

THE ENERGY EXPERTS



Development Strategy of E-Bike in City Rental Mobility

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February 2016



VELO-CITY GLOBAL 2016
EVOLUTION OF CYCLING 2.27 - 3.01 TAIPEI, TAIWAN

- **Evolution of Transportations**
- **LEV Market Status**
- **Rental Mobility of LEVs**
- **Strategy Development of Rental LEVs**

Transportation Today

Developed country? Developing country?

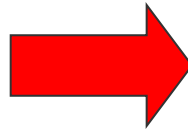


Public Infrastructure?



Revolution of Transportations

ICE Vehicles (燃油車)



Electric Vehicles (電動車)



Emission
廢氣

Noise
噪音

Energy Consumption
能源的消耗

Convenience
便利

Energy Saving
節能

Safety
安全

Environmental Friendly
環保

Taiwan-50年代



Taiwan-70年代



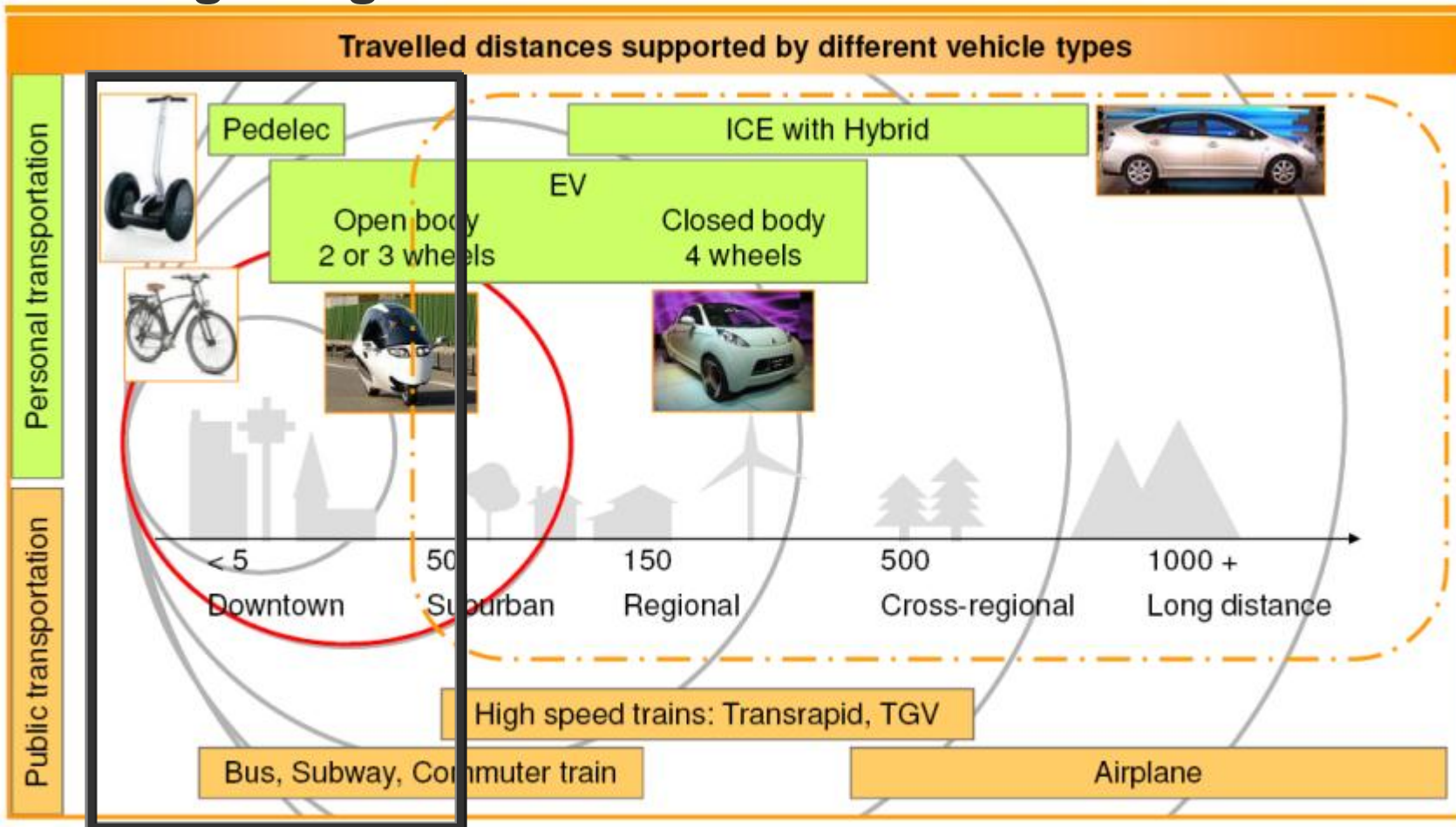


Taiwan-Now



交通運輸工具的發展

Driving Range & Convenience



Urban Mobility

Continental, 2010

輕型電動車(LEV)

Personal mobility



The Future of LEV-Mobility

MOBILITY TREND

- Compact Mobility →
