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**'Technology Options in Urban Transport:
Changing Paradigms and Promising Innovation
Pathways'**

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Table of Contents	page
Preface	3
<i>Purpose of the report.....</i>	<i>3</i>
<i>Choosing participants for the meeting.....</i>	<i>3</i>
Executive Summary	5
Chapter 1 – Demography, urban characteristics and transport patterns 7	
1.1 <i>Copenhagen as transport city.....</i>	<i>7</i>
1.2 <i>The participants’ backgrounds.....</i>	<i>7</i>
1.3 <i>Transport habits among the participants – active road-users and cyclists.....</i>	<i>7</i>
Chapter 2 - General attitudes to urban life and transport – today and in the future	9
2.1 <i>Copenhagen is the right place to live – when you are young!</i>	<i>9</i>
2.2 <i>Moving from A to B with the least possible effort</i>	<i>9</i>
2.3 <i>Environmental benefits are welcome as an added bonus of the daily choice of transport.....</i>	<i>10</i>
2.4 <i>Other choices in life influence the choice of transport.....</i>	<i>11</i>
Chapter 3 – Attitudes to different technologies and policy measures – positive and negative consequences of future urban transport.....	13
3.1 <i>Reduced complexity and long-term solutions wanted</i>	<i>13</i>
3.2 <i>Bicycling and public transport is the way to go – and cars will have to yield</i>	<i>13</i>
3.3 <i>Great openness to different solutions – as long as they work!.....</i>	<i>15</i>
3.4 <i>The carrot is nicer, but the stick is what works</i>	<i>16</i>
3.5 <i>Equality must be maintained</i>	<i>17</i>
Chapter 4- Responsibility – politicians, individuals, industry.....	18
4.1 <i>The responsibility is shared, and the bill must be divided accordingly.....</i>	<i>18</i>
4.2 <i>The EU as framer.....</i>	<i>18</i>
Chapter 5 – Additional points	20
5.1 <i>Crucial points from the first four chapters</i>	<i>20</i>
5.2 <i>The participants' own suggestions for new transport solutions</i>	<i>20</i>
Chapter 6 – Appendix	22

Preface

Tuesday June 14th 2011, the Danish Board of Technology hosted a so-called *interview meeting* in the centre of Copenhagen. 30 participants heard a presentation on the theme of urban transport, filled out a questionnaire and debated a number of issues in relation to the existing and the future transport system in their city. Similar meetings were held in Budapest, Hungary and Karlsruhe, Germany.

Purpose of the report

The interview meetings are the central elements in the fourth phase of the STOA project: *Technology Options in Urban transport: Changing Paradigms and Promising Innovation Pathways*. The purpose of this phase is to take a closer look at the attitudes and perceptions of the citizens in European countries when it comes to urban transport.

ETAG (European Technology Assessment Group) is conducting the project on behalf of the European Parliament's Panel for Science and Technology Options Assessment (STOA) which funds the project.

This report is one of the three national reports produced, one for each interview meeting. It sums up the attitudes and arguments presented at the Danish interview meeting. A synthesis report combining the results from the three interview meetings will also be delivered.

Choosing participants for the meeting

The participants in all three interview meetings were young people aged 20-30 living in the municipalities of Copenhagen, Karlsruhe or Budapest. Based on desktop research documented in previous deliverables and due to the fact that the necessary resources for covering a broader range of societal groups were not available, the focus was put on the travel behaviour and attitudes of young people. This group of urban citizens are used to quickly adopt new ICT solutions specifically and new ways of doing things in general and their views on a future urban transport system and new technologies and policy measures are therefore of great interest.

The participants were recruited by sending out a total of 2,500 invitations to randomly selected people in the target group. The invitation letter contained short information about the urban transport project and a brief explanation of the purpose of the event. The invitation letter was sent out about six weeks prior to the event. In the letter people were asked to register for participation via a webpage. They had to give details about their educational level, profession and age (see annex 5). Out of the positive responses a group of 40 people were selected with regard to the best spread in age, gender and occupation. Around three weeks before the meeting took place, the participants were sent additional information on some trends and challenges in transport in general, a fictive story illustrating different views on possible urban transport systems 10 to 20 years ahead as well as a list of words explaining the technologies and policy measures mentioned in the story (see annex 2). 30 of the 40 participants showed up at the meeting. The demographics of these 30 are presented in detail in chapter 2.

