





NCSH

Nordic Center for
Sustainable Healthcare

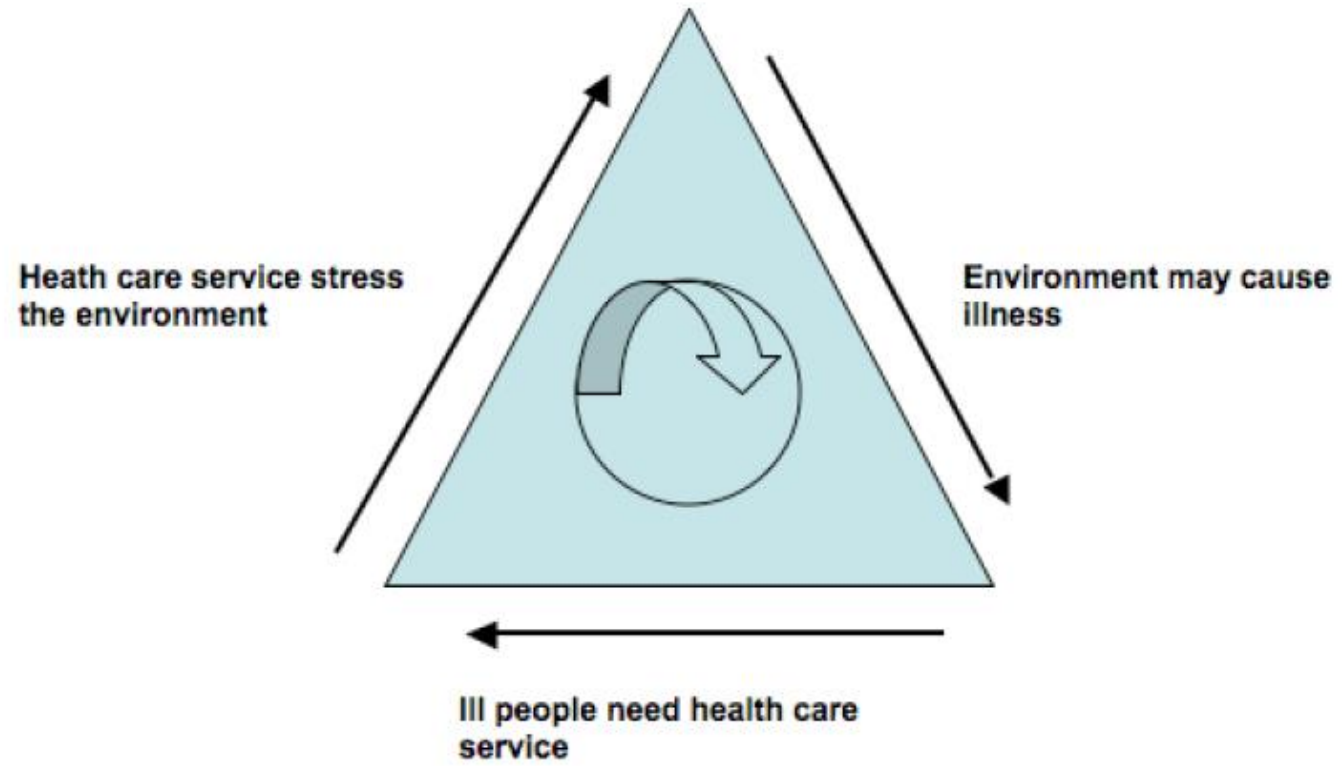


Figure 1-1 'The cyclic behavior of healthcare action and reaction'

Source: (Pelikan & Schmied, n.d.)



Climate change & Healthcare

The carbon footprint of the European healthcare sector is at least 5% of total EU's greenhouse gas emissions. US 7 %. Global 4,4 %.

For comparison: Direct emissions from aviation account for about 3% of the EU's total greenhouse gas emissions.

History – Sustainable healthcare for 15 years

- Sustainable Healthcare by Sweden in London, Berlin, Oslo, Copenhagen
- CleanMed Europe in Malmö 2012
- Different international collaborations and boards
- Working with Nordic hospitals, but also in UK, Taiwan, US etc
- Big international and Nordic network

Innovation agenda 2015 – start of NCSH

- Swedish hospitals and regions are very forward
- The Nordics are world leaders and a link to research and innovation.
- Conclusion: Sweden is too small. We need to make it Nordic!



