



**THE ITACA PROJECT
aims at lowering carbon
output of urban transport
through the use of
sustainable innovative
technologies and optimal
management models**

ITACA ESSAY

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Beyond a mere mobility thing

Essay by Frank van Empel and Caro Sicking

'Travelling is not necessarily physically moving'

Professor Dr. Wim Hafkamp

Unfamiliar Roads

Start the engines to join the jam

Transportation is boring. Traffic is stuck. But cars are exciting. We want more and more of them. They symbolize freedom, as movement itself is an act of freedom ever since man can remember. On the meeting on sustainable mobility of VVM (Dutch Association of Environmental Professionals) in The Hague, June 17 2011, Jan Anne Annema from Delft University explained about two laws of mobility: the law of budget and the law of travelling time.

According to the first law, people use 11% of their income on travel expenses, which implies that the higher the income gets, the more man travels. Applying this law globally where large populated countries like Brazil, China and India are moving upward on the income-ladder, this leads to a frightening conclusion: more cars will start the engine every day and it will be unstoppable. The faster their cars can go, the more miles they will drive, obeying the second law of travelling time, that states people feel comfortable to travel for about 1,5 hours a day. The faster they go, the further.

Professor of Sustainable Development at Erasmus University, Wim Hafkamp warned in addition to this: 'Today we talk about congestion by cars. Watch out, tomorrow it will be airplanes we discuss.' During the last twenty, thirty years the repertoire of policymakers in the field of wheels and motion did not change. It's one big déjà vu of suggested solutions for problems like congestion and pollution that have no chance of being realized, ever, because almost nobody really wants to realize them; We all want to drive our cars.

However there is hope. It has to do with the rising popularity of the concept: 'feral transportation'. This pretty recent term in the lexicon of transportation professionals, comprises all those wild modes, especially used by youth, ranging from skateboards, dirt surfers, in-line skates, electric scooters and the like, to the Segway, the railbike and flashy shoes for experiencing a city that is built for walking. Older people have their own favourites: small electric buggies for instance, used for shopping¹.

The wild modes are in harsh contrast to the more settled modes: the family car (with applications like the caravan, ski-box, trailer, etc) and on the business side - truck and company car, plus the surrounding infrastructure of garages and gas stations to keep the rubber wheels going. Where the wild modes associate with feeling free, flexible, young, clean, open, receptive and adventurous, the more traditional modes breathe the spirit of bounded, fixed, unmovable, old, close-mouthed and destructive. By destructive we mean the congestion, pollution and the climate change they are supposed to bring about. Sketched in black and white and focused on culture, psychology, sociology and common sense instead of economics and traffic management, this

¹ Preston Schiller, Eric C. Bruun and Jeffrey R. Kenworthy, An Introduction to Sustainable Transportation, Earthscan 2010, pp 259.



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can be the beginning of an answer to the catch-22 like issues in this world on wheels that transportation professionals cannot give us from the specific worldviews of their profession alone².

One big reason why almost all measures to diminish congestion in the World on Wheels are doomed to fail, is: we love our cars and the economy loves our trucks and containers. We simply cannot kill our darlings. We are our cars. And the only way out is the one that runs through our brains. The one with unconventional traffic signs, like: 'Be yourself, be a MagLev'. A MagLev is a public service vehicle that looks like a pretty casual bus, but is driven by magnetism. There are two technologies involved here: magnetic repulsion, where the vehicle is pushed away from the track, and magnetic attraction, where the vehicle is pulled towards it. In either case, there is no physical contact between track and vehicle except at very slow speed.

Traffic & Transport is an a-typical sector. It is as if everything works out differently from what originally was the intention. One logical solution for the traffic jam for instance, road expansion, actual creates more congestion than might have otherwise occurred. This well-documented phenomenon has to become known as 'generated traffic'.

People always act different from what planning schemes and models presume. Policymakers and hands-on managers find it difficult to cope with such unpredictability. They want it orderly, well-organized. They utterly dislike the chaos of the social network society and try to escape to a more linear world, that of technology. That's why there are so many technical solutions for fundamentally psychologically or sociologically human problems.

Asking for clues

On behalf of the EU/Interreg(ional) IVC program POWER, and more in particular project ITACA (Innovative Transport Approach in Cities and metropolitan Areas) the Brabantse Milieufederatie (BMF) – a federation of environmental special interest organizations and communication partner for ITACA in Noord-Brabant – has organized 'open space' sessions with experts, citizens, politicians & managers. 'The original outline of the project changed due to growing insights and the information partners shared between them,' Michiel Visser of BMF states, 'we wanted to come up with useable policy advise for local and regional area's for the next twenty years. So we invited experts to give some clues for a more sustainable transportation and citizens to tell us what they want or need. In the end they determine how fast and how deep we may dig.'

