

**BUSINESS  
FINLAND**

# **SMART ENERGY**

**Electric Vehicle (EV) charging infrastructure**

**FINLAND**



# EV – CHARGING IS RAPIDLY DEVELOPING BUSINESS

- Megatrends
  - Electrification of society
  - Decarbonisation of transport
  - Flexible smart grids
- Commercial fleets drive BEV (battery electric vehicle) adoption
- New collaborations and business models
- Number of DC (fast) charging points is estimated to grow from 250 000 (2019) to 1 227 000 by 2030.
- Price parity between EVs (electric vehicles) and internal combustion vehicles is reached by the mid-2020s in most segments.

## DEEP DIVE

As utility collaboration with charging companies rises, emerging differences could impede EV growth

10:54 11 Aug

**Hundreds of electric car charging points planned for city**

Hundreds of new electric vehicle charging points are going to be placed across Birmingham in the next two years.

**Total to deploy 20,000 EV charging stations in the Netherlands**

News > Auto > Features

**EESL intends to install 10,000 EV charging stations in India within 3 years**

**California Greenlights Massive Electric Vehicle Charging Program**

Thursday, August 27, 2020

EDITORS' PICK | 1,585 views | Jun 5, 2020, 07:37am EDT

**All Petrol Stations In Germany Will Be Required To Provide Electric Vehicle Charging**

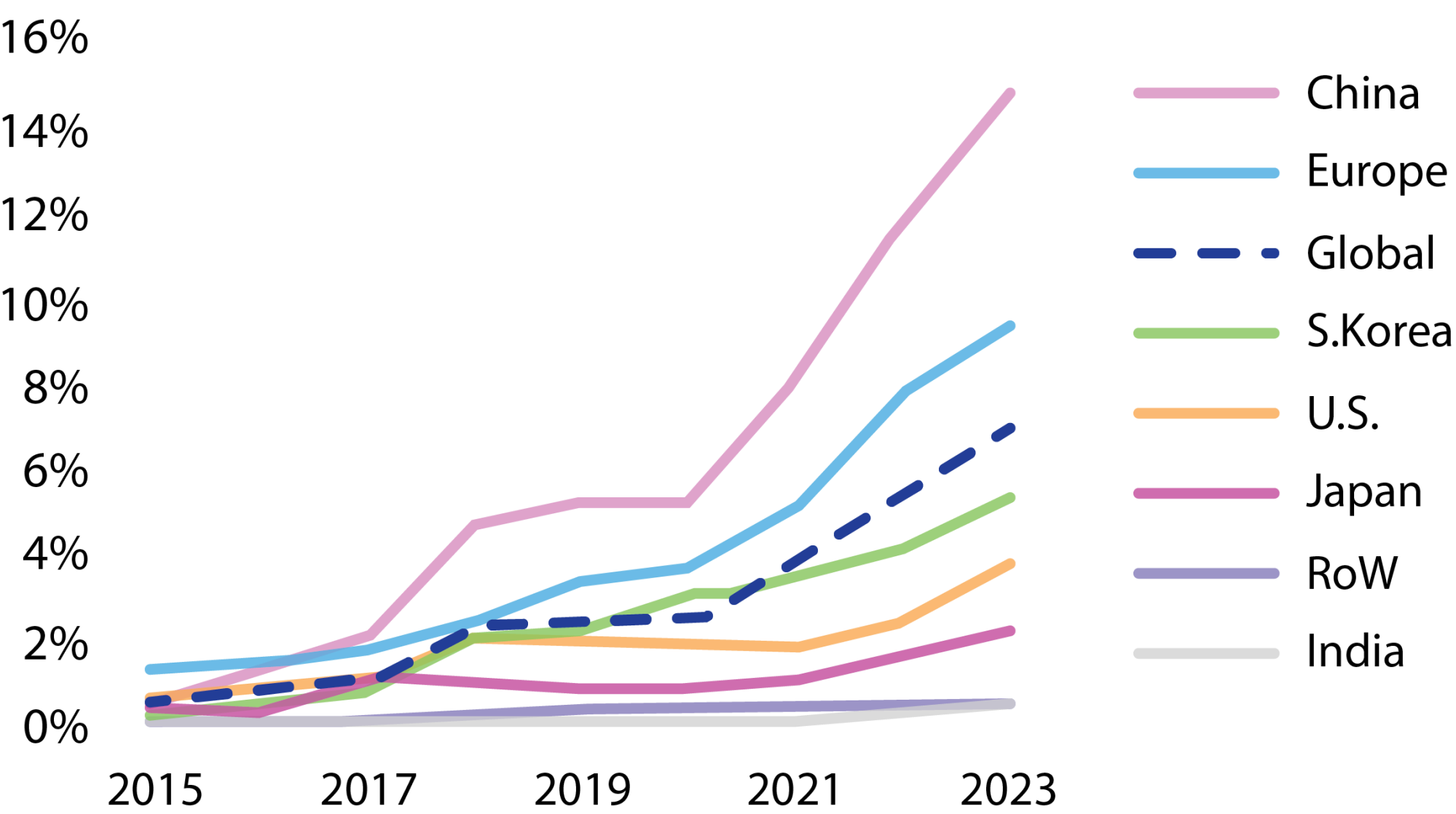
EDITORS' PICK | 108,849 views | Jul 9, 2020, 08:00am EDT

