

# PIETER CLAUSING

NETHERLANDS

PROJECT LEADER SUSTAINABLE ICE RINKS, AND POLICY ADVISOR TO  
THE DUTCH SKATING UNION

*Sustainability of Ice Rinks in the Netherlands*



# Sustainability of Ice Rinks in the Netherlands

*Pieter Clausing*

*11-09-2024*

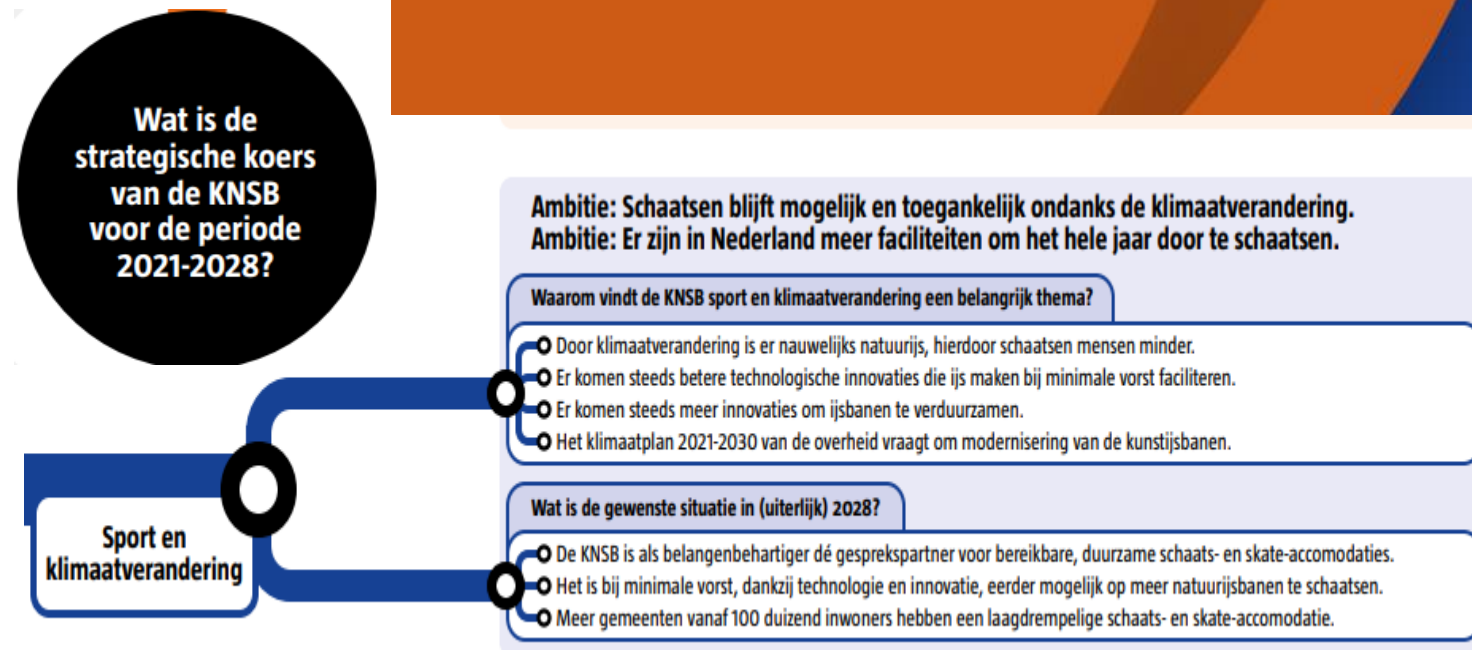
# Long term strategy KNSB 2021-2028

## Sport and Climate Change!

### Our concerns

- Less and less natural ice
- National and international climate policy and regulation
- Increasing energy prices

## What does that mean for the future of ice rinks and for the future of our sports!



## Samen voor het schaatsen en skaten

Strategische koers van de KNSB 2021-2028

# Skating and ice facilities in the Netherlands

## 22 permanent ice rinks

- 17 400m ice rinks and
- 21 30x60 ice rinks
- Estimated number of **5.5 million visitors** annually
- Over 600 skating clubs