The main issue is 'the accommodation of the growth of automobility', the experts reflected. Suggested solutions were far from revolutionary. But reviewing the words on and in between the lines, we conclude that there is common ground with regard to at least four points:

1. The freedom to choose. Managers, used to a top down regime, are prepared to give people on a lower level in the organization more room for their own interpretation and self-governance³. Not in a fit of altruism, but because the knowledge, the contacts (social networks), the adaptation capacity, creativity and strength that can be found or developed there, in the frontline.
2. Engaging more people in decision-making, personally. Democracy as we know it works on the principle of representation. The word governance derives from the Greek verb *kubernáo* which means to steer and was used for the first time in a metaphorical sense by Plato. It then passed on to Latin and further on to many other languages. Professional 'consultants' consult, negotiate and decide on behalf of people who don't feel committed themselves. The way out here seems to be decentralization of decision-making and de-layering hierarchy in such a way that the ones who decide also reap the fruit or sit on the blisters.

² Catch-22 is a logical paradox arising from a situation in which an individual needs something that can only be acquired by not being in that very situation; therefore, the acquisition of this thing becomes logically impossible.

³ For the Networksteering perspective we leaned on and have borrowed from Hans Jeekel, *De Auto-Afhankelijke Samenleving*, Eburon, 2011, pp 256-265.

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3. Technological solutions for diminishing the emission of greenhouse gasses and congestion. For instance: loading electric cars on the road, while driving, powered by brand new radiating technology. Cheap and clean engines (1 litre gasoline for another 40 km).
4. Access instead of ownership. A lot of cars don't cover 12.000 km a year and don't move for 80% of a working week. Louis van den Heuvel, one of the experts invited by the BMF, has started a company, 'Zoem', specialized in leasing a range of electric transportation modes - bicycles, scooters, Segways, cars, delivery vans - that can be shared by a group of people who know each other pretty well and live close by one another; neighbours for example. Zoem starts with backing of the province of Noord-Brabant in two neighbourhoods in 's-Hertogenbosch, the provincial capital. 'You know who the other drivers are,' Van den Heuvel says. 'That feels trustworthy.'

How big is the change potential in society?

Are the four principles mentioned above strong enough to counter the trend? The trend is that we are going to use our cars even more in the future than we did in the first decennium of the 21st century. In 2030 83% (to 76,5% now) of kilometres in the Netherlands for example will be travelled by car. Two-third of all change-places will only be possible by car then⁴.

Nobody talks about heavy investments in railroads. Trains are out of fashion. Boats are popular, for pleasure, and so are planes. Policymakers have to count in all these factors. What about the possibilities to influence what is already happening? We are talking about steering perspectives here. Recent scientific literature – April 2011 – distinguishes four perspectives: (a) Following in a sensible way, (b) Optimistic Switch, (c) Transition and (d) Creative Complexity.

The first and the second perspective can be characterized as 'business as usual (bau)'. Perspective a. is somewhat ignorant. The purpose is twofold: to keep on driving and to save the world from climate change. The first goal of the second perspective is keep on driving. Climate change is 2nd class. In perspective c. bringing to a halt climate change is top priority. Big changes are necessary to save mankind. To guarantee success (oh irony) the changes are organized and performed top down. In d. nobody tries to mature people as fast as possible along more or less closely defined change lines. Starting point is the change potential of society. When society is ready for it some kind of 'self governance' will replace hierarchy. This will start in the most developed countries with the best educated people and Internet access.

Navigating through a non-linear world

In the Network Society Network Steering is the best, but not the easiest, way to organize People, Planet and Profit. The Network Society is a non-linear world, in which it is not easy to navigate. Network Steering is all about following your senses. It is the art of taking time before choosing a direction, in order to feed the dialogue between countervailing insights, which has to lead to passable roads (practicable ways). Network Steering is about walking or driving down unfamiliar roads without prejudice.

