



A research project by National Geographic and GlobeScan



Greendex 2008:

Consumer Choice and the Environment—
Market Basket Report

- Overview and Purpose
- World Population
- Indicators of Consumer Behavior – The Market Basket
 - Energy
 - Transportation
 - Travel
 - Purchasing Power
- Conclusion

Market Basket: Overview



- The “Market Basket” is a set of independently collected macroeconomic indicators that reflect, in part, the consumer behavior measured by the Greendex.
- The purpose of the Market Basket is to provide an external estimate of the results of changes in consumer behavior over time, and to establish a framework for comparing the relative environmental impact of each country’s size and rate of growth all while acknowledging that industry and government also play critical roles.
- While the Greendex measures things consumers are doing to save energy in a country, for example, the Market Basket measures whether total energy consumption in the country is actually going up or down.

Market Basket: Overview, Cont'd



- Market Basket indicators include the following variables:
 - Population size and rate of growth
 - GDP per capita based on Purchasing Power Parity (PPP)
 - Per Capita Energy Consumption
 - Passenger Car Registrations
 - Number of Domestic and International Aircraft Passengers per 1,000 People
 - Expenditure by Households on Hotels and Restaurants
- In sum, the Market Basket data confirm that the Greendex ranking of average consumers in 14 countries reflects actual consumption patterns in those countries.
- All Market Basket data has been sourced from the Economist Intelligence Unit (EIU)

World Population



- The world's population reached a total of 6.6 billion in 2007 and is growing at an average annual rate of 1.17 percent.
- The 11 largest countries represent over 60 percent of the world's population.
- China is home to one fifth of the people on earth.
- Half of the largest countries – India, Indonesia, Pakistan, Bangladesh and Nigeria – are growing at a faster rate than the world average.

Greendex Countries Population



- The 14 Greendex countries represent 55 percent of world population and include seven of the world's top 11.
- They represent a wider mix of consumers and include a greater representation of developed countries.
- In 2007, these 14 countries accounted for 75 percent of the energy consumed in the world that year.

Population Distribution and Growth Rate by Country



60% of World's Population in Top 11 Countries, 2007

Rank	Country	Millions	Annual Growth	% of World	Cum %
1	China	1,321.9	0.61%	20.0%	20.0%
2	India	1,129.9	1.61%	17.1%	37.1%
3	USA	301.1	0.89%	4.6%	41.7%
4	Indonesia	234.7	1.21%	3.6%	45.3%
5	Brazil	190.0	1.01%	2.9%	48.1%
6	Pakistan	164.7	1.83%	2.5%	50.6%
7	Bangladesh	150.4	2.06%	2.3%	52.9%
8	Russia	141.4	-0.48%	2.1%	55.0%
9	Nigeria	135.0	2.38%	2.0%	57.1%
10	Japan	127.4	-0.09%	1.9%	59.0%
11	Mexico	108.7	1.15%	1.6%	60.7%
	World	6,602.2	1.17%		

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Population Distribution and Growth Rate by Country



Greendex Sample, 2007

Rank	Country	Millions	Annual Growth	% of World	Cum %
1	China	1,321.9	0.61%	20%	20%
2	India	1,129.9	1.61%	17%	37%
3	USA	301.1	0.89%	5%	42%
5	Brazil	190.0	1.01%	3%	45%
8	Russia	141.4	-0.48%	2%	47%
10	Japan	127.4	-0.09%	2%	49%
11	Mexico	108.7	1.15%	2%	50%
14	Germany	82.4	-0.03%	1%	52%
21	France	63.7	0.59%	1%	53%
22	United Kingdom	60.8	0.28%	1%	53%
30	Spain	40.4	0.12%	1%	54%
37	Canada	33.4	0.87%	1%	55%
54	Australia	20.4	0.82%	0%	55%
82	Hungary	10.0	-0.25%	0%	55%