 - Micro Mobility →
 - 2-Wheel Mobility →
 - Eco-Mobility →
 - E-Mobility →



LEV-MOBILITY

- Personal / Individual
- Very Light
- Agile and flexible
- Electric
- Vehicles (2-Wheels)
- Automotive styling



E-Bike Market Evolution-2003-2012

Bike



E-Bike



Why E-Bike ???



E-Bike as one category of Bike
-E-bike for elder and specific target people

E-Bike Market Evolution-2003-2012

Bike



E-Bike



Replacement



Bike Electrification

-Market trend of bike



-Market trend of E-Bike



LEV Technology-Future trend



More Design

- in-frame battery
- integration design
- personal character
- innovattion



More Power

- 350W/500W motor
- 48V high power battery



More Range

- System efficiency
- high battery capacity (500Wh-800Wh)



More Connectivity

- BT/GPS function
- service information



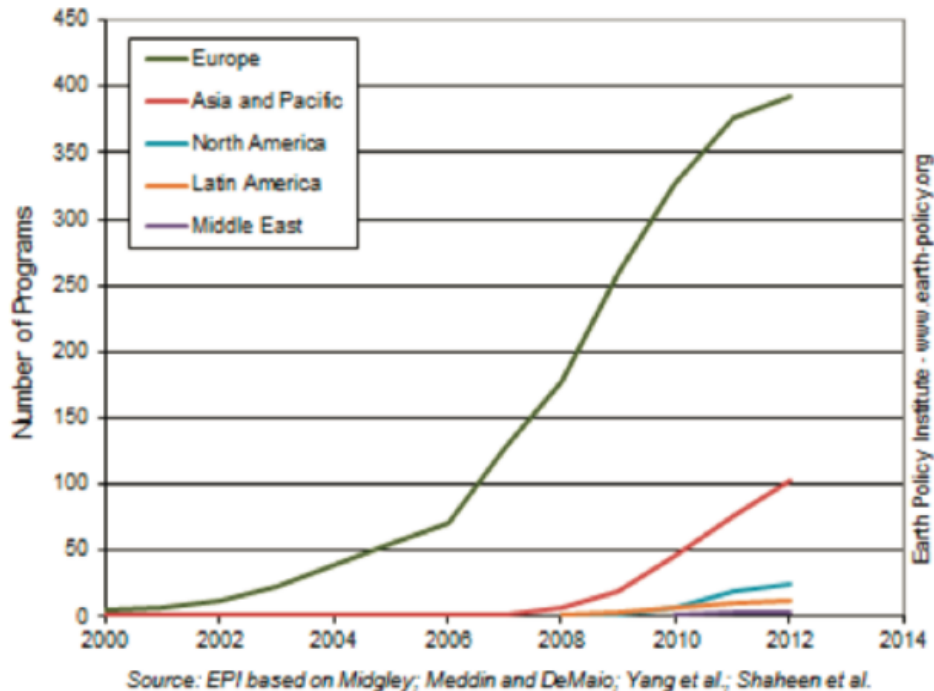
2014

Future Market Trend-Bike Sharing

Global growth of public bicycle schemes

(Not including Pedelecs jet)

