

# Sustainable Transportation: Case Studies

## An Introduction to the Case Studies

These case studies are intended to provide easy access to the exciting and revolutionary changes that are happening in transportation all over the world. Communities, cities, schools, and businesses are rethinking and redesigning the way they transport people and goods. These approaches are helping to reduce greenhouse gas emissions, air pollution, and traffic congestion. They are also strengthening communities through more social interaction and improving individual health through more active living.

Think of these case studies as starting points to conversation, exploration, and learner action. They demonstrate positive examples of the human spirit and imagination. They model the kinds of efforts that can inspire your learners to take on a challenge of their own and to make a change, for themselves, their school, or the wider community.

Energy Revealed offers ten sustainable transportation case studies that profile a wide range of topics including transportation demand management, cycling infrastructure and planning, youth leadership, technological innovation, community projects, and more. The ten case studies are:

1. Go Fly a Kite!
2. Fort Street Revival
3. Getting Charged About Electric
4. Doing Better Together
5. Building Bikes and Bearing Food
6. The Trampe
7. The Bogotá Project
8. Cool Riding
9. Grandma Rides Again
10. Streets for Living



## How Much Energy Do Canadians Use?

You can use these case studies as recommended in an Energy Revealed sustainable transportation lesson plan. To use them independently, consider asking groups of learners to create a short summary of a case study and a drawing that captures the spirit of the case. The learner summaries could answer the following questions:

- What do you like most about this project?
- Where in the world is this happening and when did it begin?
- Who started this project/came up with the idea?
- Does this project focus on solutions to moving people or goods or both?
- How does the project go about creating a solution?
- How does this project help the environment?
- What opportunities are there to make this kind of change in the area in which you live?
- What are some of the challenges you would expect to face?
- What changes to transportation would you and your family like to see and why?

These are some of the questions that communities and individuals need to explore to find new sustainable transportation solutions.

## Creating Case Studies with Your Learners

You may wish to use the case study format provided here to encourage learners to explore local, regional, or global sustainable transportation solutions on their own. Encourage learners to present:

- The Background: when, where, why?
- The Problem: what?
- The Solution: how?
- Challenges and Future Possibilities: what next?

These two links can help you and your learners explore other case studies.

- [VTPI](http://www.vtppi.org/tdm/tdm71.htm): Todd Litman, founder, and executive director of the Victoria Transport Policy Institute (VTPI), works to expand the range of impacts and options considered in transportation decision-making, to improve evaluation methods, and to make specialized technical concepts accessible to a wide audience. His research is used worldwide in transport planning and policy analysis. You can find transportation success stories from around the world at:

 <http://www.vtppi.org/tdm/tdm71.htm>

- [ELTIS](https://www.eltis.org/resources/case-studies): The European Local Transport Information Service (ELTIS) is Europe's number one web portal on urban transport and mobility. The website has more than 1,600 case studies of good practices in moving goods, managing traffic challenges, and commuting by bike, on foot, or with public transit. See:

 <https://www.eltis.org/resources/case-studies>

# Case Study #1: Go Fly a Kite!

## Background

Stephan Wrage was inspired while kite sailing as a 15-year-old to apply the immense power of the kite sail in new ways. Stephan completed a degree in Engineering and started the SkySails Company in 2001, with the idea of towing ships using a wind-powered kite.

With this technology, small to large ships that are usually powered by burning oil can now reduce their fuel use by 10 to 35% using wind power. By using less fuel, they reduce greenhouse gas emissions. SkySails rely on computers and sensors that detect wind direction and strength to determine the most effective way to capture wind power. The system is controlled remotely on board the ship so that the sail can be hoisted when out of the three-mile zone and good winds are present. The ship's automated system also repacks the components. SkySails capture five times the wind energy of normal ship sails.

Research began in 2001, and testing began on small ships in 2004. SkySails now has kites available for small cargo ships, fish trawlers, and large yachts. Testing on the full-size cargo ship, MV Beluga SkySails, began in 2007.

