Gauging interest for plug-in hybrid and electric vehicles in select markets

Compared results
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The growing interest in alternative powertrain technologies, especially the increased electrification of vehicles, is affecting the entire automotive industry value chain. Today, we continue to witness innovation in powertrain technologies with an increasing focus on alternatively powered vehicles, in particular plug-in hybrids (PHEVs) and pure electric vehicles (EVs). At the same time, as existing vehicle manufacturers (VMs) add alternatively powered vehicles to their product line-ups, many new market entrants are using this powertrain transformation as their entry point into the automotive industry.

PHEVs and EVs have long been touted as major future break-through technologies of the automotive industry, and we see the movement toward this platform as transformational. New industry participants have emerged, including component suppliers, service professionals, infrastructure developers and VMs, seeking to take advantage of the opportunities this transformation promises. The pace of the coming industry transformation will be determined by several factors, including how effectively consumer acceptance considerations are met, and the degree of cross-industry collaboration among the automotive, utilities, government and other sectors.

We anticipate continued interest among automotive industry participants in developing alternative powertrain technologies, and accordingly we have created an Advanced Powertrain Task Force specifically focused on the business opportunities and issues companies face with new alternative transportation solutions. There is a vital need for information in this area – particularly, in how consumers around the world will respond to the new technologies being introduced in the marketplace.

This survey – Gauging interest for plug-in hybrid and electric vehicles in select markets – was designed following the success of our US survey to capture a true global perspective. We asked 4,000 drivers in the US, China, Japan and Europe to share their sentiments on vehicle electrification and reveal the factors that may encourage or discourage them to purchase a PHEV or EV. The questions were strategically developed to capture responses that would provide insights ranging from consumer awareness of PHEV and EV technologies to the key considerations in purchasing a PHEV or EV.

Please continue reading to uncover our survey findings and assessments. Our dedicated Global Automotive Center professionals are poised to help automotive companies navigate this transformation, including assistance with investment decision support, business process change and increased collaboration. We would be pleased to further share our insights on this transformation.

Michael S. Hanley
Global Automotive Leader
Executive summary

Survey highlights

- There is already tangible demand for PHEVs and EVs across all markets surveyed. A notable number of survey respondents are willing to consider the purchase of a PHEV or EV as soon as they are available.
- Despite substantial interest for new vehicle technologies, the overall awareness level is very low, even for established technologies such as the hybrid powertrain. Moreover, the majority of survey participants will not consider a PHEV or EV until they are well-established in the marketplace.
- Several factors influence undecided drivers to purchase a PHEV or EV. Most of them are similar across the markets surveyed but vary enough to suggest customized vehicle introduction strategies by market.
- Among the markets surveyed, China presents the greatest variations compared to the results obtained in the other markets. China demonstrates the strongest interest by far in new vehicle technologies.
- A large segment of respondents consider rising fuel prices, dependence on foreign oil and global climate change as “major” issues, and could therefore be interested in the features offered by PHEVs or EVs.
- While there are several factors that are significant in determining new consumption behaviors towards more energy-friendly vehicles, the primary consideration is economic.
- There is a clear awareness gap between PHEV and EV technologies, in favor of the latter. This highlights the need for specific promotional and educational efforts to bridge the gap.
- In some markets, natural gas vehicles (NGVs) are more well known than PHEVs.

Survey demographics:

Of the 4,000 respondents interviewed:

- 1,000 were from the US, 1,000 from Europe (equally split between France, UK, Germany and Italy), 1,000 from China* and 1,000 from Japan
- 92% drive less than 50 miles a day
- 83% paid less than $35,000 for their vehicle
- 78% drive less than 30 miles a day
- 4% paid more than $45,000 for their vehicle
- 2% drive more than 100 miles a day

* Results from certain provinces in China include participants that do not currently own a vehicle but expect to purchase one within the next three years.
Select findings

▶ Between 7% and 37% of respondents in the developed markets surveyed (all except China) are willing to consider the purchase of a PHEV or EV as soon as it is available. When considered in terms of the total number of vehicles in service, these responses are indicative of relatively high volumes.

