

# NPR Podcast – Tired Of Commuting By Car? Try An Electric Bike

[Talk of the Nation](#) [21 min 43 sec] March 19, 2010

<http://www.npr.org/templates/story/story.php?storyId=124901320&ft-1&f=5>

Tens of millions of Chinese commuters ride electric bicycles to work. But will car-centric Americans give them a whirl? Edward Benjamin, chairman of the Light Electric Vehicle Association, and Bert Cebular, founder of NYCeWheels, discuss the safety and environmental impact of the bikes, and how culture influences their adoption.

IRA FLATOW, host:

Up next, the electric bicycle. Do you have one? You know, when you picture an electric bike, what pops into your head: a motorcycle, a moped or a geeky contraption that's rigged up this, you know, a little motor that you put on yourself, maybe with a wooden wheel that turns the tire like I once tried. It's got a battery in an old two-wheeler.

Well, that was 20th century. That was mid-20th century. Now you can find electric bikes of all shapes and sizes. There are tens of millions of them being manufactured each year, and a lot of them look just like a standard bicycle with the battery built into the frame.

There are beach cruisers and three-wheelers and foldable ones and models ready to hit mountain trails, and some of the bigger bikes look sort of like Vespas. And the price tag? Anywhere from \$300 or \$400 to thousands of dollars.

In China, there are over 100 million electric bikes on the road, and commuters really rely on them every day to get across town.

So what's holding them up here in the United States? Are Americans ready for the electric bike? Do you have one? Tell us about. Our number is 800-989-8255.

Joining me now is Ed Benjamin, chairman of the Light Electric Vehicle Association in Fort Myers, Florida. He joins us from Taipei, Taiwan, where he's attending the Taipei International Cycle Show. Welcome to SCIENCE FRIDAY, Ed.

Mr. EDWARD BENJAMIN (Chairman, Light Electric Vehicle Association): Thank you.

FLATOW: A lot of electric bikes out there?

Mr. BENJAMIN: Well, the show is full of them. It's perhaps the most important topic at the show this year.

FLATOW: Really? And they come in all shapes and sizes?

Mr. BENJAMIN: Well, they've all got two wheels and a battery and a motor. So other than that, there's quite a lot of variety and creativity.

FLATOW: And why are electric bikes so popular in China?

Mr. BENJAMIN: Well, it's a very sensible vehicle for China. China has a lot of dense, flat cities where there's no space for parking, not really enough space for roadways, perhaps tens of thousands of people per square kilometer living in a very small space. So air pollution, quiet, compact size, and they're inexpensive. They're a substantial upgrade or step up from a normal bicycle for the Chinese citizen, but they are nowhere near as expensive or as resource-consuming as an automobile. So it is a very timely and appropriate vehicle for China.

FLATOW: And it's also part of their culture, riding a bike to work.

Mr. BENJAMIN: They often refer to themselves as the kingdom of the bicycle.

FLATOW: And so that would be a natural progression from just a foot-operated one to a foot- and motor-operated one.

Mr. BENJAMIN: Absolutely. You can go faster, no sweat. You look very stylish. You know, it's a big step up for them.

FLATOW: Would Americans use a bike that's used in China?

Mr. BENJAMIN: You know, America is a big and complicated place. The answer, I think, is that it depends upon where you are. For example, I think electric bicycles are a very practical vehicle for a dense, flat city like New York City, and maybe we'll hear some thoughts about that from Bert.

But, you know, mountainous, or a place where you have a very large distance to go, they're not practical at all. So my belief is that we're going to see some markets or some areas adopting electric bikes. We're going to see other areas that never will. And then we'll see lots of in between. And I also regard this as absolutely inevitable.

FLATOW: All right. We have to take a break. We're going to come back and talk lots more about electric bikes with Ed Benjamin, and we're going to talk with Bert Cebular, who is the founder of NYCeWheels, that's N-Y-C-e-Wheels here in New York. He sells electric bikes, and we'll talk about how they're selling here in New York and what potential there is.

Do you have one? Do you use one? Would you like one? 1-800-989-8255. Let us know. You can also tweet us @scifri, @S-C-I-F-R-I, and send us a note in Second Life. Stay with us. We'll be right back after this break.