## 70 temporary ice rinks in cities and towns

## Temporary ice rinks for events (e.g. for World Championship Shorttrack in Rotterdam)

## Skating on natural ice occasionally with millions of skaters in a few days



# Current situation in the Netherlands

## Large variety between ice rinks

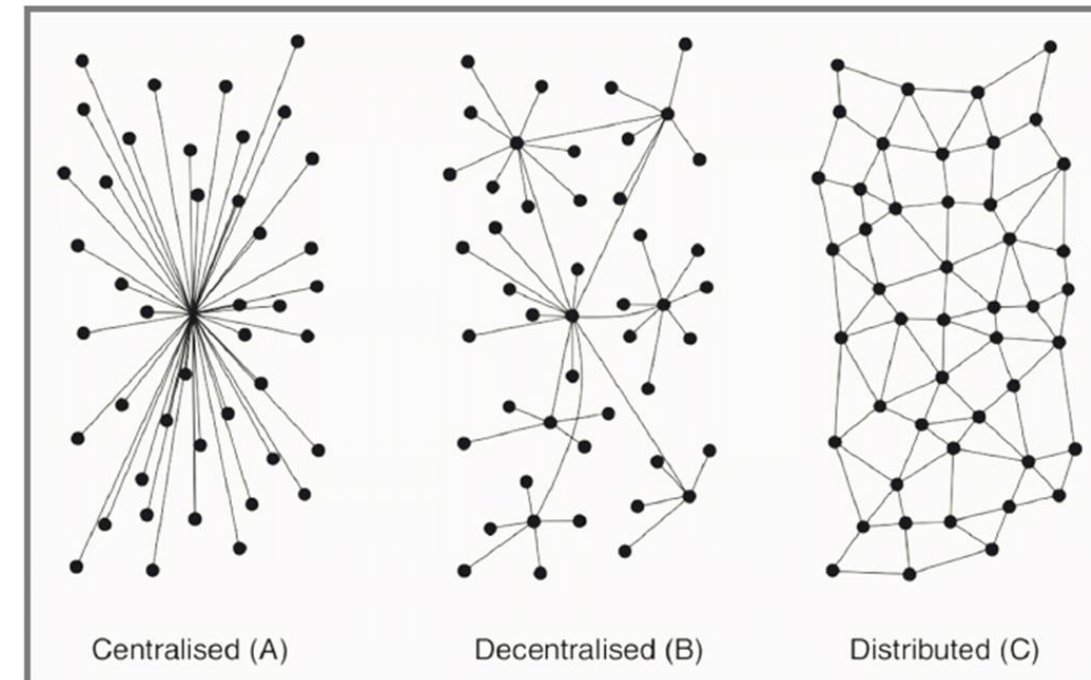
- Age and technical condition of installation and buildings
- Use of gas and electricity, peak levels
- Ownership
- Sustainability measures already taken
- Degree of monitoring of energy consumption
- Knowledge levels
- Future plans

## In the same period ...

- War in Ukraine → explosion of energy prices
- Netcongestion in the Netherlands
- Need for new regulations and solutions