▶ 60% of respondents in China show a strong interest in purchasing a PHEV or EV – nearly five times that of the US, Germany, UK and Japan, which also potentially represents significant volumes.

▶ 62% of respondents have never heard of PHEV technology or have heard of it but don’t know what it is.

▶ 40% of respondents have never heard of EV technology or have heard of it but don’t know what it is.

▶ More than 60% of respondents say they are not likely to buy a PHEV or EV until it is well-established in the market, highlighting the importance of successful launches among the potential early adopters and sharing these success stories in distinct markets.

▶ Fuel savings is the most important favorable factor encouraging the purchase of a PHEV or EV. Other factors, such as environmental impact and government incentives, are not nearly as significant to respondents.

▶ Battery driving range, access to charging stations and vehicle price are the factors that make our survey respondents most hesitant to purchase PHEVs or EVs. Several other factors such as performance and handling, reliability, and lack of clear understanding of cost advantage play an important role with various levels of significance across the markets surveyed.

▶ The vast majority of respondents would prefer purchasing a PHEV or EV over leasing. Respondents from Europe are slightly more favorable to leasing.

▶ There is a clear range anxiety among respondents, as 60% believe a battery driving range of less than 100 miles is unacceptable, whereas only 2% drive more than 100 miles a day.

▶ Willingness to pay for charging stations in their respective communities is higher among respondents than their interest for purchasing PHEVs or EVs.

▶ Among the markets surveyed, Japan has the lowest interest for PHEVs or EVs, with only 7% potential early adopters.
Capturing interest: survey results
Compared findings across markets

Question 1
Please rate your familiarity with the following powertrain technologies:

US

<table>
<thead>
<tr>
<th>Powertrain Technology</th>
<th>US</th>
<th>Europe</th>
<th>China</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hybrid</td>
<td>64%</td>
<td>44%</td>
<td>21%</td>
<td>52%</td>
</tr>
<tr>
<td>Electric</td>
<td>58%</td>
<td>55%</td>
<td>29%</td>
<td>48%</td>
</tr>
<tr>
<td>Plug-in hybrid</td>
<td>52%</td>
<td>25%</td>
<td>9%</td>
<td>31%</td>
</tr>
<tr>
<td>Natural gas</td>
<td>47%</td>
<td>28%</td>
<td>26%</td>
<td>30%</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>30%</td>
<td>48%</td>
<td>6%</td>
<td>27%</td>
</tr>
</tbody>
</table>

- I have never heard of this technology
- I have heard of this technology, but don’t know what it is
- I am familiar with this technology
- I am closely following developments with this technology
PHEV technology
- PHEV technology is most familiar among US survey respondents with almost 60% indicating that they are familiar with it and/or closely following developments. Japanese and European consumers indicate a familiarity rate in the range of 30% to 35%, and slightly more than 20% of the Chinese respondents are familiar with PHEVs.
- It is also interesting to note that approximately 25% of the drivers surveyed in Japan and Europe indicated that they had never heard of PHEV technologies.
- Across all markets, more than 50% of respondents “have never heard” of PHEV technology or “have heard of but don’t know what it is.” These combined responses by market are 78% in China, 68% in Europe and 59% in Japan.
- In each market surveyed, EV technology is more well-known than PHEV technology.

EV technology
- The number of drivers that have never heard of EV technology is very low, between 1% and 3% of all respondents, which is somewhat surprising given the fact that there are very few EVs currently available in the marketplace.
- Drivers are more familiar with EV technology in the US and Europe than in other regions. In fact, almost 70% of drivers in the US and Europe say that they are “familiar” or “closely following” EV technology.
- While Chinese drivers are the least familiar with EV technology among the survey respondents, they indicate the highest level interest in developments in this area with over 20% “closely following developments.”