(Soundbite of music)

FLATOW: I'm Ira Flatow. This is SCIENCE FRIDAY from NPR.

(Soundbite of music)

FLATOW: You're listening to SCIENCE FRIDAY from NPR. I'm Ira Flatow. We're talking this hour about electric bicycles with my guest, Ed Benjamin. He is chairman of the Light Electric Vehicle Association. And I'd like to bring on another guest. He's been in the business of selling electric bikes here in New York City for about 10 years. Bert Cebular is the founder of NYCeWheels. That's N-Y-C-e-Wheels here in New York City on the Upper East Side. Welcome to SCIENCE FRIDAY, Bert.

Mr. BERT CEBULAR (Founder, NYCeWheels): Hey, how are you doing?

FLATOW: Are these bikes in demand now?

Mr. CEBULAR: Yeah, they're very hot. We're actually up almost 100 percent this year so far.

FLATOW: No kidding.

Mr. CEBULAR: Yeah.

FLATOW: And what size, what style bike do you sell the most of?

Mr. CEBULAR: Well, New York City is a little space-challenged. So we usually do a little bit better with the compact bikes, usually the ones that, you know, fold up a little bit, and the ones that stay below 50 pounds and people can bring them up to apartments or bring them into a restaurant.

FLATOW: And so if I come into your bike store, and I want to buy a bike, how do you fit me for one?

Mr. CEBULAR: I would ask you a few questions. I would find out, you know, first of all see your height and all that. Most bikes are made to fit most riders, but we can adjust, you know, handlebars, seat posts. But basically I would find out how far you have to commute, obviously what your budget is, can you park it safely, or do you have to carry it upstairs, which means it would have to become more portable.

I would ask you if you can charge it, roll the bike up to an outlet or if you have to remove the battery. Most bikes now have a removable battery. So there's a few things we go through, and then I can pick, probably out of the 20 bikes, I can probably pick two or three bikes that you can test ride and then just pick the one that you absolutely love.

FLATOW: And do most people expect to push a button and just ride it, or do they expect to do some pedaling with it?

Mr. CEBULAR: Usually discourage that. We don't want to sell motorcycles. All our bikes have pedals on them, and they're supposed to help you, assist you, not take away the exercise, just make it a little bit easier for you so you don't arrive at work, you know, exhausted or sweating, but not just to go for a joyride, although you can do it. It's just you will drain your battery a little bit quicker.

FLATOW: And how much should I expect to pay? What's the range of prices?

Mr. CEBULAR: We sell more the better-quality bikes, which go between they start at around \$1,500 up to, like, \$3,800. The most popular one right now is the Sanyo Eneloop, which is \$2,300, I believe.

FLATOW: Wow, that's some change for a bike.

Mr. CEBULAR: Oh, it's not too bad. If you buy a quality bicycle, a really good quality bicycle, it will cost you always around \$800 dollars.

FLATOW: Yeah, so don't buy the cheaper ones because you'll get what you pay for is what I hear you saying.

Mr. CEBULAR: Yeah, they're going to be very heavy. They're not you know, you're not going to enjoy riding them. They feel like tanks rather than bicycles because cheaper batteries are very heavy. Cheaper bikes use steel frames rather than aluminum frames, and the components on them are not sometimes they're not even safe.

You have, you know, big-box retailers now sell electric bikes for as little as \$300.

FLATOW: But one pothole later.

Mr. CEBULAR: Yeah.

FLATOW: You're in trouble.

Mr. CEBULAR: Yeah, yeah. You want to spend a little more money and get something that's going to hold up for a while.

FLATOW: Bert, good luck to you, and thanks for coming on the program.

Mr. CEBULAR: No problem, thank you.

FLATOW: You're welcome. Bert Cebular is the founder of NYCeWheels, that's N-Y-C-e-Wheels here in New York City. Also we're talking with Ed Benjamin of the Light Electric Vehicle Association in Fort Myers. Good advice he gave us?

Mr. BENJAMIN: Oh, I think so. Bert is a pro and has been at this for a long time, and there's no one that's more experienced.

FLATOW: Let's see if we can get a question here, 1-800-989-8255 is our number. Let's go to Jamie(ph) in San Francisco. Hi, Jamie.