Gross Domestic Product Per Capita At Purchasing Power Parity - \$ US

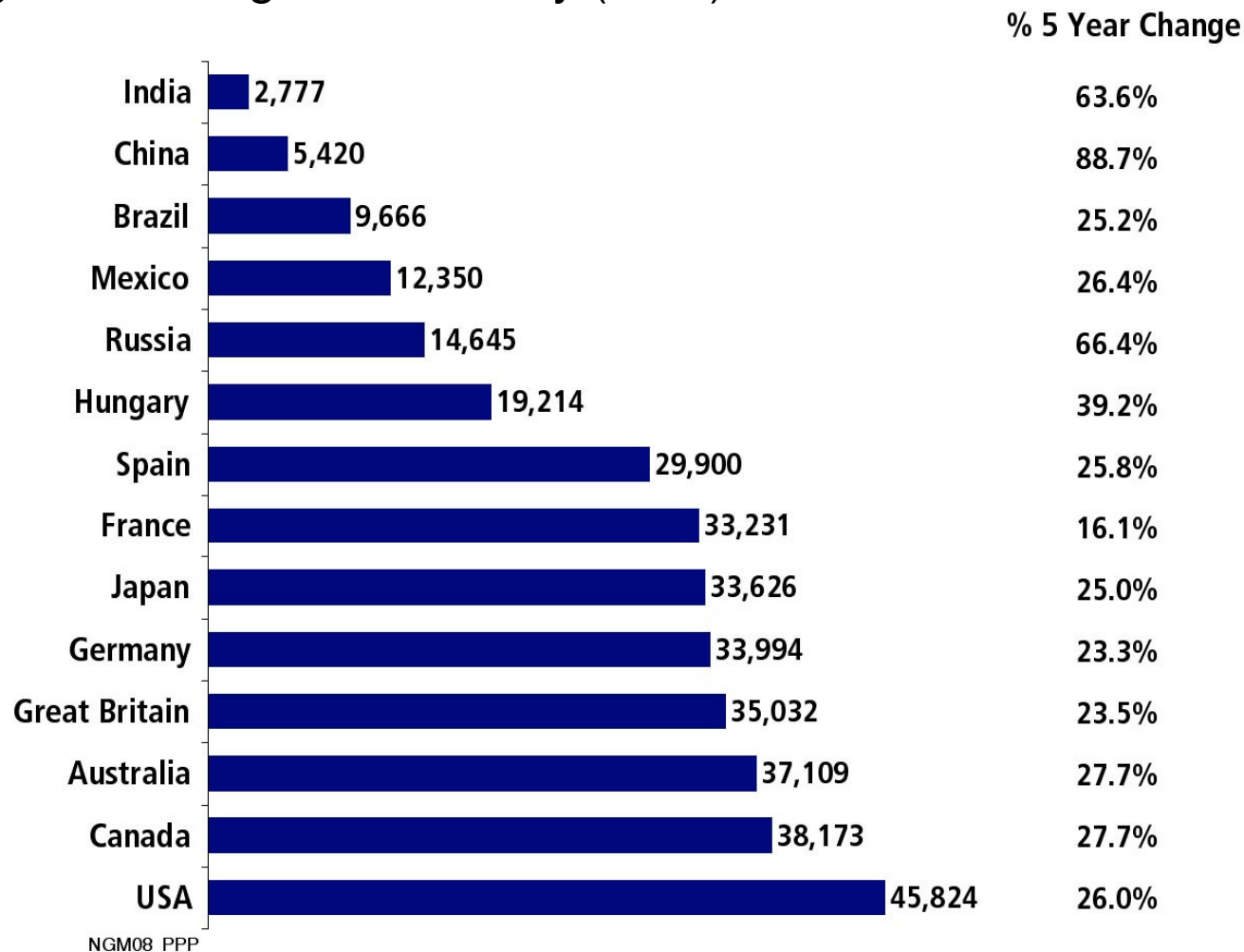


- On the basis of purchasing power parity (PPP) the Gross Domestic Product per capita in the USA was 15 times that of the average GDP per capita in India in 2007.
- Nevertheless, GDP per capita has almost doubled in China over the past five years and grown by 64 percent in India and 66 percent in Russia.
- The five year growth in GDP per capita has averaged 25 percent across most developed countries, less than half the average of the three leading economies by growth (i.e, China, India and Russia).