Other alternative powertrain technologies
- The number of respondents with a limited understanding of hybrid technology (almost 20% in the US, 40% in Europe and approximately 35% in Japan) is somewhat surprising, given the number of hybrid vehicles in use today.
- Almost half of the US and European participants are familiar with natural gas vehicles (NGVs), but only 30% of the Japanese respondents and 26% of the Chinese respondents are familiar with NGVs.
- Hydrogen is the least familiar powertrain technology on average in every market except in Europe where respondents are even less familiar with PHEVs. The overall awareness of hydrogen vehicles is surprisingly low given its existence in the marketplace for more than 10 years.

Significant regional observations
- The level of awareness towards the different vehicle technologies presented in this survey is higher in the US than in any other region.
- Familiarity with the alternative powertrains is generally lowest among Chinese drivers, but at the same time it is the region with the most respondents indicating that they are closely following the development of each technology.
- When responses from questions 1 and 2 are combined, we find that while China’s drivers are the least familiar with all of the technologies presented, they are the most willing to purchase a vehicle with an alternative powertrain as it becomes available.

“The low level of respondents closely following the technologies around the world demonstrates the huge educational and marketing opportunities available, both in terms of deciding technology and brand winners. Nobody ‘owns’ the space for these other technologies; the frontier is wide open, for global automakers as well as localized new entrants.”

- Koki Ito, Japan Automotive Leader
Question 2
Would you consider purchasing a PHEV or EV?

US

Europe

China

Japan

Numbers rounded
**Ambassadors: convinced and likely early-adopters**

- Interest for purchasing a PHEV or EV appears to be higher among drivers in China than in any other region. Early adoption in this market will provide VMs an opportunity to look deep in the purchase rationale of Chinese drivers.

- Convinced early-adopters (respondents who answered “definitely”) ranged from 3% to 5% in all markets surveyed except China where it reached 13% of respondents. While this may seem low, an early adoption rate in this range in the near-term would likely be greater than PHEV and EV production in these markets. For instance, 5% of US drivers represents approximately 10.4 million vehicles, which is clearly more than the amount of PHEVs or EVs to be available in the near future. *

- Ambassadors for PHEVs or EVs (i.e., drivers who state that they would “definitely” buy such vehicles, or “most likely as soon as they are available”) represent 60% of respondents in China, 22% in Europe, 13% in the US and 7% in Japan. The crucial question for the industry is how many ambassadors are necessary to drive the demand of hesitant consumers?

**The key to market entry success: how to identify and address apprehensions of hesitant consumers**

- Hesitant consumers (respondents who answered “not likely until the vehicle is well-established in the market”) represent 60% of all respondents, 70% excluding China where respondents are more enthusiastic.

- Almost 20% of respondents in Japan claim they will never consider purchasing a PHEV or EV and 74% are unwilling to purchase these vehicles until they are well-established. This suggests that Japan, one of the key markets recognized for its investment in advanced powertrain R&D, may have a longer adoption curve than other markets. Similar results are observed in the US market.

- Carmakers need to understand which marketing techniques can best help transition consumers from one stage to the next within the purchase funnel: through education, public relations, advertising, word of mouth and social media.

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* In 2008, 208 million US citizens had a driver’s license, based on data from the US Department of Transportation.

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“At first glance, familiarity towards EVs does not appear directly correlated to a consumer’s willingness to purchase. However, the knowledge of consumer familiarity can arm companies with the foundation for successful marketing strategies and campaigns.”

— David Baron, Marketing Effectiveness, Advisory Services
Question 3
Which purchasing method would you prefer?

US
- Lease: 7%
- Buy: 93%

Europe
- Lease: 14%
- Buy: 86%

China
- Lease: 2%
- Buy: 98%

Japan
- Lease: 4%
- Buy: 96%

Numbers rounded
The majority of survey participants prefer to buy rather than lease a PHEV or EV across all markets. Europe indicates the highest interest in leasing with 14% of respondents who prefer a leasing arrangement.