Managers who have experience with complex systems know that a more structural management of wicked problems is not possible. Smart interventions are the highest possible result. Every opportunity, every chance has to be taken to dance with the systems. Typical for this line of thinking, deciding and acting is the experimentation in several development rounds. After each round the results are monitored, evaluated and reviewed, in order to get at least learning results. In this steering model nobody tries to mature people quickly

⁴ Hans Jeekel, De Auto-Afhankelijke Samenleving, Eburon, Delft 2011, pp 239

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into more or less defined change outlines. A big difference with the other steering perspectives is that the goal is not fixed in advance. It emerges during the process. In this perspective no one believes in top-down steering.

Living in a society that can be characterized more and more as a global network commonality with different layers, loyalties and endless streams of information sharing between numerous people, the network steering model seems to be the most adequate way for decision-makers, politicians, and managers to cope with reality and try to initiate change. Because: how relevant is a neat hierarchy to a world characterized by complexity and chaos? Self-organization in business relies on intelligence that exists in every part of a complex adaptive system (in the mind of every employee) and makes it possible to tap this resource and release its formidable potential. That capacity, in turn, allows companies to seize opportunities and solve problems when they arise. Self-organization and emergence are the twin engines of adaptive work.

Another question that badly needs an answer: To what extent can change be managed? The dominant Newtonian worldview underlies much of the thinking in this field: a common feature is an implied predictability – if management does this, then that will follow. Complexity theory offers a different insight: We can never direct a living system. We can only disturb it. What rests are society structures, decision models, infrastructure and technologies that may tend towards ‘small is beautiful’ or ‘close is fine’, and de-materialize our increasingly hyper-materialistic societies where cars, tv’s, iPhones, iPads, etc are standard. Feral transportation announces a new sustainable lifestyle, with freedom to choose, some kind of direct democracy, close to the people, a lot of technological innovation and access to all kinds of services instead of ownership of things.

ITACA findings

Cinderella’s matching slipper

The European Commission aims for the EU to grow out of oil with a single European Transport system, as soon as possible, but ultimately by 2050. This ambition is stated in the Whitepaper ‘Roadmap to a single EU Transport Area – towards a competitive and resource efficient transport system’ dating from March 28, 2011. ITACA fits in like Cinderella’s foot matches the slipper. ‘Curbing mobility is not an option’, according to the EC, but smartening up, making transport efficient – on energy and accessibility levels – safe and sustainable is desperately needed. Doing so a European standard needs to evolve, for Italy to be able to connect with Sweden, or Spain with the Netherlands, to name the countries where ITACA’s partners lay.

As we speak, the transport section of the EU depends for 96% on oil accumulating to a € 210 billion import bill in 2010, spreading Greenhouse gasses (GHG) all over the continent polluting air and water, while the Europeans breathing it are spending their time in traffic jams. Not a nice picture. We need to kick the habit, reduce GHG with 60% below the 1990 level by 2050, resolve congestion, stay tuned with one another and keep on moving for the economy to be able to grow and the population to be/stay healthy. That is the job. Some would call it decoupling; economic growth paired with environmental damage reduction.

Participants in the Power ITACA project are from Italy: the Region Emilia – Romagna, the province of Rimini, the city Ferrara. From Spain: Instituto Nacional de Técnica Aeroespacial (INTA) and the province Huelva. From Sweden the city Lidingö, situated near Stockholm, joins and in the Netherlands the Brabantse Milieufederatie (BMF) is partner.

Seemingly very different localities with a variety of transport issues gather under the ITACA flag. Huelva has the problem of safety, with trucks driving through border town Rosal de la Frontera on their way from Lisbon to Seville, emitting GHG as well. Apart from that the small town suffers from congestion and cars parking on pavements thus endangering and hindering pedestrians and cyclists. Not that there are so many, but this is what the Dutch call a matter of chicken or egg – which one was first?

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Curbing transport is not an option

In Rosal de Frontera (1880 inhabitants) they have opted for technological solutions – improving pedestrian and cycling infrastructure and for instance putting plants on the sidewalk leaving no more room for cars to park. This way the pedestrians get more space and have a safer walk. A 7 km long Green path links the town centre to San Isidro Park where in the month May thousands of pilgrims go to visit the shrine. A by pass should keep trucks out of populated areas.

The village Almonaster, where 600 people live, is the centre of a group of 14 small dwellings. People go there to visit a doctor or the bank, especially elderly people. The younger generation travels for work and shopping, maybe school as well. The roads are dangerous and everybody who owns a private car prefers this to public transport. Should you go by bus, it will leave you appr. 1 km ahead of the village, making you walk the final leg. In this area a schoolbus, 4 zonal teletaxi and car sharing platforms are in order, just like improvement of the roads. These measures mainly improve the accessibility of the area, providing locals with transportation means that are safe and open the way. Like the EC writes: Curbing transport is not an option. For prosperity and cohesion people must be able to move.