Gross Domestic Product



\$ US per Capita, by Country, 2007
Using Purchasing Power Parity (PPP)



Total Energy Consumption



- Total energy consumption per capita, as measured in kilograms of equivalent oil, has grown 18 percent on average across the world in the past five years.
- However, this growth in energy consumption per capita has been driven largely by the economic growth of the largest developing nations.
- There appear to be three tiers of countries when it comes to energy consumption:
 - 1) The developing countries of India, Brazil, China and Mexico, have by far the lowest consumption per capita but are growing at the fastest rate.
 - 2) European countries and Japan exhibit relatively low rates of growth in energy consumption, and consume significantly less than the top tier of energy users. This reflects the relatively constrained supply of energy resources in these countries.
 - 3) Canada, the USA, Australia, and Russia, are by far the highest consumers of energy per capita, in part explained by their geography, but mostly due to their wealth and historical endowment with large supplies of energy resources.

Total Energy Consumption



By Country, 2007

	Equivalent Oil	% of World	Kg. Per Capita	% 5 year Change
India	450.8	4.3%	406.0	33.4%
Brazil	212.2	2.0%	1,120.8	19.1%
China	1,861.2	17.8%	1,406.7	75.8%
Mexico	189.0	1.8%	1,738.7	21.4%
Hungary	31.0	0.3%	3,108.7	13.4%
Spain	161.7	1.5%	3,577.4	18.6%
United Kingdom	234.1	2.2%	3,839.0	2.0%
Germany	346.4	3.3%	4,194.5	0.0%
Japan	543.3	5.2%	4,262.7	6.1%
France	268.7	2.6%	4,359.4	4.2%
Russia	771.4	7.4%	5,418.9	15.7%
Australia	127.7	1.2%	6,247.5	13.8%
USA	2,377.5	22.8%	7,870.0	3.6%
Canada	351.8	3.4%	10,688.7	10.3%
Rest of World	2,523.1	24.1%	n/a	
World	10,449.8	100.0%	2,090.0	18.0%

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Energy Consumption vs Greendex

