# WORKSHOP ON E-VEHICLES AND INFRASTRUCTURE FOR FREIGHT AND GOODS TRANSPORT

BSR ELECTRIC & HOEJE-TAASTRUP MUNICIPALITY, OCTOBER 25TH 2018

## THE NATIONAL PERSPECTIVE

INSTRUMENTS AND BARRIERS FOR CLIMATE FRIENDLY FREIGHT AND GOODS TRANSPORT IN DENMARK

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# ABOUT MICHAEL RASK

2005-2016 green transport project leader in DEA


Representing DK in IEA HEV TCP
http://www.ieahev.org/


## Raskgreentech focuses on e-mobility

- International corporation and projects
- Chair of IEA HEV Task 38 on e-ships
- National projects e.g. electric taxi
- Costumers:
  - Capital Region of Denmark
  - Copenhagen Municipality
  - Danish Energy Agency
  - EON
  - Tesla
  - Clever
  - String Network
  - International Energy Agency (IEA)
  - International Renewable Energy Agency (IRENA)

# OVERVIEW

Challenges & Barriers

Solutions & Instruments

Questions?

# CHALLENGES & BARRIERS

## Challenges

Vehicles not available

Long delivery time

More or far more expensive

Very high battery prices (cost/kWh)

Largely handmade/custom madehttps://www.eforce.ch/products/e-trucks

Infrastructure is missing or scarce

Benefits not capitalised into tco

Chicken and egg: costumers cannot ask for something not available

Simultaneous transitions: MAAS/DAAS/DOD and autonomous vehicles

How is Europe doing, compared to China

## Barriers

## What is most important?

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## Barriers

= Missing frameworks around

- Vehicle production
- Environmental regulation
- Benefits and/or TCO
- Infrastructure, battery size, range
- Integrated business models
- Future transport designs
- Supply and demand at all levels
- Vehicles, infrastructure, distributor and end costumer
- Europe is market based

## What is most important?

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## What is most important?

- Vehicle demand and supply
- Making demand more organised and visible
- Scaling up production and deployment
- Create business models where benefits compensate for higher TCO
- This needs regulation which gives ZE distribution vehicles benefits in cities etc
- Making end costumers demand more visible and obligating

# PROPOSALS FOR SOLUTIONS

- Create platforms for making vehicle demand more visible:
  - Include vehicle demand into our national annual inventory of EV vehicles and charger in EVI, IEA and EU EAFO Observatory (We did it in EVI)
  - This would give a DK, EU and Global overview of annual expected demand
  - This will support manufacturers supply investments and production capacity
- Create platforms for pooling vehicle demand and deployment:
  - Go together and let some of the bigger stakeholders negotiate prices and run a regional or national shopping community
  - Public demand by state, regional and local level for e-vehicles and e-distribution
- Create platforms for distributors and end users to clear their demand and supply:
  - This could be done by Green Agreements on city, regional or national level
- To compensate for higher TCO costs, a benefits package are needed, which harvest the reductions in noise, air pollution, CO2 and energy consumption

# PROPOSALS FOR SOLUTIONS 2

- If convergence on infrastructure and battery/range solutions on freight and goods distribution is needed, how do we do that?
  - Movia and Capital Region of Denmark created a formula where the busoperators did not have to deal with charging infrastructure, that is tendered separately by Movia
  - Could there be a somehow similar model, eg by the transport center or the charging operators?

- Comprehensive concepts is needed to overcome chicken and egg barriers

- Electric Taxi project as an example:
  - 7 dedicated fastchargers for electric taxi
  - Dedicated e-taxi charging places near stations, hotels and hospitals (to charge while waiting)
  - Dedicated waiting spots at same location but in front of the lines
  - Very favourable charging taxi product by EON as charging operator
  - CPH airport giving time benefits for green taxis in Taxi Management System
  - Demand for e-taxi in Capital region and CPH municipality taxi tenders
  - Demand for e-taxa by large companies and hotels in capital area
  - E-taxi is now in the new Government Climate and Clean Air Plan including with some of the above benefits