The interview meeting took place in the evening (5.00 – 8.00 pm) on the 14th of June at the Danish Board of Technology. It began with a short welcome and an introduction presentation to the theme. The main focus during the presentation was urgent trends and challenges in the transport sector as well

as the fictive stories. After a short break, the participants were asked to form groups to carry out the debates. Groups were built in advance by the moderators seeking to establish the best possible equal distribution in sex, age and professional background.

The report at hand consists of an analysis of the two phases of the interview meeting. Each chapter will give an overview of the key results from the questionnaire and present main conclusions from the group debates. Further information will be provided in annex 4 – transcripts of the interview meetings (only available in the national language) and annex 5 – the frequency tables for the quantitative material.

Executive Summary

The participants in the interview meeting on urban transport in Copenhagen are 20-30 years old, relatively well educated (or in the process becoming so) and only a few of them have children. Almost all participants use the bike as their primary means of transport. Only a handful of the participants are car-owners, and only a few of these use the car on a daily basis.

The participants are generally very happy to be living in Copenhagen. They enjoy the many services and possibilities offered by the city. In order to lead an active urban life, young Copenhageners need to move through the city, and generally speaking it is of crucial importance to them that this transport is as fast, as convenient and as inexpensive as possible.

Transport is an important element of everyday life. Consequently, transport must be adapted to the other crucial domains of life and their development. As young people begin to make more money, have children and move out of the city (which is what many plan to do at some point), they expect their transport patterns to change accordingly – typically towards increased car-use.

Young people are not blind to the environmental consequences of motoring, and basically they are very much in favour of making the city more eco-friendly by reducing CO₂ emissions, noise and air pollution. Asked directly, however, most of the participants state that the relative eco-friendliness of a given means of transport is not particularly significant for their choice of transport in the everyday. This apparent contradiction shows us that young people may support general planning and policies to boost the environment and the green areas in the city, but also that protecting the environment is not something that can be entrusted to the individual citizen.

When the participants are asked to consider how Copenhagen can develop towards greener traffic in the years ahead, they stress the importance of comprehensive long-term solutions. A majority of the participants feel that it makes most sense to strengthen the possibilities of bicycling and mass transit. This entails less room for cars, but only a small minority supports a complete ban on cars in the city centre.

The participants seem to be very open towards new ways of moving around in the city, and they do not seem to insist on owning a car. There seems to be a good chance, then, that this group of commuters can be induced to choose other means of transport provided that the alternative solutions are sufficiently attractive, i.e. efficient.

As far as behavioural changes are concerned, the participants generally prefer positive interventions that motivate the commuters to change their traffic behaviour in a more sustainable direction – the 'carrot' method, so to speak. On the other hand many participants seem convinced that interventions imposing new traffic behaviour by making existing alternatives more expensive, slower and more vexatious will be more effective.

According to many of the participants, it is important to consider equality when promoting new ways to move about in the city. It is seen as a basic right to be able to move around in the city, and this privilege must continue to include all Copenhageners in the future.

The picture is less clear when the participants are asked to place the responsibility for leading urban transport in a more sustainable direction. The individual citizen, the city councils, the country, the EU and businesses/industry are all assigned a role and expected to contribute to the funding and promotion of more sustainable solutions. Naturally, however, the various actors will play different roles at different levels. Several participants are of the opinion that the EU can play a crucial role by designating a common course for all member-states, but this must unfold as a flexible framework that the individual member-states can adapt to their specific situation.

Chapter 1 – Demography, urban characteristics and transport patterns

1.1 Copenhagen as transport city

Copenhagen has been the capital of Denmark since the early 16th century, and today about 650,000 people live in the municipalities of Copenhagen and Frederiksberg. Copenhagen is a seaport city characterised by bridges, wharfs, canals etc. The city centre is old and filled with narrow, crisscrossing streets. Newer buildings and wider streets are found further away from the city centre.

Copenhageners have access to a variety of public transport, including busses, trains and a relatively new subway system with a limited network which, however, is currently being extended. Today, 36 % of all travel to and from work or school in Copenhagen takes place on a bike and, in its 'Bicycle Strategy 2011-2025', the city plans to increase this share to as much as 50 %. In addition, 28 % of this kind of traffic is handled by public transit services and 29 % takes place by car. In recent years train passengers have been allowed to bring their bikes with them on the train in the greater Copenhagen area, and this possibility has been received favourably by commuters and cyclists alike.

Contemporary Copenhagen is generally highly focussed on the climate problem which was particularly pronounced when the city hosted COP 15 in 2009. Whether this has created further awareness of climate change among the young participants in the interview meeting is hard to tell.