**The Future Of EV Charging May Be At 50KW, Not The 'Gasoline Thinking' of 250KW**

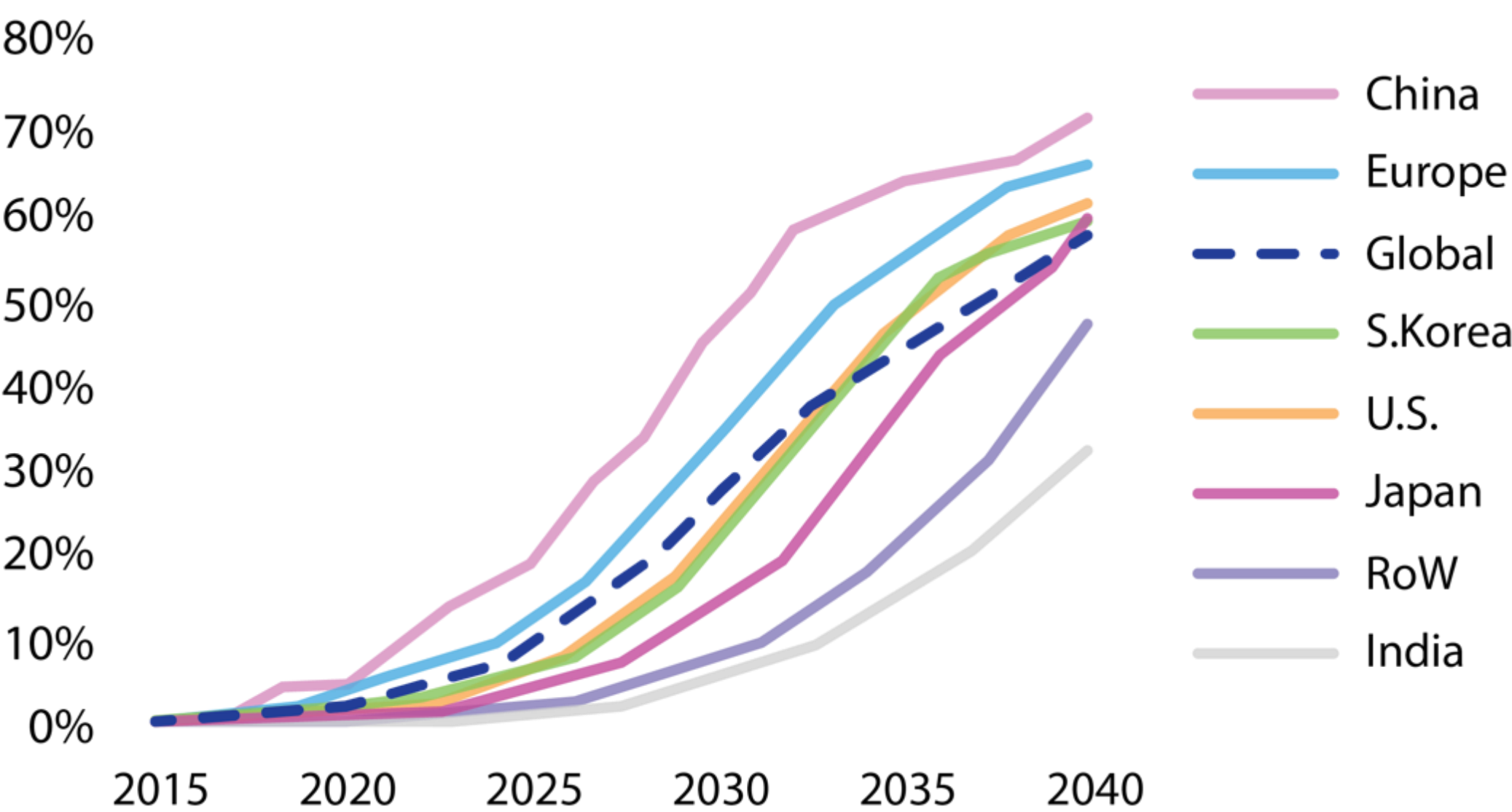


# GLOBAL EV SHARE OF NEW PASSENGER VEHICLE SALES

Short-term



Long-term





# EV CHARGING IN A DISTRIBUTION GRID

Charging will cause local consumption peaks to electricity distribution grids.

