ÍSLENSK NÝORKA ehf
ICELANDIC NEW ENERGY Ltd.

EL-MOBILITY

TESTING OF ELECTRIC VEHICLES IN GREENLAND, FAROE ISLANDS AND ICELAND

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Guðrún Lilja Kristinsdóttir

Partners

- Icelandic New Energy (coordinator)
- Nukissiorfiit
- SEV
- Energy Agency Iceland (Orkusetur)
- Reykjavík Energy

- 2 year project → 2010-2012

- Supported by NORA fund (North Atlantic Cooperation)

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NUKISSIORFIIT.GL

Orkusetur

Orkuveita Reykjavíkur

SEV

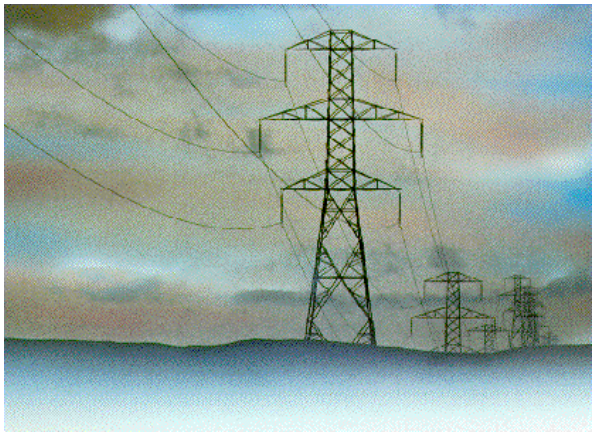
Project goals

- Demonstration of the same type of battery electric vehicles in all the three islands
  - Difficult environment, weather etc.
  - Small societies – short distances
  - Infrastructure – not available, is it needed?
  - Customers

- Dissemination
  - Visibility by demonstrating vehicles
  - High interest from the media in each location
  - Workshops in each country
    - Iceland June 2010
    - Faroe Islands February 2011
    - Greenland August 2011)

EV posibilities

- All of the islands have possibilities to increase their renewable electric production:
  1. Faroe Island from wind and hydro
  2. Greenland from hydro
  3. Iceland from geothermal, hydro and wind



