



Cefmof
creating a CN future

| Nordic Hydrogen Week
13th Feb. 2024



Cefmof



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Central Finland Mobility Foundation (Cefmof)

Cefmof is established by the City of Jyväskylä, TOYOTA GAZOO Racing World Rally Team, and Toyota Mobility Foundation.

We are creating a carbon-neutral future.

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Management

Objective of Establishment

Promote urban development where people and nature can co-exist in harmony through realizing a carbon-neutral and sustainable society.

Main Activities 2024

- Study and implement measures and model for carbon neutrality
- Development of tool to provide citizens with information on available transportation, road conditions, etc. during the harsh winter season , etc.

1. Winter Mobility

2. Carbon Neutrality & Hydrogen

1. Winter Mobility

Mission

1. Improving winter mobility for City of Jyväskylä residents
2. Optimized usage of existing winter maintenance resources

Strategy

- Establish methodology and infrastructure to combine and analyse multiple data sources
- Application to share information of conditions to citizens of Jyväskylä and support maintenance planning

Milestone

2024

2025

2026

PART 1: Acquisition of data sources

PART 2: Development of management systems

PART 3: Development of the "Citizen's Mobile App"

2. Carbon Neutrality & Hydrogen

Mission

Create a hydrogen technology and society model that is applicable to regions of Finland and the world harnessing Jyväskylä's academia, industry, youth capabilities and its sporting spirit.

Strategy

H2 Ecosystem

Define scope (solutions, enablers and players) and **setup projects** for Jyväskylä to contribute to overall Finland CN / H2 plans

H2 Innovation

Foster H2 innovation from / in Jyväskylä **utilizing local assets, environment and intelligence** inc. new TGR-WRT Technology Center

H2 Experience

Involve local community in developing CN / H2 society: enhance knowledge and demonstrate feasibility

Milestone

2024

2025

2026

PART1: Study and research

PART 2: Define scope and create long-term plan

PART 3: utilizing local assets, environment and intelligence and Involve local community in developing CN / H2 society

What Hydrogen?

CEFMOF focuses on Green Hydrogen

	GREY Hydrogen	BLUE Hydrogen	GREEN Hydrogen
Source	<p>Methane or Coal</p>	<p>Methane or Coal</p>	<p>Renewable energy</p>
Emission	<p>CO2 release into atmosphere</p>	<p>CO2 underground storage</p>	<p>O2 captured for synergetic use (Zero Carbon)</p>

*There are more types of hydrogen, but here is a description of the main hydrogen

TOYOTA Hydrogen Activities

TOYOTA Hydrogen Activities

TOYOTA's strategy aiming for people happiness is to provide a full-lineup of electrification vehicles.

Different types of electrified vehicles are needed to provide suitable options for different local conditions, types and levels of usage.

We would like to introduce TOYOTA hydrogen activities.



Type of Hydrogen Vehicle

Definition

Image

FCEV

In market

FCEV: Fuel Cell Electric Vehicle

FCV uses a fuel cell.

FCV is to take oxygen and hydrogen into the fuel cell, and the electric energy from the chemical reaction to turn the motor.



HICEV

Prototype

HICEV: Hydrogen Internal Combustion Engine Vehicle

HICEV uses hydrogen as a fuel source in a modified internal combustion engine. Instead of gasoline, hydrogen is injected into the engine, where it combusts with oxygen to produce power.



Hydrogen Vehicle TOYOTA Lineup

Vehicles

FCEV

TOYOTA Mirai



H2 City Gold



**H2 Hilux
Prototype**



**H2 Truck
Prototype**



HICEV

Prototype

GR Corolla H2



GR Yaris H2



AE86 H2



HiAce H2



Other H2 Projects of TOYOTA

Hydrogen Factory Europe



Toyota Motor Europe (TME) will establish a local business operation, the Hydrogen Factory Europe.

It will ensure a co-ordinated approach to the commercialisation of hydrogen technology and systems – spanning everything from development and production, through to sales and aftersales.

Toyota Electrolyser



Electrolyzing water using the fuel cell (FC) stack and other technology from the Mirai. The unit installed at DENSO Fukushima can produce approximately 8 kg hydrogen per hour, with 53 kWh/1 kg hydrogen energy required.