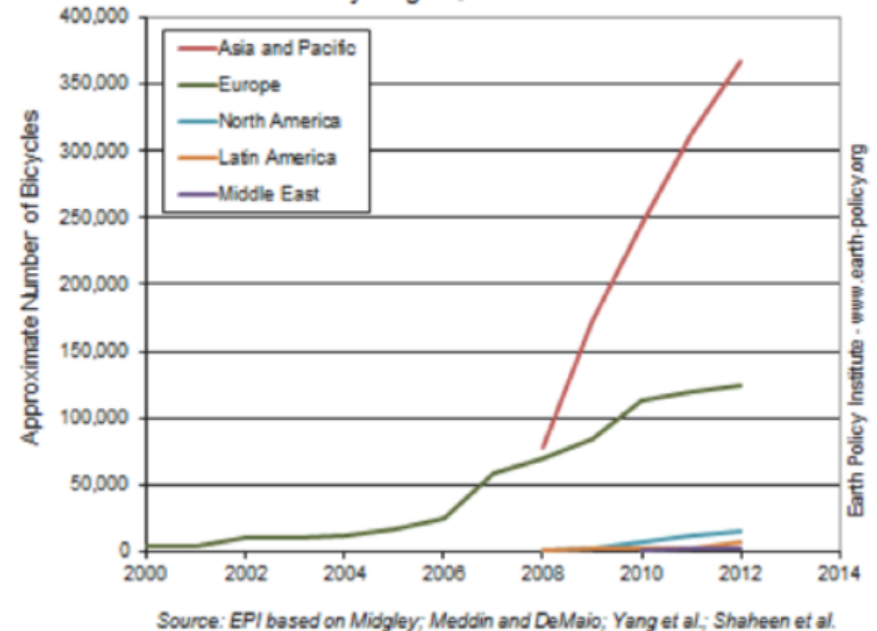
Bike-Sharing Programs by Region, 2000-2012



End of 2013:
500+ Rental systems at
50+ countries with total
about 700 000 rental
bicycles!