The case of Faroe Islands

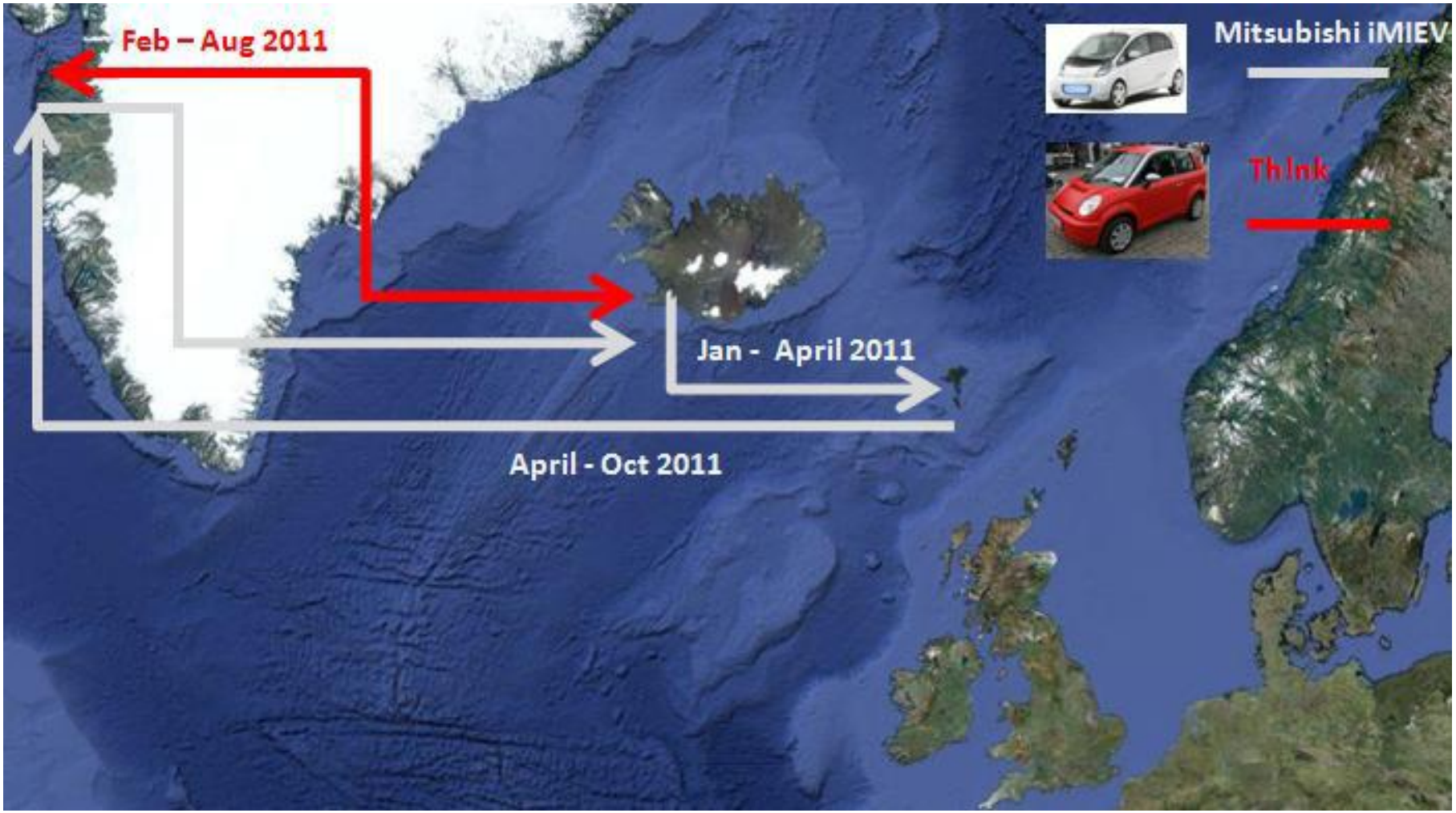
- Citroen C1 Gasoline/ Citroen C1 electricity

- Gasoline 0,6 kr / km 131 g/CO_2/Km
- Electricity 0,58 kr / km 137 g/CO_2/Km

Cars tested

- 3 x Mitsubishi iMiEV
- 2 x Th!nk City
- 2 x Peugot iON
- (2 x Peugeot Partner)