## The Problem

As the cost and environmental impacts of fossil fuels rise, finding practical and helpful solutions to meet our need for energy is necessary. Oil prices are expected to double to \$200 a barrel by 2030 as the supply falls. SkySails and similar technologies, and their application to more ships worldwide, can help reduce our dependence on fossil fuels.

Through the application of sailing knowledge gathered by humans since early Polynesian sail ships, SkySails has combined the best of past technology with today's computer systems to create an ancient solution with a modern twist. Determination, careful research, and creative thinking moved this idea from the creator's imagination to paper, then to small-scale models, and eventually to full-sized ships. Innovations like this one help reduce the impact of shipping goods globally. About 90%, or 9/10ths, of all the world's non-bulk cargo is transported by containership.

## The Solution

Stephen Wrage's innovation and the work of his company have earned Stephen and SkySails more than 16 awards in Europe and elsewhere, including the Outstanding Person of 2004 Award in Japan.

## Challenges and Future Possibilities

SkySails plans to put sails on 1,500 cargo ships and fish trawlers by 2015 and on 10,000 ships by 2027. The use of SkySails globally could reduce carbon emissions by 150 million tonnes each year. That's about 15% of Germany's current greenhouse gas emissions!

## References and Resources

- Wind Power: Unleashing its Full Potential:
  - <https://skysails-power.com/>
- A Video About SkySails:
  - <https://www.youtube.com/watch?v=NfUG-1X90jw>

## Cast Study #2: Fort Street Revival

### Background

The City of Victoria, British Columbia, created a plan to “promote a green, clean, walkable and safe city.” The plan aims to promote alternate modes of transportation, improve mobility in the centre of the city, and reduce motor vehicle pollution. Fort Street is one of three key streets in the city’s bikeway network. Improving Fort Street for cycle traffic would help improve the bikeway network as well. Cycling, an excellent alternative to driving, is already the fastest growing mode of transportation in the city. Cycling could represent 1/5th, or 20%, of commuter trips in Victoria by 2026.

### The Problem

The city made changes in four key areas:

1. **Improved bicycle safety.** Creating a dedicated bike lane increased the safety of cyclists along this key bike travel route.
2. **Improved pedestrian safety.** Pedestrian safety was improved at a signal crosswalk at Fern Street by creating a centre refuge island. Creating boulevards where possible, the city separated pedestrians from vehicle traffic. Bike lanes also buffered pedestrians from cars.
3. **Reduced vehicle speeds.** Landscaped medians and fewer vehicle lanes mean slower traffic speeds. Adding centre medians and making lanes less wide reduces collisions and vehicle speed.
4. **Changes to street parking.** Congestion was reduced by removing limited evening parking on one side of the street. Time limited parking on both sides of Fort Street was kept helping nearby businesses.

### The Solution

Through a public planning process, citizens had opportunities to hear proposed plans, provide input and ideas, and ensure that many different views were heard. Inclusive and open processes invite authentic and meaningful conversation and participation by citizens. With citizens’ groups assisting in promoting and reviewing new plans, solid input from residents was available to city planners, making new developments more reflective of the growing needs of the city.

### Challenges and Future Possibilities

The City of Victoria is growing and changing. As it does, new initiatives come up and changes are required. Fort Street changes shown here represent the best available resources at the time.

In New York, a recent change along 9th Avenue that includes separated bicycle paths has increased the number of cyclists and reduced collisions by 40%. The City of Vancouver introduced a separated bicycle lane on the Burrard Street bridge in July 2009, which led to a 30% increase in bike traffic.

Separated bicycle lanes may become the norm for all cities someday. Groups such as the Greater Victoria Cycling Coalition and Capital Bike and Walk in Victoria provide cyclists with newsletters on bike culture and celebrate the fun and inspiring aspects of bicycle travel. These and other groups also provide useful information for city planners on bicycle needs, safety, and other concerns.

