

Automotive

A long-term perspective to sustainable transportation: The Car Of The Future

Phil Gott

Director, Automotive Consulting

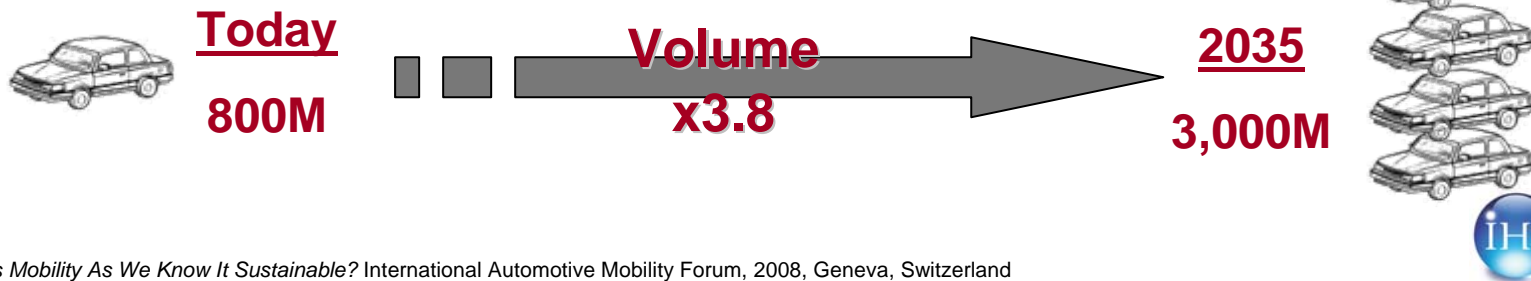