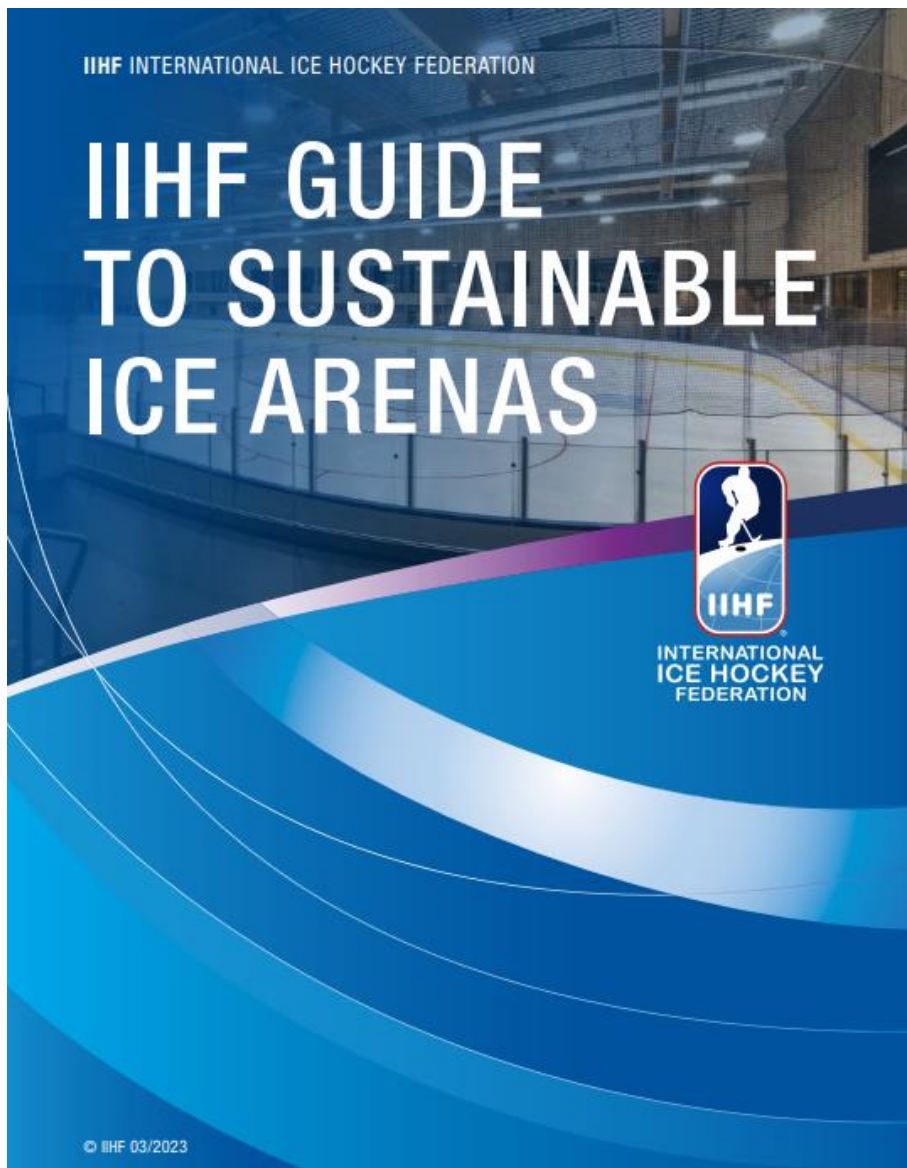


## The Dutch energysystem of the future

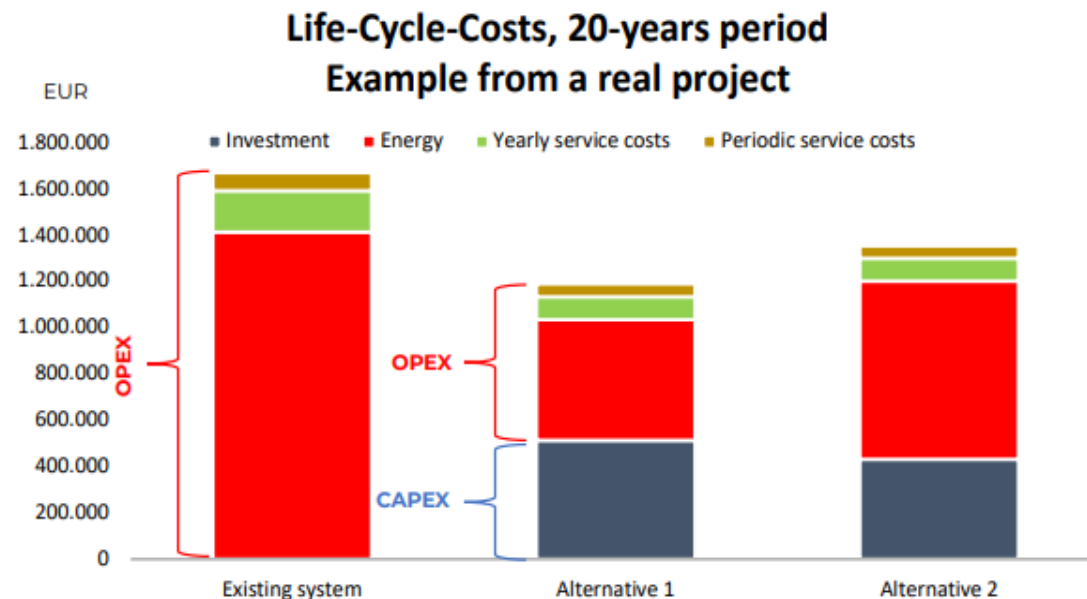


Bron: Baran, Paul. 1964. "On Distributed Communications Networks." IEEE Transactions on Communications Systems 12(1):1-9