I want to ride my bicycle

The province of Rimini in Italy is the youngest of the region Emilia Romagna. It was constituted in 1995. Recently, in 2009, some 7 municipalities from neighbouring Marecchia were added to Rimini. The province sides the Adriatic Sea. In summertime the population explodes from the constituent 321.000 inhabitants with 3 million visitors/tourists staying on average five days. How to cope with that in sustainable transportation terms? All these people come and go, drive the roads, visit sites, park along beaches and in centres of municipalities. And then, all of a sudden – so it seems – they are gone, leaving 10% of their total behind.

The Italian ITACA partner aims at a new culture in mobility, turning it sustainable, under the title Aree Produttive Ecologicamente Attrezzate (APEA, ecologically equipped production areas). Rimini town is one of the three APEA's. The province names the creating of cyclist paths in the period 2008 – 2010 as showcase: 'In particular, in the last three years a new path has been realized by the Via Marecchiese, a road connecting Rimini to Novafeltria, by separating the cars' roadway from the bicycle path. The same thing has been done on the Via Montescudo, between Rimini and Montescudo and Rimini and Coriano. The total length of the path is around 12 km. Furthermore, in development stage, is a new path, for bikes and pedestrians along the banks of the river Conca, a well known naturalistic area. Objective of the showcase: To increase bicycles mobility and to make it safer.'

Who is taking the kids to school and how do they get there?

The second APEA is Raibano and the third is to be found in the newly adjusted area: Cattolica - San Giovanni Marignano. There a great number of workers, mainly women, drive on daily base to their jobs. Most of them live relatively close-by, only 30% has to commute further than 10 km.

They have children these women, children that need to be taken to and fro schools. All in all there is a lot of mobile activity, cars with employees driving on and off, managers in their subsequent cars and of course trucks delivering and distributing goods.

All stakeholders were surveyed; asking them what is needed to get them out of their (private) cars, looking for ways to reduce the number of vehicles while increasing the quality and sustainability of transportation.

The involvement of municipalities, companies and local communities was perceived essential to reach the goal. People do not get out of their cars, just because you ask them to. Sometimes it takes a small adjustment, for example in the bus' timetable to make the difference. The home – work mobility Plan resulted e.g. with car-pooling, improved public transport, safer and more convenient cycling paths and – apparently an

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important perk for change - improving the reconciliation of free time and work. The last shows the importance of involving others, in this case the employers, and of taking the issue as a whole, not merely as a 'mobility thing'.

Mobility from door to door

Cycling – introduced in Spain and Italy as one of the sustainable solutions to mobility issues - is already a largely cultural accepted and much used manner of transport in the Netherlands. In the province of Noord Brabant, everybody owns a bike, and uses it for recreational purposes as well as for 'serious' transportation. Companies and governmental agencies offer state of the art bicycles to their employees instead of paying overtime or in some sort of different 'programme'. There are many cycle paths all over the country and in traffic the biker enjoys priority. As a matter of fact, large cities in the Netherlands, for example Utrecht, suffer from bicycle congestion and have bike parking problems. Sustainability is never served with 'big' and 'much'. The Dutch partner of ITACA, BMF, invited the other parties to visit Houten, a town that built its entire infrastructure around bicycling. The urban planning was drawn on the concept of quiet and safe neighbourhoods. Cars can enter, but only on specific roads. If you want to cross Houten, better take a bike, you will be at your place of destination much more faster than by car. It is called bicycle town.

In Houten the Euregion colleagues were invited to ride a so-called OV-fiets (Public Transportation bicycle). The concept OV-fiets is based on the idea of multimodal transportation; in order for people who travel by train to get from door to door instead of stranding on a railway station far from home or work, or wherever the trip is taking them. Next to the conventional bicycle, there are electric bikes and electric scooters available at 225 service points close to stations. There are also many initiatives, trials and errors on subscriptions available in the Netherlands that allow one to change from train to tram, to bike, to rental car, bus or taxi. All meant to get people out of their private car, trying to make it comfortable, easy and affordable to check out of the one-man-one-vehicle-mode.