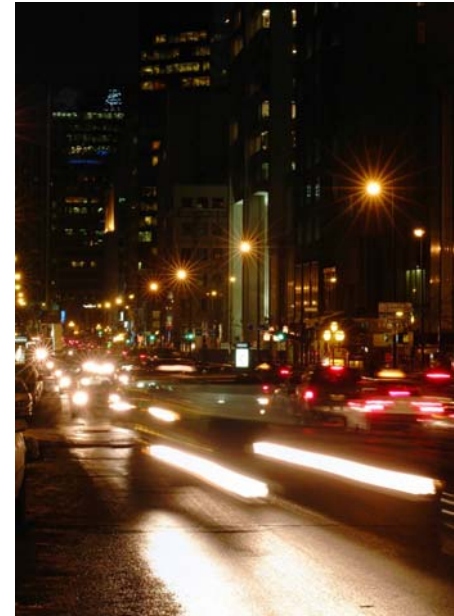
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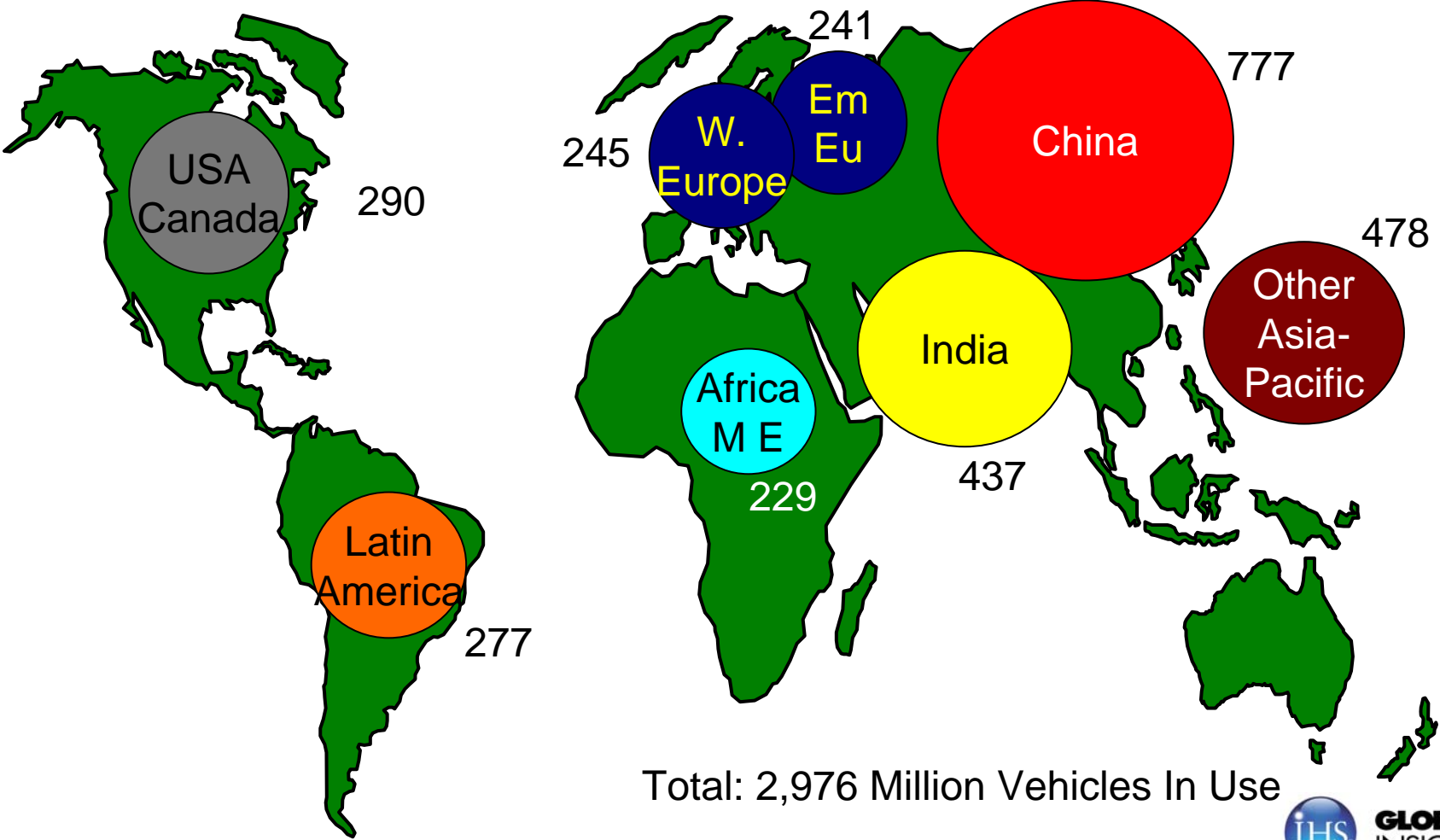
Imagine Our Future

