

Perspectives for Sustainable Transport: Modernizing and ‘Greening’ Urban Taxi Fleets

- a Preliminary Assessment -

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Why is the regulation of urban taxi markets important?

- **Taxis typically provide point-to-point personal transport services:**

Commercial taxi services can complement urban public transport systems (along routes or during periods where/when public transports services are lacking)

(Taxis can provide a transport option for “first” or “last” mile)

Commercial taxi services also compete with public transport in meeting transport demand (in terms of comfort, travel time, economic fare, etc)

- **Taxis represent only a small fraction (~ 2%) of the total motor vehicle population but can contribute significantly to local noise or air pollution and GHG emissions (~ 20%):**

Taxis are always in use and therefore disproportionately contribute to local air pollution

Taxis can contribute to congestion resulting in increase in traffic jams and travel times

- **In most cities commercial taxi services and systems are regulated by national and/or local authorities through licensing systems**

Restricted access / limitations on numbers of taxi licences;

standardized vehicle specifications, standardized taxi fare systems,

safety and security for both passengers and drivers

Policy issues with taxi systems (in many developing countries)

- Over-regulated or under-regulated urban taxi markets;
- Frequent use of old / second-hand / highly polluting motor vehicles,
...in particular in secondary urban centres and poorer neighbourhoods;
...fuel quality issues;
- High competition of taxi drivers for customers
... cruising vehicles in search of customers (wasting time + energy);
... lack of advanced information and communication technologies;
- Inadequate / unfair distribution of revenues and risks between taxi owners and drivers (and regulatory bodies?);
- Safety concerns
... insufficient inspection and maintenance and lack of appropriate enforcement;
- Security concerns (for both passengers and drivers);
- Unmet transport demand
...special need of social groups, e.g. the elderly, handicapped, school children etc

Expert Group Meeting on Sustainable Urban Transport: Policy options for Modernizing and Greening Taxi Fleets in Latin American Cities, Rio de Janeiro, Brazil, 18-19 May 2011

- Session 1: Introductory overviews: Policy options and best practices in regulating urban taxi systems
 - Session 2: Integrated urban transport planning and the role of taxis
 - Session 3: Vehicle technologies and fuel choices for mitigating urban air pollution and GHG emissions from taxis
 - Session 4: “Taxi of Tomorrow” – Recent developments and projected trends
 - Session 5: Roundtable discussion on conclusions and recommendations of Expert Group Meeting
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Analyzing urban taxi systems from perspective of sustainability

Economic dimension:

Regulation of (limited) access to taxi markets
metering and fare regulation

Sustainable urban taxi systems

Social dimension:

Affordability of the fare
Unmet transport demand of social groups

Environmental dimension:

Type of fuel used
Local air pollution
Contribution to GHG

Taxis: a history of regulation

The case of the United Kingdom

1635

- Restriction of the number of Hackney Carriages in London and Westminster
- Competition between Watermen and carriage operators.
- First transferable and tradable license.

1847

- **Town Police Clauses Act:** birth of modern regulatory practice
- Discretion granted to local authorities to restrict the number of taxis
- Regulate what taxis and drivers should look like.
- Regulation of fares
- Regulation of the mechanical characteristics of taxis