Sprawl busters for city life

The Swedish city of Lidingö enters Power from the other end of the spectrum than Huelva and Rimini did. Sweden has a whole different heritage of city planning and energy management and Lidingö is a child of these. Situated on an island in the archipelago North East of central Stockholm, Lidingö has 44.000 inhabitants. Two members of the band ABBA originate from the city in Stockholm county, where the dependence on oil has already been reduced and fossil fuels have gradually been replaced since 1991 by biomass and other renewables. (See the essay Carved in Wood, Timber project on biomass in Stockholm county) The area has its own issues one of which is sprawl, according to Karl-Olov Arnstberg of the Department of Ethnology from Stockholm University in a Research Report dating from June 2003.

Sprawl is defined as: poorly planned, low-density, auto-orientated development that spreads out from the centre of communities and gradually leads to decline in community life and values, erosion of the economic base in villages and towns.' Some call it the doughnut-effect; building a traffic ring around the centre containing shopping malls and other 'attractions' thus pulling all life out of the hart of a town and leaving it empty and forlorn. One thing is for sure, not only the Swedish suffer from this, the US even has 'sprawl-busters' ready to take action wherever a case of sprawl pops up. And many a town in Western Europe can be diagnosed with sprawl as well.

In Sweden urban planners are aware of the history of urban planning, starting with a crisis in 1880, causing people to live in unhygienic circumstances in damp basements or under whatever roof they could find to cover their heads and bodies. The poverty and inequality led in 1930, under a social democrat government, to the idea that people are equal and deserve to be treated that way. This came to the point where government took over housing and the tradition of straight, functional and unnoticeable building began, governmentally institutionalized. At first the success was unequalled and Sweden entered a golden age. However, like in other Western European countries i.e. the Netherlands, we are equal was being confused with we are the same... And diversification of the society, through the entrance of immigrants and refugees, taught that being equal does not

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mean being the same. People ended up living separate lives midst of their own peer groups and not communicating to the others – like in so many Western European country – which, as we all know, was not beneficiary for society to become a coherent and empathic community where differences are put to dynamics.

By now some in Sweden yearn for compact cities, like in the South of Europe for example. Looking at the physics of Stockholm county, surrounded by water with harsh winters and sunny summers, taking into account the existing infrastructure, and contemplating the problems of compact cities, this (Mediterranean) type of city building seems not to be the right option.

Mobility, sustainable mobility, between communities, inside communities, from home to work to school to shop to recreation and cross over, is one of the fashions to get dynamics in the street and the city centre. Stockholm county too suffers from GHG emissions (transport in this region accounts for 40% of the carbon emissions and devours one third of the total energy consumption) and congestion. Lidingö entered ITACA to look for methods. The municipality started with a bicycle campaign, just like the partners, to get its' inhabitants moving (which is healthy) without fuming gasses polluting the street. The bicycle project fits into another EU project Lidingö participates in: Building healthy cities.

Overlapping another Power project, e-mob, in the natural course of things, ITACA partners investigate different, more sustainable fashions of fuelling transportation, therefore also electric cars are part of the project. As by now is common knowledge electrical transportation emits no greenhouse gasses whatsoever while riding. The amount of carbon it disperses depends on the energy source and is emitted at the source. Electric cars are perceived to operate optimal inside urban areas. Engineers have not yet found solutions for the storage of fuel to enable the electric car to cross over large distances. The best part for carlovers is: they can keep on driving with clean hands, consciousness and air. Electric vehicles are perfect to reduce noise pollution as well; they whisper instead of growl.

Electric – hybrid –hydrogen

The Spanish province Huelva lodges a department of INTA, where, apart from military and aeronautic / spatial development and research, a lot of knowledge and experience on sustainable methods of transport is bundled. INTA is involved in testing and certification of vehicles for road safety. The institute studies electrical, hybrid and hydrogen transportation and innovative techniques for sustainable low-carbon transport.

Some of the questions INTA tries to answer: Which means are the best available on short-mid term? What intelligent transportation systems can we think of? The research institute came up with comparisons of the different fuelled vehicle; well to tank And tank to wheel. Thus discriminating the energy source used as well. INTA monitors data about the conduct of the e-vehicles in the different regions – variety in climate, roads, mountains or flat land et cetera – in the framework of ITACA as well.

All partnering regions are experimenting with electric public transportation, tour cars, taxi's, lease-cars for companies, civil servants et cetera. More on this can be read in the E-mob story.