- If our current model of mobility is maintained, there will be three billion vehicles on the roads of the world by 2035
- Imagine what this world will be like, considering the mobility challenges we face today when there are only 800 million vehicles in-use globally
- Imagine what your business will be like?



Automotive Fleet Distribution by 2035

Millions Of On-Highway Vehicles In Use, 2035

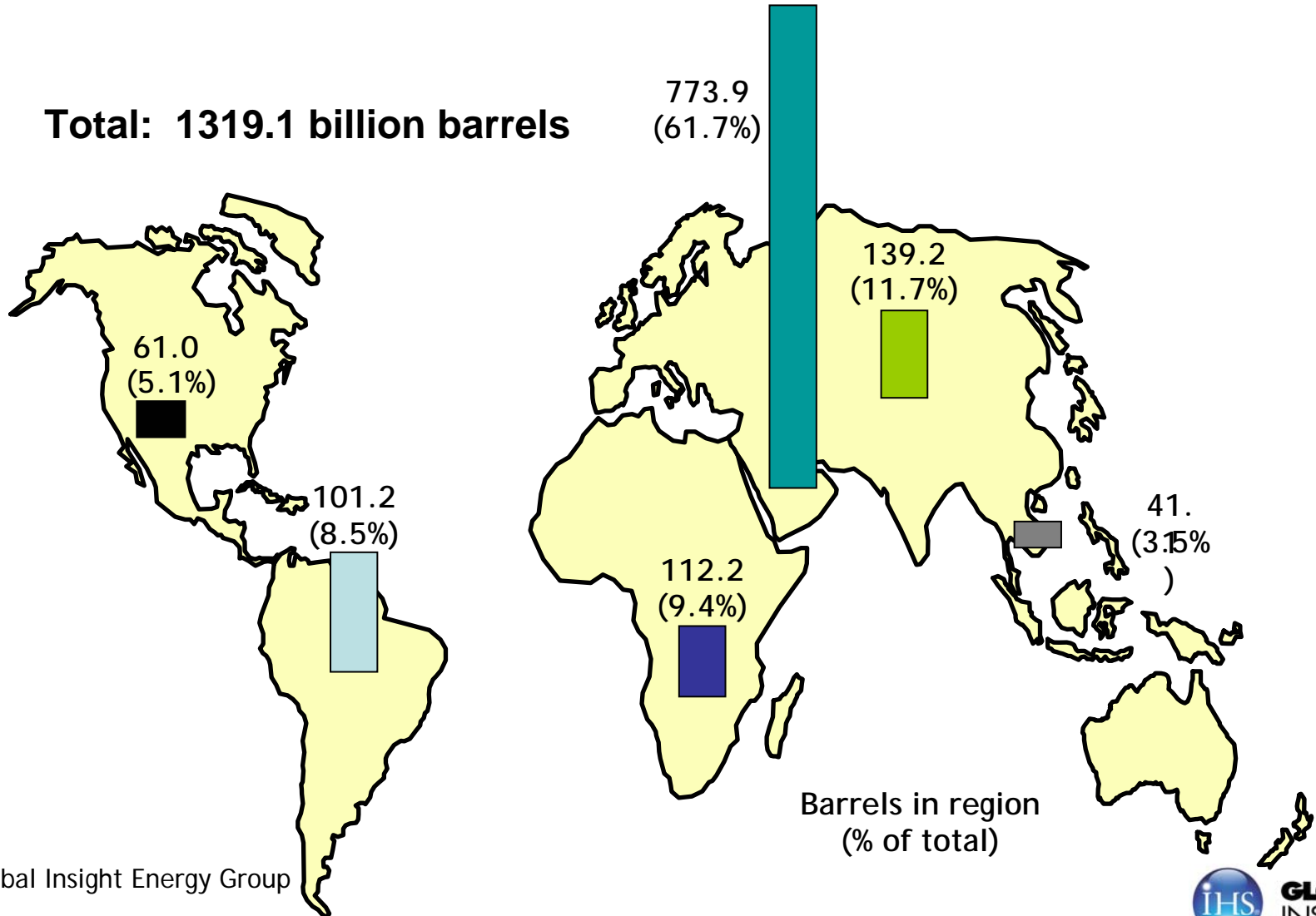


Total: 2,976 Million Vehicles In Use



Global Oil Reserves Are Localized

Total: 1319.1 billion barrels



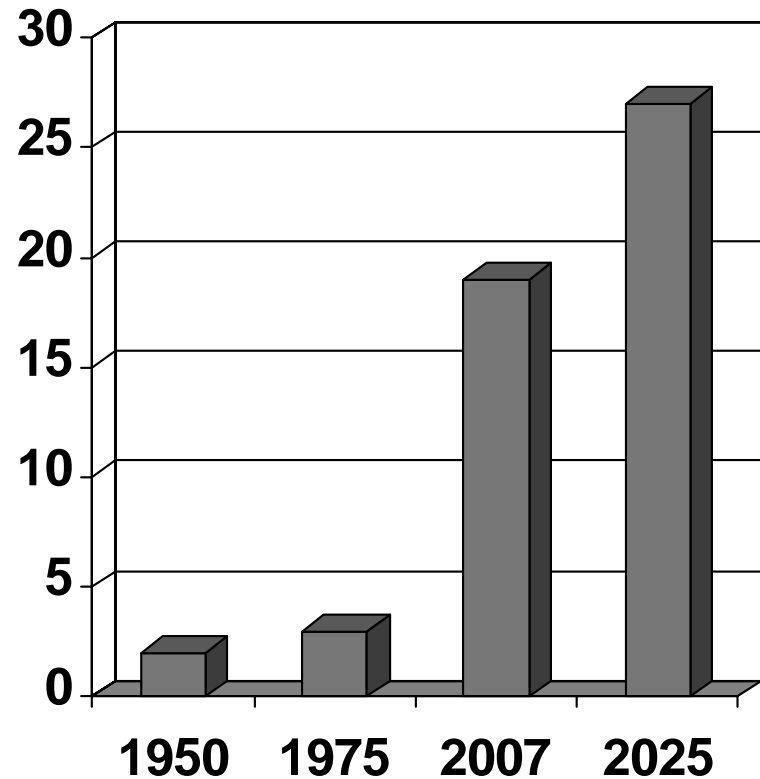
Source: Global Insight Energy Group

Future Growth Of Population And Urban Areas

Circa 2025:

- 2 billion more people will be living on the planet by compared to 1999
- Virtually all of them will be living in Urban areas
- 135 cities with populations over 4 million