## How to successfully save energy in ice rinks

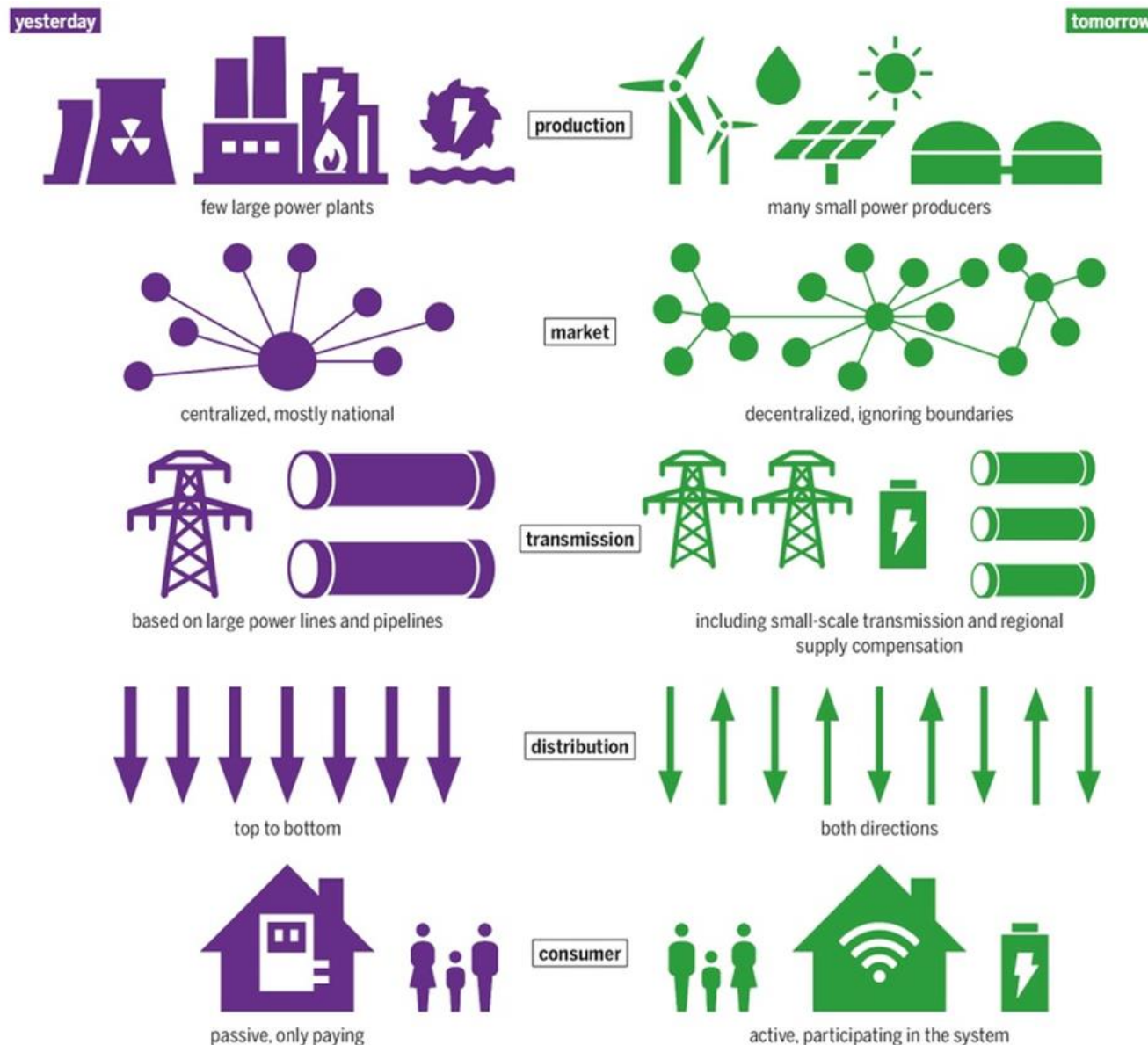


**Figure 6.** Life-cycle cost results for sustainable energy solutions (alternative 1 & 2) in an ice rink compared to existing system. The results show that investing in long-term solutions will yield the biggest savings for the ice rink owner.

IIHF GUIDE TO SUSTAINABLE ICE ARENAS 2022

# Challenges

- Efficient cooling method and efficient use of residual heat
- Self-generation of energy (solar, wind, ....)
- Balance between energy supply and demand (summer/winter, day/night)
- Storage of energy
- Ice rink as an essential part of an energy hub
- To convince the owners/politicians and decisionmakers of the pro's of investing in these solutions!

