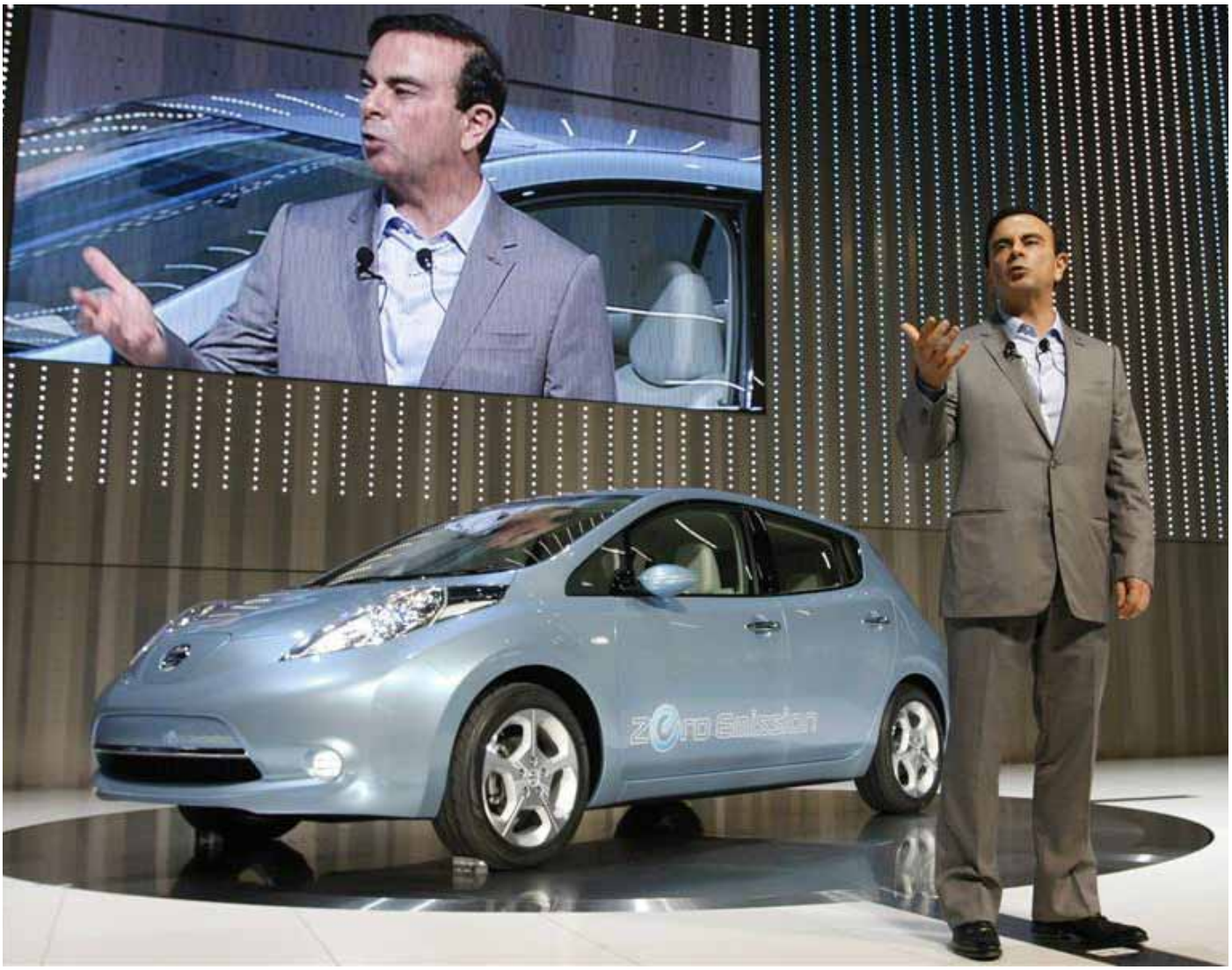
# THE 21ST CENTURY CAR




*REUTERS/Toru Hanai*

This month's launch of the Leaf, the first electric vehicle to be mass marketed, marks a milestone in the history of the automobile. The Nissan-Renault car alliance hopes the Leaf will help burnish their brand images after years of trailing rivals. That effort got a lift when the Leaf this week was named 2011 European Car of the Year