Testing of cars



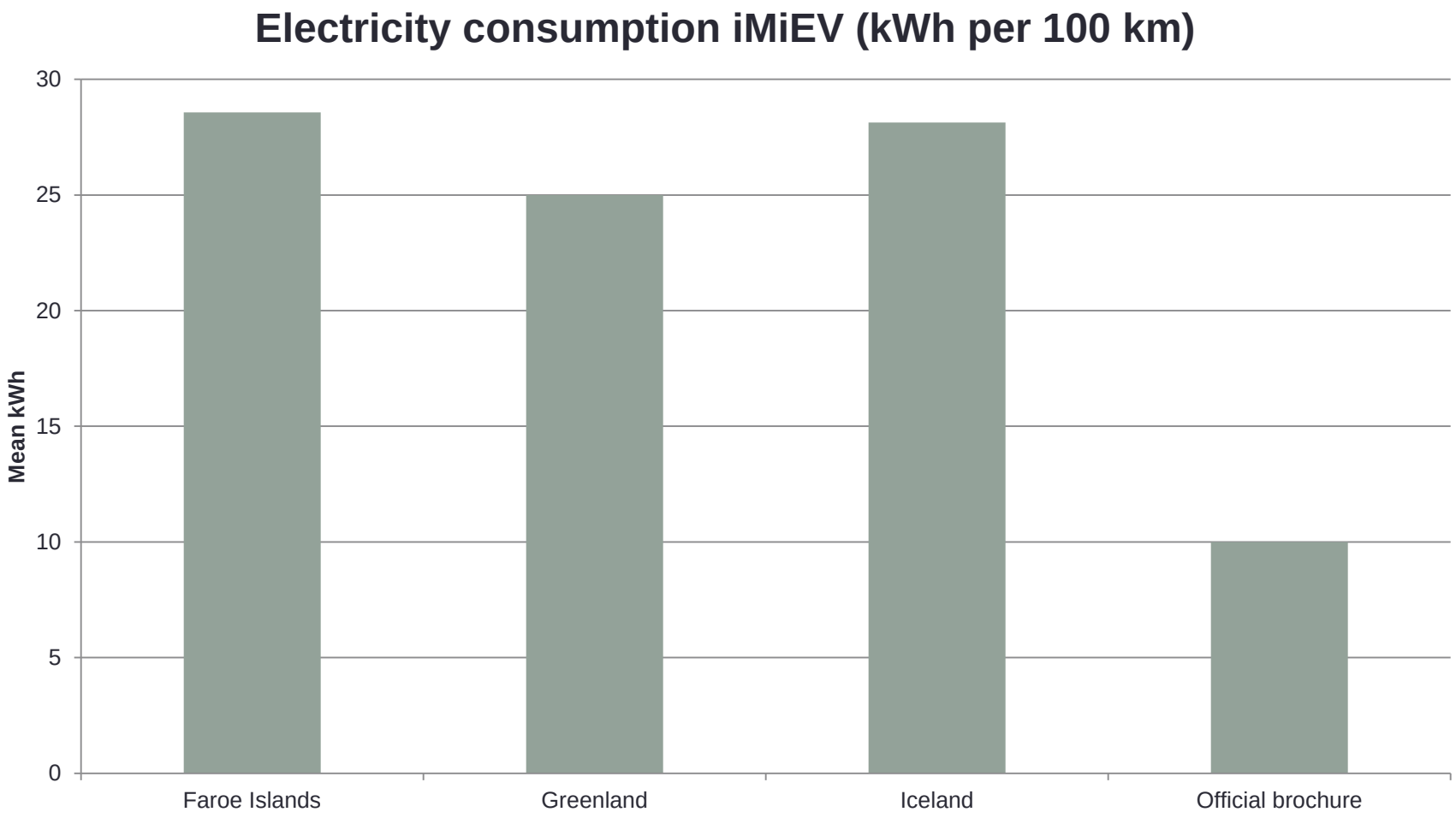
Island circumstances

- Small road network
  - Greenland: cities not connected by road
  - Faroe Island: small road network
  - Iceland: larger road network but small towns
- High interest with companies and public
- Small markets

Users

- Vehicles in Iceland
  - Minister
  - Energy companies
  - Police and fire department
  - News teams
  - Public