1.2 The participants' backgrounds

All the ages from 20 to 30 years were represented quite evenly. With 15 men and 15 women the participants were also evenly distributed between the sexes.

Generally, the participants at the interview meeting had a high level of education. Slightly more than half the participants (17) either had or were taking a university degree. Of the remaining participants seven either had attained or were about to attain a degree from an institution of higher education other than the university and six were in the midst of or had completed a secondary education. Copenhagen is a big university city and a major educational centre, but the level of education among the participants is even higher than average in the age group as such.

Half the participants (15) were students, and the other half were wage earners or self-employed. The large share of students was reflected in the income conditions: About half the participants (16) stated that they had an annual income of only DKK 0 – 150,000. 1/6 (5) had an income of DKK 150,000 – 300,000, and seven made more than DKK 300,000. Most of the participants had positive expectations to their future income conditions. More than 2/3 (22) expected their income to rise in the future. Only 1/10 of the participants (3) had children.

1.3 Transport habits among the participants – active road-users and cyclists

As a group, the participants in the interview meeting have already reached the municipality of Copenhagen's goal of having 50 % of all travel to and from work or school done by bike, since no fewer than 83 % of the participants (25) comply with this purpose. Furthermore, half the participants (15) have stated that they simply never drive a car, and only one person uses a car every day even

though six of the participants are car-owners. Such extensive bicycling reduces the need for public transport among the participants. Only two of the participants use public transit systems on a daily basis, although 1/3 (10) use this kind of transport as often as 1-3 times a week, and 1/2 (15) do so 1-3 times a month.

The interview meeting was held in Copenhagen in the beginning of June, and it is possible that the obvious preference for the bicycle as primary means of transport would have been less distinct in January, but it is unlikely that the time of year has any significant influence on transport patterns among the participants.

The participants move about a great deal, and their trips in the city are an important part of the urban life they lead today. A significant majority of the participants (23 persons) travel every day in order to reach their place or work or the school they go to. Furthermore, most of the participants (21-22 persons) are also in transit at least 1-3 times a week to visit friends and relatives, go shopping, run errands or participate in various leisure activities.

A trip through the city often has more than one purpose. Almost half the participants (14 persons) state that they 'always or almost always' combine several purposes when they move around in the city, and only slightly fewer (13) state that they do so 'often'.

Chapter 2 - General attitudes to urban life and transport – today and in the future

2.1 Copenhagen is the right place to live – when you are young!

Copenhagen is the right place to live. This simple sentence sums up the participants' view of the city they live in. The participants are clearly very happy about living in Copenhagen. Many have moved to the city from other parts of the country, some quite recently. And they still have a vivid memory of what it was like to live in a smaller town or in the countryside where public transportation services were rather poor in some cases and where the available activities were generally much more limited.

About living in Copenhagen, it's really cool to have a vibrant city life, with so many different things to do, like the carnival and the Distortion Festival, and there's just so much more culture in Copenhagen, and all these cute little cafés and restaurants. Many cultural events and stuff like that. That's super cool, I think. I can't imagine moving away any time soon.

Well, I went to grammar school in a town called Kalundborg. I lived 30 km from Kalundborg and I had to take the bus every single day and, if you were lucky, there was one bus every hour. Saturdays only four times a day and no service at all on Sundays. So of course it's wonderful to come to Copenhagen where public transport is available all the time.

The price is decisive for young people's choice of accommodation. More than 2/3 (22) answers that the price has a high or very high influence on their choice of accommodation, but proximity to public transport and green spaces are also very important for a majority of the participants (18 and 16, respectively, have answered that these factors are very or extremely influential). The participants are more willing to go a little further to buy groceries. Proximity to shopping, health care services and cultural events are significantly less important.

A good bicycle infrastructure is very important for almost all the participants in their everyday lives, and many also stress the importance of a good coverage by public transport throughout the city. Finally, clean air, the possibility of exercising and access to restaurants and bars with pavement seating contribute to quality of life in the everyday for quite a few of the participants.

2.2 Moving from A to B with the least possible effort

Some of the factors that make the city attractive to the participants are at odds with each other. Cars take up a sizeable part of urban space that could have been used for green areas, outdoor serving etc. Also, cars contribute a great deal to air pollution. On the other hand, green areas take up urban space as well which increases congestion in the city.

When measured in hours and minutes, transport obviously takes up a significant part of the participants' lives, because they move around a lot. Above all, the participants want to be able to move quickly and easily through the city. More than 3/4 (24) of the participants state that minimal waiting time is one of the three most important factors in their choice of transport and more than half (17) include travel time among the three most important factors. For about 1/3 of the participants price is

also one of the most decisive factors and approximately 1/4 indicates door-to-door connections as very important.