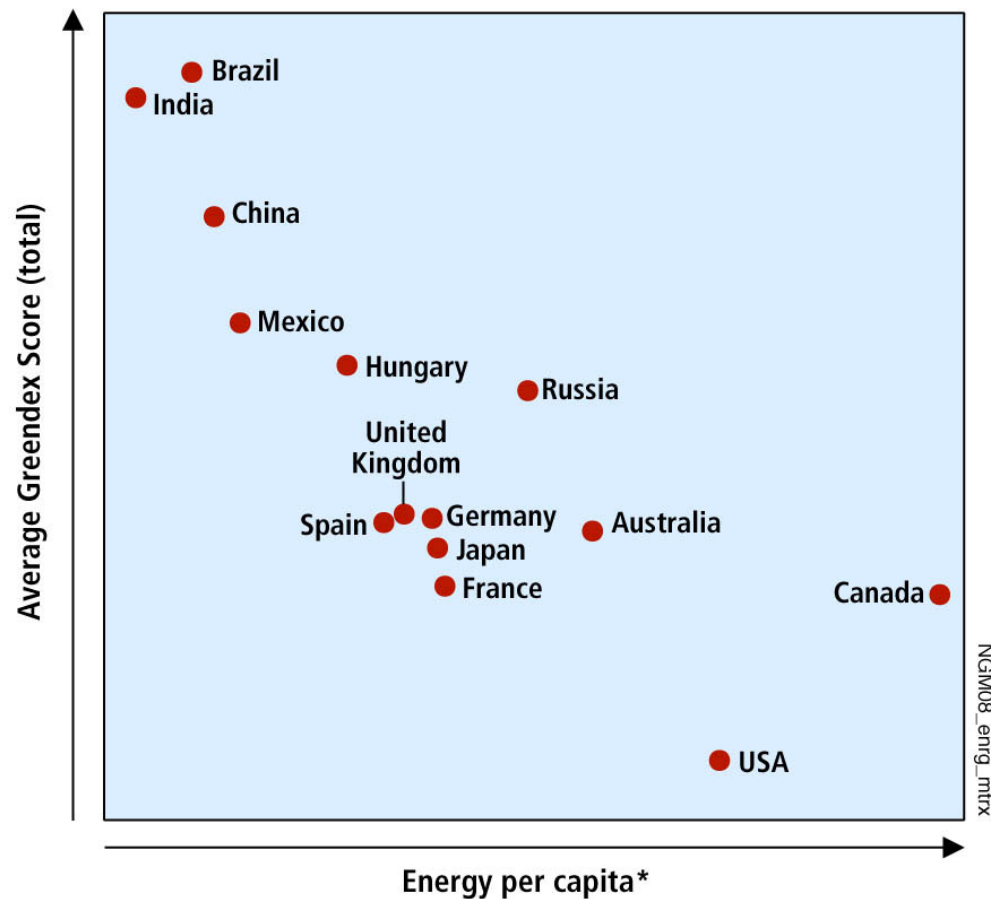


- We observe a strong correlation between the energy per capita consumption profile of countries and their overall Greendex score.
- Even though macroeconomic energy consumption statistics include both consumer and industrial consumption, the pattern of consumer environmental impact represented by the Greendex is mirrored in each country's overall energy consumption per capita.
- This is an expected finding given that higher levels of consuming behavior across all sub categories of the index naturally lead to greater use of energy both in the consumption and provision of goods and services.

Energy Consumption



2007 Per Capita Energy Consumption versus the Average Consumer's Greendex Score in Each Country



Passenger Cars – New Car Registrations



- New passenger car registrations per capita are three times higher in the USA than any other country. Nevertheless, they have declined in the USA from five years ago, a pattern mirrored in most developed countries except in Australia.