Electricity consumption



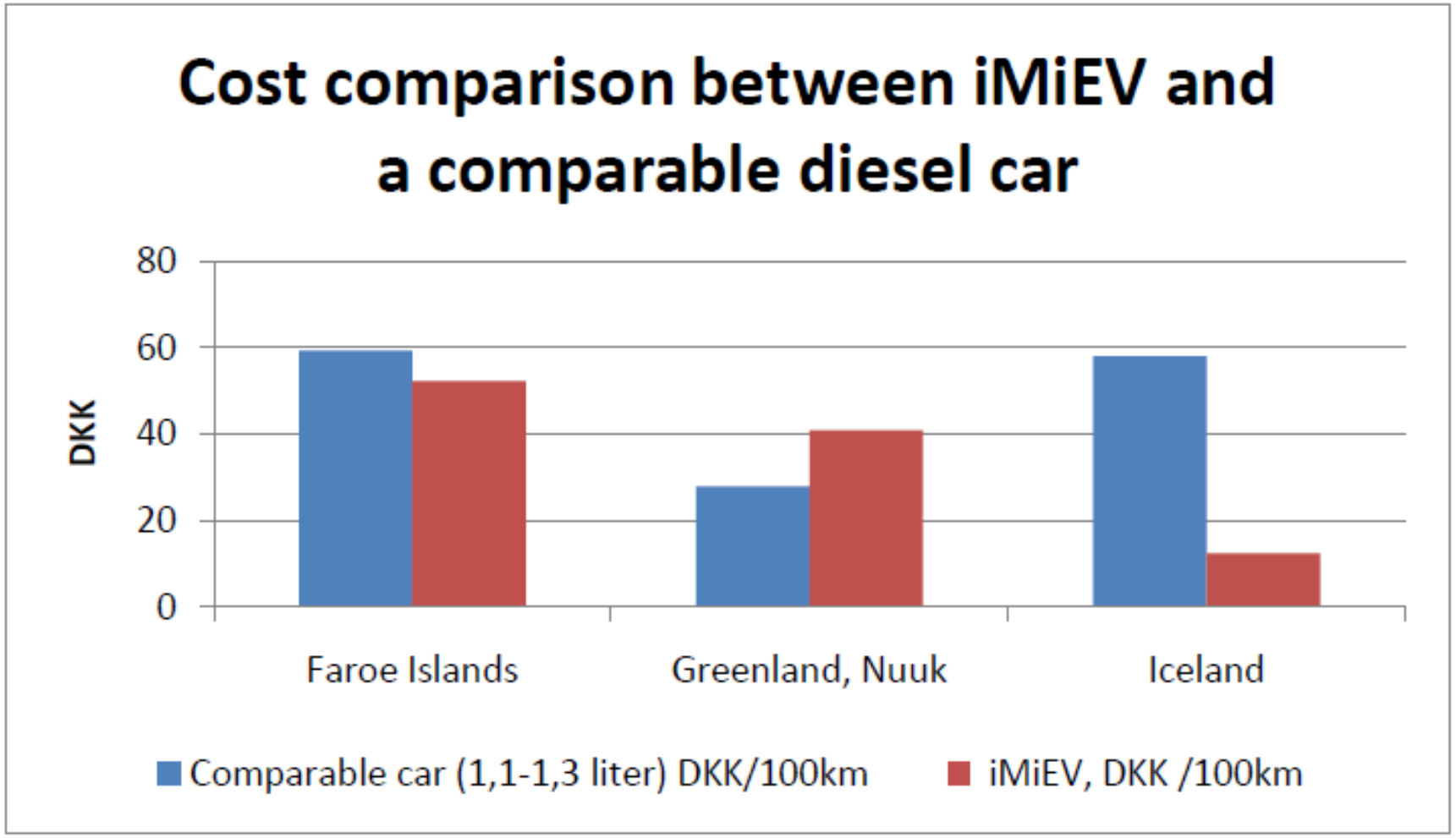
Maintenance

- Two minor car crashes

1. Damage to the rear of the iMIEV – easy to fix

2. Damage to the rear of the Th!nk – more difficult to fix

Fuel cost comparison



Public trial
“Rafbílar fyrir almenning”

Electric vehicles offered to the public of Iceland

- Demonstration of electric vehicles
  - During 2008-2011 INE demonstrated over 30 hydrogen vehicles
    - Europe's largest hydrogen vehicle demonstration

- 8 households offered to rent consecutively:
  - a battery vehicle (1 month)
  - fuel cell hydrogen vehicle (1 month)