JAMIE (Caller): How are you doing today?

FLATOW: I'm do you ride a bike, an electric bike?

JAMIE: I ride an electric bike called an Optibike.

FLATOW: You must need it on those hills. Can they get up and down the hills in San Francisco?

JAMIE: Well, absolutely. The Optibike can carry you up any hill in San Francisco.

FLATOW: And what how big is it, and how much did it cost you?

JAMIE: Well, my bike cost \$11,000. It weighs about 70 pounds, but the motor is in the bottom bracket. So you basically get your whole nine-gear drive range. So you have a low gear and a high gear. You can traverse the city with the greatest of ease for a couple hours, really.

FLATOW: But that sounds like, you know, that's the price you could pay for a car almost.

JAMIE: Yeah, but I think the bike's going to last a long time, and it's going to save you a lot of money. I think owning maybe your average BMW that you see around here is going to cost you almost that every year.

FLATOW: Ed Benjamin, would they be cheaper, these bikes, in China?

Mr. BENJAMIN: Well, the Optibike is a very special bike. We're talking about the very best that can be done, and we're – comparing an Optibike to a Chinese electric bike, that would be a little bit like comparing a Ferrari to, you know, a pickup truck because they have different functions and very different price leagues.

FLATOW: All right, thanks for calling, Jamie. Good luck with your bike.

JAMIE: Thank you, have a great day.

FLATOW: You, too. Let's go to Eric in Berkeley. A lot of Californians calling in. I guess that's where bikes are hot. Hi, Eric.

ERIC (Caller): Hi, how are you?

FLATOW: Hi there. Do you have a bike?

Mr. BENJAMIN: I do not. But I'm a do-it-yourselfer, and I'm interested in electrifying a bike. I've seen kits for this, and so my question is, you know, what are the best kits that are out there for electrifying a bike, and what kinds of things should a do-it-yourselfer be looking for? Like, you know, how many volts should the battery pack carry? What drive mechanisms are the best, you know, the hub motor or a chain drive or a belt drive?

FLATOW: Right. Is there a kit, Ed, ready for this guy?

Mr. BENJAMIN: Oh yes, there's a number of kits. But if we ask the question what's the best, I think that's very simple. It's a Canadian company called Bionix, a Canadian outfit, and I think if you check your local retailers, and certainly you'll find online resources to help you find the Bionix conversion kits, the typical one would probably be 36 volts, perhaps the 36-volt, 350 watt. They're using a lithium manganese battery.

I think you'll find that's very satisfactory, and you'll also find that there are, there must be 25 people in the kit business now with a number of excellent selections at descending prices.

FLATOW: Good luck, Eric.

ERIC: Thanks very much.

FLATOW: How can we make this, you know, more popular? I mean, in other countries, like in Holland, in the Netherlands, places where bikes are a way of life, in China they have a whole infrastructure set up, don't they?

Mr. BENJAMIN: Oh yes, and you know, bicycling is actually very popular in the United States. One of the things to know is that America is perhaps the world leader in the consumption of high-quality bicycles.

But we are when it comes to transportation, we don't think bicycle. We think automobile, and this is the result of, what is it, maybe 70, 80 years now of a love affair with the automobile. We all know this very well – also a lot of marketing about, you know, how the automobile should be your only transportation.

And there are first of all, the electric bike has many advantages, but one of its strongest advantages is it doesn't burn petroleum-based fuels, and this is going to become a bigger and bigger issue. I think you've visited before on issues such as alternative fuel and the future limitation of the fuel supply and the effects that this will have on fuel price.

Americans are very responsive to price, and we are in the earliest or we are in the early days of discovering that we probably can't afford to keep being in love with the automobile, that it's just going to take too much of our personal and national resources. And electric bikes are one of the tools or part of the tool kit for transportation of the future. And it's going to be trains and metros and buses and electric buses and normal bicycles and the electric scooters and electric bikes. All of these have a place.

FLATOW: But we also need to make you feel safe when you're driving one, or riding one, don't you?

Mr. BENJAMIN: Yes.

FLATOW: I mean, a lot of other countries have, they have places to store your bike so it doesn't get stolen, or they have better bike paths than we do.