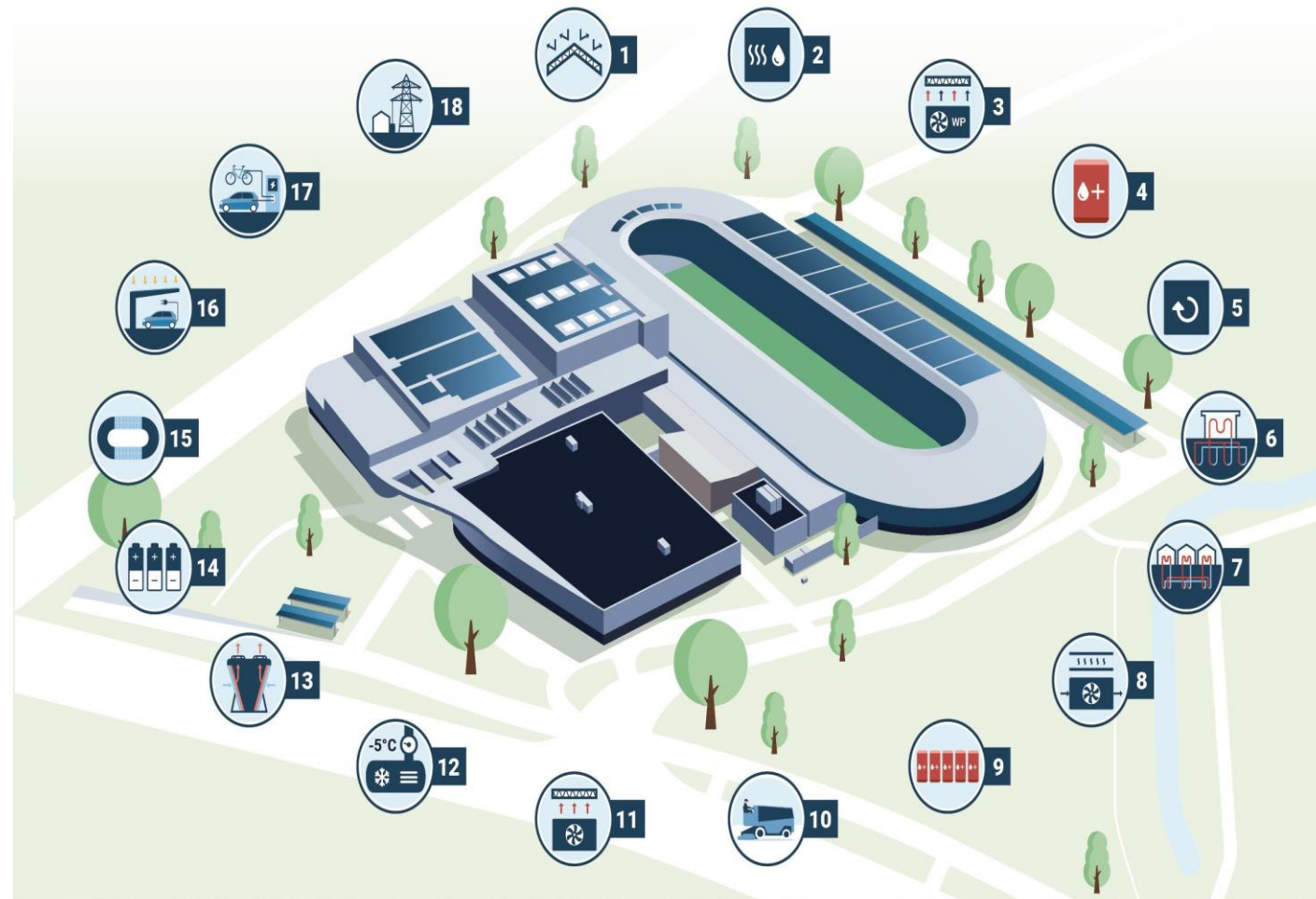


Source: Bartz/Stockmar. 2018. "Energy Atlas 2018: Figures and Facts about Renewables in Europe"

# Overview approach sustainability sports complex de Meent, Alkmaar

## POCOTYF project City of Alkmaar

- |   |                          |
|---|--------------------------|
| 1. Roof insulation                      | 10. Mop water supply     |
| 2. Electric boiler                      | 11. Residual heat pump   |
| 3. Heat pumpcooling and heating         | 12. Chillers             |
| 4. Hot water boiler                     | 13. Drycooler            |
| 5. Regeneration exchanger               | 14. Batteries            |
| 6. Heat cold storage                    | 15. Photo voltaic panels |
| 7. Resourcenet Olympiapark              | 16. Solar car park       |
| 8. Underfloor heating and air treatment | 17. Charging stations    |
| 9. Buffer vessels                       | 18. Main connection      |