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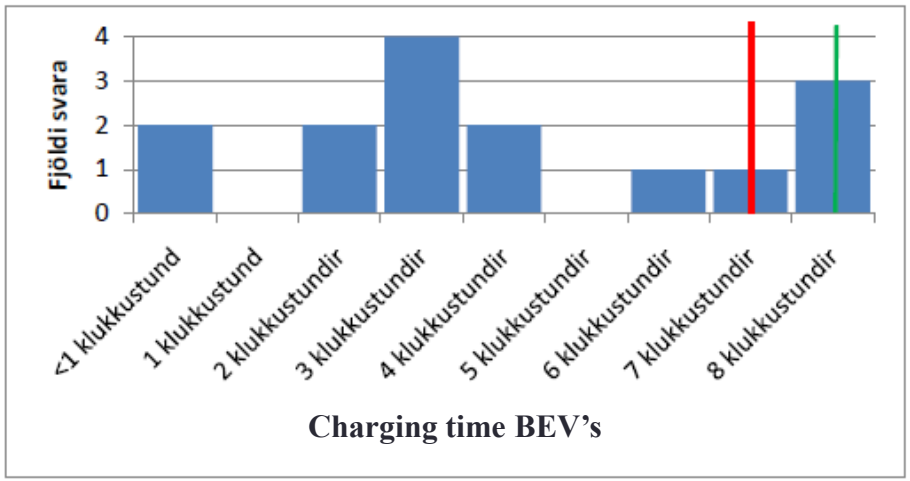
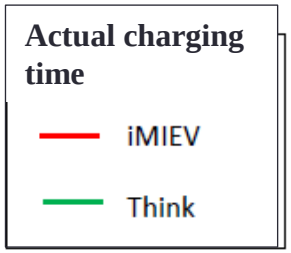
Interview results:

Expectations for EV's:

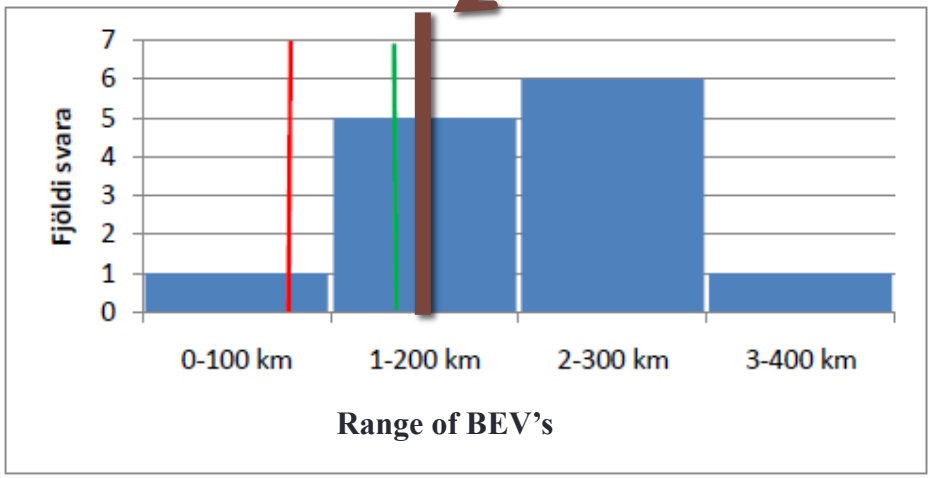
- Light, small and neat, easy in the city
- Nice to have 'a fuelling station' in the garage
- Curiosity:
  - regarding the endurance of the batteries and the lifetime of the vehicles
  - to see if it can keep up with traffic speed
  - about the power

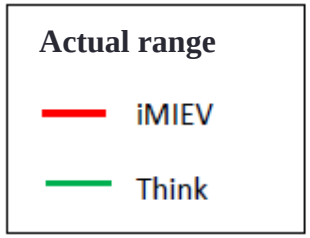
The ideas of participants regarding charging time and range of BEV's