# PROPOSALS FOR SOLUTIONS 3

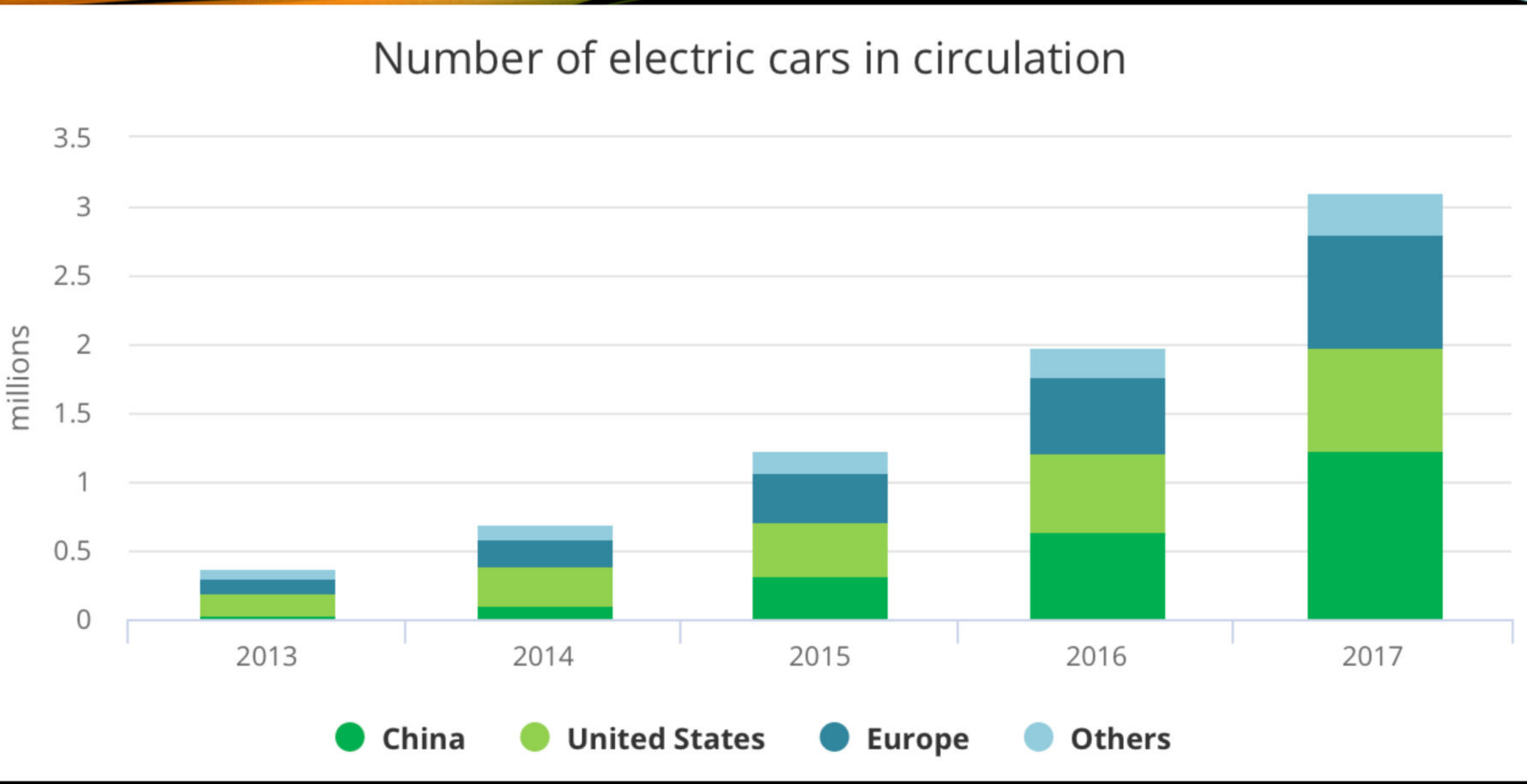
- Looking for early entry segments and focusing in those – together!
- Use large players to take lead – and go together, like Copenhagen and Stockholm
- Make the local project larger by including more similar electric activities e.g. cooling containers etc

