



# A UNIQUE INNOVATION COLLABORATION - REACHING ZERO EMISSIONS

[swedishepa.se/innovationcompetition](https://swedishepa.se/innovationcompetition) #infrazero2045

**INFRA  
SWEDEN  
2030**



SWEDISH ENVIRONMENTAL  
PROTECTION AGENCY

# The challenge

# Zero emissions by 2045 to keep Global Warming below 1,5 degrees

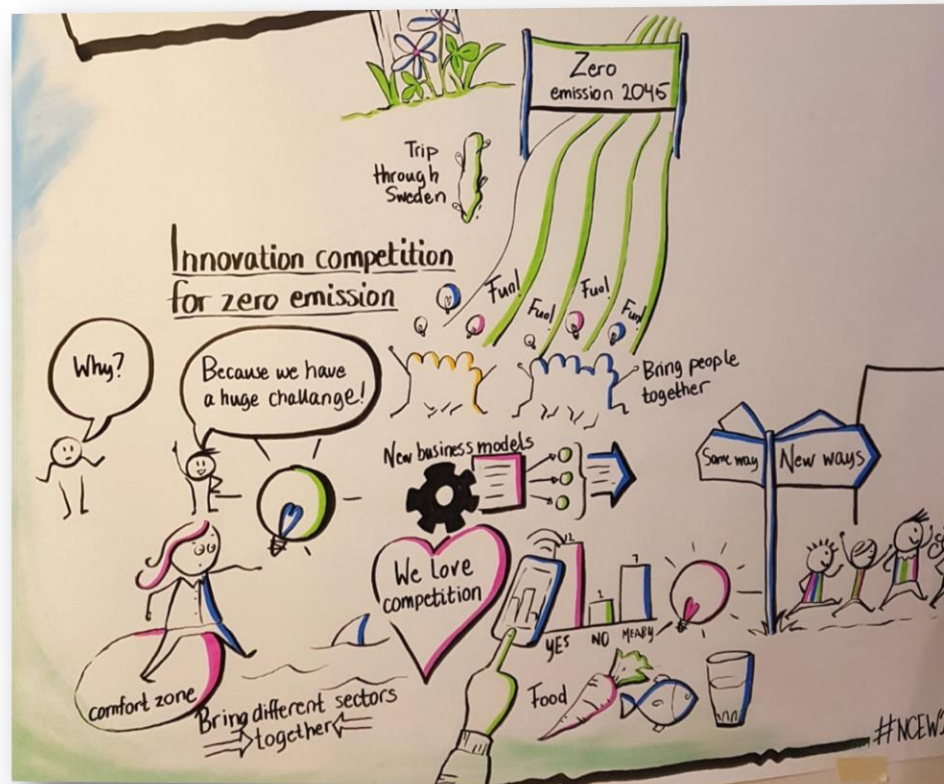


Photo: Smart Industry at the Nordic Clean Energy Week (NCEW) 23 May, 2018, arranged by the Swedish Energy Agency. Graphic recorder: Caroline Sellstone, <http://www.sellstone.se/>.

# The objective

# Building one of Europe's longest bridges with zero emissions by 2045

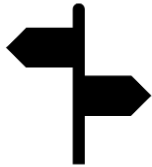


The Øresund Bridge, linking Sweden and Denmark

# The concept

# An innovative collaboration across boundaries

Across business sectors



Across sciences



Actors that normally don't interact

# A two team competition

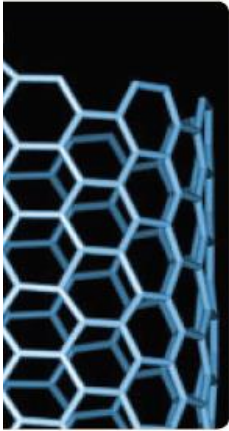




# Inspiration across boundaries



-Circular building concepts



-New business models

-Biomimicry – how can nature inspire business?

-Future automation and electrification

-Space technology

-Artificial intelligence



# Visiting different parts of Sweden

in search of inspiration



# The doers

# Co-creation in the triple helix



## -Team Yellow-

## -Team Blue-



# The results

# Promoting innovations



Breaking silos – A uniquely innovative collaboration between different organizations. Co-workers compete and competitors cooperate



Exploring new financing models and new business models



Promoting the right conditions to foster and advance innovation through inter-agency policy collaboration

# Promoting innovations



Innovative solutions towards zero emissions:  
Stimulating solutions across the value chain e.g. CO<sub>2</sub>-free or less carbon intensive material production



Innovative solutions beyond zero emissions:  
Innovation solutions bringing in bio-CCS and multi-functionality e.g. energy production, eco-system- and societal services



# Examples



Digitalisation, automation



Multifunctionality



Biomimicry inspired solutions



Energy generating solutions

# Biomimicry inspired solutions



- Grown structures mimicking how coral reefs are formed can be used to give the bridge's pylons self-healing and reinforcing properties.
- Strong structures with minimal material - inspiration from sea shells and bamboo



# Digitalisation, automation



- Sensors are used for monitoring the physical status of the bridge and for communicating with passing vehicles
- Using robots and drones to build and maintain infrastructure.
- AI used in the design process and to optimise the entire life cycle.