DECEMBER 2010

REUTERS

# TURNING OVER NEW LEAF: GET READY FOR THE EV ERA

By Chang-Ran Kim and Helen Massy-Beresford
YOKOHAMA, Japan, Dec 2

OVER the past few years, Eiji Makino has met with heads of state, governors and mayors around the globe pursuing an unconventional strategy for Nissan's new electric car, the Leaf: lining up support for the model before it was even on the road.

Electric cars need to recharge around town and a growing number of governments, seeking to reduce oil dependence and clean up the environment, have agreed to subsidise that kind of infrastructure.

The Nissan-Renault car alliance put together more than 80 such agreements across five continents, with the first batch of its zero-emission cars reaching customers only this month.

"At first we had no clue which regions to attack," Makino, who was put in charge of Nissan Motor's strategy for electric vehicles in 2008, said at the company's global headquarters in the Japanese port city of Yokohama. "Portugal was the first partnership we signed, and that made sense because they were promoting renewable energy."

Later he reached a pact with China, which has long relied on low-grade coal to make cheap electricity and had not been known for its commitments to green solutions. "It was completely unexpected," Makino said.

Many people may be surprised by the coming green car revolution.

Nissan is not the first to roll out electric vehicles, which plug into an electric outlet to charge the battery and have an electric motor instead of an internal combustion engine.

Mitsubishi Motors came out last year with the egg-shaped i-MiEV, while niche newcomer Tesla Motors put its Roadster hot-rod out in 2008. But sales of those cars are still in the thousands.

What Nissan and its French partner Renault SA are doing is something no other auto maker has attempted before:

## How the Nissan Leaf stacks up

| Company Model | GM Chevrolet Volt | Mitsubishi i-MiEV | Nissan Leaf | Tesla Roadster | Toyota Prius PHV |
|---|---|---|---|---|---|
| Range[1] – miles | 35 \| 344 \| 379 | 85 | 100 | 245 | 13 |
| Type | Extended range electric vehicle | Electric Vehicle | Electric Vehicle | Electric Vehicle | Plug-in hybrid electric vehicle |
| MPGe[2] | 93 \| 35 \| 60 | — | 99 | — | 50* |
| Price[3] (U.S. MSRP) | $41,000 | < $30,000 | $32,780 | $109,000 | $36,000 |
| Launch date (in U.S. market) | Dec 2010 | Fall 2011 | Dec 2010 | 2008 | Early 2012 |

*Notes*
1. Volt's range based on EPA calculations; i-MiEV and Prius PHV range = company estimates; Leaf's range based on LA4 drive cycle test; and Roadster's range is combined LA4 and HFEDS in accordance with California Code of Regulations.
2. MPGe = Miles per gallon equivalent based on EPA calculations. *Anticipated MPG for hybrid driving.
3. Prices are MSRP before tax subsidies. Prices for i-MiEV and Prius PHV are estimates. Price for Prius PHV based on 3 mln yen price estimate in Japan at prevailing exchange rate.

With electric/battery power only
With gasoline only
Combined electric & gas

Sources: Companies, Environmental Protection Agency, Fueleconomy.gov, Thomson Reuters.

REUTERS

Reuters graphic/Christine Chan 30/11/10

*THE NISSAN-RENAULT CAR ALLIANCE NOW HAS MORE THAN 80 AGREEMENTS ACROSS FIVE CONTINENTS WITH GOVERNMENTS AND OTHERS TO PROVIDE INFRASTRUCTURE FOR THE ELECTRIC CAR*

getting governments and infrastructure providers involved on a global scale from the start to create, for the first time ever, a sizeable market for zero-emission vehicles.