Leasing appears to be particularly insignificant in Japan and China, with 4% and 2% of respondents, respectively, who would prefer this purchasing method.

It is surprising that so many respondents prefer to buy a PHEV or EV over leasing. One would expect that uncertainties surrounding the vehicles’ residual value, potential maintenance and warranty issues or even apprehensions over technical obsolescence would keep drivers from wanting to take the full risk of vehicle ownership.

The structure of sales and leasing transactions among VMs, dealers, and independent and commercial customers will evolve to meet the demands and opportunities in the market.

“The unique reusable nature of the battery components of these vehicles creates a value stream at the end of the vehicle’s life that must be factored into pricing, financing and residual value considerations.”

- Mike Hanley, Global Automotive Leader
Question 4
Which factors would favorably influence your decision to purchase a PHEV or EV as your next new vehicle?

<table>
<thead>
<tr>
<th></th>
<th>Fuel savings</th>
<th>Environmental impact</th>
<th>Government incentives</th>
<th>Safety</th>
<th>Design and exterior appearance</th>
<th>Access to advanced data technologies</th>
<th>I want to make a statement</th>
<th>Popularity</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>86%</td>
<td>82%</td>
<td>60%</td>
<td>69%</td>
<td>49%</td>
<td>59%</td>
<td>35%</td>
<td>22%</td>
</tr>
<tr>
<td>Japan</td>
<td>88%</td>
<td>56%</td>
<td>59%</td>
<td>46%</td>
<td>34%</td>
<td>22%</td>
<td>4%</td>
<td>8%</td>
</tr>
<tr>
<td>US</td>
<td>91%</td>
<td>63%</td>
<td>55%</td>
<td>56%</td>
<td>38%</td>
<td>23%</td>
<td>5%</td>
<td>9%</td>
</tr>
<tr>
<td>France</td>
<td>92%</td>
<td>81%</td>
<td>56%</td>
<td>28%</td>
<td>20%</td>
<td>23%</td>
<td>13%</td>
<td>6%</td>
</tr>
<tr>
<td>Germany</td>
<td>88%</td>
<td>61%</td>
<td>66%</td>
<td>34%</td>
<td>29%</td>
<td>22%</td>
<td>14%</td>
<td>10%</td>
</tr>
<tr>
<td>Italy</td>
<td>89%</td>
<td>73%</td>
<td>61%</td>
<td>50%</td>
<td>29%</td>
<td>30%</td>
<td>8%</td>
<td>6%</td>
</tr>
<tr>
<td>UK</td>
<td>88%</td>
<td>58%</td>
<td>45%</td>
<td>34%</td>
<td>30%</td>
<td>10%</td>
<td>3%</td>
<td>13%</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>89%</strong></td>
<td><strong>67%</strong></td>
<td><strong>58%</strong></td>
<td><strong>52%</strong></td>
<td><strong>37%</strong></td>
<td><strong>31%</strong></td>
<td><strong>13%</strong></td>
<td><strong>12%</strong></td>
</tr>
</tbody>
</table>

**Legend:**
- **Dark Gray**: Highest response rate for each factor
- **Light Yellow**: Lowest response rate for each factor
Fuel savings, environmental impact and government incentives are the three major factors that could motivate survey participants to buy a PHEV or EV, with fuel savings clearly the most important factor. This indicates that while environmental and other factors are on consumers’ minds, the new technology has to make economic sense.

Beyond the strong consensus on fuel savings, there are significant fluctuations among the answers of participating markets: at least 15 percentage points separate each factor. This makes vehicle electrification a complex endeavour with specific regional parameters adding to the vehicle launch challenge for VMs.

Given the importance of fuel savings and the environmental impact of the vehicles, carmakers will need to evaluate how to best communicate their vehicles’ contributions to these specific buying criteria.