## References and Resources

- Greater Victoria Cycling Coalition:
  - <https://capitalbike.ca/>
- Capital Bike and Walk:
  - <http://www.capitalbikeandwalk.org/>
- The City of Victoria:
  - <https://www.victoria.ca/EN/main/city-hall.html>

## Case Study #3: Getting Charged About Electric

### Background

Electric cars got their start more than 100 years ago in Europe. At first, they were more popular than gasoline-powered cars. They became less popular as gasoline became cheaper and more available. The first big manufacturer of electric cars in North America was General Motors. These cars lasted a short time and became the subject of the popular movie, *Who Killed the Electric Car?*

In the last decade, large steps have been made in electric car development. Now all major car manufacturers have launched or plan to launch prototype cars. The success of Toyota's Prius (which combines electric and gas in a hybrid vehicle) has increased interest in more fully electric cars, called Plug-In Hybrid Electric Vehicles (PHEV). Many car companies are now moving to fully electric cars.

Examples include Nissan's LEAF, Mitsubishi's iMieV, Ford's Focus BEV, and Think's City, which all reach highway speeds of 100 kilometres per hour. The world's most popular electric car, the Tesla Model Y, reaches speeds of 217 km per hour. Low speed vehicles such as ZENN (Zero Emissions No Noise) and IT (Dynasty) offer cars that reach speeds of 40 to 55 km per hour. Drivers of electric vehicles avoid the cost of gasoline, which is expected to continue rising. People like the energy efficiency, extremely low maintenance costs, and very small carbon footprint of electric vehicles. Electric vans are also becoming popular in cities to ship goods from depots to stores.

### The Problem

The largest challenge with electric cars is their batteries. Electric vehicles require many batteries and are sensitive to temperature changes. The batteries can overheat and do not do well in cold temperatures for very long.

1. **Battery recharge time:** Batteries need to be recharged regularly, which can take several hours.
2. **Weight, lifespan, toxins, and popularity:** Batteries weigh a lot and need to be replaced often. Finding ways to store power at lower costs and with less toxic chemicals would help make electric vehicles more desirable. For shipping companies that want to reduce greenhouse gas emissions, lower cost and increased availability will make electrical vehicles a better choice for moving goods in and out of cities.
3. **Electric stations replacing gas stations:** As more electric vehicles are built, cities, towns and regional districts will need to help create more stations for recharging vehicle batteries. This will require effort in many parts of the world.

The other big challenge is ensuring that the source of electricity itself does not create problems. For example, electricity can come from coal-powered power plants or from renewable sources such as hydro, wind and solar.

## The Solution

- **Better than Batteries:** A company called EESstor is working to replace batteries with a simple electric device called a Capacitor. This device has a low weight and stores an incredible amount of electricity in a small space. It recharges in a few minutes without the use of hazardous materials and doesn't need frequent replacement.
- **Helping create Electric Stations:** The City of Vancouver has begun the installation of several public electric car-charging stations. One out of five new condominium parking stalls now must include the equipment needed to recharge electric vehicles. These changes will help support city use of electric vehicles like the Mitsubishi iMieV.
- **Shipping Goods with Hybrid and Electric Vans:** The City of Stockholm, Sweden, participated in the ELCIDIS project that promotes electric and hybrid-electric vans for urban goods delivery. Nine new vehicles were introduced to replace diesel trucks traveling downtown. The plan is to replace all the noisy and polluting heavy diesel trucks with electric hybrid trucks to reduce emissions in the city centre.

## Challenges and Future Possibilities

If capacitors replace batteries, it could revolutionize the use of electric cars for transportation of goods and for travel. Gas stations may become less common, and public electric-car charging stations more common. When electric vehicles are powered by renewable energy, the result is nearly zero emission transportation. Electric vehicles will continue providing transportation alternatives where traditional fossil fuel vehicles add to air pollution and emissions.