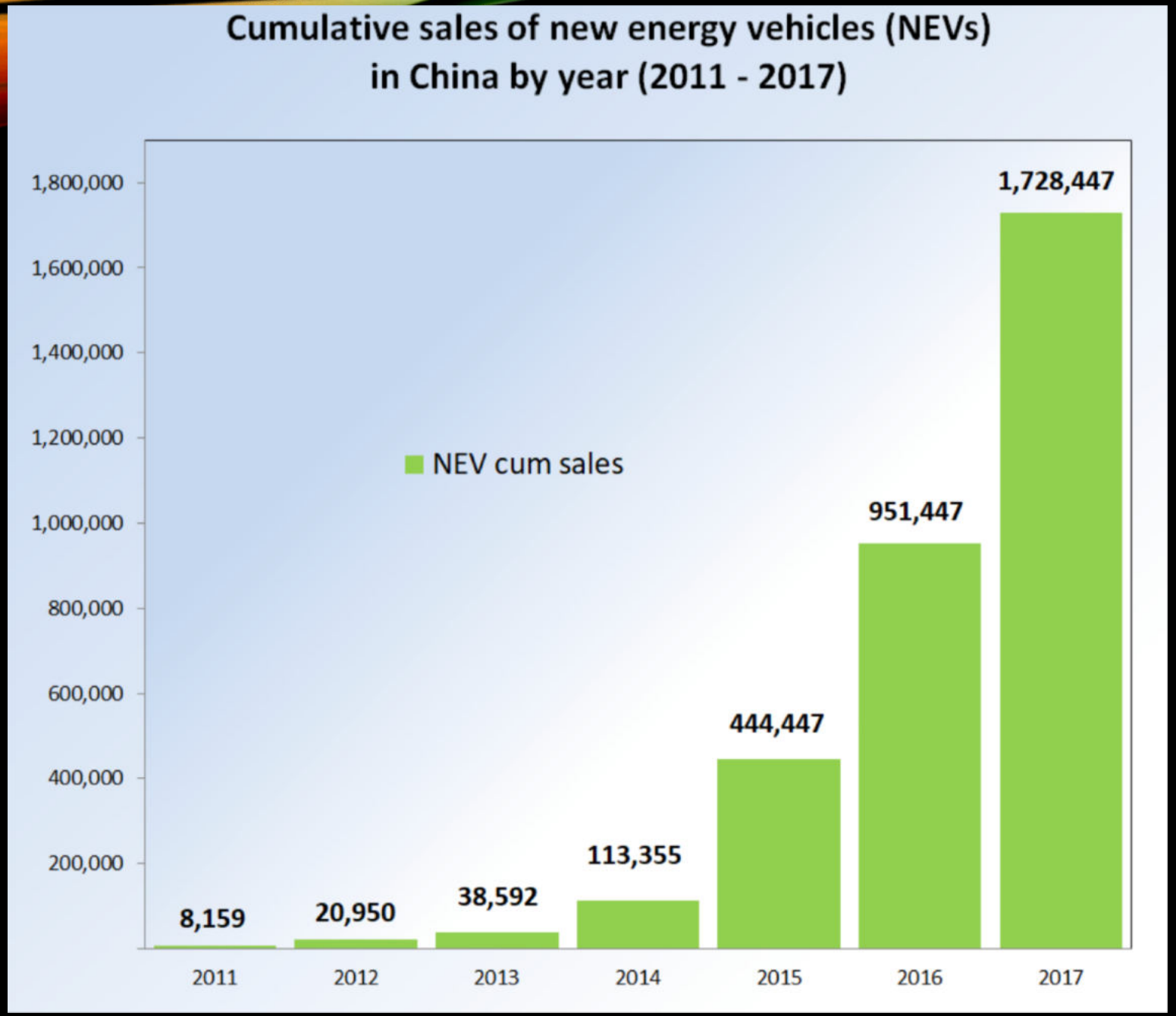
Harbour locations as an example – it could also be distributions centers:
Habours will be future electric power houses due to 3 developments:
**Seaport cargo and container handling** is expected to happen at greater economies of scale, more automated and with higher environmenyal performance in the future. This is 3 of six key findings in a new report by McKinsey et al. looking into the future on "Container transport in 2043". One of the main "no regret" moves recommended is radically digitisation and automation. **Shore power** is very much needed. **E-Ships** will need charging.

# HOW IS EUROPE DOING, COMPARED TO CHINA

- Already mentioned eForce  a Swiss e-truck producer
- HESS, a Swiss e- and trolley bus manufacturer

- IEA Global EV Outlook 2018:
  - BEV and PHEV Busses in China 370.000 units in 2017
  - Rest of the world: approx. 2100 units
  - BEV og PHEV stock + 3 mio in 2017 + 54 % from 2016, sale 1 mio
  - China: 50 pct of stock and 580.000 in sale in 2017 +72 pct


Number of electric cars in circulation
millions
3.5
3
2.5
2
1.5
1
0.5
0
2013
2014
2015
2016
2017
China
United States
Europe
Others


Cumulative sales of new energy vehicles (NEVs) in China by year (2011 - 2017)
1,800,000
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
NEV cum sales
8,159
20,950
38,592
113,355
444,447
951,447
1,728,447
2011
2012
2013
2014
2015
2016
2017

Thank you for your attention! Happy to take questions?