 - 114 will be in developing nations

Megacities



Source: *World Urbanization Prospects: The 2007 Revision*, United Nations Economic and Social Affairs, 2007

Lifestyle Is A Function Of Where People Live

Megacity



- > 10 million population
- 19 in 2007
- 27 in 2025

Urban



- Includes suburban areas
- ≥ 400 people/km²

Rural



Courtesy of Alexander Augst

Urban Mobility Must Accommodate All Populations

- Ageing is a major global trend
- In mature markets the age of retirement tends to increase
- Many elderly go back to "work"

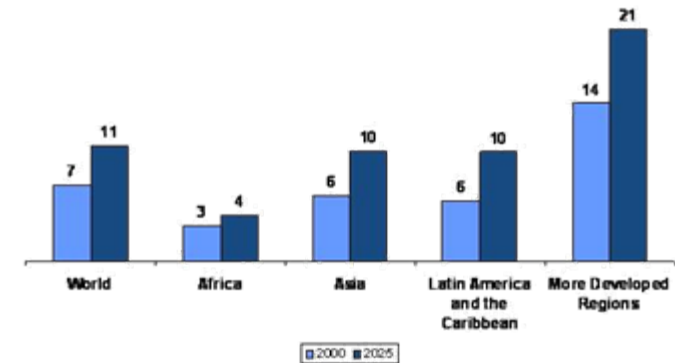


Source: Ford Motor Company

Trends in Aging, by World Region

Population Ages 65 and Older

Percent

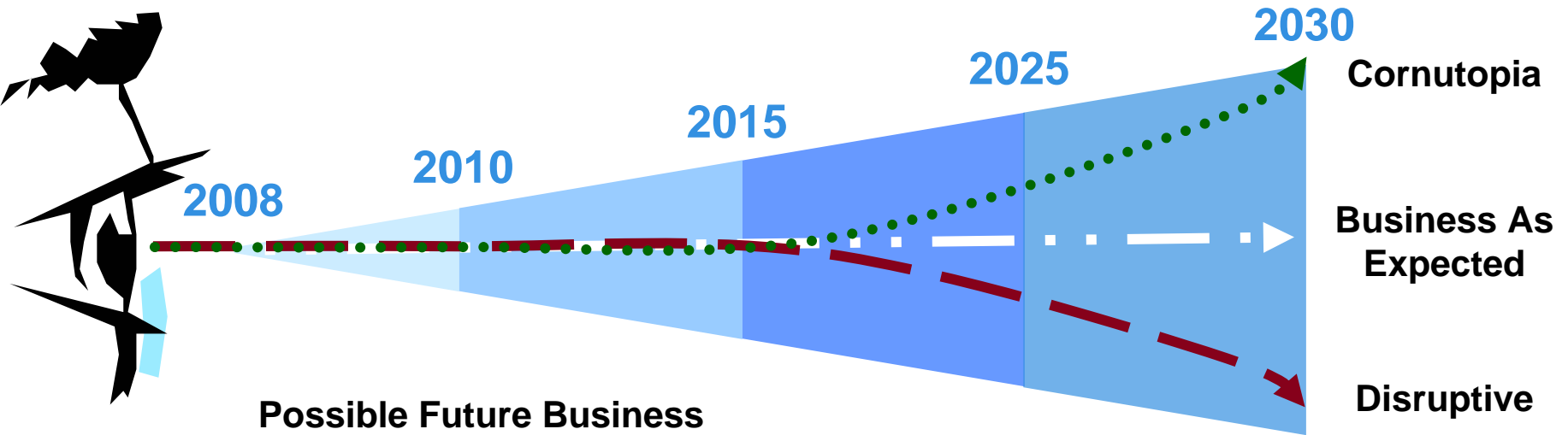


Source: United Nations, *World Population Prospects: The 2004 Revision (medium scenario)*, 2005.