Generally, you feel that it must be easy and pretty straightforward and preferably door-to-door.

I guess one of the major advantages of taking the bike is that it will bring you from A to B faster than any other mode of transport.

Well, I live right on the motorway, so it takes me half an hour, door to door, to get to work. But my car is being repaired right now, so I use public transport and that takes an hour and a half door to door and that is simply not good enough in everyday life.

Quality of transport, then, is primarily a question of being able to move from point of departure to destination as fast, as easy and preferably as cheap as possible. However, sometimes urban transport also involves experiences and, in this respect, the participants are mostly thinking of bicycle transport. A bike ride on a sunny summer's day is a cherished experience, and some participants mention the possibilities of exploring the small streets and finding new cafes and the like when moving by bike.

To me, riding a bike is an incredibly nice way to get rid of the drowsiness you feel in the morning. Some winters I have taken the subway instead, and when I do that I'm not as fresh and awake, so for me bicycling is very much a way to wake up along the way, and it makes you feel really good – especially in the summertime with fresh air and sun. It's really wonderful.

You find things when you're riding around on your bike like that: "Hey, look, what a cool café." You make a mental note of checking it out some day, and then you see a small park or something like that and you think it could be nice to go there one of these days. The bike gives you a chance to see other places than what public transport allows you to see.

2.3 Environmental benefits are welcome as an added bonus of the daily choice of transport

Being able to move quickly, easily and at a low cost – these are the trump cards in the participants' choice of urban transport mode. Barely 1/6 (4) of the participants have selected the level of pollution from a given means of transport as one of the most important factors in their choice of transport.

This group of Copenhageners pollute much less than city average, because they use the bike so much and generally choose public transit systems when they need motorized transport. But it is easy to see that their eco-friendly transport behaviour is a welcome added bonus of their everyday transport choices rather than a decisive factor. The participants are glad to be able to help protect the environment in the city by using the bike so much and they do want a clean or cleaner city, but not at any cost if it affects their own transport reality.

When it comes to CO₂, I must admit I'm a little bit ... I mean, there are a lot things that are wrong in this world, but it's not the CO₂ emissions that determine which mode of transport I choose.

Naturally, we all support the attempt to reduce CO₂ emissions, but I'm sure that what appeals the most to us is saving money and making money. These are the things that influence our decisions.

That environmental concerns only have a limited impact on the participants' choice of transport means that they are only inclined to change to a mode of transport with low CO₂ emission if it also involves other advantages. 2/3 (20) state that such means of transport would have to be cheaper than the alternatives, and slightly more than half (16) feel that the travel time should be shorter or at least not longer than usual, if they were to shift to another mode of transport. Less than 1/3 (9) indicate that it could be attractive to change mode of transport, if it would help reduce climate change, but 1/4 (7) are not influenced by the level of CO₂ emission at all in their choice of transport.

*That's what really counts in our day to day lives, right. I mean, what's the point in reducing CO₂, if it takes you three hours to get home from work.
CO₂ is not something we can touch and feel. When it comes down to it, you don't think 'are electric cars the smartest and most eco-friendly choice?' You think 'which is the quickest and easiest way to get to work?'*

When the participants talk about environmental considerations, they mostly do so in relation to issues and consequences that are felt directly in their own everyday life. Some participants mention health problems, the unpleasantness of cycling through the exhaust smoke along an expressway or the noise generated by car traffic.

Even if environmental considerations matter very little in the individual participant's choice of transport, most participants still feel that it is important to include such considerations in Copenhagen's future development. 2/3 have answered that it is important or very important include the reduction of CO₂ emission in city planning. This tells us something about the participants' views on the placement of the responsibility for achieving a cleaner urban transport in the future. We will get back to this in Chapter 4.

2.4 Other choices in life influence the choice of transport

In general, the participants do not expect the life they lead as Copenhageners to remain unchanged in the years ahead. Approximately 2/3 (19) of the participants believe that they will not or probably will not be living in Copenhagen 10-20 years from now, and most of them (22) expect to make more money than they do now. These figures are probably due to an expectation of getting a job after completing an education (or, for people who are already employed, of benefitting from career development) which will improve the financial situation and allow people to change residence. Only few of the participants (3) have children, but many of them expect starting a family to influence their wish to stay in the city.