Number of Bicycles in Bike-Sharing Programs by Region, 2000-2012

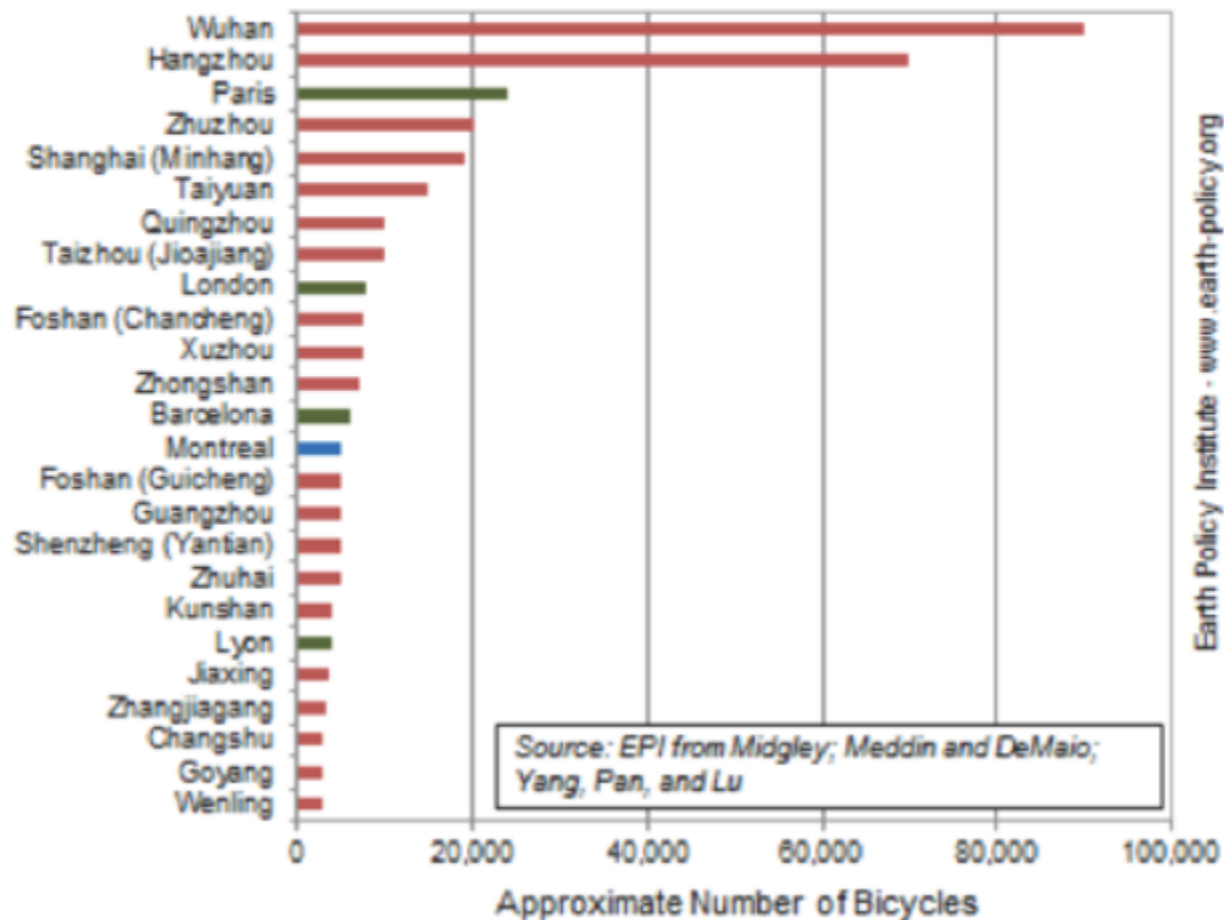


Market Trend-Bike Sharing

Global growth of public bicycle schemes

(Not including Pedelecs jet)

Largest Bike-Sharing Programs Worldwide, Early 2013



Market Trend-Bike Sharing

Global public bicycle schemes

(Not including Pedelecs jet)



Market Trend-Bike Sharing

Bicycle sharing systems in Europe

(November 2013)



Market Trend-Bike Sharing

Bicycle sharing systems in North-America

(November 2013)



Market Trend-Bike Sharing

Bicycle sharing systems in Asia

(November 2013)

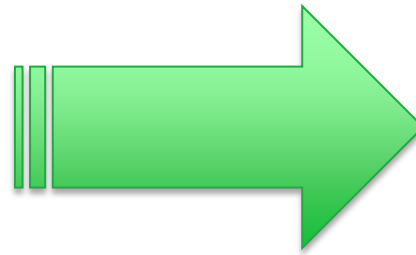


Future Market Trend-Bike Sharing

Bike Rental



E-Bike Rental



Future Market Trend-E-Bike Sharing

The game changer: Profitable public transportation by rental pedelecs augmenting existing public transport options!

The Danish company GoBike won the 1st prize of the E-Bike Award given in October 2014.

Mainly since the made it already in the first year of operation to turn profitable it is getting global attention. The bikes made it to generate a monthly income of 178 Euro which did cover the costs and generated a little profit. And more income is feasible due to the options still hidden in the system.



Stylish and durable design for maximum riding **quality and comfort.**



Get help uphill
The electric motor has several speed settings to assist you in all types of terrain.



Never get lost
Featuring a built in GPS, you'll only ever get lost when you choose to.



Trouble free
With puncture free tires, built in lights and adjustable seat, all you have to do is ride.



Go Bike rental business at Copenhagen ⁺HITECH ENERGY

- The home screen which give access to all main features like intermodal travel scheduling. It will tell you for example how much time you will have until you do reach the next local train which is your long distance link. But you can browse as well live on the tourism website suggesting you some touristic highlights of the city.



Go Bike rental business at Copenhagen⁺ HITECH ENERGY

- When you did choose some touristic destination you could just switch into the navigation mode by pressing the „Set as destination“ field.

