



**Arthur D Little**  
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Imperatives in  
collaboration with  
**UITP**

## Future of urban mobility 2.0

# The Future of Urban Mobility 2.0

### *Imperatives to shape extended mobility ecosystems of tomorrow*

Arthur D. Little, the Global Management Consultancy, launched its “Future of Urban Mobility” lab in 2010 and in 2011 released its first global study highlighting the mobility challenges cities face on a worldwide basis. This report introduced the first Arthur D. Little Urban Mobility index, which assessed the mobility maturity and performance of 66 cities worldwide, and triggered high interest within the mobility industry and in the media on a global scale.

Arthur D. Little releases the second version of the “Future of Urban Mobility” study, including an updated version of the Urban Mobility Index, with an extended scope of 84 cities worldwide as well as an extended set of criteria. The index finds most cities are still badly equipped to cope with the challenges ahead indicating

there is still significant potential for improvement.

Arthur D. Little highlights what is holding cities back and, together with its partner the UITP – the International Association of Public Transport – identifies three strategic directions for cities to better shape the future of urban mobility. The study also describes twenty-five imperatives to consider when defining sustainable urban mobility policies and case studies of cities demonstrating best practice.

#### **Arthur D. Little Urban Mobility Index 2.0 – The most comprehensive global urban mobility benchmarking study**

##### **Plotting the trend**

Urban mobility is one of the toughest challenges that cities face as existing mobility systems are close to breakdown.

The world’s population is increasingly city-based. 53% of the population currently lives in urban areas and by 2050 this number is expected to reach 67%. Today, 64% of all travel kilometers made are within urban environments and the total amount of urban kilometers travelled is expected to triple by 2050. Delivering urban mobility to cope with this increasing demand will thus require massive investment in the future.

In addition to the increasing demand for urban mobility, mobility needs are evolving. Changing travel habits, demand for services to increase convenience, speed and predictability, as well as expectations toward individualization and sustainability will require mobility services portfolio extension as well as business model transformation while specialized players from other sectors are

assessing opportunities to play a role in the extended mobility eco-system.

Moreover, in order to reach UITP's objective of "doubling the market share of public transport worldwide by 2025" (compared to 2005 level), public transport stakeholders are working hard to improve attractiveness, capacity and efficiency of mobility systems under limited public financing, demonstrating the need for system level innovation. "Arthur D. Little's Future of Urban Mobility Lab is our contribution to tackle the urban mobility challenge", says Ignacio Garcia-Alves, global CEO of Arthur D. Little.

## Methodology

Using 19 criteria Arthur D. Little assessed the mobility maturity and performance of 84 cities worldwide. The mobility score per city ranges from 0 to 100 index points; the maximum of 100 points is defined by the best performance of any city in the sample for each criteria. In addition Arthur D. Little has reviewed policy initiatives undertaken by cities to improve the performance of urban mobility systems.

## Where are we now?

The overall results find most cities are still badly equipped to cope with the challenges ahead. The global average score is 43.9 points, meaning that, on average, the 84 cities achieve less than half of the potential that could be reached today, applying best practice across all operations.

Only 11 cities score above 52 points (top 20% of the score range). The highest score (58.2 points) went to Hong-Kong followed closely by Stockholm (57.4 points) and Amsterdam (57.2 points), still indicating potential for improvement.