The importance of incentives to lower the total cost of ownership is a particularly important issue in the transition to this new technology platform and must be addressed in a comprehensive and collaborative manner at the federal, state or municipal levels. The market will likely produce several forms of incentives that will be available to meet consumers’ needs and motivate purchasing.

In China, most factors seem to play a key role for a large majority of respondents, which supports the assumption that Chinese drivers are more enthusiastic towards PHEVs or EVs than consumers from other markets.
**Question 5**
Which factors would make you most hesitant to choose a PHEV or EV as your next vehicle?

<table>
<thead>
<tr>
<th></th>
<th>Access to charging stations</th>
<th>Price</th>
<th>Battery driving range</th>
<th>Reliability/service ability</th>
<th>Performance and handling</th>
<th>Lack of clear understanding of cost advantage</th>
<th>Battery disposal</th>
<th>Safety</th>
<th>Technological obsolescence</th>
<th>Seating capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>China</strong></td>
<td>69%</td>
<td>57%</td>
<td>73%</td>
<td>64%</td>
<td>57%</td>
<td>49%</td>
<td>54%</td>
<td>64%</td>
<td>28%</td>
<td>24%</td>
</tr>
<tr>
<td><strong>Japan</strong></td>
<td>60%</td>
<td>73%</td>
<td>43%</td>
<td>36%</td>
<td>35%</td>
<td>44%</td>
<td>26%</td>
<td>32%</td>
<td>10%</td>
<td>9%</td>
</tr>
<tr>
<td><strong>US</strong></td>
<td>75%</td>
<td>74%</td>
<td>75%</td>
<td>57%</td>
<td>49%</td>
<td>49%</td>
<td>50%</td>
<td>41%</td>
<td>30%</td>
<td>33%</td>
</tr>
<tr>
<td><strong>Europe</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>74%</td>
<td>63%</td>
<td>81%</td>
<td>26%</td>
<td>46%</td>
<td>23%</td>
<td>26%</td>
<td>19%</td>
<td>14%</td>
<td>16%</td>
</tr>
<tr>
<td>Germany</td>
<td>74%</td>
<td>66%</td>
<td>75%</td>
<td>46%</td>
<td>52%</td>
<td>48%</td>
<td>36%</td>
<td>26%</td>
<td>27%</td>
<td>20%</td>
</tr>
<tr>
<td>Italy</td>
<td>64%</td>
<td>62%</td>
<td>62%</td>
<td>42%</td>
<td>54%</td>
<td>44%</td>
<td>33%</td>
<td>28%</td>
<td>22%</td>
<td>19%</td>
</tr>
<tr>
<td>UK</td>
<td>71%</td>
<td>60%</td>
<td>71%</td>
<td>47%</td>
<td>50%</td>
<td>44%</td>
<td>36%</td>
<td>31%</td>
<td>23%</td>
<td>27%</td>
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<tr>
<td><strong>Average</strong></td>
<td>69%</td>
<td>67%</td>
<td>66%</td>
<td>49%</td>
<td>48%</td>
<td>45%</td>
<td>41%</td>
<td>41%</td>
<td>22%</td>
<td>21%</td>
</tr>
</tbody>
</table>