START



Sustainable hospitals	Good environmental performance	Good environmental performance	Applications for healthcare	Good sustainability performance and applications for healthcare	Smart locally produced organic food	Support/boost sustainability performance	Management system, reporting, training
Construction industry	Life Science	Med Tech	Clean Tech	“Regular” Companies	Food Industry	ICT	Management

Horizontal not vertical



Yale SCHOOL OF PUBLIC HEALTH LINDINVENT | SUNNAAS SYKEHUS





 Nordiska
ministerrådet

 Miljø- og Fødevareministeriet
Miljøstyrelsen

 Swedish
Energy Agency

VINNOVA
Sweden's Innovation Agency

 Aktuell
Hållbarhet

 Nordic
Innovation

 **NCSH**
Nordic Center for
Sustainable Healthcare

The Nordic Center for Sustainable Healthcare aims to:

Raise

- the status and awareness of sustainable healthcare

Boost

- innovation and investments in sustainable healthcare

Bring

- world-class solutions and ideas to the Nordics

Deliver

- Nordic solutions & knowledge to the world

What we at NCSH address

NCSH
Nordic Centre for
Sustainable Health

- Energy efficiency in healthcare- and hospital buildings
- Hazardous substances in medical devices
- Transportation in healthcare
- Climate impact from healthcare operations
- Supply chain management and human rights in the supply chain
- Reduction of dangerous chemicals
- Improving the sustainability performance in Med Tech and Life Science
- Waste water treatment and water management
- Single-use items
- Green building design
- Packaging
- Pharmaceuticals in the environment
- Waste management and waste reduction
- Infectious waste treatment
- Innovation & export
- & more

New hospital in Grønnsköpingkið city

- 453 000 inhabitants – 1,5 million in the region
- University hospital
- Totally new on a new location
- ER, maternity ward etc
- Planning to be built in 2021

Will be the **greenest hospital in the world** with state of the art solutions

All solutions must exist in a Nordic hospital and be available on the market



Grøn is the Danish word for green with the Nordic letter ø

Köping is a common part of old Swedish city names and refers to trading - typical Swedish ö

ð is a letter used in Icelandic, Faroese and Elfdalian. It was also used in the rest of Scandinavia during the Middle Ages.

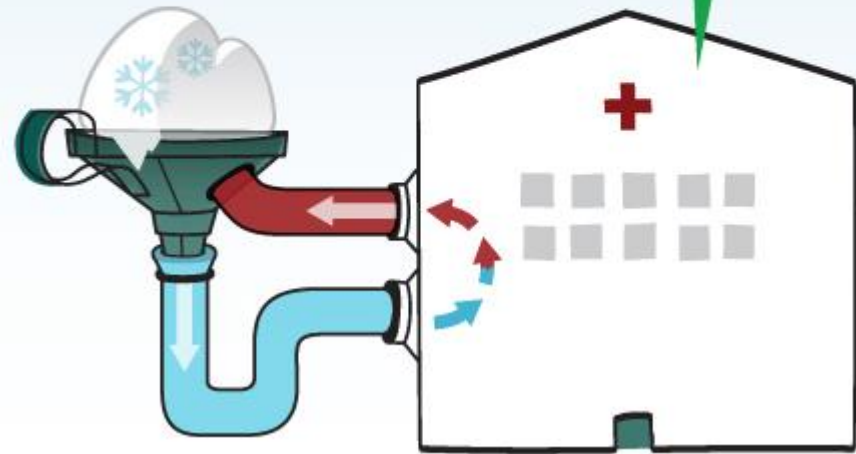
(Grøn)(n)(köping)(ki)(ð)

If you add an n to the Danish Grøn you get the Norwegian word for green - **Grønn**