If all goes to plan, this month's launch of the Leaf, which gets the mileage equivalent of 99 miles per gallon, will mark a major milestone in the history of the automobile and the future of the internal combustion engine.

It's also a crucial step in the Franco-Japanese pair's attempt to win green points and lift their brand images after years of trailing rivals such as Toyota, Honda and Volkswagen – a weakness that has grated at management for years.

That effort got a lift on Monday when a panel of journalists named the Leaf the 2011 European Car of the Year, the first electric vehicle to be chosen for the award.

### "NORMAL CAR"

The car is being competitively priced to match up with conventional cars, taking into account lower running costs.

The five-seater Leaf hatchback is expected to cost just under 3 million yen after subsidies in Japan, and about 30,000 euros in European countries. The mid-sized vehicle will be about $25,000 in the United States with a federal tax credit, and as low as $20,280 in California, which will offer further credits.

The sticker price on General Moters' Volt, a plug-in hybrid rolling out this month that will compete with the Leaf, will be around $41,000.

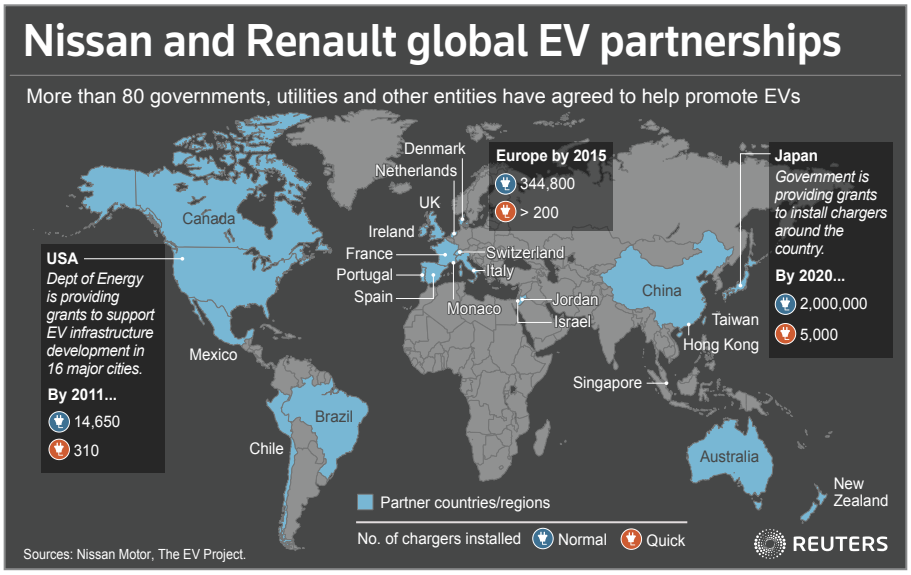
But how good is the Leaf on a spin around the block?

On two test drives – on the streets of Lisbon and at Nissan's proving ground

*THE FIVE-SEAT HATCHBACK WILL COST ABOUT $25,000 IN THE UNITED STATES WITH A FEDERAL TAX CREDIT*

near Yokohama – the authors were impressed with the instant engine torque and acceleration of a car with a maximum speed of 145 kilometres an hour. Packing no piston-pumping engine, the car rode silently and smoothly.

In Saitama, a city just north of Tokyo, residents who had won an online lottery to test-drive the Leaf also gave it a thumbs-up. "I knew it was going to be quiet because I'd been in other EVs before," said Kazuhiro Futamura, a 36-year-old businessman. "But the acceleration, steering, response – it was linear, if you know what I mean. I thought that was quite impressive," said Futamura, who had also ridden in BMW's experimental Mini E and the i-MiEV.




Notes: Number of chargers do not include those installed at Nissan dealerships. Data as of Nov 2010. Reuters graphic/Christine Chan 30/11/10

*"BUT THE ACCELERATION, STEERING RESPONSE – IT WAS LINEAR, IF YOU KNOW WHAT I MEAN" – 36-YEAR-OLD BUSINESSMAN, TEST-DRIVING THE LEAF*

At Nissan's proving ground in Oppama, a stone's throw from the factory that began building the Leaf in October, racing driver Seiji Ara said it was obvious the engineers had paid close attention to the ease and precision of how the car handles.