## References and Resources

- See a solar electricity backgrounder at:
  - <https://programs.greenlearning.ca/course/introduction-to-solar-electricity>



## Case Study #4: Doing Better Together

### Background

Faced with high gasoline prices in Seattle, Washington, Jennifer and her family decided to cut their \$400 monthly gasoline bill by reducing the use of their Honda Odyssey Van (16 mpg = 7 kilometres per litre) and their Ford Explorer (13 mpg = 5.5 kilometres per litre). The high cost of gas motivated them to rethink their driving habits and to consider their carbon footprint. Jennifer and her family describe their minivan as their “home away from home,” where they do homework, eat meals, make phone calls, watch movies, and even change clothes! To their surprise, they found that they can do as much or more when they drive less.

### The Problem

When faced with rising gas costs, Jennifer asked herself, “How could we reduce our dependence on the minivans we already own?”

### The Solution

- **Cutting back on short trips:** Jennifer’s family began by making fewer trips to the grocery store and coffee shop.
- **Relocating the family vacation:** Instead of taking a family vacation to Disneyland, the family decided on a trip to visit relatives in Washington.
- **Getting family and friends onboard:** The whole family got excited about challenging themselves to see how long they could go between filling the gas tank. Right away they realized that they could carpool to school and on the way home. They invited another family to carpool both ways and away they went.
- **Changing one routine:** Instead of driving to swim practice, Jennifer and the kids walked or biked. This saved 50 cents per round trip on two to three trips per day, which added up fast.
- **Rethinking more decisions:** Once the family started the challenge, they began questioning more of their choices. Instead of driving downtown for dinner they travelled shorter distances to great restaurants nearby. The more successes the family had, the more they were willing to try, and they had fun in the process. Instead of driving to the gym to use the treadmill, Jennifer now runs in her own neighbourhood. The family chooses to meet friends at their homes more often than going out to eat. With a bit of coordination, carpooling to many destinations works well for the family.
- **The Benefits:** The family’s gasoline use dropped by 50%. Jennifer’s kids found themselves having more great conversations with mom while they walked and biked together. A few pounds of extra weight were lost, and even the dog is happier from getting more exercise. The family realized that the car they thought was so essential to their busy lives sometimes made their schedules more complicated. Stress levels dropped by cutting down on trips around town and replacing them with a walk or run.

## Challenges and Future Possibilities

Jennifer says, "Do I still need my minivan? Of course, I want to visit my grandmother ten miles away, and I cannot carry a week's worth of groceries on my bike. When the rainy season begins in earnest, I am sure I will find the car more pleasant than the bike. Still, we are making permanent changes in our transportation habits. The high cost of gas has been nothing but good for our family."

## References and Resources

- A new article about living without a vehicle!
  - <http://www.newsweek.com/id/151739>

## Case Study #5: Building Bikes and Bearing Food

### Background

Jan Vander Tuin created the Centre for Appropriate Transport (CAT) in Eugene, Oregon, in 1992. The first bicycle center in the United States, CAT provides many original bicycle services including the nation's first Pedaler's Express (PedEx), which delivers goods around the city. CAT does many other things too, such as supporting learners interested in improvising and building unique bikes, and engaging learners in delivering organic foods in the community using a bike called the Long Haul. Bicycles like the Long Haul have become popular for bike delivery in many places, a powerful example of a creative solution to moving goods locally.

Jan has led an interesting life that includes starting Community Supported Agriculture (CSA) programs and a Car Co-op, but his first love is bikes. Inspired in his youth, he says "Being a newspaper boy in snowy upstate New York contributed to my hardiness and to seeing bicycles as a legitimate way to move stuff around. I started working on farms when I was really young. Never really stopped. It's still a part of my life."