Charging network provides useful data to the grid owner to develop new functionalities and services at the grid.

## New business models and possibilities

- Charge optimization
- Security
- Energy storage assets
- Local modelling
- Aggregation services
- Battery second life
- Demand response
- V2G
- Interconnection

## Smart Charging development in a grid

- Control peak demand
- Increase renewable energy utilization
- Grid flexibility
- V2G possibilities

# BEST PRACTICES FROM FINLAND

35%

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Investment incentives for building more than 5 charging points to a residential building

30%

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HSL (Helsinki city busses) electric by 2025

99,9%

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99,9998% grid reliability at transmission lines



# EV- CHARGING WITH FINNISH TOUCH (1/2)

## SAAS PLATFORM & EMP MOBILE APP

- Remote monitoring and managing of the infra
- Smart and easy-to-use customer application
- Utilization of existing business systems with real-time data integration

## CHARGING HW

- AC charging
- Fast DC charging, modular and scalable design, dynamic power distribution
- Environmental protection against harsh conditions
- EV-charging solution for a private subscriber

## BATTERIES OPTIMIZATION

- Battery optimization
- Battery Powertrain
- Operational optimization

## COMMUNICATION & CONNECTIVITY

- Reliable and interference free IoT connectivity
- 5G
- Data management and connectivity studies



# EV- CHARGING WITH FINNISH TOUCH (2/2)

## POWER MONITORING AND CONTROL

- Asset and device health monitoring
- Power forecasting
- Conversion efficiency

## PLANNING & SIMULATION

- Traffic and charging station planning
- Simulations
- Parking space optimization
- End-to end planning and consulting

## SAFETY & SECURITY

- Customer detection
- Advanced CCTV security and alarms
- Multi-source occupancy estimation

## FLEET OPTIMIZATION

- Public transport electrification and fleet optimization
- Private fleet route and charging planning



### **POWER FORECASTING AND CONNECTING TO LOCAL ENERGY SOURCE**

- Power forecasting and control
- Windside tower solution for local power source
- V2G services

### **VEHICLE BATTERIES AND OPTIMIZATION**

- Battery optimization
- Electric powertrain
- Techno-economics and operational optimization

### **EV-CHARGING HW**

- AC
- DC
- Wireless
- Private consumer

### **POWER MONITORING AND CONTROL**

- Power monitoring
- Power Conversion Efficiency
- Power monitoring and forecasting

# **FINNISH COMPANIES OFFER YOU**

### **COMMUNICATION AND CONNECTIVITY**

- Radioconnectivity
- 5G
- Data management and connectivity studies

### **SAFETY AND SECURITY**

- Video control and analytics, advanced activity search
- Multi-source passenger occupancy estimation

### **USER INTERFACE**

- Flexible payment platform
- Connected with other service providers

### **PLANNING, SIMULATIONS**

- Infra planning tools and simulations
- Parking space optimization
- Engineering, feasibility studies, maintenance management
- Fleet and route planning and optimization

### **SAAS PLATFORM FOR EV-INFRA**

- Management platform
- Real-time IoT data analysis
- Business system real-time data integration



# EV-CHARGING WITH FINNISH TOUCH

Comprehensive and collaborative approach to charging infrastructure and actors around it

Power Forecasting and connecting to local energy

Power monitoring and control

User Interface

SAAS platform for EV-infra

Safety and security

Planning and simulations

EV-charging HW

Communication and connectivity

Batteries, powertrain and optimization

VTT

REJLERS

EMTELE

echargie

PLUGIT

P  
PARKING ENERGY

V VENSUM  
THE POWER CONVERSION COMPANY

ENSTO

fortum

+BAMO  
MAS-

VIRTA

MIRASYS

IGL  
TECHNOLOGIES

Comsel  
System

Wapice

+ KEMPOWER

MOVEKO

HARJU ELEKTER

UNIFIE DC HARGERS

WIREPAS

WALL

Haltian

RAMBOLL

NOKIA

REVONTE

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