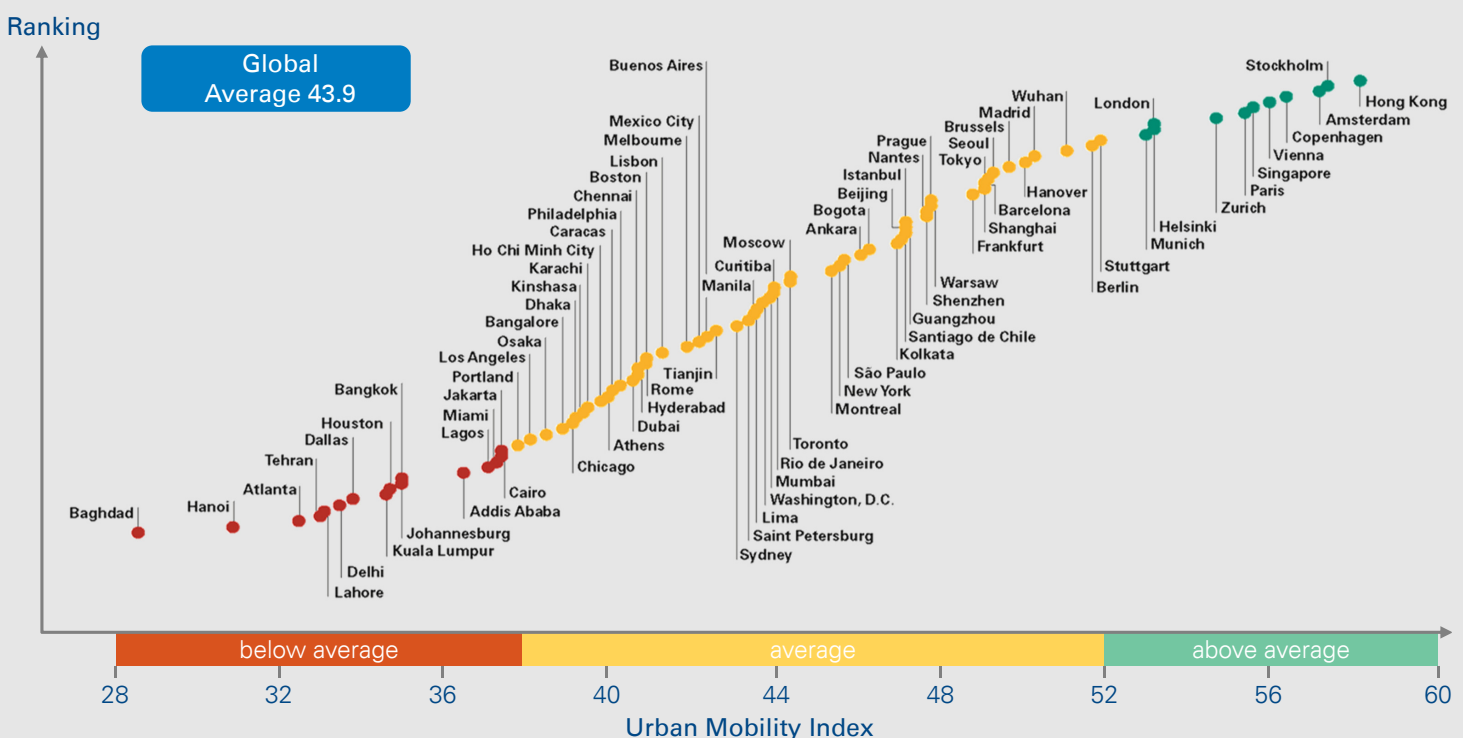
There are big differences between the top and low end performers in various regions:

- Europe achieves the highest average score of the 6 world regions surveyed. "With an average of 49.8 points (51.5 points for Western Europe and 45.2 for (south)-Eastern Europe) and 9 out of the 25 analyzed European cities scoring above 52 points, European urban mobility systems are the most mature ones as of today and lead the way in mobility

performance" says Oleksii Korniiuchuk, Manager at Arthur D. Little and in charge of the Urban Mobility Index. Stockholm (57.4), Amsterdam (57.2) and Copenhagen (56.4 points) head the table – while Athens (40.0 points), Rome (40.9 points) and Lisbon (41.3) are the worst European cities in the sample.

- Latin American and Asian Pacific cities show slightly below average performance. The continents' average scores are well below Western Europe (43.9 and 42.8 points respectively) but outperform other regions in public transport related criterion (financial attractiveness of PT, share of modal split, smart cards). Most cities in Latin America show average performance (between 39 and 47 points) while Asian Pacific cities show the broadest range in performance – from Hong Kong and Singapore, which with scores of 58.2 and 55.6 respectively sit at the top of the global table, down to Hanoi with 30.9 points.