"The car does exactly what you tell it to do," said Ara, who races on a Nissan-backed team and was taking journalists on a joyride in the GT-R sports machine one September weekend. "It's a difficult area to master, but also very important," he said, adding that the Tesla Roadster lacked that quality and drove more like an on-or-off switch.

Nissan says the central concept for the Leaf was to make it seem like a "normal" car – right down to the faint but audible humming sound that engineers programmed into it to make sure pedestrians heard the car approaching at low speeds.

This wasn't a car for "zealots", a term Nissan-Renault CEO Carlos Ghosn often uses to describe owners of other EV niche models, such as the Tesla. To enter the mainstream, it had to be on the shopping list of the average Joe, and not just the "eco warriors" that would buy a zero-emission car at any cost.

*Eiji Makino, general manager of zero emission strategy at Nissan Motor Co, poses with Nissan Motors' Leaf all-electric vehicle at the company showroom in Yokohama, Dec 1, 2010. REUTERS/Toru Hanai*

## RANGE ANXIETY

One of the biggest hurdles engineers had to overcome in appealing to a mass market was range anxiety, a term that has entered the auto industry lexicon to describe drivers' worries about being stranded in an electric car with no juice left.

Because lithium-ion batteries are still expensive, Nissan is stacking just enough for a driving range of 100 miles on a full charge, a quarter that of a typical petrol-powered car (the Environmental Protection Agency EPA puts the range at 73 miles). Even though market research showed that about 90 percent of the world's drivers travel less than 60 km a day, surveys show range anxiety is a major concern for consumers.

To quell those fears, Nissan has employed advances in information technology to link the Leaf's onboard computer to a data centre to tell drivers how much power they have left – even remotely on their mobile phones or desktops – and how far they could travel with it. The car's navigation system will indicate the coverage range on the map, as well as available charging spots in the vicinity.

"It's going to be important to change consumers' mindset," said Masato Sase, an automotive consultant at Deloitte Tohmatsu. "Consumers' initial reaction

*A cleaner wipes down an encased model of the Leaf at Nissan company headquarters in Yokohama. REUTERS/Toru Hanai*

to Nissan's Leaf could really determine the momentum for EVs."

Nissan isn't taking any chances.

The first owners will go through a vetting process to ensure they are technically and psychologically ready for an EV. That means anyone expecting to drive more than 100 miles a day on a regular basis would be steered towards one of its internal combustion engine cars.

"We feel we have a responsibility as to what kind of customer we will sell the car to," said Thomas Ebeling, General Manager of Product Planning and Strategy for EVs and small cars at Nissan International. "We don't want to say no to anyone on principle but as a customer you have to buy into the concept too," he said at a test drive event in Lisbon.

Both car makers are considering a dedicated EV breakdown service for early customers. Thierry Koskas, head of Renault's Electric Vehicle project, said it would probably involve the car being towed to a charge point.

*THE CENTRAL CONCEPT FOR THE LEAF WAS TO MAKE IT SEEM LIKE A "NORMAL CAR" – RIGHT DOWN TO THE FAINT BUT AUDIBLE HUMMING SOUND ENGINEERS HAD PROGRAMMED INTO IT*

"Based on the experience we've had already with previous EVs ... people might have experienced the lack of electricity once, but it only happened once. After that they manage their range better and know their car better."

After all that, Nissan and Renault still face one of the biggest challenges to ensure EVs can go from niche to mainstream: significant cost reductions on lithium-ion batteries.

Automakers will rely heavily on subsidies and tax breaks to sell EVs at the start. As the numbers grow, governments will inevitably be forced to cut back.

"It's been a constant worry since the beginning," said Thomas Orsini, head of zero-emission business strategy at Renault. "This is why it was important for us to understand how committed each government is, and to make sure that this kind of commitment is sustainable (against) the constraints on public finances."