### The Problem

CAT got started when Jan was working at a small bike shop in Eugene and realized that local 14- to 15-year-old boys had many skills to offer when given the opportunity. He decided to teach and provide young learners with more practical work skills. At CAT, young people have opportunities to experience diverse challenges and grow their self-confidence. Working in teams of five to solve challenges, learners take on welding and painting bicycle frames, fabricating and assembling parts, and design work using computer software. Learners at CAT step into a hands-on learning space where school, shop, and office environments mix. They learn business skills, bike repair, metalworking, organic farming, and journalism, in addition to usual classroom content.

The recumbent bicycles, utility trailers, folding bikes, and cargo delivery vehicles built by learners and staff at CAT have evolved over time. One design, the unusually shaped Long Haul, has a container space in the front that can carry loads of up to 90 kilograms! It is used to deliver vegetables and eggs from organic farms in the suburbs to households in town. The people of Eugene have welcomed these innovations. The bike designs have also become a source of pride for young people.

### The Solution

Jan's early life experience, his travels in Europe, and his work in building bicycles and farming cooperatively all had a big influence on his life. He sees the power of education to solve many of society's problems, especially if learners see the relevance of what they are doing. Many kinds of technology can offer solutions. He believes in using the technology that is best suited to a task: "Cars have a place, ambulances have a place, even electric vehicles," he says.

## Challenges and Future Possibilities

Jan feels that if more regional centres produced and distributed products it would strengthen self-sufficiency. “We’ve lost the ability to make things,” says Jan, which is part of the challenge. Jan hopes to start an apprentice program for adults soon so that they can also gain these skills and then duplicate them in their own communities, creating a network of CATs. This could mean goods delivered by bicycles like the Long Haul in many communities. PedEx, work bikes, and bike centres may start up all over North America.

## References and Resources

- Adapted from “Working where Food and Transport Intersect,” by Segue Fischlin, Momentum: The Magazine for Self-Propelled People, No. 31,
  - <http://www.momentumplanet.ca/magazine>
- Video of the Long-Haul bike design in motion with PedEx:
  - [http://www.youtube.com/watch?v=pQZS-8m\\_WDM&feature=player\\_embedded](http://www.youtube.com/watch?v=pQZS-8m_WDM&feature=player_embedded)

## Case Study #6: The Trampe

### Background

In Trondheim, Norway, an electrically powered lift was built in 1993 to give cyclists a boost up the hill. It is called Trampe, which is the Norwegian verb for “to stomp.” The only lift of its kind in the world, it transports cyclists up a 20% gradient (a 1:5 slope) for 130 metres at 7.4 kilometres per hour.

### The Problem

In the past few years, increased vehicle traffic and more parking and road space for cars have made bicycling and walking less common in many parts of the world. However, many cities and towns are helping to promote cycling. Cycling is a more efficient, environmentally friendly, and healthy transportation choice than driving. In the municipality of Trondheim, Norway, \$3.75 million (CAD) was spent building connected bicycle paths. However, the steep hills of Trondheim prevented many people from using their bicycles to travel to the Town Centre in the upper part of the town. Many people found the hills made for an uncomfortable, sweaty, and tiring commute.

### The Solution

In 1992, the traffic planners in Trondheim were looking for new and efficient ways to increase use of the bicycle network. A bicycle enthusiast, inspired by local ski lift technology, presented an idea to build a lift that would push cyclists uphill without having to step off their bicycles. The idea was accepted and a year later the lift was installed. Since 1993, an estimated 220,000 cyclists have been lifted the steep Brubakken hill in the historical city center!

Trondheim has the highest number of cyclists of all Norwegian cities. The city has large numbers of university learners, and 9 out of 10 learners use bicycles to get around. The city has made a large investment in building its bicycle road network. The addition of the Trampe bicycle lift has motivated more people to take their bicycles. 41% of lift users claim they are using their bicycles more often because of the Trampe.