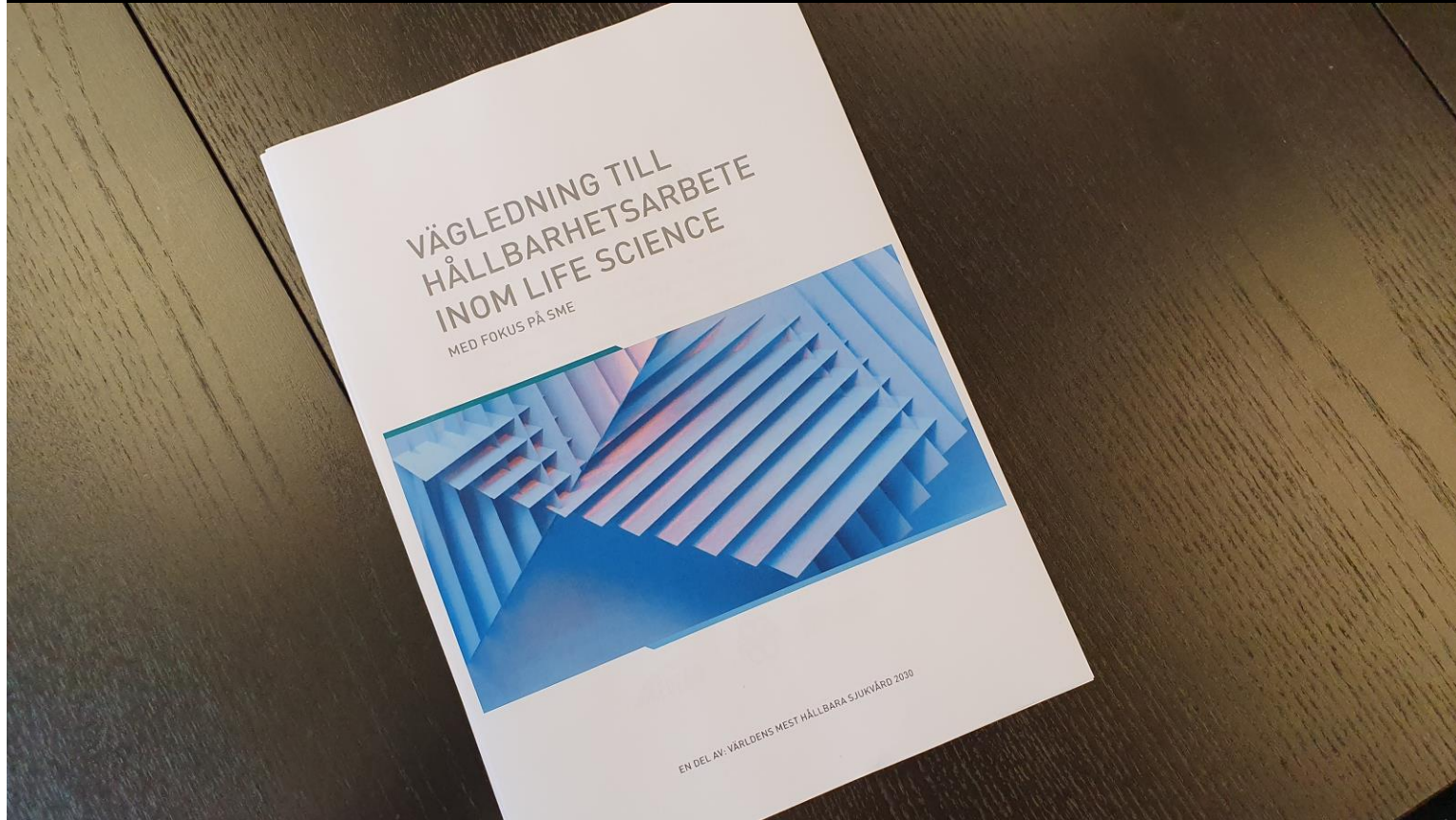
ki is the last part of Helsinki - the Finnish capital and the last part in the Finnish word for city - kaupunki



90%
less energy is consumed in the cooling of the hospital facilities



The worlds most sustainable healthcare 2030



VINNOVA
Sweden's Innovation Agency

Nordic Conference on Sustainable Healthcare

DTU – Copenhagen 2020 – June 12



Rosemary Kumwenda

Coordinator, Task Team for Sustainable Procurement in the Health Sector, UNDP



Joakim Larsson

Professor of environmental pharmacology at the University of Gothenburg



Tore Havellen

adviser, Oslo University Hospital, Oslo



Joe Bialowitz

National Environmental Program Leader, Kaiser Permanente



Charlotta Brask

environmental manager, Stockholm Country Council



Jodi Sherman

MD, Professor of Anesthesiology, Environmental Compliance Officer, Yale School of Medicine, USA



