due to interventions and therefore can not be used to make precise estimates.



# The SDG Synergies Tool

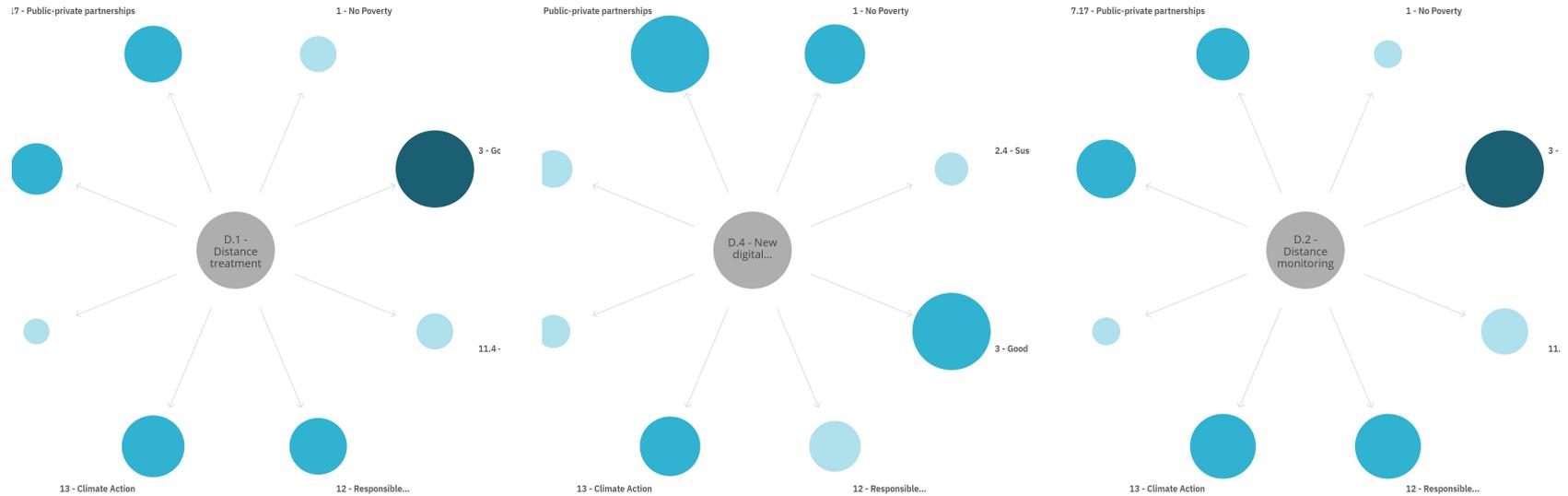
Making effective policy often means balancing sets of highly connected but very diverse targets..

SDG Synergies is a practical tool for understanding how groups of policy areas and targets interact, using systems thinking.



# Synergies

First order and second order Impacts

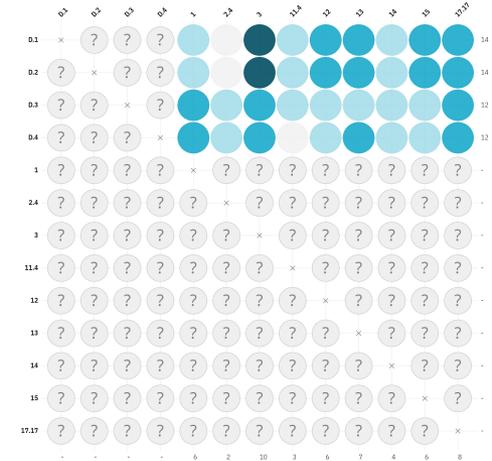


# Context of Distance Health & SDGs

- We see strong linkages to public-private partnerships, climate mitigation and adaptation, as well as to equity

# Workshop setting

- Representatives from policy, research, health care design & implementation sectors, as well as experts participated
- Co-production of knowledge facilitated by the SDG synergies tool
- We analysed more complex, systemic relationships, combining qualitative assessment of target interactions with quantitative network analysis