Just as the participants expect the circumstances to change in relation to income, family status and place of residence in the years ahead, more than half of them (17) expect to drive a car more than they do today. It would seem that the participants adapt their choice of transport to the development within other areas of their lives – and not the other way around. First they find a partner, decide to have children or not, get a job and select a place to live. Only then do they choose one or several modes of transport to match these prior choices.

Here, in the city, I really don't feel I need a car.

I think I will probably leave Copenhagen at one point and then a car would be the obvious way to get to and from work, I guess. At least compared to a bike. If you move more than 15-20 km. away from the city, the bike becomes less and less of an alternative. Then it depends, if you have easy access to the train, well, then that is certainly a possibility (...), but if wasn't easy to come from door to door, I would probably end up buying a car.

We don't need a car right now, but I'll bet you we'll have one in five years, because it's so nice, practical and convenient.

It's not really a problem, I think, when you're on your own, but things change as you get older and you need to do more shopping. Now, I can have everything on the bike, but that probably won't be possible when I start a family and all that.

On the face of it, this group of young Copenhageners cannot be considered representative of a new transport generation with basically different preferences than previous generations. But they do seem to be more open towards adopting new forms of transport – provided such alternatives are sufficiently attractive. In their own assessment, the participants are more flexible in their current situation than the older generations and easier to induce to refrain from private car-ownership.

Yeah, the few times that I have borrowed my parents' car and been able to drive to work, well, it's fantastic of course. I only save 7 minutes or so, but I can listen to the radio and stuff like that. So I'll do it when I have the chance, sure. I think everybody can relate to the element of convenience, but of course it's something one can do without.

Personally, I think it's pointless to aim at people who have been car-owners for decades; they are not liable to change their views any time soon. People tend to stick to their habits and that's not something you change overnight.

Chapter 3 – Attitudes to different technologies and policy measures – positive and negative consequences of future urban transport

3.1 Reduced complexity and long-term solutions wanted

It can be difficult for young Copenhageners to reach an overall assessment of how the future transport system in the city is to develop. But generally people seem to be of the opinion that long-term thinking is the key to the door in this complex transport reality and that the various policies and solutions must be integrated so they do not obstruct, but rather supplement each other.

(...) but there's always a risk that we just move the problem to another part of the world ... for example by saying "we WANT electric cars" and then it's just too bad if a lot of people will die from cancer in China, because they stand there making big, poisonous batteries all day long and so on.

And then we need some long-term solutions, because it's just more expensive in the long run if we keep going 'okay, we'll just use this quick fix here, and when we realize that it didn't work, we just try another quick solution.' Then it might be better to think a little further ahead.

3.2 Bicycling and public transport is the way to go – and cars will have to yield

There is wide agreement among the participants that the strong bicycle culture in Copenhagen, which they are very much a part of, must have better conditions in the future so it can be further strengthened. Public transport also needs a boost. Thus, almost all the participants (29) say that both bicycling and public transport must be rendered more attractive in the coming years. There is also general agreement (28) about an expansion of bicycling and pedestrian infrastructures as well as improvements in public transport.

Even if the participants generally have very positive things to say about bicycling in the city, they also have many suggestions for improvement: More respect for each other among cyclists, better possibilities for moving at different speeds in different lanes on the bicycle track, better bicycle tracks through the green areas instead along major, highly polluted roads and improved parking facilities for bikes.

There are so many cyclists in this city, and Copenhagen has a lot of students and young people who don't own a car, so I really think it's important that these people have good traffic conditions.

Some places don't have any cycle tracks at all, and then you feel really unsafe when you're driving down the road next to the cars parked along the curb.

One of the problems is that it's hard to get a good, direct flow through the city. And, sadly, it is often the rather unpleasant areas that are the fastest passageways (...) and they are

completely polluted so you really feel everything you inhale, right (...) It would be nice to have a bigger network where you could drive through some green areas and avoid constantly running into traffic lights and road work and God knows what all the time.

Actually, I sometimes think what bothers me is not really bicycling as such, but rather the other road-users. There are a lot people who behave completely irresponsible in traffic.

The participants also have suggestions for improvements in relation to public transport. Among other things they mention a more developed subway network and more public traffic services in general, lower priced or completely free public transport and more room for bikes on the trains.

What's interesting, I think, is that there actually are a few cities where public transport is free in the city centre. I cannot help but wonder: "How do they support this, and how do they manage to break even?"

In itself it is an awesome idea to allow bikes on the train at no extra charge (...) but it involves a risk that there isn't room enough and you have to stand, and then you're knocked back and forth and people complain when they have to pass you ..."