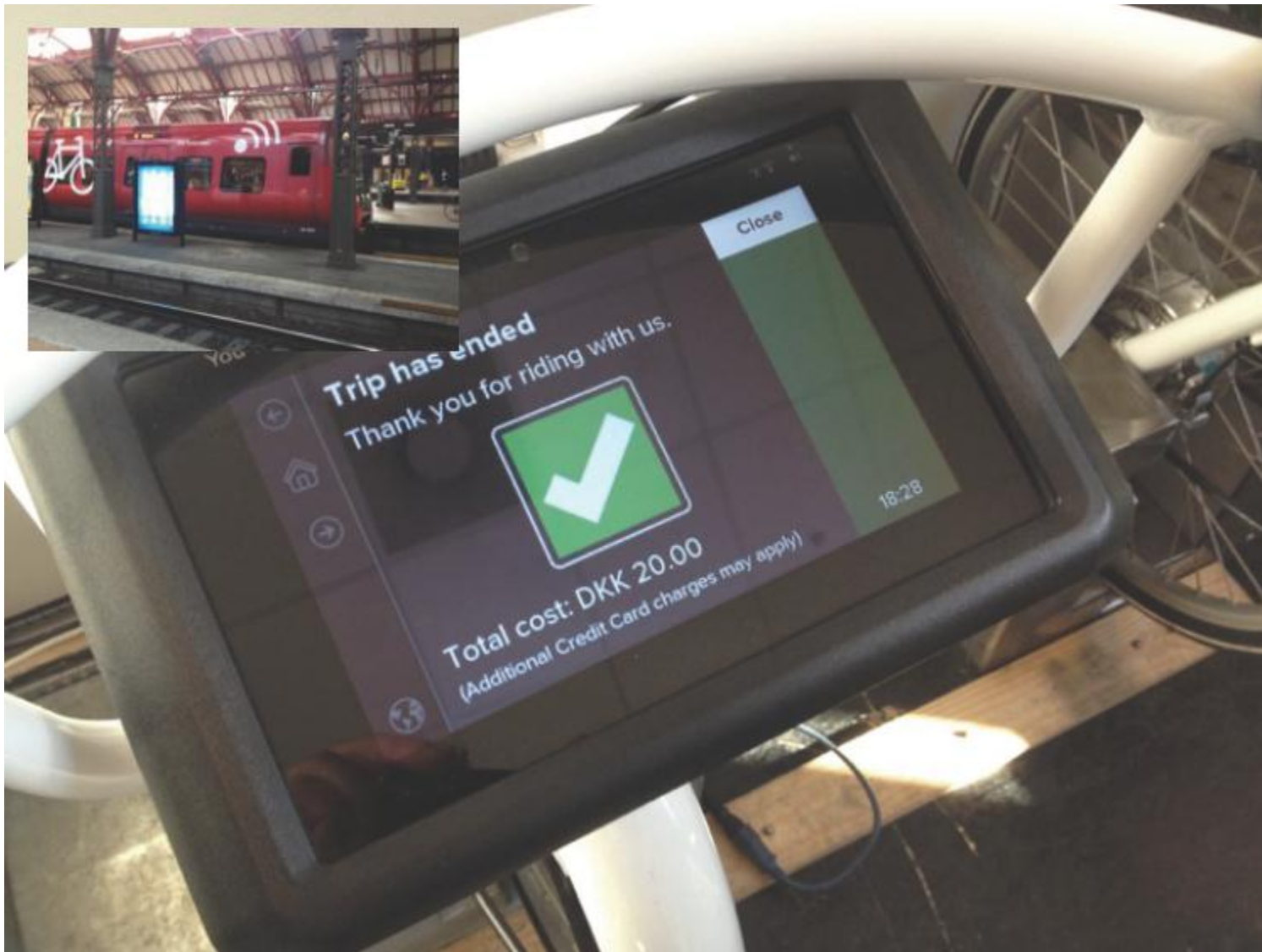


Go Bike rental business at Copenhagen⁺ HITECH ENERGY

- Quite surprising to me was that it feels absolutely natural to operate such a touch menu while riding around Copenhagen. Even I have not been in Copenhagen for about 12 years I have had all the time full understanding about where I was and where I need to go. This experience has convinced me absolutely that it is the right way to have smart vehicles and a simple parking and charging infrastructure. The Screen was easy to read even at direct sunshine like you can see on the picture. I learned from the company later that features like a Wlan hot spot for tourists will be added soon to the functionality.