### Challenges and Future Possibilities

Improvements over the years have made the Trampe more reliable for cyclists, which has increased its popularity. Today, half of the users of the Trampe are learners. In twelve years, there have been no injuries from using the lift. Because this is the first bicycle lift of its kind in the world, more than 200 towns around the world, including some in Canada, have contacted Trondheim to learn more about the design. Some towns are now working to include a lift in their plans. This could create more work and design opportunities for the designers of the Trampe in Trondheim.

### References and Resources

- Videos of the Trampe Bike Lift
  - <http://www.youtube.com/watch?v=JtB8DX70ihM>
  - <https://www.youtube.com/watch?v=sZXfSVNLnQU>

## Case Study #7: The Bogotá Project

### Background

In 1998, the mayor of Bogotá, Colombia, made it his priority to increase pedestrian and cyclist opportunities. Now, the city enjoys expanded cycle paths and pedestrian zones and improved parks

### The Problem

As in many countries, most people in Bogota (80%) use public transportation, but private vehicles occupy most (95%) of the roads. This creates many problems: traffic congestion, air pollution, unsafe roadways, and less walking and biking. Nearly 70% of trips shorter than three kilometres are made by car. Low activity levels among people can lead to poor health, such as cardiovascular disease (heart and circulation related illnesses). Health can be improved through regular exercise such as commuting on foot or by bicycle, but people need to feel safe to do so.

### The Solution

Bogotá realized that many small changes could make a big difference. It has found many ways to encourage sustainable options while discouraging unsustainable choices. For example:

- **Adding Fees, Taxes and Tolls:** When Bogotá doubled the cost of public parking and removed fees in private parking lots, citizens left their vehicles parked at home more often. Taxing gasoline by 20% (by adding another 1/5 to its usual price) allowed funds to be gathered for road maintenance and more bus rapid transport. Adding tolls at city entrances also raised funds and helped control the number of vehicles entering Bogotá.
- **Adding Bus Rapid Transit (“TransMilenio”):** Based on Curitiba, Brazil’s bus rapid transit, this highly effective bus rapid transit system moves 1.4 million passengers each weekday for about 75 cents per trip. It shortens travel times, reduces accidents and greenhouse gas emissions, and costs 1/10th of some rail lines. TransMilenio uses a trunk and feeder system. Over 1,000 large articulated buses (long buses made up of two regular buses joined in the middle by a flexible tube) form the trunk and travel in special lanes. Four hundred feeder lines, which are regular buses, drive in mixed traffic and connect passengers with the trunk lines. Since it began in 2000, the system has been a huge success. Today, there is 2.47 million daily riders and 1,209 articulated buses.
- **Using the Cycleways (“Ciclovía”):** 120 km of roadways are closed to public automobiles for seven hours on Sundays and holidays in Bogotá, opening spaces for 1.5 million people to walk, bike, jog, and skate. Both people and the environment benefit because community members from all social and economic classes make contact with one another on the Ciclovía. People form new friendships while thousands of polluting cars are kept off the roads. Enrique Penalosa, Bogotá’s mayor, called it “a formidable achievement of Bogotá’s citizens. A city of seven million inhabitants functioned well without cars.” Nine out of ten of citizens agreed with the idea of a Car Free Day. Bogotá has proposed a 2015 goal to remove all cars from the streets during rush hour, making the city move exclusively by walking, biking, and public transport.

- **Introducing Peak License Plate (“Pico y Placa”):** These limits two out of five vehicles from travelling during weekday peak traffic rush hours in Bogota, reducing congestion and encouraging use of public transportation. The system uses the last number on the license plate. For example, owners with a license plate ending in one may only use their cars on Mondays and Wednesdays. Less car use reduces travel time, accidents, and air pollution.
- **Expanding Cycle Paths:** An initial network of 120 km of pathways in 2001 has been increased to more than 300 km, providing safe and attractive spaces for cyclists to travel through the city. Bicycle use has grown several times with more than 300,000 bicycle trips daily in Bogotá on the Cycle-Path Network. These paths decrease congestion and travel time for commuters.