Avi Blau

Head of Afeka Institute of Circular Engineering & Economy, Israel



Rachel Stancliffe

CEO, Centre for sustainable healthcare, Oxford, UK



Daniel J. Vukelich

President Association of Medical Device Reprocessors, USA



Platform for internationalization: Energy- and Climatesmart healthcare

- Financed by the Swedish Energy agency
- Operated by NCSH
- 2-4 years
- Purpose: Internationalization of Energy- and Climate- smart Healthcare

What we do:



Promote innovation

Collaboration
with hospitals,
companies and
testbeds



Best practice cases from Swedish
Hospitals



International collaboration to increase
the spread of Swedish solutions to speed
up the process to a more climate
friendly Healthcare globally

Examples:



Study visits at Nordic Hospitals



Collaboration with Testbeds and Research institutes to evaluate new technology



Start new spin off projects



Pitching innovative solutions to hospitals



International conferences with partners

Future healthcare – Smart and sustainable today

- Sustainable, digital and holistic.
- Healthcare as a leverage for smart circular cities.
- DTU in Denmark and Upgraded Finland are partners



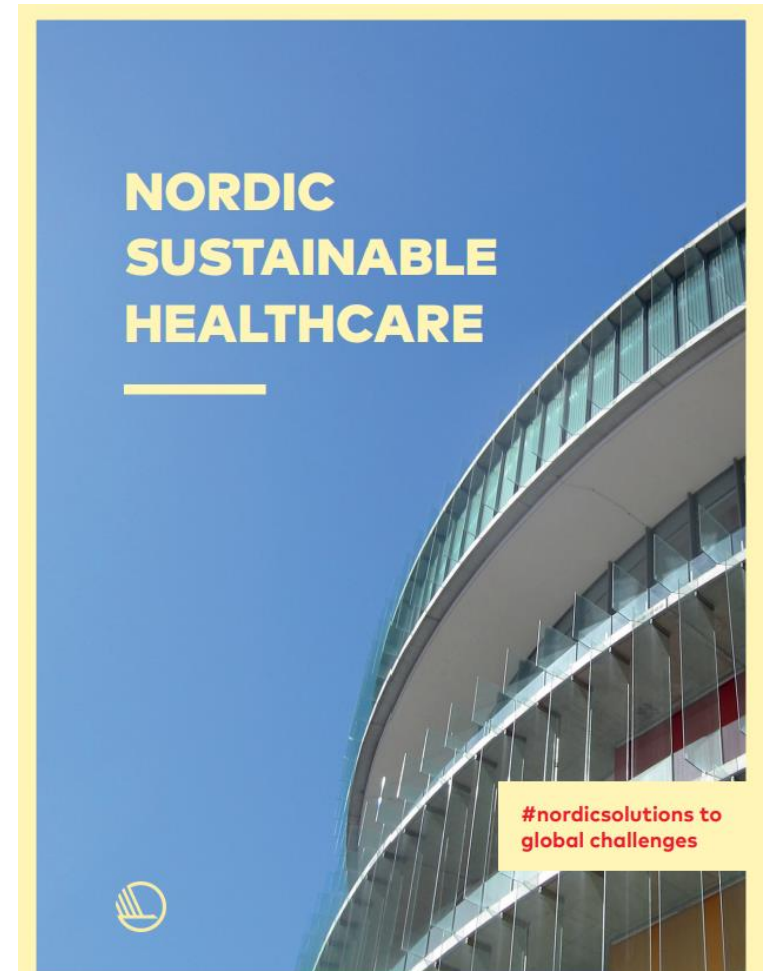
**Nordic
Innovation**

Nordic white paper on sustainable healthcare

- Part of the Nordic Prime Minister initiative on targeting the SDG:s.
- All Nordic countries and territories:
 - Iceland
 - Norway
 - Denmark
 - Finland
 - Sweden
 - Åland
 - Greenland
 - Faero Island



**Nordic
Innovation**





Why are the Nordics frontrunners? |



Culture – Politics - Legislations

- We want to do the right things
- Everyone has a relation to nature
- First EPA in the world – long traditions
- Trust – Nordics have trust in the state and in each other
- Strong legislations
- Politicians can make unpleasant decisions



Hospitals at the forefront

- Public procurement is a strong tool
- Management – sustainability is present
- Organisation – from environmental managers to 250 environmental coordinators
- Systems for environmental performance:
 - Environmental management systems – structure - Chemical management systems
 - Statistics on almost everything
 - Testbeds – Innovation procurement etc
 - Reports