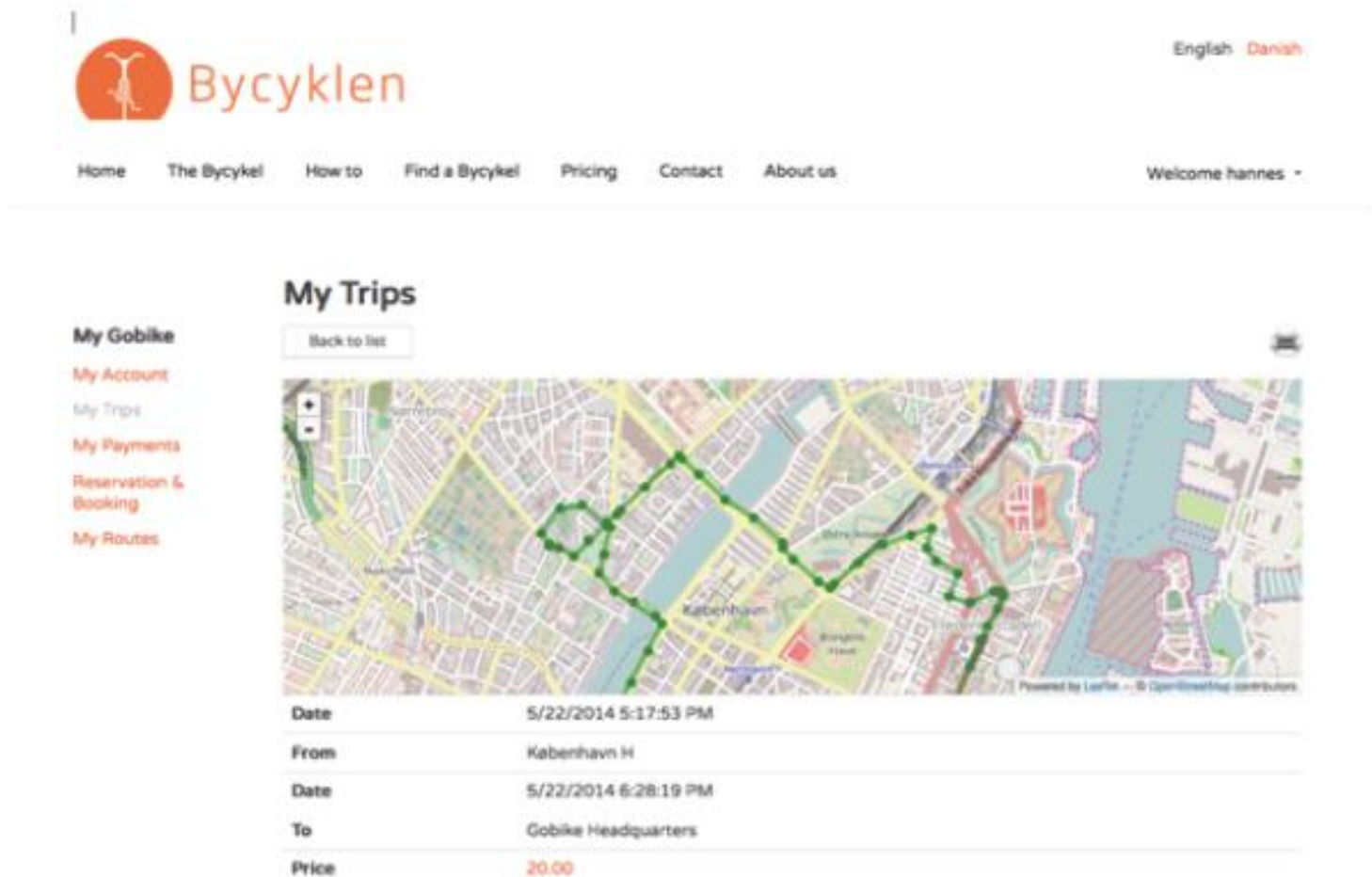


Go Bike rental business at Copenhagen ⁺HITECH ENERGY



Go Bike rental business at Copenhagen ^HHITECH ENERGY

- I have had the next surprise after returning home and logging into the Bycyklen website and finding a exact map of my trip saved in my profile. This system has implemented many features like nobody else before - It is really raising the bar of the state of the art pedelec sharing systems.