- The decline in registrations in developed countries is reflective of the longer lifespan of automobiles produced today, and hence a growing stock of cars, rather than any significant behavioral shift in reduced driving.
- Growth of new car registrations has exploded in China and India, with strong increases in Russia and Brazil.
- This growth of car registrations in developing countries is a warning that growth in demand for energy and resultant emissions has strong momentum and will be extremely difficult to influence with behavioral change in the short term.

Passenger Cars (New Car Registrations)



By Country, 2007

	000's New Car Registrations	Per 1000 Pop	% Change 5 Years
India	1,586.2	1.4	108.9%
China	4,722.4	3.6	274.2%
Mexico	671.9	6.2	-11.0%
Brazil	1,978.7	10.5	50.0%
Hungary	169.6	17.0	-0.3%
Russia	2,562.5	18.0	84.6%
Canada	894.2	27.2	-10.4%
Australia	637.0	31.2	12.8%
Spain	1,471.5	32.6	2.3%
France	2,067.4	33.5	-6.4%
Japan	4,400.3	34.5	-1.2%
Germany	3,148.0	38.1	-3.3%
UK	2,404.0	39.4	-8.8%
USA	16,111.9	53.3	-8.7%

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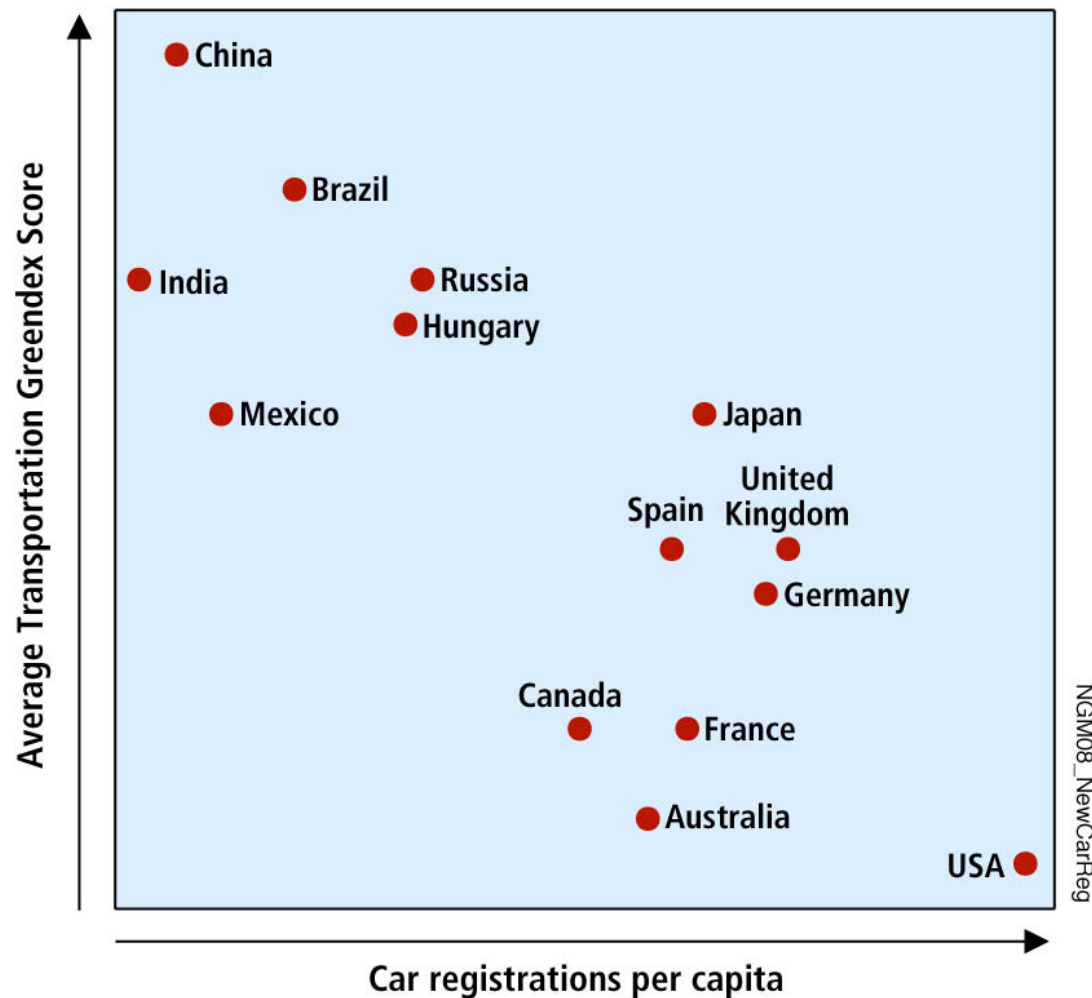
Passenger Cars (New Car Registrations) vs Transportation Sub-Index