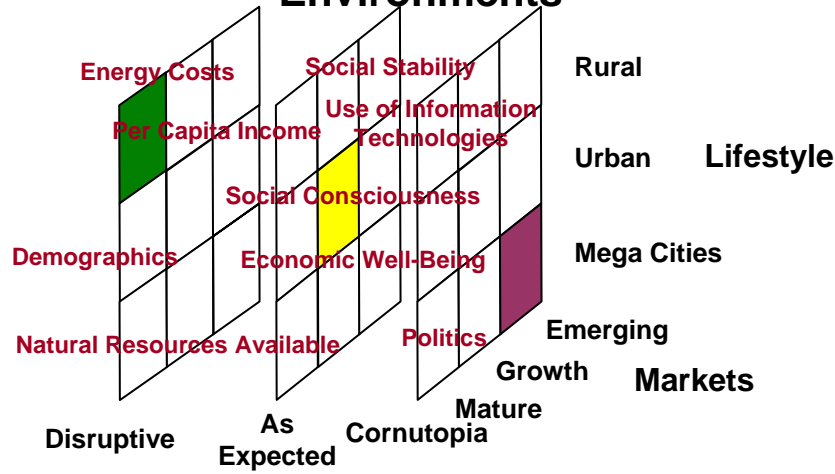
© 2008 Population Reference Bureau

- As people age, their physical capabilities erode
- Ergonomics

Planning For The Car Of The Future



Possible Future Business Environments



Market Type	PCGDP@PPP	2007	2030
Pre-Emergent	<\$5,000	83	53
Emerging	\$5K - \$10K	39	30
Growth	\$10 - \$20K	41	32
Mature	>\$20K	44	92

Economic, Regulatory & Energy Environment

Scenario : Business-As-Expected

- Keywords: No change, on and on...



Scenario : Cornutopia

- Keywords: Responsibility (People & Corporate)



Scenario : Disruptive

- Keywords: Security Control



Today's Conventional Wisdoms Are Challenged

- We currently purchase vehicles that are excessive for their most frequent missions
 - Downsizing with greater flexibility for vehicle functionality is needed
 - The Car of the Future will be more tuned to its intended use/mission profile
- More people will accept a truly small car (Nano, Fiat 500, Smart and smaller)
 - As long as access to more versatile vehicles can be assured when they are needed
- Emotional links to the car are independent of car size
 - The more urbanized an area, the less emotions are tied to ownership

The Role of the Car Will Be Altered!

- Forces Driving Change Include
 - Aging population
 - Vehicle usage rethink
 - Vehicle design/powertrain rethink
 - Virtual mobility
 - Do I need to 'own' the vehicle?
- A need for “Integrated Mobility Services” to cover various phases of travel seamlessly
- Car sharing meets the “integrated mobility” needs very well. It will be encouraged
 - How will this be provided?

Implications For The Auto Industry

- **The Car of the Future will be:**
 - Largely used in urban areas for relatively short trips
 - Managed by car-sharing fleets
 - Fueled by a diversity of energy forms
 - Compatible with dense traffic conditions and a potentially compromised driver



Towards the future of mobility

- To sum it up, while the Car of the Future is likely to be predominantly smaller, right-sized and electric and fleet-owned for the purpose of sharing, the future of the car is to play a much less important role in the lifestyle of tomorrow's city-dweller.
- The change in ownership, size and energy source will help mitigate the impact of each vehicle on its physical surroundings; the sheer reduction in its use will be the most effective way to ensure that the mobility provided is sustainable.



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Thank you

Phil Gott

Director, Automotive Consulting

philip.gott@ihsglobalinsight.com



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