Since there is limited room for traffic in the city, the conditions for cyclists, pedestrians and public transport cannot be improved without hindering car traffic to a certain degree. Limiting car traffic by way of a toll ring is a desirable solution according to a little less than half the participants (13). Approximately the same number of people (12) feel that a toll ring can be an acceptable solution, and a smaller group (5) find this solution unacceptable. The numbers are similar when it comes to creating more car-free areas in the city. 1/3 of the participants (10) say that it is completely unacceptable to expand the roads in order to reduce congestion. Only 1/6 (5) considers this a good solution.

There are limits, however, to how far the participants want to go in order to reduce car traffic in Copenhagen. The participants do not seem to consider it a good solution to reduce the number of parking spaces. 1/3 (10) find this solution unacceptable. Only 1/6 (5) are in favour of it.

I don't believe that limiting traffic will harm the growth potential of the city (...) I think we can easily have a good, vigorous city in spite of a toll ring (...).

I think it's easy to see that many of the places around Copenhagen where it's actually possible to rent a place for a store, because it has been a cheap part of town, are filled with cafés, restaurants and things like that. And if there were fewer cars and fewer parking spaces so all this space could be used for something else, right, that would give the city a tremendous dynamic and a lot of new life with tons of new stores and stuff. I mean, that would be really cool.

(...) in itself the concept of a car-free city won't solve all problems. Basically, I think, it must be possible to enter the city by car if you have a valid reason to use a car. And I don't think we can simply cancel that possibility just because we want a car-free city.

3.3 Great openness to different solutions – as long as they work!

Young, well-educated city-dwellers are typically more open towards new technological possibilities and behaviours than the average citizen. To a certain degree the interview meeting confirms this in relation to transport. But it is not a quality *in itself* that a given form of transport is new. Young people in the city are not creatures of habit to the same extent as the older generations, but they are only willing to change behaviour, if the new transport services are better than the existing alternatives. The participants in the interview meeting are open towards many new initiatives and they are willing to use new tools if possible and if such services are attractive for them.

The participants do not seem to be 'tied' to one particular means of transport. Rather, they appear to be keen to choose the form of transport that makes most sense to them in relation to the criteria mentioned above: Quick, easy and cheap. Nor do the young seem to consider the car a status symbol in the manner of earlier generations.

For the participants it is not a goal in itself to have a car, and a part of them might even prefer to avoid it, if there were viable alternatives. The young are not yet 'used to having a car', but many expect the car to become an indispensable element of their future unless other real alternatives materialize.

For me, accessibility is of the essence. It must be easy, and it must be quick to get from A to B. I don't care that it's public, but I think that's because I've never had my own car. That makes a big difference, I think.

I think it's a lot easier for people like me, who have never owned a car, to take part in some kind of car-sharing deal, because then you really do have a car, right. That's a step up, but changing from having your own car to suddenly having to fight over it with other people ... that's quite a setback.

Half the participants (15) find it necessary to support the development of electric vehicles and infrastructure particularly for these. The same number of participants (15) support using a differentiated tax system rewarding owners of energy-saving cars. Electric cars are eco-friendly and they decrease noise pollution. Many of the participants also stress that it will be easier to make car-owners change to electric cars than to completely different means of transport. In spite of this general support to the idea of electric cars, however, the participants are aware that the technology is not yet a really attractive alternative to conventional cars and that electric cars cannot solve the congestion problems faced by city people.

Like in Norway and Sweden where electric cars are allowed to drive in the bus lanes and park for free. That's really, really good for the CO₂ problem, but it won't do away with congestion, which I think is the biggest problem.

But I think tax exemption for electric cars is incentive enough. I don't think we need much more than that. And then we'll probably need to improve the technology a bit, before we can convince people to buy one.

Car-sharing appeals to the participants. Almost half of them (14) support public investment in the development of new ways to move about in the city, e.g. car-sharing and bike-sharing deals, and the

same number of people (14) find this acceptable. But it is obvious that the participants feel that it will be a while before car-sharing becomes a real alternative in situations where you need a car. Several of the participants who have had experiences with car-sharing or have looked into the possibility point out that it is still too expensive. Furthermore it is clear that the participants consider guaranteed accessibility a crucial condition for the feasibility of car-sharing.

Car-sharing works really well, it's just terribly expensive (...) It costs an arm and a leg to use the car for a couple of days. It's a really smart deal, but it's certainly not cheap.

You need to know that you can have a car when you need one. It doesn't work, if you risk having to wait for one to become available.

