

Janel McCaffrey  
September 24, 2009  
Transportation Project

I have chosen to research the subway system or tunnelbana, as it is known, in Stockholm, Sweden. I will explain why this particular mode of transportation is unique and contributes to the "green design" of the city. I will demonstrate that you can change the way people commute, contributing to a positive impact on the environment. As you will also learn, not only is the subway a great alternative to private cars in Stockholm, it is often said that "The Stockholm Subway is the longest art exhibit in the world".

When you think of the subway, somewhat seedy images come to mind, but despite this, you will still find crowded subway cars at peak hours because it lessens traffic congestion and noise, is affordable and is not usually affected by weather. Most subways are fairly aged, damp, unattractive and dirty. If cities want people to make a change to move from their personal vehicles to public transportation such as the subway as way to improve the environment and reduce greenhouse gases, these issues need to be addressed.

Using public transportation and more specifically, the subway, would be an obvious green alternative to driving. Using this option would lower greenhouse emissions by taking more private vehicles off the road. Fewer vehicles would mean less traffic congestion, less idling in traffic and less noise pollution. "Transportation, specifically the combustion of fossil fuels in our vehicles, is the single largest source of human-made greenhouse gases." ("Fuel Economy") The increased use of electricity powered subways would certainly help in lowering these emissions.

In Stockholm, "...all subways and commuter trains run on renewable electricity making them an even more environmentally sustainable means of transport." ("European Green Capital") The renewable energy comes from wind and water and because of this, the subway and rail services only release small amounts of greenhouse gas. This in turn means that choosing to travel by subway produces about 30,000 times less carbon dioxide than that same trip by car ("Stockholm Public Transport"). In response to that fact, Stockholm has made impressive efforts to get residents to think more environmentally. For example, in March 2006, they introduced a congestion tax that charges a tax to all

vehicles driving in and out of the city. This has resulted in more residents seeking alternative methods of transportation which has increased ridership on the cities subways and other modes of transportation. The city has reported that 70% of trips during rush hour are made by public transit. (Beatley, 109) Stockholm has since seen a lowering of emissions by "10-14% and air quality has been improved by 2-10%" just because residents have sought alternatives to driving into the city. ("European Green Capital")

Imposing a tax is one way to get people to use public transportation, creating an inviting environment would be another. If you want people to make lifestyle changes you need to make them feel comfortable and safe. As I mentioned before, most people simply do not like their experience in the subway, it can be dark, dirty and odorous. To get people out of their comfortable cars and into the subway, these things will need to improve. My personal experience in Stockholm was pleasant and proof that things can be done to improve conditions. The first thing one might notice is the cleanliness of the



Floor lighting in one of the stations

platforms and how well lit they are. There are also plenty of maps and electronic messaging boards that announced which train would be arriving next, on what track and how many minutes until it arrived. I found the system easy to navigate and very convenient to the places I needed to be. I also noticed that each stop was

announced in Swedish and English and you could follow your progress down the line on the many maps located inside the cars. The cars I experienced were clean and modern, although they do still have some older cars which were not as attractive, but they were clean.



I also noticed that they had many escalators which moved many people quickly to and from the platforms. Lastly, their system is affordable. Stockholm finances their public transportation through various means, such as county general tax and fare revenue. They have justified the use of

tax funds because it is felt that "public transportation benefits everyone, not just the riders" (Beatley, 119). All of these things contributed to having a good experience which in turn changes people's perspective in a positive way.



The most impressive part of the subway experience in Stockholm had to be their use of artwork in their stations. The majority of Stockholm's subway stations have been decorated with sculptures, mosaics, paintings, installations, engravings and reliefs by over 150 artists. The city spends a considerable amount of time and money each year supporting these projects. Some stations are large and cavernous and you can see how the tunnel was carved out of the natural rock. Others use bright colors and earth themes to bring a warm feeling to riders, there is always something to catch your attention and bring your thoughts away from the fact that you are in a subway station. As Beatley suggests, the atmosphere of such stations make it almost an attraction in itself (pageX).

Although Stockholm is making many efforts to move towards sustainability, some of these ideas do come with a downside. For example, imposing the congestion tax has been great in lowering traffic congestion and increasing ridership on subways, but the cost to install the monitoring systems, similar to EZPASS, was quite expensive. The increased ridership has also lead to crowded trains/subways and overloaded park and ride lots. While these are not impossible to correct, it will take some time to work out adding trains and building bigger commuter lots. There is also the argument that it is cheaper and less destructive to have people drive "green" cars than it is to build additional subway lines. Another problem is that Stockholm unfortunately experiences a lot of graffiti and vandalism to their subway cars, stations, and the artwork. Beatley notes that the effort to keep the stations and subways



cars clean and free of graffiti is a 24 hour a day effort and is very costly (114). This would certainly be one reason why this hasn't caught on in other cities. A third issue would be that there has also been some concern about the air quality in the subway. The Swedish Council for Working Life and Social Research became concerned after nine cases of lung cancer among subway drivers were reported. However, they concluded that "there is some evidence against the hypothesis that subway particles would be more potent in inducing lung cancer than particles in ambient air." (Gustavsson, Per, Bigert, Carolina, and Pollán, Marina 545 - 547)

Every effort to move towards green design will be faced with some obstacles, but I believe Stockholm is making a conscience and aggressive effort towards sustainability. The fact that Stockholm is the first winner of European Green Capital 2010 supports this conclusion. In the city's ongoing search for new and green ideas, they will soon be attempting to harvest the heat from the hundreds of thousands of commuters that pass through Central Station and use it to heat nearby offices buildings ("National Post " A3)!



## Bibliography

"About SL." *Stockholm Public Transport*. November 2008. SL, Web. 15 Sep 2009.

Beatley, Timothy, . *Green Urbanism: Learning from European cities*. Island Press, 2000. Print.

"Commuters' discomfort to generate heat for Swedish building." *National Post* January 11, 2008, : A3. Print.

*European Green Capital*. June 11, 2009. Web. 15 Sep 2009.

<[http://ec.europa.eu/environment/europeangreencapital/docs/about/brochure/egc-brochure-stockholm\\_en.pdf](http://ec.europa.eu/environment/europeangreencapital/docs/about/brochure/egc-brochure-stockholm_en.pdf)>.

"Greenhouse Gas Emissions...." *Fuel Economy*. U.S. Department of Energy, Web. 15 Sep 2009. <<http://www.fueleconomy.gov/FEG/best/GHGemissions.shtml>>.

Gustavsson, Per, Bigert, Carolina, and Pollán, Marina . "Incidence of lung cancer among subway drivers in Stockholm." *American Journal of Industrial Medicine* *American Journal of Industrial Medicine* 51.7 (2008): 545 - 547. Web. 15 Sep 2009.