Although electric transport seems promising, especially in urban areas, there are some downsides to it. One of them is safety: you don't hear the cars coming. Plus, filling cities with electric cars will not solve the congestion issue or parking problems (even if a region generates enough clean and renewable energy to fuel the automotives as well as household and factories, has sufficient charging points et cetera – again, more on this in the E-mob story) The BMF arranged to consult transportation experts, civilians and governors/administrators in three different open space sessions; asking people, professionals as well as laymen how they think sustainable transportation can be accomplished. And while doing so, creating a network of engaged partners in different layers of society.

Before the first meeting took place, Dutch environmental professionals gathered in Den Haag for the conference on sustainable mobility, organised by VVM that was mentioned before. In what can be called a 'thinking paper' recording that event for the province of Noord Brabant Frank van Empel describes the dilemma. The essay's title

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is: Stuck between the wheels (Klem tussen de wielen). The wheels representing two conflicting aspects of mobility: freedom and accessibility.

In short, when everybody moves freely around in private cars, nobody will get far, because the roads are blocked. Drivers become each other's prisoner and the freedom of movement transforms into standing still in the traffic jam. Yet, people are so very attached to their private car that it is almost impossible to get them out of it. The car is perceived as an extended home on wheels where one contemplates and sometimes drinks a cup of morning coffee, shaves or puts on make-up before entering the working place, it is a symbol of status and illusion of freedom – 'I can drive to Paris any time if I like instead of going to the office' – So, although in a number of cases it is much more sensible, sustainable and free to travel with public transport (one can take the train to Paris as well) people stick to their vehicles as if it were a second skin. Politicians are afraid to touch their voters' tainted love and shy away from measurements to reduce the use of it through pricing or other unpopular regulations.

Whereas one expert calls for technology to bring solutions, another one claims that technology only leads to more use i.e. more congestion (Generated traffic). Conclusion of the conference is that nothing new grows under the sun. Everything seems to be tried – broadening roads, which results in even more congestion than keeping them smaller sized; cleaner cars, but more of them pollute just as much, et cetera – but nothing works. It looks like the proverb predicts: what's been given attention grows.

ITACA recommends Noord Brabant

From the exchange of knowledge with the project partners and the discussions at ITACA meetings in Brabant some recommendations were formulated to incorporate in a road map to Sustainable Mobility in Noord Brabant:

- Transition from value-added chain to a value-added network;
- Stimulate and promote E-biking for shorter distances and develop and promote sharing vehicles
- Make sustainable road transport an integrated part of city investment plans
- A market approach for mobility (supply and demand) combined with government's responsibility for market regulation
- Experience, convenience, comfort, and personal safety should become the first principles for development en innovation.

Plugged: E-mob Findings

Sibling projects

Since E-mobility is one of the fashions that can make transportation sustainable, especially in urban areas, this Power project is presented as a sibling of ITACA here. We already saw electric vehicles enter the story above. Underneath text is from the e-mob brochure, written by Wendy Persoon from BOM, Noord Brabant, lead partner in the project. The partners were located in Oxfordshire, UK, North Brabant, the Netherlands, Malaga, Spain, Uppsala, Sweden and Krakow, Poland.



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Building a business case

The project E-mob has generated business cases to find out the liability of electric transportation on regional level. Unique circumstances in five different regions have defined five different business cases. All act on the level of expertise and the political mindset of the concerned region, yet they can inspire everyone working in the field of e-mobility. The business cases are explicitly not an end goal, but a starting point for further development of e-mobility in our region.

Six organisations in five regions acted as a linchpin to (further) develop a business case for their region. Using and building upon expertise available in these five regions, we invited local organisations and companies to debate and develop our ideas. We have now set the outlines of what could potentially accelerate the availability of e-mobility in Europe.

Transportation on electricity is still in its infancy and that it might take years for proper market introduction and acceptance. We therefore must constantly and actively steer and develop these business cases not only the technology for e-mobility and smart grids, but also on political and market level.

The next pages show the business cases for each region. The future is unsure and undefined, we therefore have no choice but to use a lot of maybe's and probabilities. This makes it both an exciting field but also very difficult to predict the speed and directions of the developments. But one thing is for sure: if we sit still, nothing will change... Will you team up with us to accelerate e-mobility in our regions? Contact us at wpersoon@bom.nl (Wendy Persoon, Lead partner E-mob project).

Overview E-mob

As part of the E-Mobility Accelerator project, each of the project partners was asked to identify a business opportunity in their region which could be used to accelerate the adoption of a sustainable market for electric vehicles.