## Challenges and Future Possibilities

Many cities and towns are questioning whether private automobiles must be the dominant transportation mode and are finding ways to reduce people’s dependence on them. Bogotá is one example. Curitiba, London, and Stockholm are others. These cities are taking steps to maintain cycle paths, expand walking opportunities, provide appealing and attractive alternatives to car use, and to educate people about their benefits, making cities healthier, friendlier, and less polluted.

## References and Resources

- Streetfilms-Ciclovía (Bogotá, Colombia)
  - <http://www.youtube.com/watch?v=ELa5CHsUepo>
- Information about Bogotá
  - <https://itdp.org/wp-content/uploads/2023/05/From-Transmilenio-to-Cycle-Networks-Lessons-Learned-from-Bogotas-Comprehensive-Urban-Mobility-Planning-MAY4.pdf>
  - <https://www.itdp.org/publication/bus-rapid-transit-a-cost-effective-mass-transit-technology/>
  - <https://discovery.ucl.ac.uk/id/eprint/110/>
  - <https://sthlmchallenge.se/>
- Statistics about Bogotá
  - <http://thecityfix.com/why-is-transmilenio-still-so-special/>

## Case Study #8: Cool Riding

### Background

People in Qatar suffer from some of the same problems as people in North America. Many people do not get enough exercise, and cardiovascular disease is common. Lack of exercise has led to more obese children. This hot desert country is located halfway down the Arabian Peninsula on the Persian Gulf and has a population of 2.8 million. The capital city, Doha, is well connected to the rest of the world by seaports, airports, and communication technology. Doha is an important commercial and cultural center.

### The Problem

For people in Qatar, cycling is not the obvious choice. Qatar's climate is intensely hot and humid. As a result, many people drive, contributing to inactive lifestyles as well as air pollution and greenhouse gas emissions.

### The Solution

With support from Velo Mondial and several corporations, the country is building a cooler bicycle path. The path will not be air-conditioned, but cold ground water will create a mist that comes out of an overhead canopy onto cyclists to cool them. As part of this project, training in the basics of cycling will be provided to Muslim women to increase their use of bicycles as an alternate means of transportation.

### Challenges and Future Possibilities

Similar projects could succeed in other hot and humid cities where cycling is not a common method of transportation. Many cities around the world are interested in finding creative ways to encourage people to bicycle. Some cities are even providing bicycles for people to ride. Velib (Velo Liberte) in Paris, France, for example, is a self-service bicycle system with more than 20,000 bicycles available at nearly 1,500 stations for citizens and visitors to rent. Similar systems such as Bicing (in Barcelona, Spain), Bixi (in Montreal, Canada), SAMBA (in Rio de Janeiro, Brazil) and B'easy (in Santiago, Chile) exist around the world. These programs need to address design and cost issues and connect with existing infrastructure.

### References and Resources

- Cool Riding Video:
  - <http://www.youtube.com/watch?v=nmmdjqul9Tc>
- VELIB:
  - [http://www.nytimes.com/2008/07/13/world/europe/13paris.html?\\_r=1](http://www.nytimes.com/2008/07/13/world/europe/13paris.html?_r=1)



## Case Study #9: Grandma Rides Again

### Background

In 2007, a car-free family in Portland, Oregon, received a visit from their out-of-town grandmother. Todd, the father in the house and Grandma's son, and the rest of the family were faced with a challenge: how to transport Grandma without using a vehicle. Born in 1915, Grandma was mentally sharp, but she was also frail, arthritic and had a history of falls. How would they do it?

### The Problem

Todd wondered if the family's Bakfiet bike (Dutch for Boxbike) or Bak (for short) could provide the solution. If so, how would they make it safe and comfortable enough for Grandma to ride? With Grandma arriving at the airport in a wheelchair, Todd and his wife had some serious doubts about their idea. How could they get her on a bike to show her around town? The bike itself had only one gear, a single brake, and was hard to handle. Would Grandma even want to get on board?