Japan, for one, has yet to decide whether or by how much it will extend subsidies on EVs beyond March. Without them, the Leaf would cost 3.76 million yen, not far from Nissan's top-of-the-line Fuga sedan.

"The guys are working on what we call BCR right now – Big Cost Reductions," said Andy Palmer, head of Nissan's Zero Emission Business Unit.

## PLUG-IN HYBRIDS

Unless it keeps a competitive price – with or without subsidies – Nissan risks losing out to other technologies.

Toyota, for one, is looking to steal the Leaf's thunder with plug-in hybrids, which marry a hybrid with an EV. Plug-in hybrids have the advantage of being rechargeable to enable driving on pure electric mode for short distances; the gasoline engine kicks in once the juice runs out, taking care of any range anxiety.

*"THE CAR DOES EXACTLY WHAT YOU TELL IT TO DO. IT'S A DIFFICULT AREA TO MASTER, AND AT THE SAME TIME, EXTREMELY IMPORTANT" – SEIJI ARA, NISSAN RACING TEAM*

The world's top automaker said last month it would price its first plug-in hybrid, based on the Prius, as low as 3 million yen in Japan without subsidies.

A survey by consultancy Deloitte Tohmatsu found just 27 percent of U.S. consumers willing to shell out more than $35,000 for an EV. In Japan, only 12 percent said they would spend more than 3 million yen.

Renault's different pricing model, whereby customers buy the car and rent the battery, will appeal to customers conscious of the initial outlay, Renault's Koskas said. Renault's Fluence electric car, due to go on sale in September 2011, will cost 21,300 euros, but drivers will hire a battery for 79 euros per month.

"As we have the alliance we can experience different sales methods," Koskas said.

The alliance is well aware that the total cost of owning an electric car is going to be the biggest factor for most people on whether they buy one. "We always knew that getting eco-warriors and early adopters was going to be the easy part of the job," Palmer said.

Nissan and Renault engineers say higher sales volumes will allow bigger cost cuts. But predictions of when that would happen have ranged from two to seven years.

Ghosn said recently annual sales

would have to reach 1 million units before subsidies are no longer needed, double what executives had reckoned a few years ago. Whether governments could afford to support that many EVs is anybody's guess.

That's probably why sales forecasts for electric vehicles have been all over the road. Ghosn is one of the most optimistic, expecting at least one in every 10 new vehicles in the world to be an EV by 2020. Some expect just 1 percent.

## BUILDING BUZZ

Makino, the man in charge of business strategy for the Leaf, is an engineer by training. But what he may have lacked in marketing expertise, he more than made up for in his passion for electric cars.

He was given one to use when he headed a team of researchers in southern California several years ago to help analyse Nissan's earlier electric car, and loved it. At the end of that project, in 2006, he bid a tearful farewell to his imperfect Altra EV after racking up 10,000 miles on it. He had even concocted a secret plan to hide the electric station wagon in another Nissan facility in Sacramento to save it from what he figured would be a last trip to the junkyard.

"I cried with my whole family when we had to let it go", said Makino, a father of three daughters whose self-deprecating sense of humour belies his towering height.

But Makino knew that electric vehicles would never take off without help from the public sector. Charging infrastructure was vital, not to mention financial incentives to entice consumers to buy what was still a costly car compared with what they were used to.

*RANGE ANXIETY IS A TERM THAT HAS ENTERED THE AUTO INDUSTRY LEXICON TO DESCRIBE DRIVERS' WORRIES ABOUT BEING STRANDED IN AN ELECTRIC CAR WITH NO JUICE LEFT*

Governments, it turned out, were eager to get on board. Whether it was a desire to improve air quality, to importing less oil for national security, the show of interest, in Makino's view, all pointed to the same, encouraging conclusion: the world was ready for a new kind of clean car.

But how to turn that initial interest into tangible and continuous support from governments, especially those coming under new fiscal austerity pressures? That could be a make-or-break proposition for Nissan and Renault.