Although all were starting from different points on the road to adoption of electric vehicles, several common themes were identifiable. The cities represented in the project were all picturesque historic cities, usually with road systems, which were not designed to cope with modern vehicles. Congestion was therefore often a problem with the associated pollution. Unsurprisingly, finding solutions to these common problems is what has led these cities to investigate the potential for electric vehicles.

Noord Brabant, perhaps the furthest along in developing its sustainable electric vehicle market, having already established the Triple-Helix' framework (industry, government and knowledge institutes), and already successfully backing several trial projects, is seeking to introduce electric delivery and passenger vehicles to one of its congested, historic city centres. Oxfordshire, on a similar path, has recently established the Oxfordshire EV Consortium as the partnership to promote an EV market and has identified the Low Carbon Community as its business opportunity.

Malaga has targeted the eco-tourist, proposing to establish an EV hire car fleet in partnership with local hotel chains. Visitors will be able to travel from beach to beach guilt free and hassle free with charging stations conveniently located at major hotels across Andalusia. Uppsala is looking to take advantage of an increasing number of businesses looking to test their sustainable products, including electric vehicles, by creating a cold climate test site with easy access to its two leading universities.

And finally, Krakow has identified that raising public awareness of the benefits of electric vehicles, whilst building the necessary technical expertise, is the main goal of its proposition. Therefore they have identified converting existing buses and taxis into electric vehicles, ensuring maximum access to the general public.



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As you can see, the opportunities are huge and varied. The projects presented here range from regions with established interest and expertise in electric vehicles to those just started their journey.

Notably, among the E-mob partners there are three universities – Malaga, Oxford and Krakow – who have more in common than electric transportation alone and the lead-partner, BOM from Brabant, is experienced in international cooperation. BOM was able to bring the partners closer to each other, despite regional differences. These characteristics of the partnership made communication flow and led to plans of working together on different subjects as well, like exchange programs for students and/or lecturers. The plans are not implemented yet, but the seeds are sown and intentions have been spoken out.

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Recommendations by E-mob

The partnership defines 10 objectives and has listed 40 recommendations for policymakers to enhance the share of electric vehicles in the sustainable transportation mix. The recommendations are divided into global and specific actions. The complete list can be found in the brochure 'E-mob policy recommendations'.

Recommendations of the E-mob partnership for Brabant

1. Stimulate demand for EV by supporting the development of new business models for public and private sector. Continued development of high quality public transport and facilities based on EV. (R-L)
 2. Create a forum of industry and market (EU,N,R):
 - * Coordinate and implement R&D and experimental programs;
 - * Promote new training and curricula;
 - * Encourage the use and development of new technologies and innovation about E-mobility & Smart grids.
 3. Standardization at European level (EU,N):
 - * The charging points;
 - * A standard of emissions CO₂ per km by 2015 and 2020;
- Reduce/eliminate the various taxes and fees associated with EV in European countries.

Together E-mob & ITACA state for Brabant

Develop, strengthen and promote sustainable intermodal and multimodal transport:

- * Develop and implement sustainable urban mobility plans and business travel plans, integrated with urban development plans;
- * Promote and facilitate practical projects and initiatives: awareness campaigns, car-sharing, infrastructure, incentives like parking facilities and use of public transport lanes (N,R-L);
- * Promote intermodal transport in the urban setting (R-L) through education, training, information and citizen participation; prioritize behaviour change through innovative social media channels;
- * Connect goals of different policy plans in the planning of new projects.

Cross cutting benefits/themes: Sustainable transport: ITACA - Electric transport: E-mob - Behaviour Change: TrisCo

Beyond a mere mobility thing

Routing on the unfamiliar road

Biomass for Bio-ethanol – 2 other projects entwining

Instead of building a biomass heat/energy generator close to a community, biomass can also be used as raw material for bio-ethanol, which is considered a healthy replacement of petrol in cars. Bio-ethanol does not emit CO₂. In Sweden SEKAB built a plant to experiment with woodchips from forest waste as a base for cellulosic ethanol. The company won the Sustainable Bio-ethanol Award for this initiative in 2009.

The advantage can be that, while people want supply security for heat and electricity, the production of bio-ethanol can probably be managed more flexible, i.e. when there is a surplus of waste wood, the factory goes full steam ahead and during times of shortage, production is lowered. Instead of demand driven, the local bio-ethanol plant will be supply driven by the local availability of biomass, thus reducing the risk of getting drawn into the destructive phase of fuel fighting food that awaits around the corner when scarcity enters the stage. This concept links to another Power project about Biomass (TIMBER) and is spoken of in the essay Carved in Wood as well.