1985

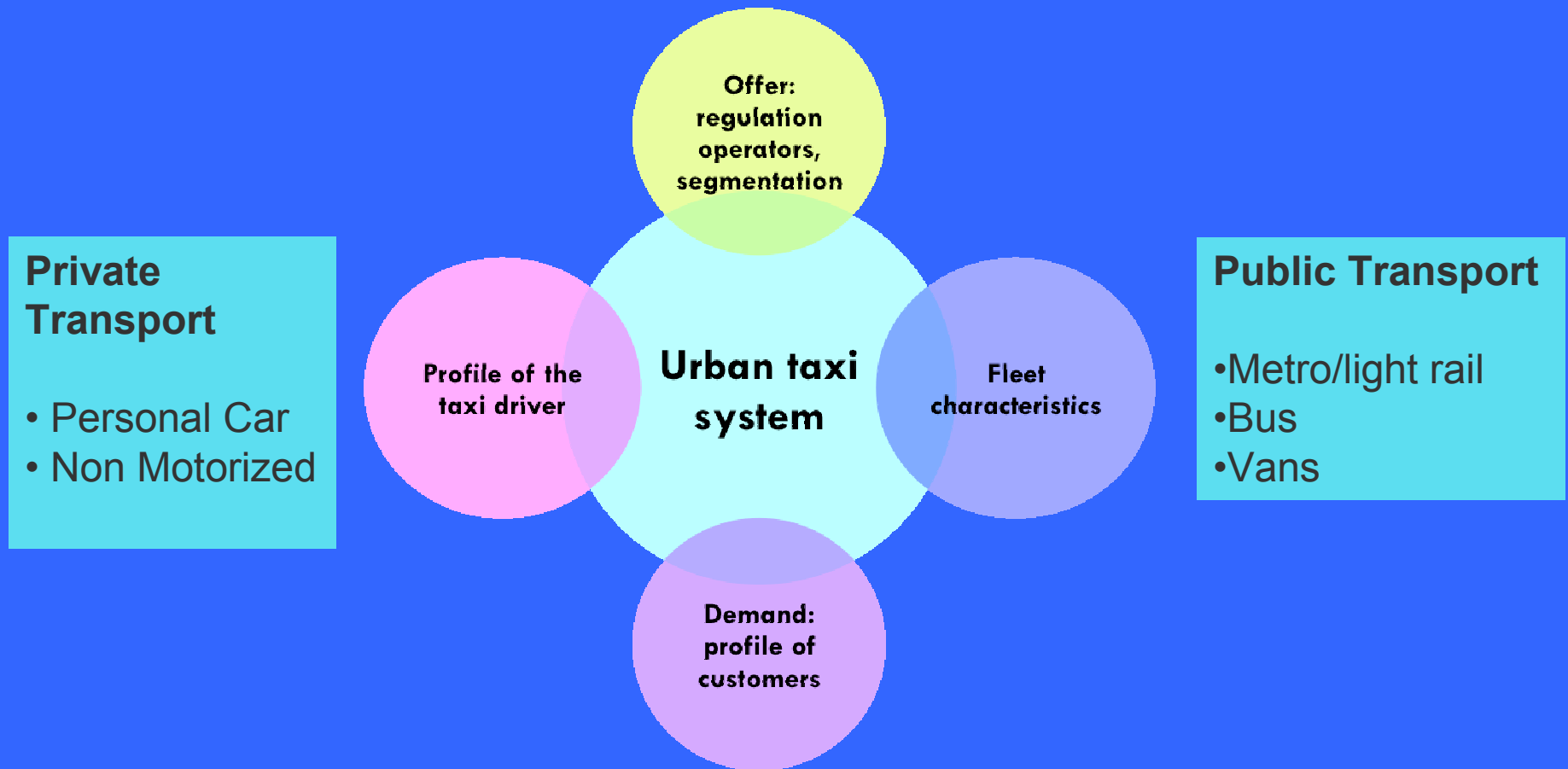
- **1985 Transport Act:** Inclusion of clauses concerning taxis and hire cars as an adjunct
- Local authorities are now required to issue new vehicle licenses to suitable applicants unless they can prove there is no "significant unmet demand"

2003

- More than half of districts had derestricted
- In the British cases, entry derestriction has had no impact on fares

Source: Koehler (2004) and Toner (2010)

The operation of an urban taxi system



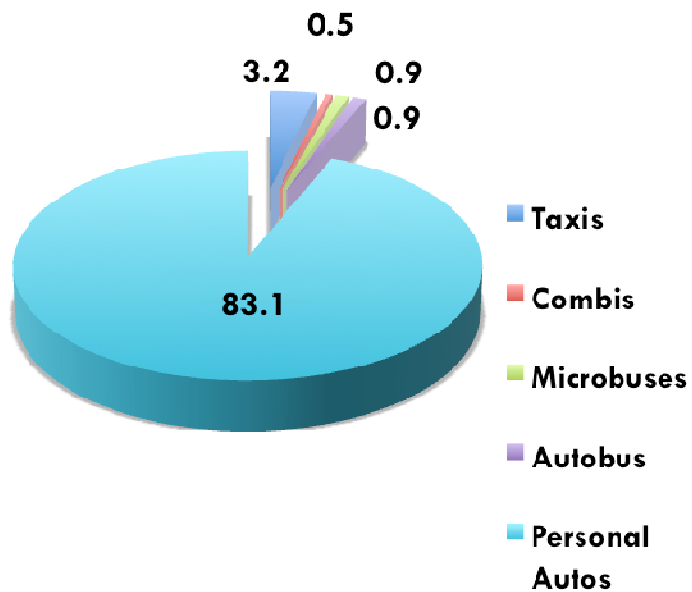
Call taxis , “cruising market”, taxi stands/queues