The alliance has spent the last two-and-a-half years building buzz – through Twitter, Facebook, ads and townhall events – around the Leaf, and making grand predictions about the potential of electric cars.

Between them, Nissan and Renault have earmarked 4 billion euros, or $5 billion, by 2013 to build the 12 assembly and battery factories – in the United States, Japan, Portugal, France and Britain – capable of producing a combined 500,000 electric vehicles a year.

"We're going to really make this big change for the industry," Ghosn said when he unveiled the EV plan at a May 2008 news conference. "We want the leadership on EV. We're doing everything

*A plug trails out from a prototype of a Chevrolet Volt electric car during the North American International Auto Show in Detroit On Jan. 13, 2009 REUTERS/Mark Blinch*

for this."

## CHICKEN OR EGG

Count Laura Spanjian as a believer.

Not satisfied with the nearly 40 miles per gallon she gets on her Smart car, the tiny two-seater from Mercedes-Benz, Spanjian put down her $99 refundable deposit sight unseen to get in line to buy a Nissan Leaf.

As Director of Sustainability in Houston, Texas, Spanjian is doing everything to prepare a city that is home to 5,000 energy firms and known as "Oil Capital of the World" for a variety of green initiatives, including electric cars.

Houston is setting up 65 electric charging stations by early next year

*THE FIRST OWNERS WILL GO THROUGH A VETTING PROCESS TO ENSURE THEY ARE TECHNICALLY AND PSYCHOLOGICALLY READY FOR AN EV*

and is making it easier for buyers to get permits to set up charging spots in their garages.

"I love my Smart – it's great," she said in a telephone interview, noting that Houston consistently ranks among the worst U.S. cities for air quality. "I literally spend $40 a month on gas, which is just unbelievable. But it still runs on gas (petrol). I really want my electric car."

The automobile industry has vacillated about what the ultimate green car would be. After collectively giving up on marketing EVs in the last decade due to prohibitive costs and shoddy battery technology – a saga made famous by the 2006 documentary "Who Killed the Electric Car?" – major automakers such as General Motors, Toyota and Honda became convinced that fuel-cell vehicles, which run on hydrogen fuel, could be the winner.

But talk about "sticker shock": the price of the cars was initially estimated at $1 million. With little hope of selling them in significant numbers, the infrastructure for hydrogen fuelling stations that automakers waited for never came. Fuel-cell vehicles were put back in the garage.

To avoid that mistake, Nissan and Renault knew industry, policymakers and infrastructure providers had to move in tandem. And for that to happen, all the players needed to be sure that EVs were technologically and commercially ready for the road.

*U.S. President Barack Obama sits behind the wheel of an electric car as he attends the groundbreaking of a factory for Compact Power Inc. in Holland, Michigan, July 15, 2010. REUTERS/Kevin Lamarque*

"It's the chicken and egg argument," said Hideaki Watanabe, who heads the Zero Emission Business Unit for the alliance. "Are we going to wait for the infrastructure to be ready, or are we going to drive the speed of infrastructure by putting a product out there? Which is more proactive as a company?"

Renault's Orsini said the car maker borrowed a strategy from Airbus, which worked with airlines and airports to ensure they were ready for its new A380 jumbo. Another executive likened it to car makers being in charge of deciding where to set up petrol stations.

When the top car makers in the U.S. market abandoned the EV experiment that had been ignited by California's Zero Emission Vehicle mandate in the early 1990s, the main culprit was the cost and performance of the batteries. (Electric cars have come and gone in small numbers since the 19th century, but their limited range and power made them impractical. Nissan made its first EV, the lead acid battery-powered Tama, in 1947)

Storing and discharging energy at the rigorous pace and frequency required in a moving vehicle was a technically formidable task. Toyota knew that all too well. It had to recall all of its first-generation Prius hybrid cars for battery failure.

But with 18 years of advanced battery development behind it, Nissan had a long lead, engineers and executives said. Japan's oldest car company had begun working on lithium-ion batteries, considered the best match for rechargeable cars today, before any other automaker, in 1992. It has also brought development of the electric motor and inverter, the two other key EV components, in-house.