I looked into the possibility of car-sharing. It might be a good idea and, hopefully, it will become more common, but when you look at how much it costs, it turns out to be almost twice as expensive as taking a taxi.

Only 1/6 (5) of the participants consider it necessary to support the development of information and communication technology in order to increase the use teleworking, online shopping, video conferences etc., and just under 2/3 (19) consider it acceptable. There is limited backing for the kind of IT technology that can replace part of the existing urban transport with improved possibilities of hooking up in cyberspace. Some of the participants indicate that it has a special value to meet face to face and that inner-city distances are more manageable than longer trips to other parts of the country or abroad. Very few participants (3) also indicate that they would personally be willing to travel less in order to limit CO₂ emissions and air pollution.

I'm sure that there are situations where it would be really helpful, but it's rather on an international level that you would need to have a video conference between Japan and Denmark. On the other hand, I don't think we should underestimate how much it means to be personally present and how much the company or whatever would want it to be like that, so I think it would probably be better to make transport more climate-friendly ...

There seems to be broad support for the development of the kind of IT technology that can improve the conditions for the existing urban transport. For instance, 2/3 of the participants (20) consider e-ticketing in public transport a worthwhile initiative to improve the possibilities of living and moving around in Copenhagen.

3.4 The carrot is nicer, but the stick is what works

If the purpose is to change road-user behaviour in a more sustainable direction, there are different tools that can be used. Some of these work as "carrots" by improving the environmentally sound transport services and the conditions of their use (for example by way of new and improved alternatives, cheap or free public transport, coordinated 'green lights' on the bicycle lanes etc.). Other tools work like a "stick" by punishing environmentally unsound behaviour (for example by way of congestion taxes, fewer parking spaces, increased tax on polluting cars etc.).

Generally, the participants look more favourably upon the idea of the carrot than the stick when it comes to behavioural change. When asked to prioritize a number of tools to reduce CO₂ emission, 4/5 (23) select improved bicycle and pedestrian infrastructure and improved public transport as two of the three tools they favour the most.

Generally, it is probably easier for most people to back the improvement of some modes of transport rather than making the problems in other modes worse. The participants are happiest about the idea of enticing road-users to change transport pattern by offering new and better alternatives to the car. On the other hand the participants seem to believe more in a large-scale change in behaviour among the urban road-users, if harsh measures are employed.

I think I lean towards (...) rather than punishing those who do the wrong thing – making it easier for people to do what we want them to do. Making it more attractive and cheaper to use public transport.

I think it is very hard to motivate people to change to public transport. I actually think it requires some pretty strong financial incentives or even prohibitions. And that's a shame, but otherwise I don't think it will work.

I also think that punishment is the only thing that works, I mean, not because I like it that way, but personally I wouldn't change my behaviour unless it was to avoid something like that.

3.5 Equality must be maintained

When the participants are asked to assess which future possibilities are attractive and why, they are generally quite concerned with equality. It is important to them that the various future traffic solutions do not contribute to increased inequality in people's possibilities to move around and take part in life in Copenhagen. If motoring is significantly reduced within the city, some of the participants feel the need to stress that this must not discriminate the disabled or others who need to have a car in a particular situation. According to several participants we cannot allow a situation where only the well to do can afford to have a car. More than 2/3 (22) of the participants say that it is very important or important that all citizens have equal access to move around in the city.

I think we have a real dilemma here, because on the one hand I think the urban development will force us to introduce some kind of toll ring to reduce congestion. But on the other hand I think the price is too high, if it leads to a major social divide in traffic. And I simply don't think I can come up with a good solution. But I must say I'd really hate to see a development in which it becomes kind of low-status to take the bus – with a real divide between us and those who can afford to have a car.

Chapter 4- Responsibility – politicians, individuals, industry

4.1 The responsibility is shared, and the bill must be divided accordingly

Generally, the participants want Copenhagen to reduce CO₂ emission, air pollution and congestion while maintaining and developing the possibilities for moving around in the city. They realize that this development is unlikely to occur unassisted which makes it relevant to consider the placement of the responsibility for this development. 2/3 of the participants say that it is very important (14) or important (6) for future city planning to take a reduction of CO₂ emission into account. According to the participants, then, part of the responsibility rests with the decision-makers in charge of the overall urban development.

When asked to place the responsibility for reducing CO₂ emission, the participants are not quite in agreement. Among a number of different responsible parties about 2/3 of the participants (19) emphasize the individual countries and hence the national politicians, approximately half of them point to the individual citizens and companies/industry (16 and 14, respectively), and slightly more than ¼ have selected the EU (8) and the municipalities (8).