### LEGENDA

1. Dakisolatie
2. Elektrische ketel
3. Warmtepomp

4. Warmwaterboiler
5. Regeneratiewisselaar
6. WKO
7. Bronnennet Olympiapark
8. Vloerverwarming luchtbehandeling

9. Buffervaten
10. Dweilwater voorraad
11. Restwarmte warmtepomp
12. IJsmachines
13. Drycooler

14. Accu
15. PV panelen
16. Solar carpark
17. Laadpalen fiets en auto
18. Netaansluiting



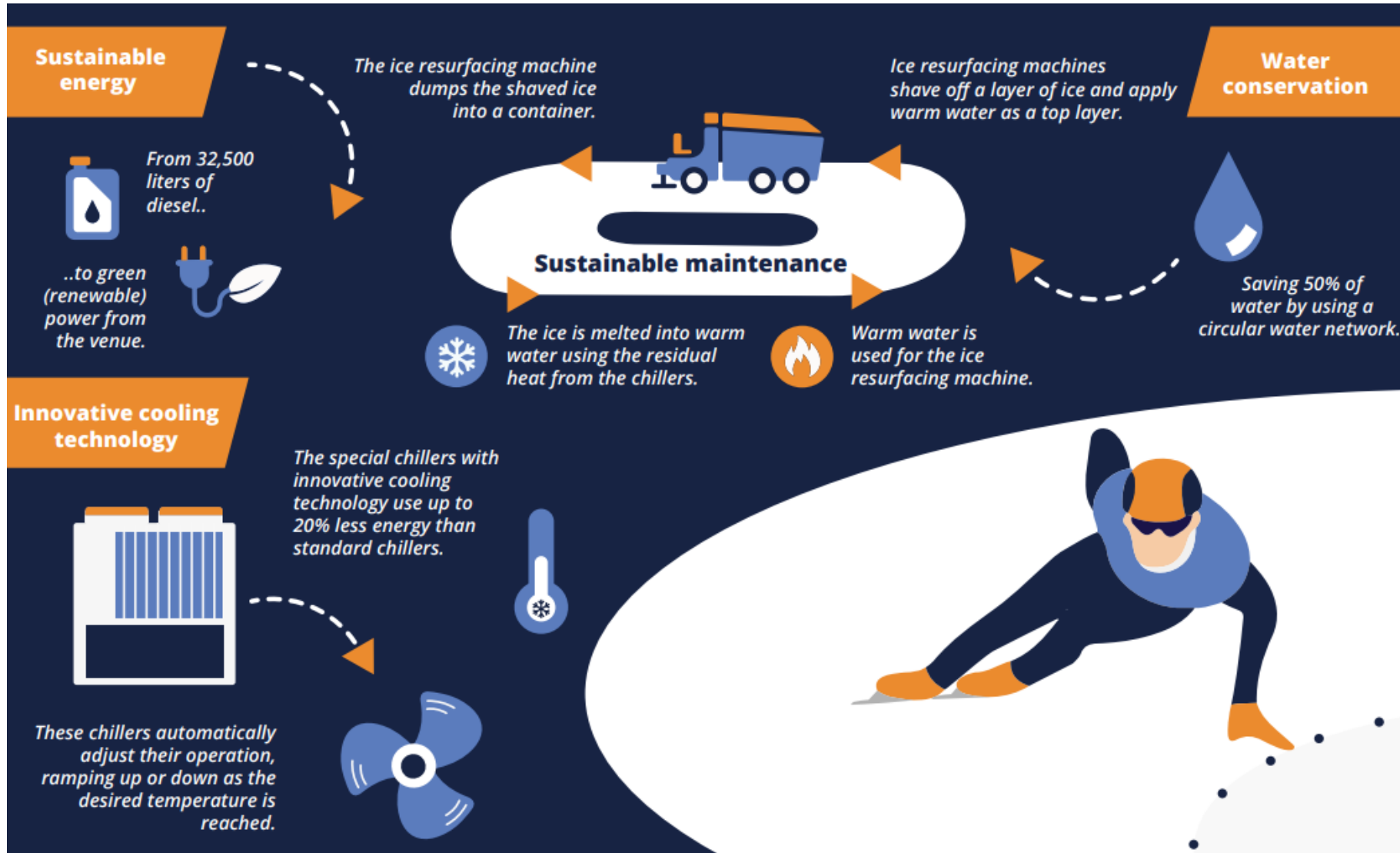
# IJshal De Vliet, Leiden

## Energy-neutral building

- 3400 solar panels
- Enough to run the chillers all year round
- In summer feeding back to the electricity grid
- Preparations are made to store electricity when suitable batteries are available
- Residual heat is used for the swimming pool
- Together with heat pumps this ensures constant air quality in the hall



# Sustainable temporary ice rink | ISU World Short Track Championships 2024



# Conclusions

- Sustainable (energy efficient) ice rinks are realistic
- The net energy consumption and therefore the operational costs are significantly lower!
- A lot of knowledge and expertise is available!
- Further improvements are continuously being sought
- Short term (quick wins) as well as long term solutions are necessary

