11th Regional EST Forum in Asia
Plenary session 6: Role of e-Mobility in Sustainable Urban Development
Ulaanbaatar, Mongolia, 2-5 October 2018

Electric mobility: Options for enhancing sustainable local transport in tourist destinations

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Background information paper for 8th EST Forum in Asia (2014):
Next Generation Solutions for Clean Air and Sustainable Transport in Asia: Electric Mobility

Structure of this follow-up presentation:

I. Review of pros and cons of electric mobility in an increasingly sustainability-concerned world
II. E-mobility: Enabling smart and environmentally sustainable local transport solutions in tourism
III. Selected case studies, e-mobility projects and business profiles in tourist destinations
IV. Conclusions and recommendations for policy makers

Pros and Cons of e-mobility: SWOT Analysis

Strengths

- no local air pollution at point of use ("zero emissions")
- no engine noise
- no GHG emissions at point of use
- low operational or maintenance costs

Opportunities

- multiple applications in public and private transport are possible
- electric mobility enables emission-free and carbon-free local transport if electricity is procured from renewable sources of energy;
- Potentially important component of local sustainable tourism campaigns;

Weaknesses

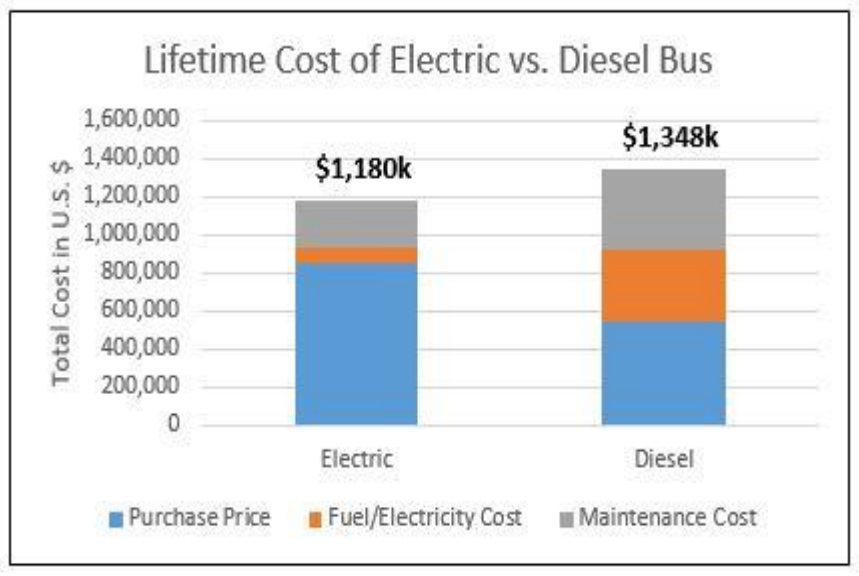
- comparatively high costs of electric vehicles
- limited driving range (of 120-180 km) per electric charge of battery-powered vehicles
- publicly accessible rapid charging infrastructure remains limited
- Some tourist locations depend on electricity supply from lignite, coal or nuclear power (each posing potential constraints on environmental sustainability of electric mobility)

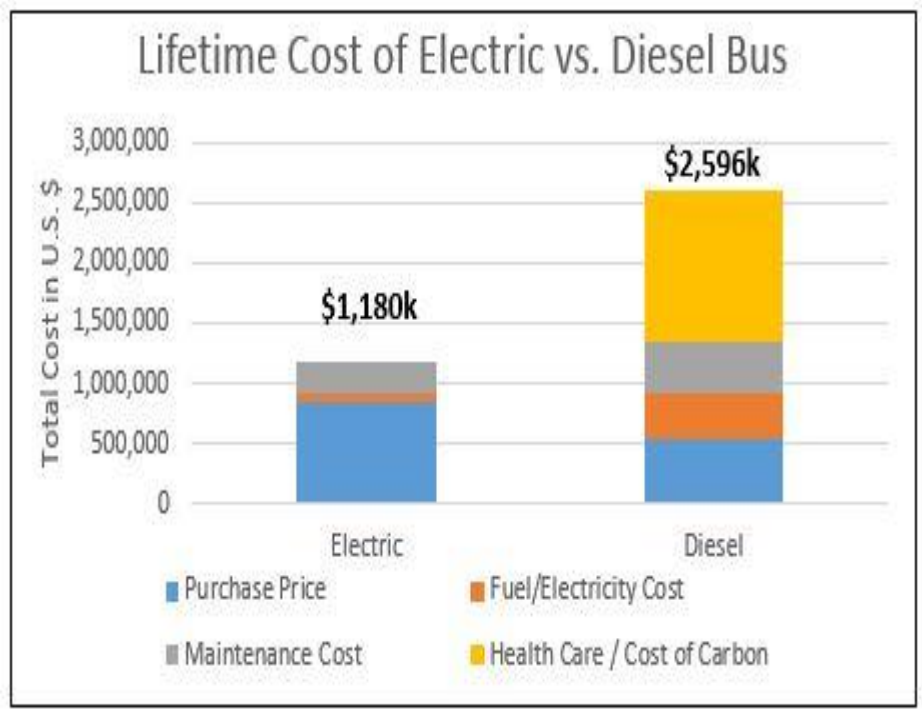
Threats

- some incidents of safety/fire hazards were reported on selected batteries;
- in some countries appropriate regulation and facilities for battery recycling and/or disposal are still lacking or under development