- There is a strong correlation between the incidence of new car registrations per capita and a country's Transportation Greendex score.
- The higher the prevalence of new car registrations, the lower the Greendex score on Transportation.
- This correlation will likely strengthen as the growth of economies in developing countries enables the emerging middle class to take advantage of new opportunities for increased personal mobility.

New Car Registrations

2007 Per Capita versus Consumer's Average
Transportation Sub-Index Score in Each Country



Number of Domestic and International Aircraft Passengers per 1,000 People

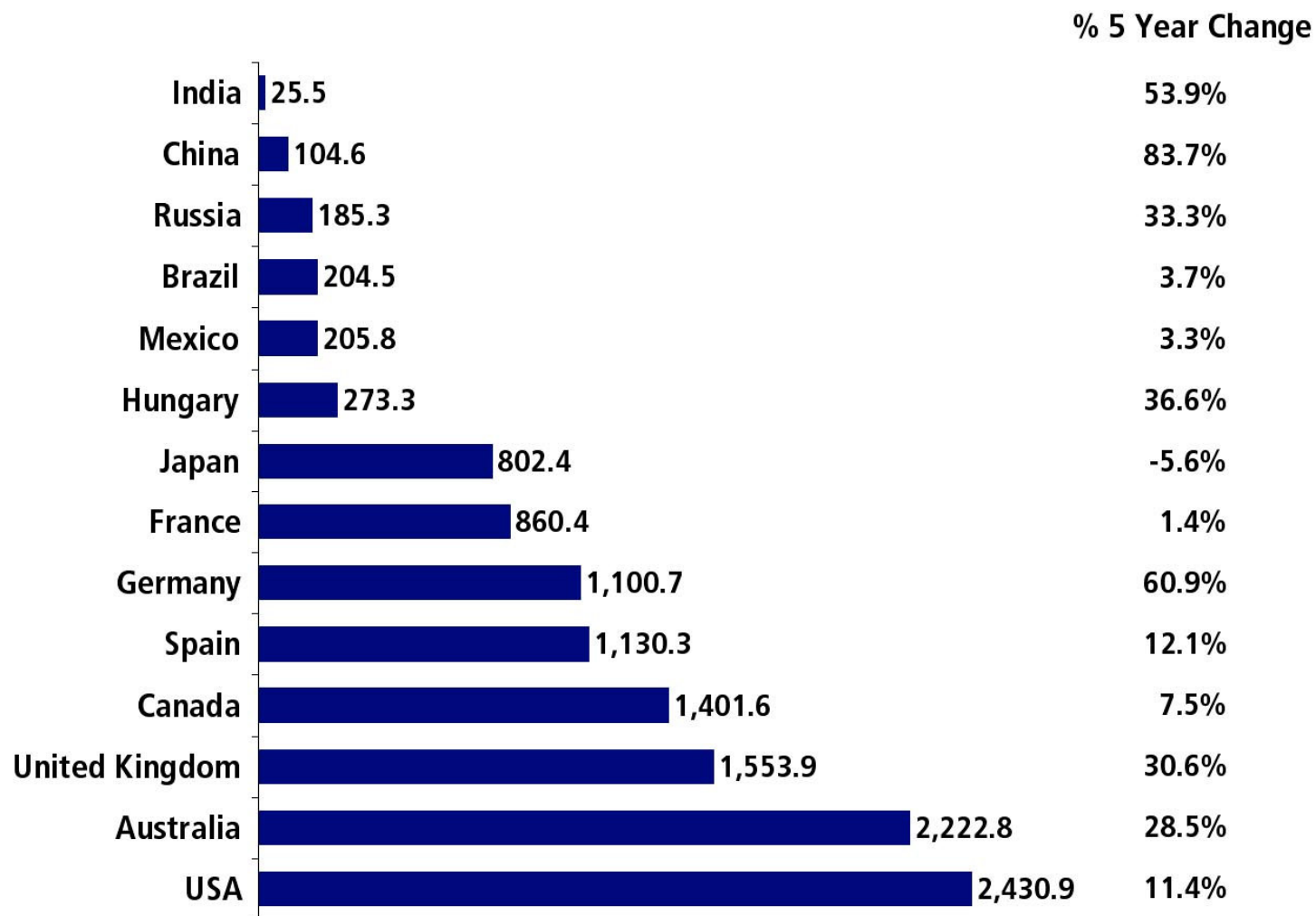


- People in the top four air traveling countries – USA, Australia, UK and Canada – travel by air 10 to 20 times more frequently than consumers in China.
- If this frequency of air travel were to be matched by consumers in developing countries, the contribution to carbon emissions and subsequent impact on climate change would be extreme.

Number of Domestic and International Aircraft Passengers per 1,000 People



By Country, 2005



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Number of Domestic and International Aircraft Passengers per 1,000 People