System solutions

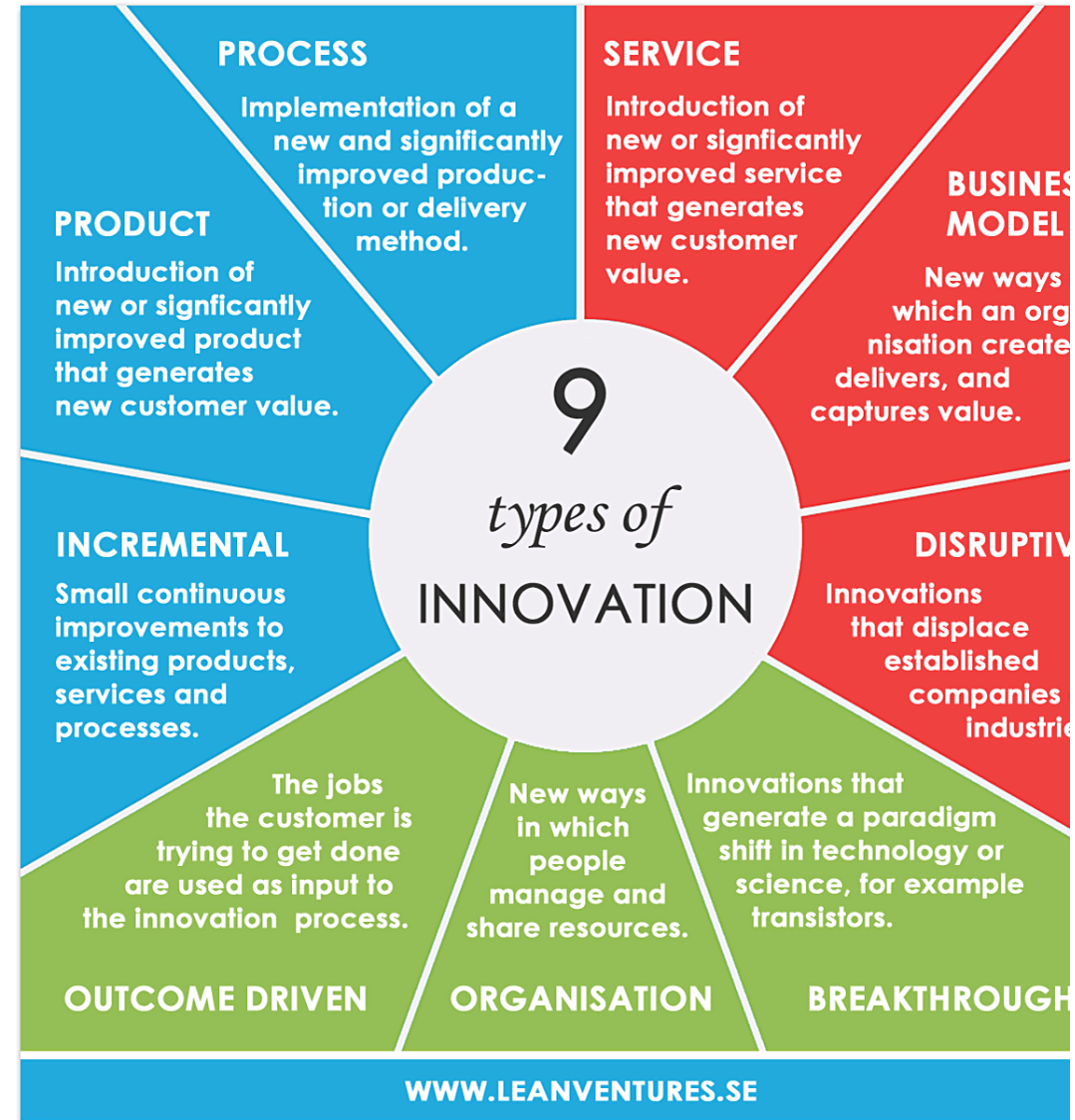
The hospital does not act alone. Part of an ecosystem:

- District heating
- District cooling
- National recycling programs
- Regional biogas digestion
- Waste water treatment
- Clean energy
- Clean water
- Clean transportations