Mr. BENJAMIN: Yes, but again, America is a big, complicated place. In my hometown in Fort Myers, we have a glorious bike path system that has more than 400 miles of bike paths and extra-wide roadways, and that's something that's been installed relatively recently. That's roughly over the last 10 years.

But this is an ordinary story in America today. America has been quietly and persistently investing in bike paths, but we have a long ways to go. You know, the Dutch can get around on the bike path more readily than they can by automobile. And one of the nice things about the electric bike is this is by federal mandate or federal law, this is a bicycle. You can use the bike path. You can use the roadway. You have all the privileges of a bicycle, and a bicycle is a very privileged vehicle.

We can use the roadways without a license plate or an insurance card. We don't need to have a driver's license. We have all of the rights of any vehicle and then some rights that other vehicles don't have. So this is a very sweet situation for the electric bicycle.

FLATOW: Hi, Dennis(ph) in Iowa, hi, welcome to SCIENCE FRIDAY.

DENNIS (Caller): Hi, how are you?

FLATOW: Fine, how are you?

DENNIS: Love your program.

FLATOW: Thank you.

DENNIS: We have an electric bike called a Bionix that we added to an existing Trek frame. We live on about two miles out of Decorah on a hill that has about a 300-foot vertical rise and use it to go up and down the hill.

FLATOW: That's it, like your own little elevator up and down the hill there.

DENNIS: But then we also bike in town.

FLATOW: And when did you buy this bike? Or when did you modify it?

DENNIS: Two years ago.

FLATOW: And do people look whacky at you driving it around?

DENNIS: I don't think, really, people even notice.

FLATOW: Really?

DENNIS: The bike is a little heavier, so anybody who purchases the kit need to be prepared that it's going to be a heavier bike. But other than that, I don't think people even notice that we're on electric bike except, maybe when we pass them.

(Soundbite of laughter)

FLATOW: So you do pedal it too, right?

DENNIS: Yes. You cannot operate it without pedaling.

FLATOW: All right.

DENNIS: It's the power assist.

FLATOW: It sounds like a lot of fun.

DENNIS: It is, and we really enjoy it.

FLATOW: All right, Dennis. Thanks for calling.

DENNIS: Thanks.

FLATOW: Good luck on your bike.

DENNIS: Thanks. Bye.

FLATOW: Bye. I guess, Ed, a lot of people are waking up, so to speak, to electric bikes, making their own retrofits.

Mr. BENJAMIN: Well, we've got several hundred thousand electric bikes that are in use in the United States. So there's a lot of folks out there and I think a lot of positive stories to be told.

FLATOW: Is – you know, one of the problems with a bike is finding a parking place for it. But parking spots – I guess, you could – you can fit how many bikes in one parking spot – one car parking spot?

FLATOW: In my garage – since my wife has limited me to the space of one car park for my electric bicycle collection, it's about 10.

FLATOW: Wow. Wow. And how do they stack up? We always hear, you know, that trains take so many tons of freight on one gallon of diesel. How do they stack up to other modes of transportation, the electric bikes?

Mr. BENJAMIN: Well, that's an interesting question. I normally figured that it costs – I ride my electric bike around town, whenever I'm in town. I travel quite a bit. But I figure it costs me roughly 13 cents for 20 miles worth of electricity. And that's more – that's less efficient or more expensive than an electric – diesel electric train. But it's much more efficient than any ICE or gasoline-powered personal transportation.

FLATOW: Mm-hmm. 1-800-989-8255. Let's go to Oliver(ph) in Woodside, California. Hi, Oliver.

OLIVER (Caller): Hi. How are you?

FLATOW: Hi, there.

OLIVER: Well, we're doing a cross country electric bicycle ride, leaving on Earth Day. And we built up our bikes from – well, we sort of building up recumbents into bike kits. And I know what we're doing is completely nuts, but we're just going for it.

FLATOW: How many people?

OLIVER: Well, it's my sister and I. She's 61, I'm 55. And one of our stories is that, you know, this is a way to get older people who've thought they couldn't be bike riders anymore back out on the road. And so we're really looking forward to it. We, unfortunately, are going supported. We're going to have a support vehicle. But we're also stopping along the way and looking at everything sustainable we can find. We've got to stop in the Tehachapis. We're going to look at wind. We got to stop in Flagstaff. We're going to look at another company that's building wind turbines. We're looking at straw bale homes. We're doing a lot of...