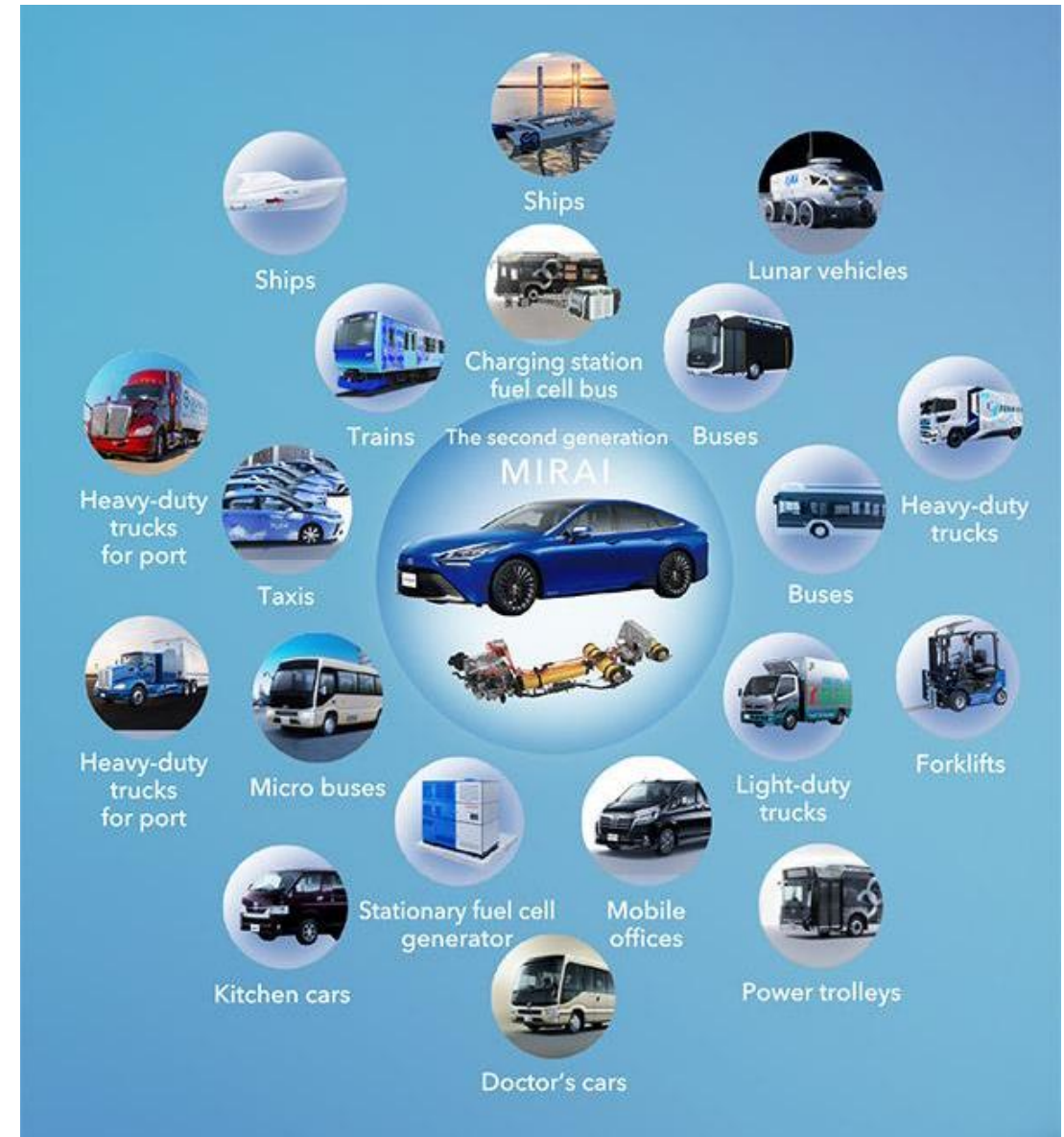
H2 Stationary generators



Hydrogen fuel cell module which delivers high-density continuous power.

TOYOTA Hydrogen Support

Toyota is collaborating with companies across a wide range of fields of hydrogen powered vehicles.



Cefmof is seeking collaboration on various fields of industries and business.

Please contact us.
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