- North America shows average performance with 39.5 points. Given their orientation toward cars, North American cities rank bottom worldwide in terms of maturity. In terms of performance, they



Source: Arthur D. Little Urban Mobility Index 2.0; UITP is independent of this index, which does not necessarily reflect its opinion; 100 index points for city that would achieve best performance on each criteria.

perform above average overall, but show poor results with regard to number of cars per capita and CO2 emissions. New York leads the way with 45.6 points, closely followed by Montreal with 45.4 points.

- Africa and the Middle East are lowest performing regions with respective average point totals of 37.1 and 34.1. While urban mobility systems in these regions perform well on several criteria due to the lower number of cars, they are still at an evolving stage and haven't reached sufficient maturity yet.

**What is holding back change?**

A comprehensive review of technologies and urban mobility business models reveals sufficient availability of solutions to address the mobility challenges. In its 2011 study<sup>1</sup>, Arthur D. Little identified three long term business models archetypes for mobility suppliers (the "Amazon," "Apple" and "Dell" of urban mobility). Those business models still hold true today and each have interesting development potential. However, these solutions and archetypes are currently not being applied comprehensively. "There is a clear trend toward shared mobility" says Oleksii Korniiichuk. "More cars and bikes are being shared in cities, both via peer-to-peer and business-to-consumer models, but many of those concepts haven't yet managed to take off as providers are still testing different business models."

Why is the innovation potential not been unleashed? There is a key reason: The management of urban mobility operates globally in an environment which is hostile to innovation. Our urban management systems do not allow market players to compete and establish business models that bring demand and supply into a natural balance. "Urban mobility is one of the toughest system-level challenges facing actors of the mobility ecosystems" says François-Joseph Van Audenhove, Partner at Arthur D. Little and in charge of the Future of Urban Mobility 2.0 study. "There is plenty of solutions and business models available, but very few have managed to smartly integrate them to unleash their full business potential. What

*is needed is system level collaboration between all stakeholders of the mobility ecosystem to come up with innovative and integrated business models."*

Moreover, a lot of mature cities do not yet have a clear vision and strategy on how their mobility systems should look like in the future. The lack of synergies between individual initiatives leads to a sub-optimal outcome in terms of mobility performance, which calls for a more holistic approach. At a different level, integration between regional mobility systems still remains very low in comparison to other parts of the economy as transport infrastructures were historically designed to serve regional rather than supra-regional goals. "In that context, there is a need for stronger alignment between regional mobility strategies while respecting each-others accountabilities and ensuring solutions are adapted to the local contexts" says François-Joseph Van Audenhove.

**Strategic imperatives for cities to shape extended mobility systems of tomorrow**

**Three strategic directions for cities**

To meet the urban mobility challenge, cities need to implement one of the following three strategies dependent

on their maturity and the share of sustainable transport in their modal split:

- **Rethink the System:** Cities in mature countries with a high proportion of motorized individual transport need to shape political agendas to fundamentally redesign their mobility systems so that they become more public transport and sustainability oriented. The majority of cities in the index (53 out of 84) belong to this group.
- **Network the System:** For mature cities with a high share of sustainable transport modes, the next step must be to fully integrate the travel value chain to foster seamless, multimodal mobility while ensuring "one face to the customer" and to increase the overall attractiveness of public transport by service extension. This group contains the majority of cities in Western Europe as well as Hong-Kong and Singapore.

- **Establish Sustainable Core:** For cities in emerging countries with partly underdeveloped mobility systems, the aim must be to establish a sustainable mobility core that can satisfy short term demand at a reasonable cost without replicating mistakes from developed countries. With access to emerging transport infrastructure and technologies, these cities have the opportunity to become the testbed and breeding ground for tomorrow's urban mobility systems.

**Four dimensions identified by Arthur D. Little and the UITP to consider when defining sustainable urban mobility policies**

- **Visionary Strategy and Ecosystem:** Establishing sustainable urban mobility policies requires cities to develop a political vision and urban mobility objectives based on strategic alignment between all key public and private stakeholders of the extended mobility ecosystem. This should inform a visionary urban mobility strategy (priorities and investments to achieve mobility objectives), which ensures the right balance between stretch and achievability.