*AUTOMAKERS WILL RELY HEAVILY ON SUBSIDIES AND TAX BREAKS TO SELL EVS AT THE START*

## OBJECTIVES ALIGNED

Once sold on Nissan's technological readiness, many governments were swift to come on board.

"The main concern of the partners is, 'Okay we would be ready to invest in infrastructure or whatever but tell us about the cars'", said Thierry Koskas, head of Renault's EV project.

Officials on both sides of Nissan and Portugal's conversation in the spring of 2008 remember how quickly they saw eye-to-eye as they sat down to talk in the coastal Portuguese town of Cascais.

"I knew that the moment we had the chance to talk about this, something good would happen, because our objectives were so aligned," Joao Dias, economic adviser for Portuguese Prime Minister Jose Socrates, told Reuters at Lisbon's Electricity Museum overlooking the Tagus River during a test-drive event.

*JUST 27 PERCENT OF U.S. CONSUMERS ARE WILLING TO PAY MORE THAN $35,000 FOR AN EV*

Socrates is an enthusiastic supporter of EVs. Italy's Prime Minister Silvio Berlusconi even teased him about it at a European Summit, joking that he would buy Socrates an electric Ferrari, Dias said. The Portuguese leader had the last laugh – the Italian sportscar maker displayed a hybrid model at the Geneva Auto Show in March.

Portugal gets more than 40 percent of its electricity from renewable sources, among the highest in the world. By 2020, it wants to raise that to 60 percent, and for that electricity to power one in every 10 cars on the road by that time. It plans to put up 1,300 normal charging points and 50 fast-speed ones in 25 cities in its pilot phase by next July.

The government will also offer a 5,000 euro subsidy for the first 5,000 buyers of electric cars, lowering the price for consumers to under 30,000 euros.

Using their combined global reach, Nissan and Renault went on to seal more such partnerships, building momentum with each handshake. By the end of 2008, the alliance had 10 agreements, from Israel to Oregon. The number doubled the next year, before ballooning to more than 80 today.

Ichiro Kawanabe, head of Tokyo's biggest taxi operator, Nihon Kotsu, says running costs would be far lower with electric taxis and he would switch his entire fleet to EVs in a heartbeat if the conditions were right. Postal and parcel delivery services are starting to experiment with them, too.

Even if governments do drop their EV subsidies, they can still provide incentives such as preferential parking rights or use of car pool lanes, said Xavier Mosquet, a senior partner at Boston Consulting Group. At one point, a used Prius with a car pool sticker in California was worth $7,000 more than a new one, he said.

Nissan and Renault insist their problem won't be a lack of demand, but meeting it. Mosquet said that even if EVs end up making up just a few percent of the global market, if Renault and Nissan could take 30 percent of that, it would still be a good business.


Click for a video on Nissan-Renault's strategy for the Leaf

"When Toyota came with the hybrid, nobody believed there would be a market," Mosquet said. "It's not a huge market – 2.5 percent of the U.S. market – but it's a market."

## TOM HANKS DRIVES ONE

Despite some snickering at the beginning about Ghosn's vision for his EV, his rivals in the auto industry have nevertheless joined the race to make and market green cars.

Toyota is one. As its president, Akio Toyoda, announced a $50 million investment in Tesla Motors, he said the Roadster may be proof EVs can be more than just for urban commuters.

Last month, the Toyoda family scion proudly told reporters in Tokyo he had learned that Hollywood actor Tom Hanks was still driving a RAV4 EV crossover, clocking 50,000 miles on Toyota's discontinued electric car. Toyota and Tesla are now developing a new electric RAV4 together for sale in the United States.

For now, with less than 50,000 Leafs available in the first year, Nissan is cherry-picking the cities, countries and customers that will get the shipments first, with priority placed on those with the most serious plans to support EVs.