- **Highest response rate for each factor**
- **Lowest response rate for each factor**
• Access to charging stations, vehicle price and battery driving range are the most important factors, which if not addressed, could lead consumers away from purchasing a PHEV or EV.
• Price is not as important of an issue among Chinese and many European drivers, whereas safety rates much higher in China than in other regions.
• In most markets, almost half of the consumers surveyed have expressed that understanding the overall economics of PHEV or EV ownership is very important to the purchasing decision.
• The responses to this question, combined with the importance of government economic incentives from question 4, illustrates the need for collaboration among existing automotive companies, infrastructure developers, new suppliers to the sector, governments and other entities, to fully support the launch of PHEVs and EVs. The VMs alone will not be in a position to unilaterally create the environment that will encourage and support mass adoption of these vehicles from the consumer’s perspective of vehicle operating range and economics.
• The responses to both questions 4 and 5 also signal that most consumers are not willing to compromise key performance characteristics that they have become accustomed to, such as styling, safety, reliability and performance, to drive an alternatively powered vehicle. So the bar is set high; Complex new technologies must be delivered without any material sacrifice of fit, function and finish. Marketing and communications campaigns will need to be redesigned to balance these critical messages.
• In China, 7 of the 10 factors are a concern for over 50% of respondents, reflecting the need for VMs to address more issues simultaneously to enhance the likelihood of adoption.
• Technological obsolescence and seating capacity are the least mentioned unfavorable factors in each country surveyed.
• On average, Japanese drivers seem to be less concerned about negative factors than drivers in other regions. However, question 2 indicates that they are also less interested in purchasing a PHEV or EV.
• With typically shorter driving distances, Japanese range anxiety is lower, pointing out that battery range can be diminished with a commitment to putting large numbers of charging stations in place.

“One of the key findings in this survey is that not one specific but several factors equally contribute to scepticism towards new technology adoption. Factors holding back potential buyers vary widely across the markets, which implies that distinct marketing strategies and public campaigns will need to be designed in every geography to address the diverse concerns.”

— Eric Wallbank, EMEIA Automotive Markets Leader
Question 6
Would you consider a driving range of 100 miles to be acceptable? (Percent of respondents who answered “No”)

- On average, 60% of drivers would prefer a longer driving range (above 100 miles), far longer than the average daily miles driven by respondents. (The survey demographics shows 98% drive less than 100 miles daily.)
- This result is consistent with question 5, which indicates that battery driving range is among the most significant factors for purchasing PHEVs or EVs (most important factor in Europe and China, second most important in the US and fourth most important in Japan).

![Bar chart showing percent of respondents who drive more than 100 miles per day in select markets.](chart)

- Italy: 76%
- France: 64%
- China: 62%
- Germany: 61%
- US: 60%
- Japan: 56%
- UK: 55%

- Percent of respondents who drive more than 100 miles per day
Question 7
Would you be willing to pay for charging stations throughout your community? (Percent of respondents who answered “Yes”)

- Even in tough economic times, respondents indicate a willingness to invest in order to achieve a gradual transformation in the transportation fueling infrastructure. In each country, the willingness to pay for charging stations is higher than the early adopter interest for purchasing PHEVs or EVs.
- There is a major gap between China and the other regions. This result appears to be related to the interest expressed by Chinese consumers to purchase PHEVs or EVs.
Question 8
How long do you think it will take for the number of electric powered vehicles to outnumber gasoline passenger vehicles in your respective market?

US

Europe

China

Japan
The Chinese perspective on growth potential for PHEVs and EVs greatly differs from the responses obtained in other markets.

In the US and Europe, respondents indicate that it would take longer for the number of electric powered vehicles to outnumber gasoline passenger vehicles than those respondents of China and Japan. More than 79% of Chinese respondents believe it would take less than 20 years. This is likely reflective of the relatively small car parc, the very rapid growth in new car sales and the dynamic nature of the Chinese market: with a shorter exposure to current technology, consumers are less “wedded” to it.

On balance across the markets surveyed, the responses to this question can be correlated with the early adoption rates in the same markets as illustrated in question 2. Compared to China, the US, Europe and Japan suggest longer consumer acceptance periods, consistent with lower early adoption rates of 13%, 22% and 8%, respectively. China on the other hand indicated a 60% early adoption rate.

There are a number of developments that will ultimately impact the pace of broader consumer acceptance including the success of the initial launches of PHEVs and EVs as well as the impact of continued improvement in internal combustion technologies.

“If it is difficult to predict when the balance of vehicles in use will shift from internal combustion engine (ICE) to electric-powered. There have been significant improvements in the ICE over the last decade and additional fine tuning will further solidify its market presence. The use of ICEs may likely expand as additional sources of energy become available. It will be fascinating to observe the coexistence of historic and new technologies in the years to come.”