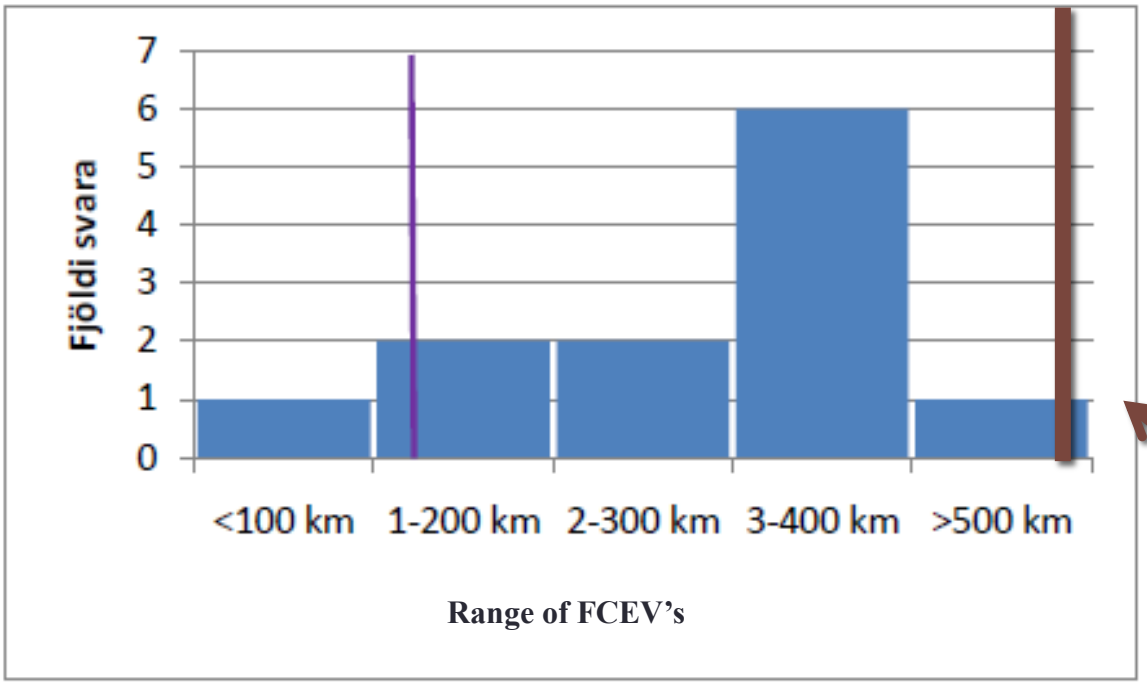


Mitsubishi iMiEV 2012





The ideas of participants regarding charging time of FCEV's



Actual range in the experiment

Vetnisbíll

Hyundai Tucson ix35
2012

Experience after test driving

- Charging behavior
  - The families always charged the car at home, never used charging posts available in Reykjavík.
  - The car was usually plugged in overnight, thus the families did not know how long the charging process was.

Positive aspects:

- Surprised by the power
- ‘Good conscious’ driving
- Operational cost very low
- Good as a second car
- People “think” and plan their trips

Negative aspects:

-Limited range
-Insecurity to reach destination
-That the car was too silent
-The car air condition is unefficient and high in electricity consumption