The screenshot shows the Bycyklen website interface. At the top, there is a navigation menu with links: Home, The Bicykel, How to, Find a Bicykel, Pricing, Contact, and About us. A user is logged in as 'hannes'. The main content area is titled 'My Trips' and features a 'Back to list' button. Below this is a map showing a green route through Copenhagen. To the left of the map is a sidebar with navigation options: My Gobike, My Account, My Trips, My Payments, Reservation & Booking, and My Routes. Below the map, there is a table of trip details:

Date	5/22/2014 5:17:53 PM
From	København H
Date	5/22/2014 6:28:19 PM
To	Gobike Headquarters
Price	20.00

Public space for private use-not pay



Münster Germany bicycle garage (always fully booked) and all other left spaces

h bicycles and pedelecs



Public space for private use-not pay



Münster Germany the parking bicycles are a serious issue in the urban space

Public space for private use-not pay



Copenhagen Denmark bicycles and pedelecs parking often is troublesome for the bicycle owners as well as the pedestrians which may not get through any more.

Public space for private use-not pay



Public space for private use-not pay



Malmö Sweden. A pedestrian zone partially jammed with parking bicycles.

Public space for private use-not pay



Hsinchu Taiwan, little street sides are jammed with all kind of vehicles. Pedestrians with moving vehicles no protected sidewalks are available.

Public space for private use-not pay



Public space for private use-not pay



Public space for private use-Pay



In several Japanese Cities bicycle parking has a price. An example of bicycle parking

Public space for public infrastructure



Public space for private use-pay

Reduction of non moving traffic in urban areas will make cities more human friendly



Electric cars as privately used vehicle are no solution - they are still material resource hungry as well consume a lot of public parking space

Public space for public use-moving



Public space for public use



Public space for public use-moving



Public space for public use-moving

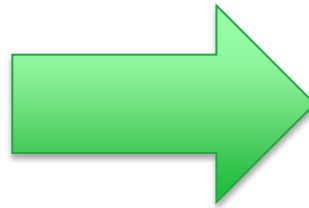


Public space not for private use



Today

Public space for
private use

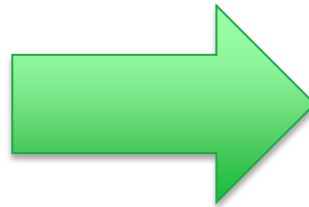


Private own vehicles
User pay or not pay

Always not enough space

Tomorrow

Public space for
public use



Rental vehicles for
public use

Reduce idling space

LEV Market Development

➤ 次系統溝通介面標準

Interface standardization: Energy Bus

www.energybus.org

Universal charging interface
IEC/ISO/TC69/JPT61851-3



➤ 電池安全及性能標準認證

Battery safety standardization

www.batterytest.org

ISO 18243 & CLC/TC21X



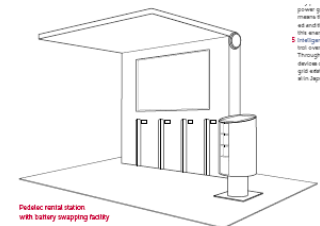
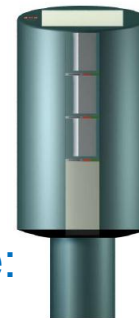
➤ 能源補充(供應)服務模式

Energy supply service system

-Battery exchange system (SWAP)

-Charging Station

Public LEV Infrastructure Initiative:
IEA HEV IA Task 23



City Transportation in Taiwan



1950



1970



2000



2010

Bike sharing (rental Bike)



2020

E-Bike sharing (rental E-Bike)



**HITECH
ENERGY**

謝謝 *Thank you*

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