FLATOW: Wow. Yeah.

OLIVER: ...stuff all across the country to show that, you know, there's positive sustainable stuff going on everywhere and our bikes are getting us there.

FLATOW: Good luck to you, John(ph). Have a good trip.

OLIVER: Thank you.

FLATOW: 1-800-989-8255 is our number. I'm Ira Flatow and this is SCIENCE FRIDAY from NPR.

Talking about electric bikes, let's see if we can get a call or two in here. A Tweet coming in from Nonchalant Pete(ph) says, as more bikes are motorized, will law change. What do

you think, Ed?

Mr. BENJAMIN: Well...

FLATOW: We can't ignore them.

Mr. BENJAMIN: Well, frankly, the laws did change not long ago – and to our benefit. The House passed a bill called HR 727 back in 2003 that made a electric bicycle that has a motor of 750 watts or less that travels at 20 miles an hour or less and has a fully functioning set of pedals is a bicycle, not a motorbike, not a motor-assisted bike. It is a bicycle. And this is a wonderful support from the government.

FLATOW: So you don't need a special license for it or to register it, things like that?

Mr. BENJAMIN: Yeah. It's a bicycle. Whatever your local's laws are, concerning the use of a bicycle in your community...

FLATOW: Mm-hmm.

Mr. BENJAMIN: this is exactly the same for the electric bicycle.

FLATOW: Quick last call from Terry(ph) in San Francisco. Hi, Terry.

TERRY (Caller): Hi, Ira. I also, like previous callers, have BionXs. I've had three others in my last four years, and this is by far the best. It has a hub motor. The battery comes off in a flash. It adds about 18 pounds total to the bike. And I had it attached to my old Trek mountain bike and it just works perfectly. I had it done by an expert bike dealer who services it. It goes up hills in San Francisco. I have two panniers in the back. I can get two full loads of groceries in it. And it's just more fun than anybody should be allowed to have.

(Soundbite of laughter)

FLATOW: May I ask how old you are?

TERRY: I'm 63.

FLATOW: And you're going up and down those hills in San Francisco?

TERRY: I go up and down the hills, and I rarely take my car out.

FLATOW: Do people notice it's an electric bike?

TERRY: They do. They ask me all the time and, you know, I could spend a couple of hours, every time I go out, talking to people.

FLATOW: They ask, where do I get one of those?

TERRY: Yeah. Yeah, they do. But I recommend not doing it yourself. Take it to an expert bike dealer.

FLATOW: So you're saying you converted your older bike instead of buying a new one?

TERRY: I did. My bike dealer actually sells BionXs and he's perfect, knows how to do it, he makes repairs and it's really quite easy.

FLATOW: Good luck, Terry.

TERRY: Thank you.

FLATOW: Is that true, Ed, that most bike – bike stores now can convert them if you'd like?

Mr. BENJAMIN: I think any competent bicycle store can make the conversion. And I would say, yes, that probably most bike stores have made some conversions. So I would agree with his recommendation. He – you stay – if you do a conversion, get the bike dealer to help you with it. It will be much easier.

FLATOW: How long can you pedal on the bike before you need to recharge the battery?

Mr. BENJAMIN: It's – it depends upon the bike. There are models out there that will go as little as eight to 10 miles. And there's models that would go as many as, perhaps 40 to 50 or even farther. So, you know, it depends upon how big is the battery, how efficient is the bike's system, how hard did you pedal, and what's the age and condition of the bike and the battery.

FLATOW: Are we in a shakeout period of companies, a lot of little companies there? Do we expect bigger some bigger company to come in once the market becomes...

Mr. BENJAMIN: Well, there's – and we have a lot – well, we have a lot of big companies. And I'd like to point to out that BionX is on by Magnum Arc(ph) which is \$26 billion automobile parts maker. That's a pretty big company.

FLATOW: Okay.

Mr. BENJAMIN: And we got players like Bosch and the American Bicycle Company or bicycle parts company, Sram. We've got big bicycle companies, specialized bicycle companies introducing electric bikes, soon. Trek bicycle companies has already introduced theirs.