Many types of taxis

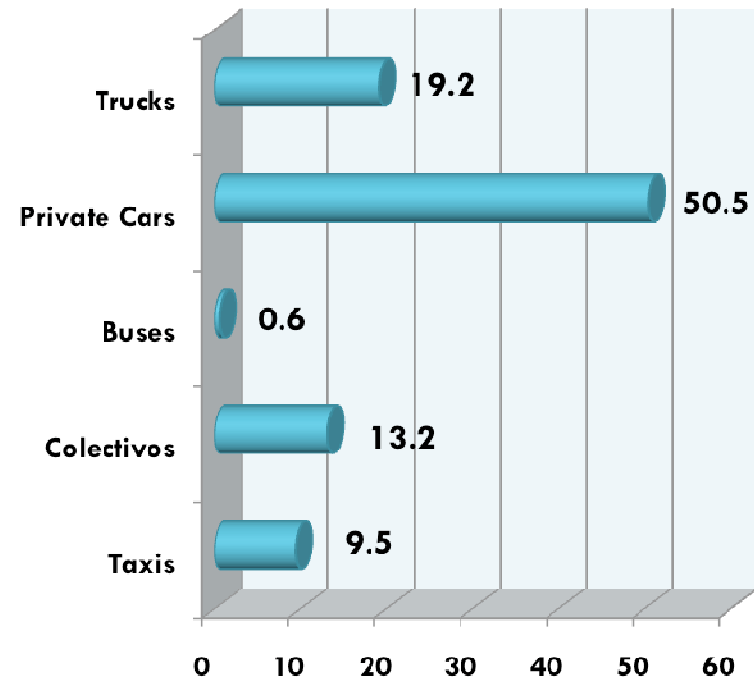


The contribution of taxi fleets to environmental pollution

Mexico City, 2002
% of Vehicle Fleet (By Type)



Transport Contribution to
Total CO2 Emissions
Percentage per Vehicle Fleet (2002)



Source: APERC, 2007

Fuel choices and fuel efficiency regulations

- Gasoline vs. Diesel(ization)
- Propagation of Natural Gas Vehicles
- Flex fuel vehicles (Brazil)
- Hybrid electric vehicles (high fuel efficiency)
- Fuel electric vehicles (Pilot projects in Japan, China and some other countries)

Growing use of natural gas in taxis

- **Compressed natural gas (CNG/NGV)**
cleaner than gasoline (subject to local availability)
retrofit possible; but less storage space;
lower fuel costs and lower emissions;
- **Flex-fuel / multi-fuel vehicles (Brazil)**
E-20 or E-25 ethanol gasoline blend, or 100% ethanol or
regular (pure) gasoline, and CNG
- **CNG Taxi programmes are being
expanded in many developing countries**
(e.g. Latin America, South Asia)



Fiat Siena Multi-fuel taxi in Brazil

Photo: Mariordo (2008) - Wikipedia

Promotion of high energy-efficient / hybrid-electric vehicles as “greener” taxis – Example of New York City

Hybrid-electric vehicles have a significantly higher fuel/energy efficiency if compared with conventional gas/diesel vehicles;

NYC currently has 13,237 licenced “yellow” taxis, including about 20 per cent “green” taxis (hybrid-electric vehicles)



- New York Public information / public participation campaign “Taxi of tomorrow”

www.taxioftomorrow.org

Several influential taxi companies have opposed local “green taxi initiatives”;

- “Green taxi law” proposed by Senator Ms. Kirsten Gillibrand and Congressman Mr. Jerold Nadler (N.Y.)

Pilot projects using battery-electric vehicles as “e-taxis”:

Example: Peng Cheng E-Taxi Company, Shenzhen, China

Partnership/Joint venture: Shenzhen Bus Company (60%) and BYD (40%)

Established in Shenzhen, China, in 2010 with initially 50 vehicles with planned rapid expansion (100 vehicles by August 2011)

It has been estimated that the first 50 e-taxis have decreased / saved CO₂ emissions of approx 1,800 tons per annum (or 42% lower energy consumption; Note: methodology tbd).



- Currently 5 charging stations
- 86 drivers
- Growing popularity
- Charging time 1.5-4.3 hours
- Importance of further reducing costs and improving performance and customer convenience

Innovative designs for the “Taxi of tomorrow”

Eco car design: MX-Libris – Solar-powered taxi for Latin American Cities



by Mexico-based industrial designer Mr. Alberto Villarreal

Source: www.ecofriend.com

Conclusion and Recommendations for Developing Countries (provisional)

- Taxi regulation needs to be tailored to local problems, objectives and market conditions,
- There is no “one-size –fits-all” solution: Neither total regulation (fare and entry) nor total deregulation is likely to be as effective as partial regulation involving fare control accompanied by quality-controlled free-entry
- Greater differentiation of taxi services could be considered;
- Quality control regulations should cover vehicles (safety and emissions) and drivers (training in defensive driving, good health and geographical knowledge)
- Where liberalization of a previously strict regulation is involved, it may be necessary to undertake the liberalization gradually, paying attention to the effects on the livelihood of poorer individual operators.
- In cities where taxis contribute significantly to air pollution, tight environmental controls should be considered, taking into account the availability of cleaner technology, cleaner fuels and cleaner and more advanced vehicle technologies.
- Car-sharing and taxi-sharing could play a greater role in public transport systems.

**For further information on planned future events
and proceedings of recent transport policy meetings
please see United Nations webpage:**

http://www.un.org/esa/dsd/susdevtopics/sdt_transeminars.shtml

Seminars, Workshops & Meetings 2011

**"Expert Group Meeting on Sustainable Urban Transport:
Modernizing and Greening Taxi Fleets in Latin American
Cities"**

Rio de Janeiro, Brazil, 18-19 May 2011

Thank you for your attention :-)