Comparing lifetime costs (and benefits): electric vs diesel buses in urban passenger transport

Example: New York City





Assumptions: lifetime of bus 12 years ; Price: e-bus costs US$ 300,000 more than diesel bus
Annual fuel savings of e-bus : US$ 39,000 ; Annual value of health benefits: US$ 150,000 / year

Source: Aber, Judah, Columbia University New York. ((May 2016)

Electric mobility can be economical and commercially viable …

- … in applications in which vehicles are routinely driven a lot in urban areas

- … in applications in which users are willing to accept a higher tariff for a **unique tourist experience** including the transport services

Photos: Ralph Wahnschafft

This presentation illustrates 5 essential points:

1. Electric mobility is very versatile and can match the needs of the tourism sector particularly well;
2. Tourists and tourism service providers seem to value the advantages of electric mobility higher than other consumers (e.g. no local emissions; no noise, easy to drive vehicles);
3. Tourism sectors show greater ability and willingness to pay higher start-up costs of investments in electric vehicles;
4. Electric vehicles provide both mobility and fun for tourists;
5. Electric vehicles can play an important role in protecting the local environment in tourist resorts and destinations.

… reviewing some examples in Asia

Example 1: Singha Park, Chiang Rai, Thailand

Use of electric vehicles for tourist passenger transport within private or public estates, parks, resorts, etc

Park Access: Free
Bus Ride: Bht 100

Source and add'l info:
Boon Rawd Brewery
http://singhapark.com/

Example 2: Scenic (geo)tourism sites in China

"Shilin" (石林) "Stone Forest"

Photos: Ralph Wahnschafft

Sustainable local transport by electric shuttle buses

Off-site and on-site tourist transport by e-vehicles without local air pollutant emissions

Photos: Ralph Wahnschafft

Sustainable local transport by electric shuttle buses

Source of Map http://www.0871km.com/Scenic/scen196.html

"Shilin - Stone Forest" Park Entrance Fees 2017

Sample entrance ticket, and
Sample Shuttle Bus Ticket

Price Category	Price (RMB per person)	Valid area	Permitting Agency
Ordinary	175 RMB	Stone Forest	Kunming NDRC (Government)
Discounted	130 RMB		
Half Price (Children)	87.5 RMB		
Membership card	200 RMB	Stone Forest, Naigu Stone Forest, Changhu Scenic strict, Dadieshui Scenic District	Kunming NDRC (Government)
Membership card for students	150 RMB		

Ordinary entrance fee: = 27 US$ + 4 US$ for e-shuttle

Importance of key principle of user/ beneficiary fees/tariffs to (re)cover all costs of tourist infrastructure and services
4 Million Visitors per year (average > 11,000 visitors/day)

Example 3: Hanoi Old Town Electric Bus Tour

- "open-air" buses
- standard tour 30 min. or 1 hour
- for individuals or groups
- Price about US$ 15/car/hour

Info and photos: https://www.vietnamonline.com/destination/hanoi/electric-car-tour.html

Example 4: Tourist Islands
Jeju – Korea's e-mobility island

© SK Netorks (Jeju Island), www.froventureoflecia.com/2015/09/adventures-on-udo-island-2.html ; www.mhryupassions.com

Example 5: Self-drive and chauffeured e-vehicles for tourists: Angkor Wat, Cambodia

Bolloré BluE-Mobility "Bluesummer" electric vehicles

www.blue-mobility.com.kh

Example 6: Electric Tuk-Tuk for Tourists: "Made in Thailand" – Marketed throughout Europe and world wide

Founded in 2008
Production to date:
~ 1200 units
Present production capacity:
~ 60 units/month
Approved for operation in
~ 30 countries
More info:
www.tuktukfactory.com

E Tuktuk in Madrid, Spain (Photo: Ralph Wahnschafft)

Example 7: Traditional electrified "bum boats" for use as non polluting tourist boats on Singapore River

For info: please see Singapore River Cruise Pte Ltd. https://rivercruise.com.sg/

Some concluding observations

- rentals of e-vehicles (or e-boats) can match with sustainability branding of tourist destinations, notably on islands, in parks, nature reserves, along lakesides, or other scenic and environmentally vulnerable locations;
- for mobility in and around tourist destinations "range anxiety" is less of a constraint than it may be in ordinary life;
- rental businesses can amortize higher investment costs faster than private households (subject to seasonal variation in tourism demand);

- data collection and assessment of local situation and conditions is important for decision making;
- “no one size fits all approach” exists - each destination needs to determine its own priority needs and policies;
- EV rentals can enhance tourist mobility options and create value added in tourism economy,
- private entrepreneurship and public-private-community partnership are essential for successful EV projects;
- e-mobility investments and businesses may be given local public approval, support and incentives if all safety and sustainability criteria are fully met;

Thank you - Баярлалаа

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