FLATOW: Hmm.

Mr. BENJAMIN: Giant bicycle companies have been selling them for years. These are big outfits. There this is also a very young industry and we've got the flock the little guys, you know? We got relatively tiny well, I shouldn't say tiny, but relatively small importers, companies like Peda-Go(ph), companies like Optibike that was mentioned earlier, that build a handful of excellent bikes every year. This is an exciting time.

FLATOW: All right, Ed, thank you for taking time to talk with us. Good luck at the bike show.

Mr. BENJAMIN: Well, thank you.

CONAN: And thank...

Mr. BENJAMIN: And thank you for this excellent show.

FLATOW: You're welcome. Ed Benjamin, chairman of the Light Electric Vehicle Association in Fort Myers. We're going to take a break and change gears and talk about bacteria fingerprints, you leave the trail behind you.

So stay with us. We'll be right back.

I'm Ira Flatow, this is SCIENCE FRIDAY from NPR.

<http://www.blog.hybridep.com/general-news/npr-podcast-tired-commuting-car-electric-bike/>

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## **An Electric Boost for Bicyclists - New York Times**

By J. DAVID GOODMAN

Published: January 31, 2010

<http://www.nytimes.com/2010/02/01/business/global/01ebike.html?adxnnl=1&adxnnlx=1269360959-cvobLcXaLRnzlP9PdKbGrg>

SHANGHAI — Jiang Ruming, a marketing manager, owns a van, but for many errands, he hops on a futuristic-looking contraption that lets him weave rapidly through Shanghai's messy traffic. He rides an electric bicycle.

Half a world away, in San Francisco, the president of that city's board of supervisors, David Chiu, uses an electric bike to get to meetings without sweating through his suit.

And in the Netherlands, Jessy Wijzenbeek-Voet recently rode an electric bicycle on a

long trip that, at 71, she would not have been able to make on a standard bike.

Detroit may be introducing [electric car](#) designs and China may be pushing forward with a big expansion of its highways and trains. But people like Mr. Jiang, Ms. Wijzenbeek-Voet and Mr. Chiu — as well as delivery workers in New York, postal employees in Germany and commuters from Canada to Japan — are among the millions taking part in a more accidental transportation upheaval.

It began in China, where an estimated 120 million electric bicycles now hum along the roads, up from a few thousand in the 1990s. They are replacing traditional bikes and motorcycles at a rapid clip and, in many cases, allowing people to put off the switch to cars.

In turn, the booming Chinese electric-bike industry is spurring worldwide interest and impressive sales in India, Europe and the United States. China is exporting many bikes, and Western manufacturers are also copying the Chinese trend to produce models of their own. From virtually nothing a decade ago, electric bikes have become an \$11 billion global industry.

“It’s miraculous — it takes the hills out of riding,” said Roger Phillips, 78, who rides an electric bike around Manhattan. The sensation is akin to a moving walkway at the airport, he said.

Electric bikes have been a “gift from God” for bike makers, said Edward Benjamin, an independent industry consultant, not only because they cost more — typically \$1,500 to \$3,000 — but also because they include more components like batteries that need regular replacement.

In the Netherlands, a third of the money spent on bicycles last year went to electric-powered models. Industry experts predict similar growth elsewhere in Europe, especially in Germany, France and Italy, as rising interest in cycling coincides with an aging population. India had virtually no sales until two years ago, but its nascent market is fast expanding and could eclipse Europe’s in the next year.

“The growth has been tremendous in the last two years,” said Naveen Munjal, managing director of Hero Electric, a division of India’s largest bicycle and motorcycle maker. He expects sales at Hero to increase to 250,000 electric bikes in 2012, from 100,000 in 2009.

While the American market has been modest — about 200,000 bikes sold last year, by some estimates — interest is rising, said Jay Townley, a bicycle industry consultant. [Best Buy](#) began selling electric bicycles in June at 19 stores in San Francisco, Los Angeles and Portland, Ore. Trek, a manufacturer based in Wisconsin, recently began selling a bike created by Gary Fisher, a prominent bicycle designer.

“Electric-assisted bicycles will change how people think about bikes in urban areas,” predicted Mr. Chiu of San Francisco, who has been riding a prototype of the Trek bike

since the summer.