"There is now a real window of opportunity to drive innovation in urban mobility" says Alain Flauch, UITP Secretary General. "The time has come



1 Arthur D. Little, "The Future of Urban Mobility – Towards networked, multimodal cities of tomorrow", 2011

for public transport to step up and to drive innovation in urban mobility. In order to benefit from those opportunities, we will need to open our minds and take a much more holistic view on public transport as authorities and operators will need to work closely with each other, and the new market players, to deliver creative and entrepreneurial mobility solutions guided by a strategic vision of how cities and regions can be planned and organized."

■ **Mobility supply (solutions & lifestyles):** Responding to increasing demand for urban mobility and to consumer and business needs for seamless, multimodal urban mobility requires cities to extend their public transport offering and adapt it from "delivering transport" to "delivering solutions". This transformation can be achieved through a combination of quality improvements to the current public transport offering and an increase of customer experience via service offering extension through partnerships and alliances with third parties.

*"The development of a coherent offer within subway and railway stations can significantly improve customer experience while maximizing revenues from existing assets" says François-Joseph Van Audenhove. "Historically, infrastructure operators have had some difficulty in setting up an optimal and value creating commercial offer. Airports, and to a lesser extent railway stations, are now at an advanced stage of their commercial activity redesign as a key element of customer experience and a key lever of value creation, whereas local public transport operators still have major room for growth."*

■ **Mobility Demand Management:** The limited capacity of current mobility systems and level of investment required for the development of transport infrastructure means mobility services extension must also be complemented

with measures to manage the demand side. Mobility demand management is a delicate discipline which can easily meet strong resistance if not properly managed. However, a number of measures exist and some of these have already derived clear benefits, the relevance of which should be assessed by cities against the local context.

*"Different measures can be considered to define the right mobility demand management mix for cities to foster a shift towards a sustainable transport modes" says Laurent Dauby, Director Rail Transport at the UITP and co-author of the study. "The relevance and acceptance of each individual measure must be assessed based on the existence of viable alternatives to motorized individual transport and through a dialogue with key stakeholders, including citizens, businesses and the real-estate community."*

■ **Public Transport Financing:** Devising the right funding mix for public transport is a critical priority for cities to ensure the financial viability of public transport, particularly given funding needs are increasing significantly due to growing supply, rising quality expectations and the rising cost of production factors. As fare revenues do not always evolve in line with the costs of production factors and public debt crisis is increasing pressure on public resources, transport authorities and operators need to assess opportunities to derive additional revenues from aggregation of third party services and to perceive charges from indirect beneficiaries of public transport.

*"Sustainable public transport financing involves implementing a proper revenue strategy for public transport and securing the contribution of indirect beneficiaries to ensure the required flexibility to improve quality and efficiency" says Jerome Pourbaix, Head of Policy and Outreach and responsible of the Public Transport Financing Toolbox at the UITP and co-author of the study.*

A system-level approach across these four dimensions is critical: sustainable improvements of a city's mobility performance requires simultaneous improvement on each of the four dimensions as the weakest link will influence overall mobility performance.

In the "Future of Urban Mobility 2.0" study Arthur D. Little and the UITP elaborate further on those dimensions and identify twenty-five imperatives for cities to consider when defining sustainable urban mobility policies. The study also includes case studies of cities demonstrating best practice.

### Want to know more?

The "Future of Urban Mobility 2.0" study as well as the full results of the Arthur D. Little Urban Mobility Index 2.0 are available (from late January 2014) at [www.adl.com/FUM2.0](http://www.adl.com/FUM2.0) as well as at [www.uitp.org](http://www.uitp.org)

Arthur D. Little aims to use its Future Lab to support cities and nations in shaping the extended mobility ecosystems of tomorrow and as a catalyzer to enable and facilitate an open dialogue between urban mobility stakeholders. Do not hesitate to contact us should you require further information:

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