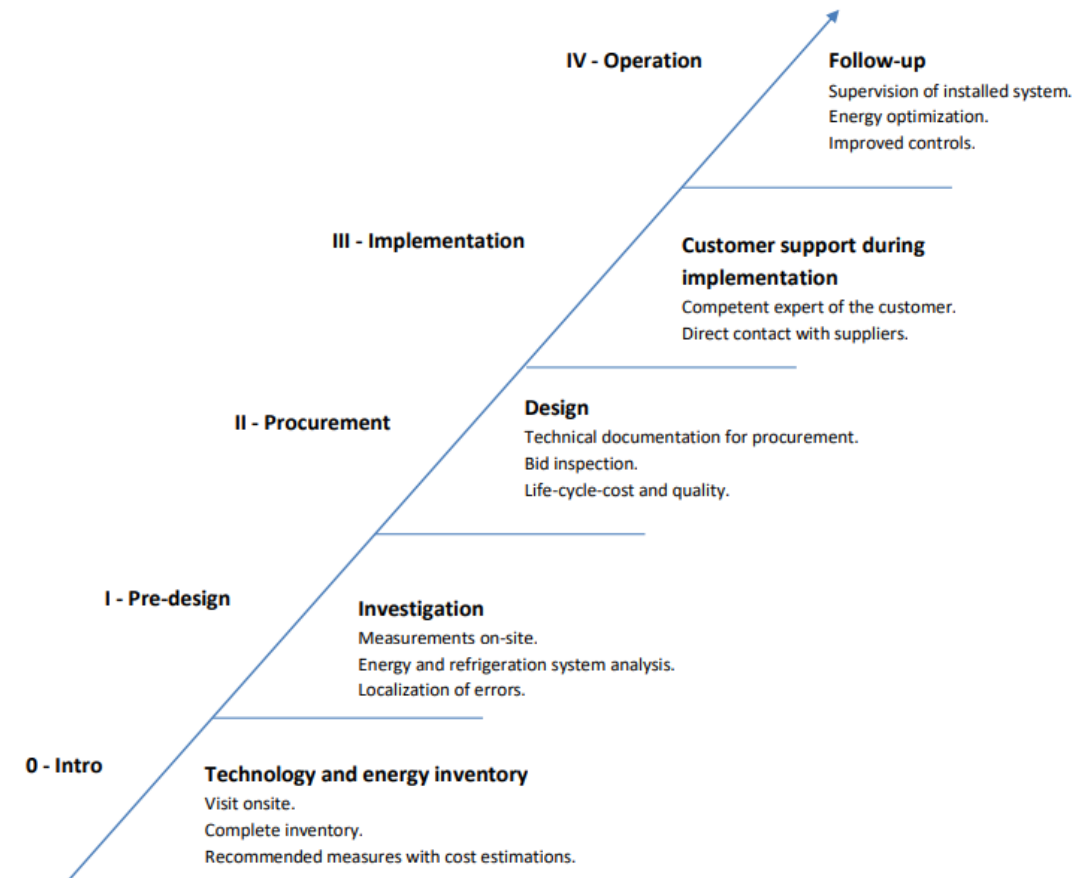
## However!

- Many owners lack the awareness and knowledge of the possibilities of making ice rinks more sustainable
- This leads to nothing being done or to the wrong choices being made for the long term.



## The work process of developing energy concepts

IIHF GUIDE TO SUSTAINABLE ICE ARENAS 2022





# That is why

- The sportfederations (ISU, IIHF, KNSB , ...) must proactively work to convince facility owners and decisionmakers that sustainable ice rinks are a realistic prospect!
- We can help them make the right choices in that process, for instance with a guide like the IIHF Guide to Sustainable Ice Arenas.
- This conference is a good start!
- KNSB started a new Consortium together with Essent and Daikin

**KNSB X ESSENT  
PARTNER TEAM DUURZAAM IJS**





## *KNSB'S SUSTAINABILITY AMBITIONS*

***“ENSURE GENERATION ALPHA IS ABLE TO  
SKATE ON NATURAL ICE AND ARTIFICIAL ICE”***

KNSB wants to use technology and innovation and take responsibility to make artificial ice rinks more sustainable and to realize artificial and natural ice faster and more sustainably

\* Generation Alpha are people (read: children) born between 2010 and 2025