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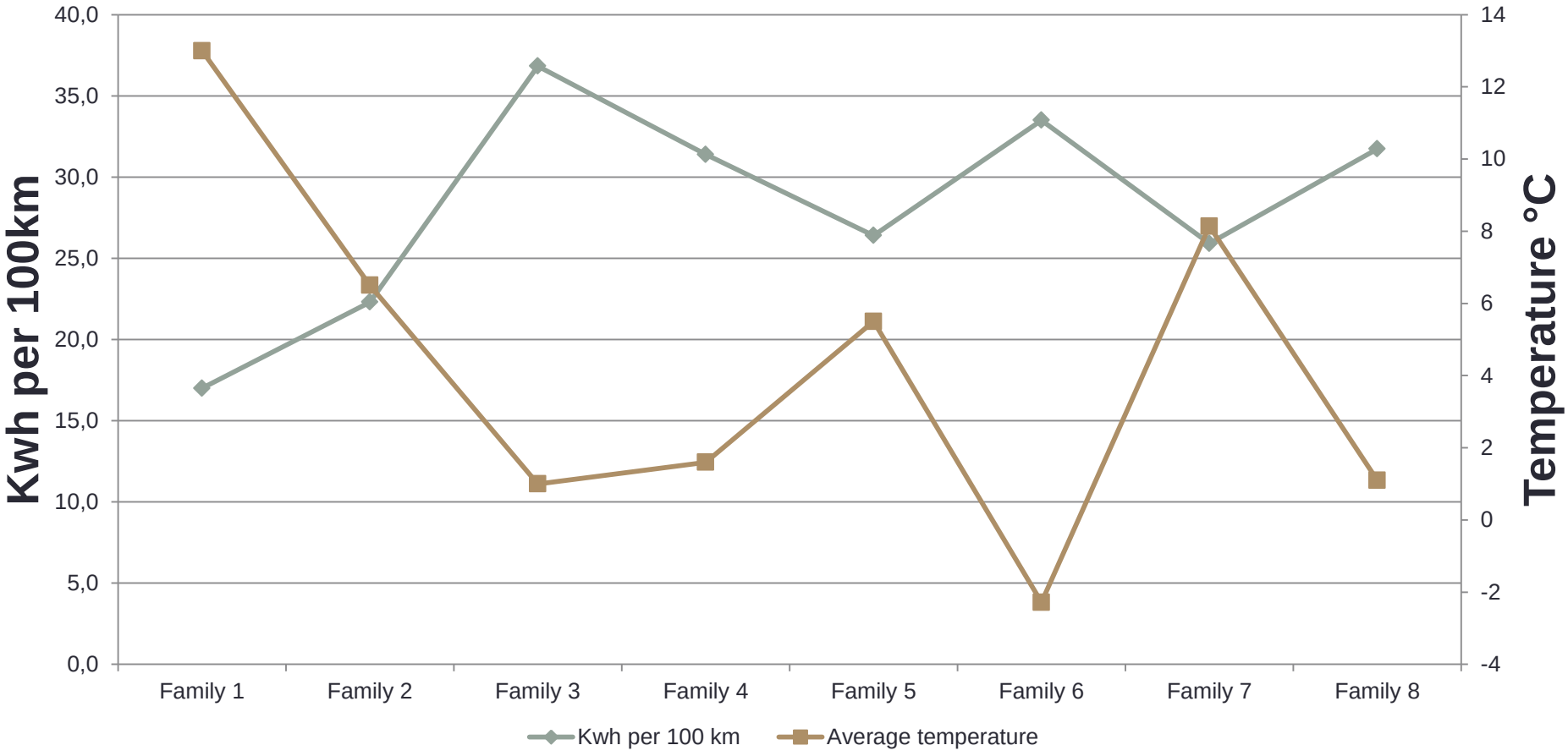
Usage of Kwh


40,0
35,0
30,0
25,0
20,0
15,0
10,0
5,0
0,0
Kwh per 100km
14
12
10
8
6
4
2
0
-2
-4
Temperature °C
Family 1
Family 2
Family 3
Family 4
Family 5
Family 6
Family 7
Family 8
Kwh per 100 km
Average temperature

Media and public

- The El-mobility project has received a lot of media attention
- It is apparent that people are very interested in new technology and the ‘newenergy’ cars of the future
- With the support of NORA it was possible to initiate all these research activities – which is the first step towards future electric transportation

Conclusion

- Mostly positive outcome - Why hasn‘t the market reacted?
  - Price?
  - Lack of infrastructure?
  - Range?
  - Incentives?
  - Expectations?

- Full report can be found at: http://www.newenergy.is

Thank you

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