*NISSAN AND RENAULT HAVE EARMARKED $5 BILLION BY 2013 TO BUILD 12 FACTORIES CAPABLE OF PRODUCING 500,000 EVS A YEAR*

The Leaf will be delivered to the first 6,000 customers in Japan and to 20,000 others from select U.S. states starting this month. Portugal will get the first Leafs in Europe in January, followed by Ireland, Britain and the Netherlands. Within four years, Renault and Nissan are planning to expand the EV range to four models each, including a commercial-use van and a compact under Nissan's premium Infiniti brand.

Ghosn stresses that Nissan and Renault will continue to develop vehicle technologies across the spectrum, from more fuel-efficient gasoline and diesel cars to hybrids, plug-in hybrids and even fuel-cell vehicles.

"But we are betting that this alliance is going to be a technology leader in the future, and it's going to rely on the success of zero-emission cars," Ghosn said in Tokyo last year.

"There are some risks that other people are not ready to take. But if I have to take a risk, I'm glad to take this one."

(Editing by Bill Tarrant)

# GETTING A CHARGE OUT OF THE ELECTRIC CAR

YOKOHAMA, Japan, Dec 2

ELECTRIC cars run soundlessly, get some of the best mileage, and don't pollute the air. But if you ask officials in Yokohama, Japan's second-largest city, an electric car can do even more than that.

They can contribute to the electricity network.

Because electric vehicles, or EVs, run on batteries, they could theoretically store energy and feed it back into the home from the garage, for instance, or even provide electricity to the community if it was connected to a "smart grid".

Yokohama is one of four cities selected by Japan's Ministry of Economy, Trade and Industry to test that "Smart City" concept, bringing together power companies, electronics firms and others. Nissan Motor Co is providing the electric cars, as well as ideas for where best to place charging spots around town.

In the city's vision, homes and businesses will be connected to a smart grid that combines electricity and telecommunications to make the most efficient use of energy across a community.

Solar panels will be installed on rooftops, and instead of having a separate storage unit, electric cars would capture that energy. By doing so, the car would not only run on clean energy, but could also feed electricity back to power household appliances when demand arises, the city says.

The electric car thus can be both a source of supply and demand on a smart grid.

"Electric cars would play a very important role in this kind of city," said Tetsuya Nakajima, director of Yokohama's Climate Change Policy Headquarters.

Over the next five years, Yokohama, home to Nissan's global headquarters, is aiming to have 2,000 EVs in use in three neighbourhoods, comprising 170,000 households and 420,000 residents.

*The Suns sets over the port city of Yokohama during an Asia-Pacific summit Nov. 11, 2010.*
*REUTERS/Yuriko Nakao*

*THE ELECTRIC CAR CAN BE BOTH A SOURCE OF SUPPLY AND DEMAND ON A SMART GRID*

Yokohama, a city of 3.7 million people, is targeting a 25 percent reduction in greenhouse gases by 2020 compared with 1990 levels, and 80 percent by 2050, Nakajima said.

Nissan says EVs, when used in a "connected" system, could open up other possibilities for car-based transport, such as making the taxi business more efficient.

"A lot of taxis drive around looking for passengers, and that wastes fuel," said Hideaki Watanabe, managing director of the zero emission business unit at Nissan and its French partner, Renault SA.

Instead, Nissan's central data unit, which would be connected to all of its EVs, could indicate which taxis are free at any given time and passengers could "call" them through a reservation centre on their computers or mobile phones. Rather than trawling for passengers on the streets, the electric taxis could be parked at charging spots at train stations or hospitals, for instance.

The city's ambitions go beyond its boundaries. It wants to come up with the best low-carbon society model and export the city-scale infrastructure package in its entirety, first to Asia and later to overseas markets.

"All this would allow us to design a city that is suited for electric mobility," Nakajima said.

(Editing by Bill Tarrant)

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**Cover Photo:** Nissan Motor Co's Chief Executive Carlos Ghosn introduces a prototype of the Leaf at the opening ceremony of the company's new global headquarters in Yokohama on Aug. 2, 2009. REUTERS/Toru Hanai