- Peter Fuss, Germany Automotive Leader
Question 9
Please rate the severity of the following issues, in your opinion:

US
- Dependence on foreign oil
- Rising fuel prices
- Global climate change
- Lack of existing environment-friendly transportation technologies
- Local air pollution
- Traffic during your commute

Europe
- Dependence on foreign oil
- Rising fuel prices
- Global climate change
- Lack of existing environment-friendly transportation technologies
- Local air pollution
- Traffic during your commute

China
- Dependence on foreign oil
- Rising fuel prices
- Global climate change
- Lack of existing environment-friendly transportation technologies
- Local air pollution
- Traffic during your commute

Japan
- Dependence on foreign oil
- Rising fuel prices
- Global climate change
- Lack of existing environment-friendly transportation technologies
- Local air pollution
- Traffic during your commute

- A major issue
- Concerning
- Not much of an issue
- Not an issue at all
The issues mentioned generally rate higher in Europe and the US than in China and Japan.

On average, the three issues most considered as being major are dependence on foreign oil, rising fuel prices and global climate change. However, there is an interesting difference in perception on the dependence of foreign oil and rising fuel prices between the US and Europe on one side, and China and Japan on the other, where drivers seem to be less concerned.

The concerns about climate change are fairly uniform around the world, confirming a common sense of the threat.

In China, environmental issues seem to create more concern than economical issues: local air pollution and global climate change rank as the most important factors, both with 91% of respondents indicating that they are “concerning” or “major issues.”

European drivers seem particularly concerned by rising fuel prices: it is rated as the most important issue.
Supplemental data

In this section, we present the survey response data in an alternative format to illustrate further comparisons.

Comparing the level of familiarity of PHEVs and EVs across markets

Question 1
Please rate your familiarity with electric vehicles:

- [ ] I have never heard of this technology
- [ ] I have heard of this technology, but don’t know what it is
- [ ] I am familiar with this technology
- [ ] I am closely following developments with this technology

Question 2
Please rate your familiarity with plug-in hybrid vehicles:

- [ ] I have never heard of this technology
- [ ] I have heard of this technology, but don’t know what it is
- [ ] I am familiar with this technology
- [ ] I am closely following developments with this technology
Comparing factors positively influencing the purchasing of a PHEV or EV

Question 4
Which factors would favorably influence your decision to purchase a PHEV or EV as your next new vehicle?
Question 5
Which factors would make you most hesitant to choose a PHEV or EV as your next vehicle?

Comparing factors negatively influencing the purchasing of a PHEV or EV
Question 3
Which purchasing method would you prefer?

Numbers rounded
Comparing the severity of various issues caused by transportation
Detail of European responses

Question 6
Please rate the severity of the following issues, in your opinion:

France

UK

Germany

Italy

- Global climate change
- Rising fuel prices
- Local air pollution
- Dependence on foreign oil
- Lack of existing environment-friendly transportation technologies
- Traffic during your commute

A major issue
Concerning
Not much of an issue
Not an issue at all

Global climate change
Rising fuel prices
Local air pollution
Dependence on foreign oil
Lack of existing environment-friendly transportation technologies
Traffic during your commute
How Ernst & Young can help

Key questions to consider

- If you operate outside the traditional automotive value chain, have you identified the business opportunities created by the electrification of vehicles?
- Have you developed a strategy to access various capital markets to fund the transformation?
- Have you developed a global approach to identifying and applying for applicable economic incentives in the form of grants, loans or cost-sharing agreements?
- Have you considered which markets or submarkets will be the most receptive to the design, manufacturing and introduction of PHEVs and EVs?
- How are you monitoring the ongoing developments and lessons learned in connection with your PHEV or EV strategies?
- What competitive advantage can be obtained from collaboration with value chain partners, such as utilities, governments and service providers?
- What changes are necessary in your sales, service and distribution processes to accommodate the introduction of PHEVs and EVs?
- Are your marketing messages and other communications aligned with your customers’ desires?
- Have you considered the potential implications of PHEV or EV transactions on your finance, accounting and reporting functions?