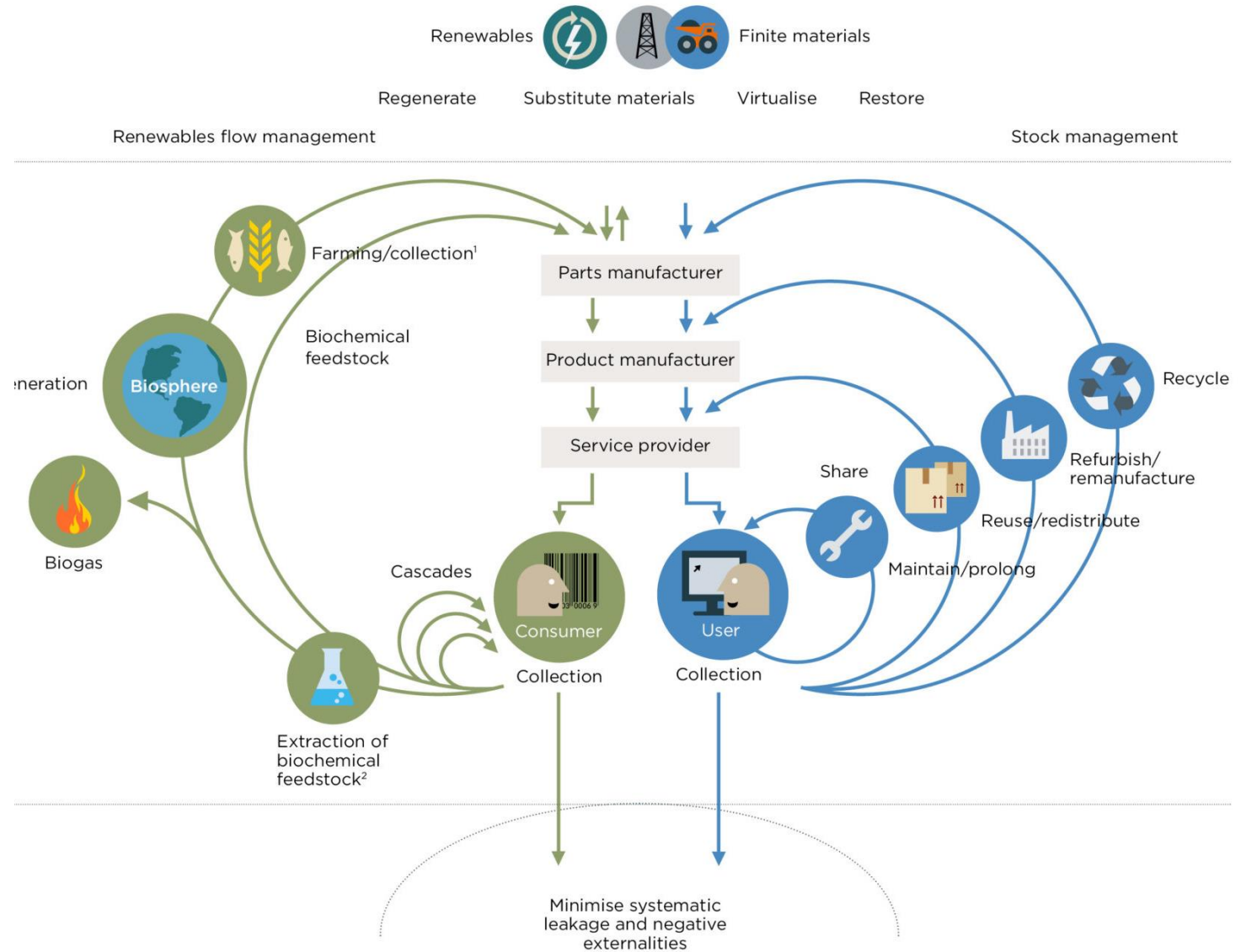
Innovative companies

- CleanTech with solutions for healthcare
- Medtech with good environmental performance
- Outside hospital technology – waste water treatment – energy etc.
- Authorities promote and fund innovations, testbeds etc.
- Sustainable healthcare is identified as 1 of 4 export strongholds