# Multifunctionality

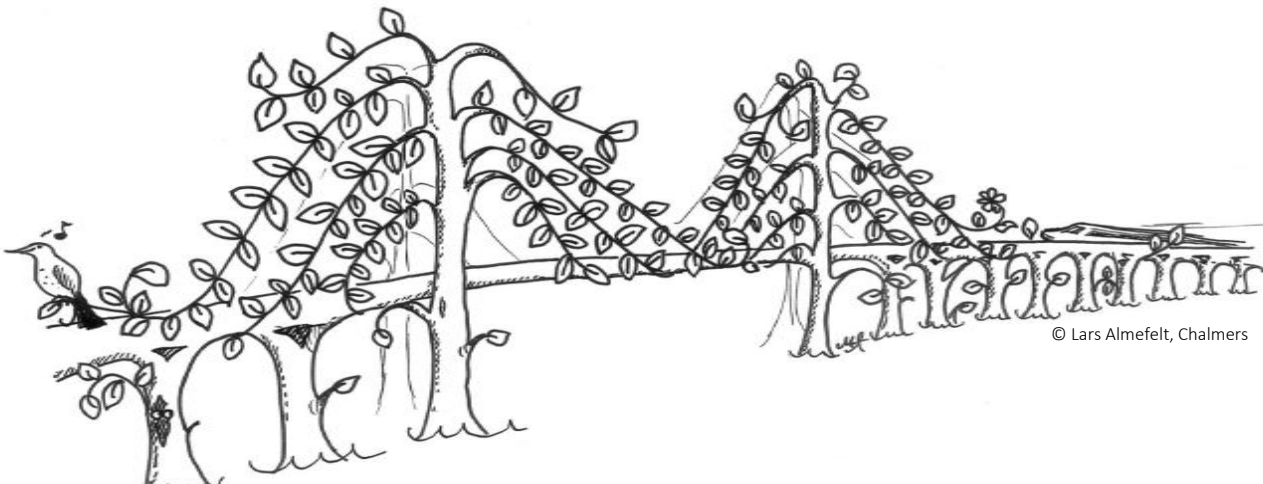


-More than just a bridge

- A bridge with a **role in society**, with its own business model closely connected to its value-net (not value chain)

- Providing **ecosystem services**.

- Wind power integrated in the structure, wave-power, solar panels, piezo-electric power.



# The timeline



# The winner

# The winner of the competition...

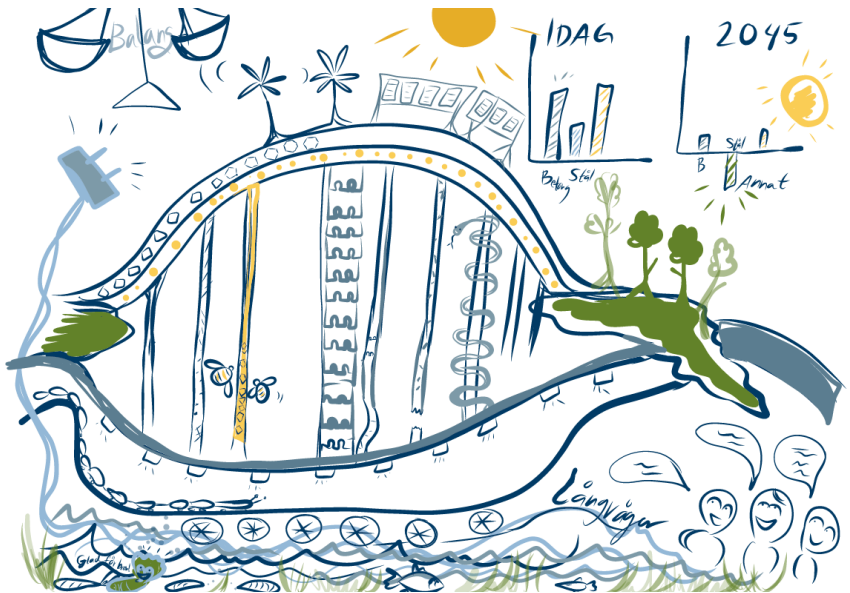


Photo: Graphic recorder – FridaRit, Frida Panoussis.

...will be announced this summer by:

-Minister for **Enterprise and Innovation**, Mikael Damberg

-Minister for the **Environment**, Karolina Skog



# However, everyone benefits

-**Industry**: new products, new services, new business models

-Research institutes and **academia**: application of their research, implementation of their work

-**Public agencies** and the ministries and government: lower CO2 emissions, new policies

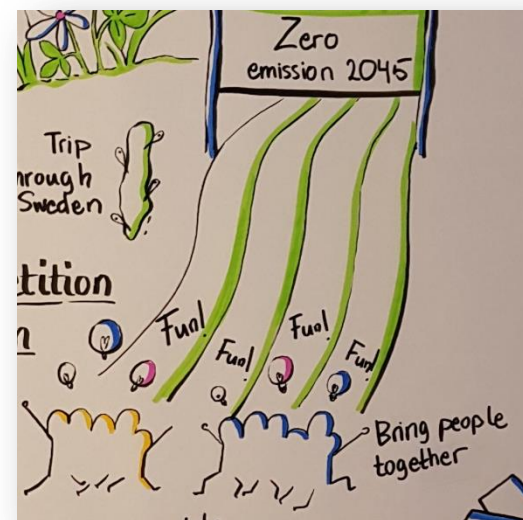


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# INTERESTED IN LEARNING MORE?

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