Improvements in technology are resulting in lighter designs that appeal to older cyclists. “Now you’ve got a product you can present to a baby boomer,” Mr. Townley said.

New York City’s largest electric bike store, NYCeWheels, opened in 2001, and in the last few years, business has been growing, said Bert Cebular, the owner. In Chinatown, electric bikes are showing up on nearly every corner and several shops have recently appeared, selling bikes imported from Chinese factories.

As the global market develops, two types of electric bikes are emerging. One is similar to a standard bicycle with pedals, but it has an electric motor that engages on command or when the cyclist pedals. These are the most popular type in the United States and Europe, with many people using the electric motor mainly for help in wind or on steep hills.

By contrast, in China, electric bicycles have evolved into bigger machines that resemble Vespa scooters. They have small, wide-set pedals that most cyclists do not use as they travel entirely on battery power. The bikes move at up to 30 miles an hour, with a range of 50 miles on a fully charged battery.

These larger models are causing headaches for global transportation planners. They cannot decide whether to embrace them as a green form of transportation, or ban them as a safety hazard. Some cities are studying the halfway measure of banning them from bicycle lanes while permitting them on streets.

In China, electric bicycles “have a moderating influence on the use of cars,” said Cornie Huizenga of the Clean Air Initiative for Asian Cities, an advocacy group. A survey by American and Chinese researchers in the Chinese city of Kunming found that one in six electric bike riders would drive a car or take a taxi if their bicycle were taken away.

Such is the case with Mr. Jiang, the Shanghai marketing manager. Environmental benefits never factor into his decision to use his bike instead of his car, he said; it is simply a matter of convenience. “If I’m not going to anywhere distant, driving a car doesn’t save any time,” he said.

For each mile traveled, electric bikes cause fewer emissions of the gases associated with [global warming](#) than do cars. But they come with their own set of pollution concerns. A typical Chinese model uses five lead batteries in its lifetime, each containing 20 to 30 pounds of lead. In areas without stringent recycling programs, the potential for environmental contamination is high.

“This is perhaps the most problematic issue for electric bikes,” said Christopher Cherry, an author of the Kunming study.

Safety is increasingly a concern. An electric bike rider is more likely than a car driver to

be killed or injured in a collision, and as the number of riders has soared, fatalities in China have risen. And riders of these vehicles often choose to take bicycle lanes, where they mix with slower-moving bikes and pedestrians, adding to the potential for an accident.

In December, conflict over electric bike safety and design erupted when a government agency introduced a rule effectively banning large electric bikes from bike lanes. But the response from manufacturers and bike owners — nearly 10 percent of the population — was forceful. Less than two weeks later, the rule was suspended.

As China struggles to find the proper place on the road for electric bikes, some bicycle advocates in the United States see them as a potential boon for bike commuting, especially for older riders.

But with greater numbers, conflicts between electric bikers and old-fashioned cyclists may also grow. Several Canadian cities, including Toronto, have considered banning electric bikes from bicycle lanes, while in New York and in parts of Europe, riders have reported harassment from regular bike riders when they use the lanes.

Ms. Wijzenbeek-Voet said she often gets stares from other cyclists when she takes her electric bike to the store. “They look at me wondering, ‘How is it possible that lady is going so fast?’ ”

Officially, electric bicycles are not permitted on New York streets, though that does not seem to be stopping many riders. However, Mr. Phillips, the Manhattan rider, recently found himself unable to get accident insurance, making him wary of riding and eager for a change in the law. A bill before the State Legislature would permit bikes with a top speed of 20 miles an hour and less than 1,000 watts of power. Other states limit power output to 750 watts.

One barrier to wider adoption of electric bicycles in the United States and Europe may be the culture of cycling. Bicycle riders have long valued cycling as a sport and a form of exercise, not simply as a utilitarian means of transportation, and many of them look down their noses at electric bikes.

“To the core cyclist, it’s cheating,” said Loren Mooney, editor in chief of *Bicycling Magazine*. “Marketers understand this, and it’s why some have put e-bikes in mass retailers like Best Buy, rather than engaging in the uphill battle of trying to sell them in bike shops.”