We’re helping companies navigate the challenges and pursue the opportunities in the alternative powertrain transformation.

- **Investment decision support**
  Investments are critical in the development of advanced technologies. We assist companies as they make various investment decisions, including identifying relevant incentives in the form of grants, loans or cost-sharing agreements, providing financial and strategic diligence in connection with acquisitions, and market analysis.

- **Business process change**
  The transition to an alternative-powered vehicle environment will require automotive companies to make changes in key business processes. We assist automotive companies as they enter into new business relationships, make changes to distribution and service models and marketing approaches, and evaluate reporting and other financial implications of evolving pricing and sales transaction structures.

- **Facilitating collaboration**
  Unlike other product development initiatives in the automotive industry, this transformation will not be accomplished unilaterally by the automotive sector or any other sector on an individual basis. Adoption of PHEVs or EVs will require collaboration across utilities, policy makers, component suppliers, vehicle dealers and service providers, and charging infrastructure companies, among others. We actively support industry leaders across these constituencies in addressing the challenges they face and create forums where they can exchange insights.
About Ernst & Young's Global Automotive Center

Ernst & Young’s Global Automotive Center – with resources in Detroit, Stuttgart, Shanghai and Tokyo – is focused on the mega trends in the global automotive industry. It brings together a proven team of professionals to help you achieve your potential – a team with deep technical experience in providing assurance, tax, transaction and advisory services. The Center works to anticipate market trends, identify the implications and develop points of view on relevant industry issues. Ultimately, it enables us to help you meet your goals and compete more effectively. It’s how Ernst & Young makes a difference.

Our Advanced Powertrain Task Force
The Ernst & Young Global Automotive Center has dedicated resources to an Advanced Powertrain Task Force to focus on the business opportunities and issues companies face in the development of alternative transportation solutions. The Task Force’s objectives are to:

- Facilitate dialogue with all constituents in this new alternative energy area, including government, utilities, new entrants and existing players
- Focus now on the important players of tomorrow by assisting companies, both well-established and new entrants in the market, in teaming and innovating as they navigate the challenges and opportunities in this evolving segment of the industry
- Identify and better understand key areas of innovation and the influence of new players across the automotive industry value chain
Related Ernst & Young publications

Please visit ey.com/automotive for additional information.
Ernst & Young LLP contacts

Michael Hanley, Global Automotive Leader
Tel: +1 313 628 8260
Email: michael.hanley02@ey.com

Jeff Henning, Global Automotive Markets Leader
Tel: +1 313 628 8270
Email: jeff.henning@ey.com

Jean-Francois Tremblay, Advanced Powertrain Task Force Leader
Tel: +1 514 874 4453
Email: jean-francois.tremblay@ca.ey.com

Pete Langlois, Senior Automotive Strategic Analyst
Tel: +1 703 747 1172
Email: pete.langlois@ey.com

Regan Grant, Marketing and Communications
Tel: +1 313 628 8974
Email: regan.grant@ey.com

John Auldridge, EMEIA Automotive Leader
Tel: +49 6196 996 26848
Email: john.auldrudge@de.ey.com

Peter Fuss, Germany Automotive Leader
Tel: +49 6196 996 27412
Email: peter.fuss@de.ey.com

Eric Wallbank, EMEIA Automotive Markets Leader
Tel: +44 20 7951 0352
Email: ewallbank@uk.ey.com

Koki Ito, Japan Automotive Leader
Tel: +81 335 031 100
Email: ito-kk@shinnihon.or.jp

Brian Link, Far East Automotive Markets Leader
Tel: +86 21 22282129
Email: brian.link@cn.ey.com
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This survey polled 4,000 respondents of driving age across the US, China, Japan and Europe. These results should only serve as a guide, and in no way serve as an accurate representation or projectable to the entire global population.