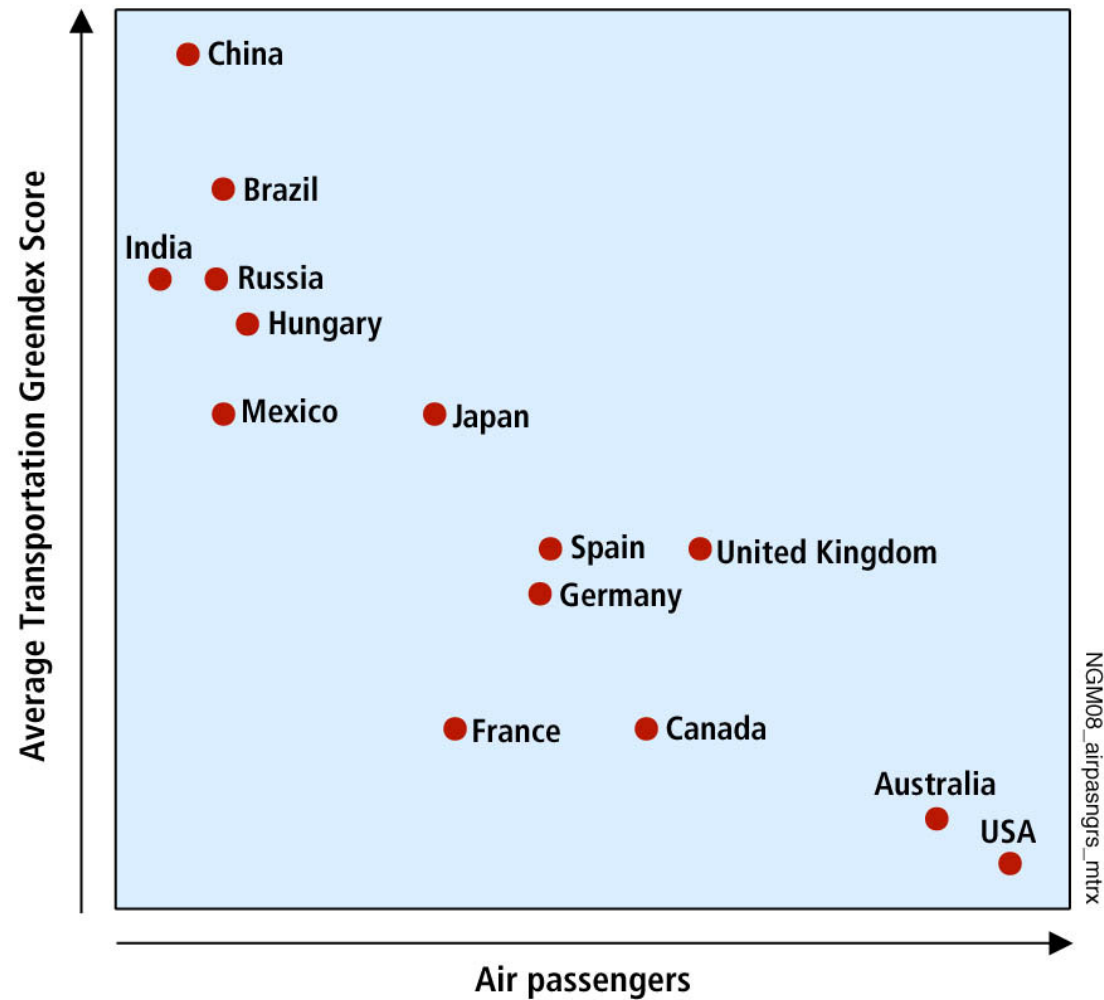


- There is a very strong correlation between the frequency of air travel per capita and the Transportation Greendex score. The higher the incidence of flying, the greater the environmental impact, reflected in a lower index score.
- This also highlights the strong relationship between wealth, size, and isolation of country, and the propensity to travel by air. Countries such as the USA, Australia, and Canada, are large land masses populated by relatively high proportions of wealthy citizens.
- The large countries of China, India, and Brazil would naturally adopt the same attraction to air travel if not constrained by lower per capita incomes.

Number of Aircraft Passengers per 1,000 People vs the Average Consumers' Transportation Sub-Index Score



2005



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Final Consumption Expenditure by Households on Hotels and Restaurants



- The spending on restaurants and hotels represents a combination of two of the Greendex sub indices – Food and Transportation.
- There is a vast difference in per capita expenditures on hotels and restaurants between developed and developing countries. This indicator also highlights countries such as Spain with significant reliance on the economic contribution of tourism to their economies. Because the Hotels and Restaurants data reflect a high proportion of expenditure from persons traveling from outside of the country, however, the data do not compare to the Greendex scores as precisely when expressed on a per capita basis. For this reason we have not included a correlation chart for Hotels and Restaurants.
- What is most striking is that the average annual change in expenditure on Hotels and Restaurants is growing at similar levels in all countries. This highlights the universal appeal of travel and entertainment, underscoring the natural resistance to behavioral change that will arise.

Final Consumption Expenditure by Households on Hotels and Restaurants



\$ per Capita, by Country, 2007

	2007	Average Annual Chge	% Average Annual Chge
India	\$8	\$1	9%
China	\$44	\$5	11%
Russia	\$96	\$13	13%
Brazil	\$110	\$12	11%
Mexico	\$440	\$21	5%
Hungary	\$448	\$50	11%
Germany	\$1,233	\$88	7%
France	\$1,437	\$115	8%
Japan	\$1,481	\$27	2%
Canada	\$1,626	\$135	8%
Australia	\$1,883	\$191	10%
USA	\$1,989	\$90	5%
United Kingdom	\$3,172	\$229	7%
Spain	\$3,487	\$325	9%