11

Frequently Asked Questions on the SEKAB website

What are the plans for future production of ethanol?

In the long term, sugar cane will be the predominant raw material in the tropical countries, and the temperate climate zones will increasingly be shifting to manufacture of ethanol from raw materials rich in cellulose.

Where will cellulose come from in future?

Forestry cellulose primarily comes from residual products such as branches and treetops, wood produced by thinning, etc. From cultivated agricultural areas we will collect cellulose from surplus material such as stalks and leaves and surplus agricultural areas, which will also be usable as energy-producing forest instead of becoming overgrown and thus destroying valuable land for future cultivation. Household waste contains large amounts of cellulose – a raw material for bioethanol that will be of increasing interest.

Does ethanol combustion also create carbon dioxide emissions?

With regard to the effect on the climate, the carbon dioxide's provenance is a crucial factor, i.e., whether it comes from 'dead' or 'living' carbon. Both of the latter are stored solar energy, but the 'dead' carbon (oil, coal, and natural gas) has been locked in (fossil-fixed) under the earth's crust for 200 million years. Its release into the atmosphere results in an imbalance that affects climate. We get biofuels such as ethanol and biogas from the 'living' carbon that comes from the plants surrounding us today and that forms part of the carbon cycle, i.e., nature's way of moving carbon around to facilitate life on earth.

Photosynthesis in plants breaks the carbon dioxide down into carbohydrates, which build up the plants, and oxygen, which is emitted into the air. When the plant dies or is burnt, the carbon returns into the air and is then absorbed by other plants.

The 'dead' carbon in the form of oil (petrol and diesel), carbon, or natural gas comes from plants that existed millions of years ago. The carbon they absorbed is now released when these fossil fuels are used. There are no extra plants that can absorb this carbon. This means a raised carbon dioxide content in the atmosphere and an increased greenhouse effect.

Brazil – now the world's biggest ethanol producer – produces ethanol with a 90-95% net saving of fossil carbon dioxide. A report from Chalmers University of Technology (Magnus Blinge) shows that current ethanol production in Örnsköldsvik uses 2% fossil energy, which means a 98% net reduction in fossil carbon dioxide.

Beyond a mere mobility thing

Public transport with personal service – liberated bus routes

Network LA Transit is a conceptual design response by Gensler Los Angeles to an open invitation by Sci-Arc, The Architect's Newspaper and LA Metro to shift people from their cars to public transit. 'Increasing the movement of people, not cars should be the goal of any public transit initiative. For this ambitious project, Gensler Los Angeles proposes an integrated set of ideas to adapt the current system to improve its performance at the various scales based on user needs. The belief is that a more responsive system and an improved user experience ultimately leads to the means to meet that challenge', it says on the Vimeo page where the Gensler animation is parked.

The whole thing is about creating a public transport that delivers personal service. The main themes are: increasing choice, deliberating bus routes, a user friendly interface and user influenced system. To increase choice and flexibility, the bus stops stay fixed, but the routes are liberated. Passengers use a GPS to influence the route and plan their trips with an application on their phone. The idea fits perfect in a network society, providing one is networked and connected (which is a big disadvantage). The concept is public transport offering personal service using communication technology and IT to make it happen. AND: to make public transport sexy and hip.

Walkable cities

Urban planning has a lot of influence on the mobility needs of the inhabitants of the city. When the supermarket is right around the corner, one doesn't need to take the car to get groceries. On a US website <http://www.walkscore.com/> one can calculate the walkability of the neighbourhood. New York and San Francisco lead the list scoring 85.3 and 84.9 on the scale 0 – 100. When there is a bookshop, cinema/theatre, supermarket, restaurant, school, bank et cetera, the town scores high on walkability.

There is more to mobility than congestion and pollution; Treehugger, a Toronto blog, describes how a boy got killed when stepping with his mother out of the bus in a remote area. There were no sidewalks, no pedestrian crossings, no traffic lights and the boy crossed the road. A car hit him and killed him, it apparently was a drunk hit-and-run. His mother is convicted of vehicular homicide. The town where this happened scored a mere 20 on the walkscore.

Measuring the walkability of an urban area – preferably before building, renovating or changing it – can raise awareness and influence the infrastructure and traffic management turning urban mobility more sustainable. It can turn into a powerful instrument, allowing civilians to communicate with planning professionals in a non-emotional, rational way on how to improve their livelihood.

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