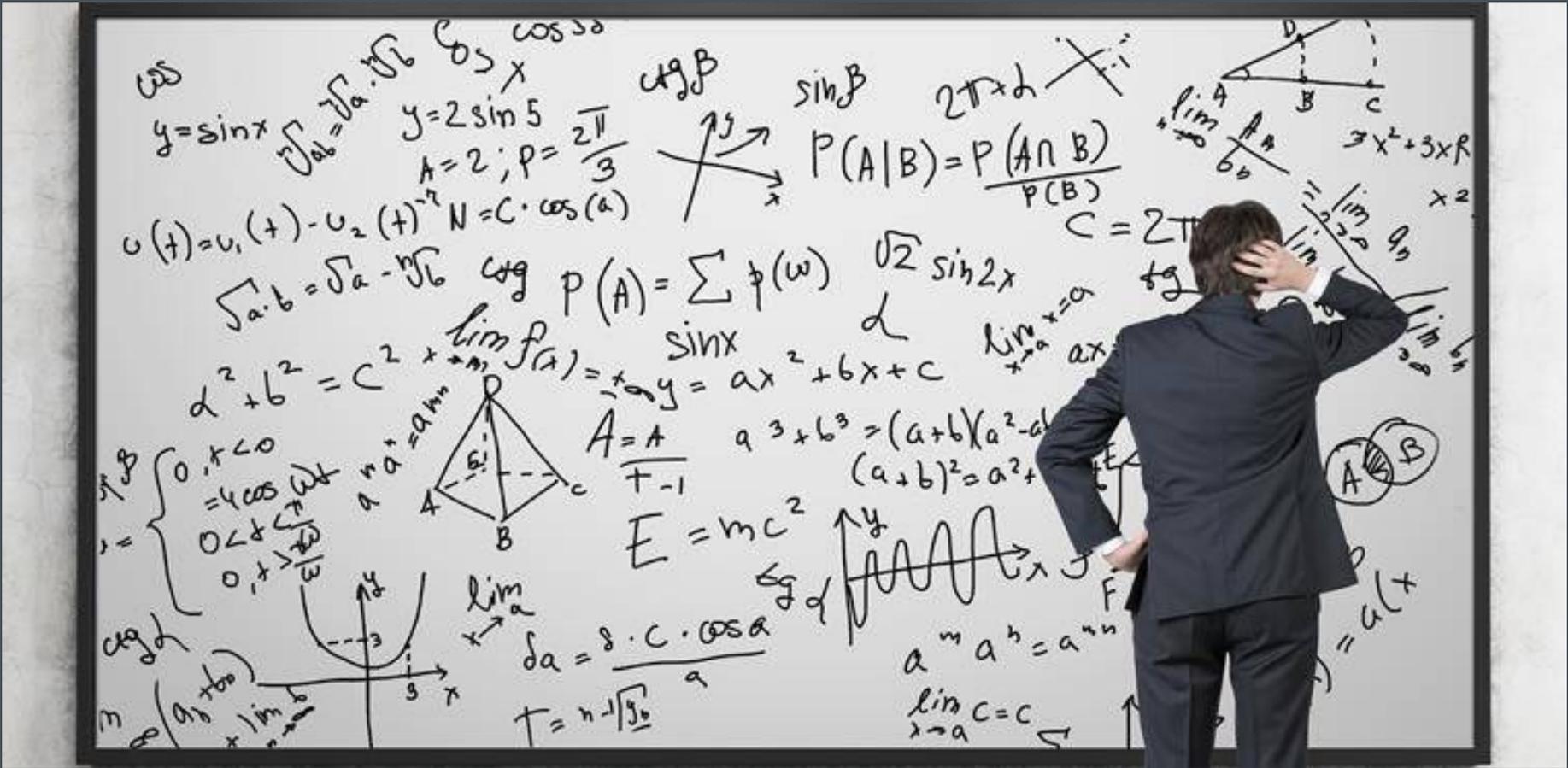


# Next steps and future directions

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Whilst there is potential reduction of emission, our scoping study is limited in a number of ways – in that sustainability of interventions goes beyond climate alone. We would hence be interested in further work broadening the sustainable impacts studied including issues such as equity, biodiversity, resource rights, looking at the entire value chain, particularly for vulnerable sections of society.

While some synergies and trade-offs come to mind - for example how climate action is promoted by sustainable energy production (synergy), but often in conflict with economic growth or biodiversity (trade-off) – they are highly contextual. For example, the focus and conditions for progressing on SDG 3 on health are very different in Sweden compared to most low-income countries and progress on SDG 3 therefore influences the other goals in different ways. We would like to examine the global aspects of this work in the future.



## Concluding Reflections

- Distance health and social care is the future and to embrace that we need to address a broad range of factors from digitalization, automation and last mile coverage to the holistic spectrum of SDG 2030 targets.
- This requires collaboration of diverse sectors to address complex problems
- Sustainability in this context needs to address both environmental and societal concerns, when pivoting towards just transitions.

# Thank you!

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