### The Solution

Grandma and Todd decided to line the Bak with fleece blankets and pillows. Grandma insisted on getting into the Bak herself and soon they were off. While pedaling in traffic, Todd rang the bell a lot, and they both waved. They reported, "Many people were too stunned to wave back. Others cheered. Another white-haired lady called out 'Am I next?' "

They rode to a local schoolyard full of playing children. Then they headed to a neighbourhood with on-street bicycle parking. From there, they rode to a huge sunflower/mandala painted on a street by neighbors to reclaim public space. Todd asked grandma, "This is our high-stress commute; how do you like it?" She chuckled nearly continually." The highlight of the trip for Grandma was crossing the Hawthorne bridge over the Willamette River, a bridge at the time had nearly 15,000 bicycle crossings per day. 20%, or 1/5, of all vehicles crossing the river are bikes.

### Challenges and Future Possibilities

Todd believes that in the next few years, more people in America will begin using their bicycles to commute. Like in Grandma's girlhood, in Europe and Asia today biking is a very common way to travel. Todd predicts that living and working closer to home (perhaps 20 km or less between the two), will become more common. Todd views this as an opportunity for people to recover something they've lost because of our current dependence on cars. Although there will be challenges, he thinks it will be joyful for many people, like it was for Grandma.

### References and Resources

- Here two articles to check out:
  - <https://www.clevercycles.com/blogs/news-and-events/grandma-got-bakfiets/>
  - <http://letsgorideabike.wordpress.com/2009/06/04/exclusive-grandma-rides-a-bike/>

## Case Study #10: Streets for Living

### Background

Livable Streets Education (LSE) programs in New York City help teachers and schools bring important ideas about urban living into their classrooms. With a focus on people, LSE works to help redesign communities around public transportation; walkable, bikeable streets; and healthy, livable, and affordable urban environments through special projects. LSE works closely with educators, connecting schools with city agencies and community-based organizations.

### The Problem

Vehicles often dominate large cities and city roads. They make neighbourhoods less green, less safe, and less enjoyable for residents who must navigate noise, air pollution, and the risks of walking and bicycling on busy city streets. Decisions around street design and layout are made without input from youth, leaving an important voice out of the creation and growth of cities.

This project turned that thinking on its head. LSE and Local Business completed a six-week intensive study with Grade 7 learners. The learners fulfilled their community service requirements while exploring two big ideas: How can we improve our neighbourhood streets for the local community? How can we make public space greener, safer, and better for local business? The learners completed the study near their school at 109th near Broadway in New York City. They worked in groups to create digital photo simulations and wrote letters to present their ideas for better streets.

### The Solution

The study began with a community walk. Learners were asked to think about what they knew and what they would like to know about streets and public space. They spoke to the District Manager of the local Business Improvement District to learn about his role in addressing local problems and opportunities. Learners interviewed a long-time resident of the area and learned about the public space and street activities she remembered as a child. They learned about leading street design and joined one of four class groups: Bike Lanes, Safety, Beautification/Public Art, and Bus Lanes.

Learners took pictures in their neighbourhood, and with help from a graphic designer they traced their visions of change over their photos. They added explanations to their pictures and presented them in class. After learning about advocacy, learners had a chance to reflect on what they learned and to write letters requesting a change or two they would like to see in their neighbourhood.

### Challenges and Future Possibilities

Learners wrote letters to officials explaining their ideas and requests. Learners learned that they could contribute by imagining and communicating their visions for the future. Projects like this one illustrate that learners have important and creative ideas about their communities. When given a voice, youth can help shape sustainable transportation visions in their communities and around the world.

## References and Resources

- 30 Most Walkable Places to Live:
  - [https://www.insidermonkey.com/blog/30-most-walkable-cities-in-the-world-1261258/#google\\_vignette](https://www.insidermonkey.com/blog/30-most-walkable-cities-in-the-world-1261258/#google_vignette)
- 880 Cities
  - <https://www.880cities.org/>