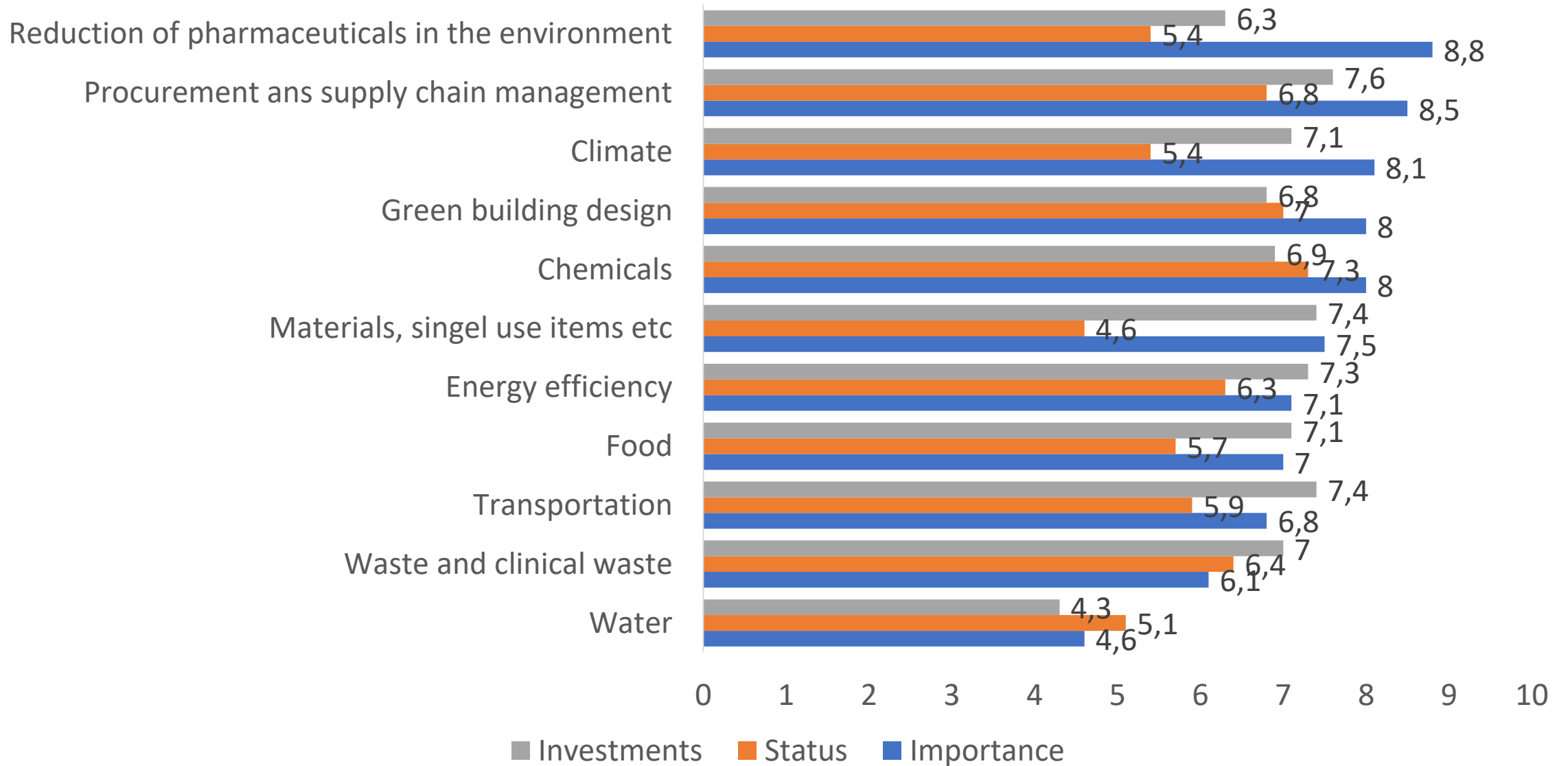


Holistic - circular

- Most hospitals work with all environmental issues
- Understanding of end of life – supply chain etc
- Top 5 % in everything – not best in anything.



1. Hunting and fishing
 2. Can take both post-harvest and post-consumer waste as an input
 Source: Ellen MacArthur Foundation, SUN, and McKinsey Center for Business and Environment; Drawing from Braungart & McDonough, Cradle to Cradle (C2C).



Daniel Eriksson

Phone: +46 707-94 42 13

Mail: daniel.eriksson@tem.se

Twitter: @DanielatTEM

Johannes Brundin

Phone: +46 (0)730677431

Mail: johannes.brundin@tem.se

www.tem.se

www.nordicshc.org

Foto: Daniel Eriksson