Purchasing Power and Consumption of Goods

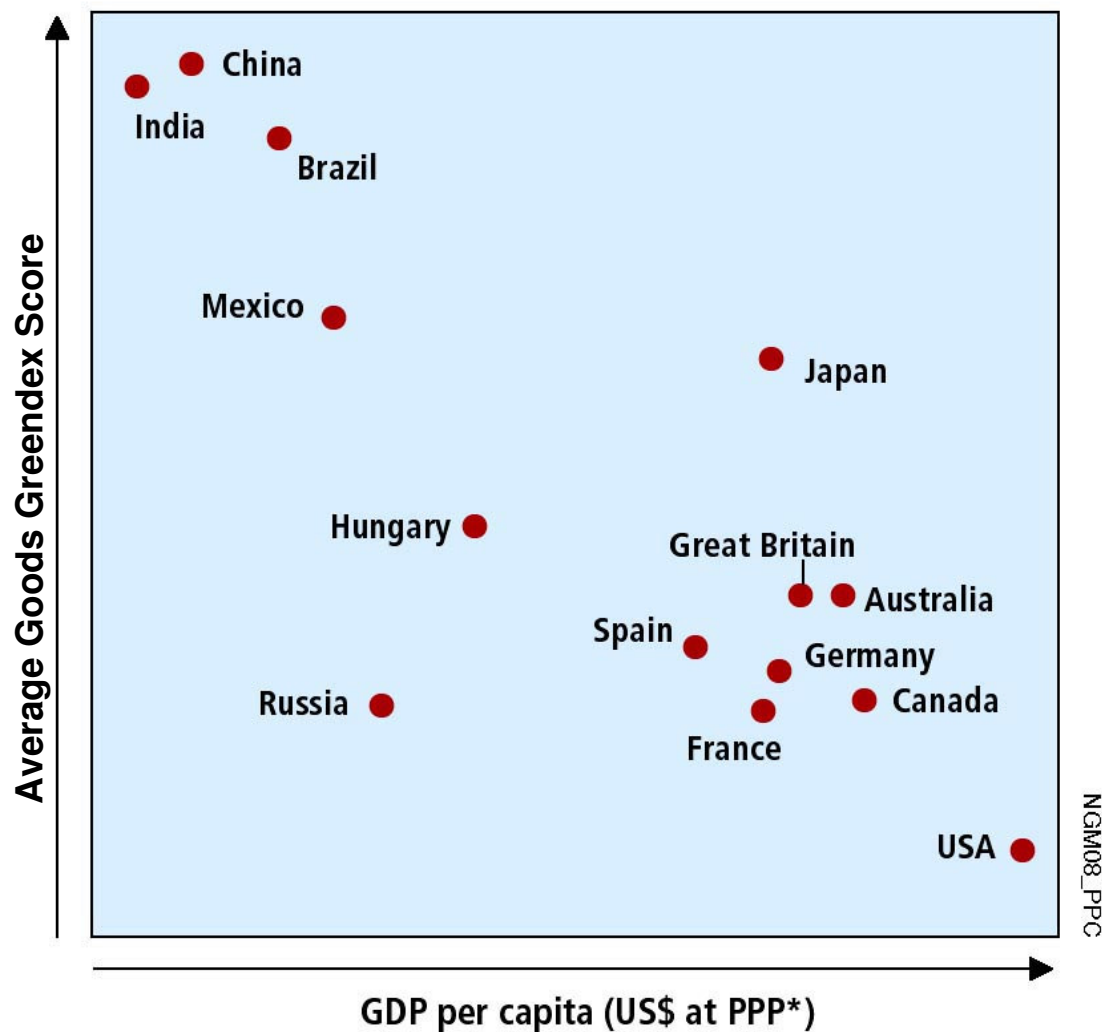


- There is a strong correlation between per capita wealth – as measured by the Purchasing Power Parity of Gross Domestic Product – and the propensity to acquire goods.
- Behavior captured by the Greendex survey matches the capacity to acquire goods as measured by GDP. As developing countries grow more wealthy, they will set the stage for increased impact of consumption on the environment.

Purchasing Power vs the Average Consumer's Goods Sub-Index Score in Each Country



2007



Conclusion



- From country to country, the Market Basket data correlate well with consumers' Greendex scores. That is, the Greendex scores are indicative of actual consumption patterns in the countries studied.
- The Market Basket data suggest that if current growth rates are sustained in large developing countries in 2008, Greendex rankings may change considerably in the near future.
- For now, there appears to be strong momentum toward increased energy and resource consumption in the categories measured by the Greendex and the Market Basket. The strength of this momentum has profound implications regarding climate change and the transition toward sustainable development worldwide.