We can't be supposed to save world as individual citizens so, I mean, it must be up to the state to regulate our behaviour.

This whole thing has to do with a change of attitude and outlook, and I think that's something that partly comes from above, in the form of regulation, but I also think it has a lot to do with being more prepared to sacrifice things than we are our today (...) I don't think change will come only from above; if it does, I think we will lose a lot of learning, and I also think we will see a lot of strife.

The participants differ in opinion when it comes to the question of who is supposed to pay for new and less polluting forms of transport. 1/3 (10) want everyone to pay through taxes, almost as many (9) think that only the users of the various transport services should pay, and slightly fewer than that (7) only want users of polluting means of transport to pay.

There is much greater agreement with regard to the question of how to use the money collected by way of toll ring, taxes etc. The participants were asked to emphasize three among a range of possible uses, and a vast majority selected improved public transport and better bicycle and pedestrian infrastructure (24 in each case). Half the participants (15) also point to research and development in relation to new transport technologies and 1/3 (9) stress the importance of strengthening intelligent transport systems.

4.2 The EU as framer

The participants have rather different ideas of the role of the EU in creating less polluting and polluted cities in the years ahead. Slightly less than half the participants (17) agree, either fully or to certain extent, that decisions on urban transport are to be handled nationally and not left to the EU whereas 11 disagree, completely or to a certain extent. This disagreement may be due to a certain haziness in relation to the level of detail at which EU decisions take place. In any case, there is clearly significant support for the idea of general EU regulations that are so flexible that they can be adapted to the individual city.

I think it must be up to the individual nation-state to do the regulating. I also think the EU should outline some regulatory guidelines, but if you ask me I think it's really a bad idea for the EU to impose concrete plans of action, because the cities in the EU are so very different.

I believe it's a good idea bring this thing up on a European level – not that the EU should necessarily issue 'regulations' and more or less decide the whole thing – but more in order to sort of have a debate between the countries, because, as it is today, we're trying to deal with these problems in Denmark, and they're trying to figure the same thing out in Germany, so I mean, maybe we could learn from each other's experiences from country to country.

If we try to distinguish between the levels for a moment, I really think that it should be up to the individual city and the individual city council to decide whether to ban cars from this or that street, and of course only the individual city council can figure out which way the garbage cans should be turned, these things are not for the EU to stick their noses in. But the EU should sort of prioritize this thing and allocate some resources for it and make sure that the governments in each country also prioritize it.

Chapter 5 – Additional points

5.1 Crucial points from the first four chapters

- The participants are happy to live and move around in Copenhagen and, primarily, they use the bike when they need to go somewhere.
- The participants are open towards using different means of transport as long as they can get to where they are going quickly, easy and inexpensively.
- Environmental considerations rank high when the participants think about the future urban development, but in their own everyday life environmental considerations have a low priority.
- In the future, the participants believe in promoting bicycling and public transport – preferably through positive motivation, but also by making car traffic more expensive and less convenient if necessary.
- Politicians, nationally as well as in the EU, companies and individual inhabitants of Copenhagen all have a responsibility to strive for cleaner and more attractive city in the years to come.

5.2 The participants' own suggestions for new transport solutions

When the participants talk about urban transport and different kinds of future solutions, they refer a great deal to experiences they have had when travelling to other big cities or to solutions they have heard about from other places in the world. By and large the participants are full of ideas on how to improve the future transport situation in Copenhagen. Here follows a list of some of these suggestions:

- Free public transport.
- Collaboration between educational institutions and public transport services to provide free or inexpensive transport for students.
- Collaboration between transport providers and employers to create better possibilities for public transport as an employee benefit.
- Good borrow-a-bike services at the workplace or affiliated bicycle repairmen to ensure that one always has a well-running bike.
- Nice showers for bicyclists at the workplace.
- Using municipal knowledge of the urban traffic to inform the citizens of the best possible routes at different times of the day in order to avoid traffic jams etc.
- A car-sharing service offering vans and trailers so people can also haul bigger things.
- Free off-street parking for cars that are not used frequently so they take up less room along the side of the road.
- Discounts on bikes because they are an environmentally sound means of transport. If bicycles were cheaper, people could afford to have several kinds – a fast bike for rapid transport to and from work and a carrier-bike for major shopping etc.
- Bicycles with a covered cabin so you would not get wet when it is raining (a car with pedals, basically).

- More electric bikes, with supplementary power for especially heavy bikes, for instance.
- Big parking facilities for commuter cars outside the city centre. At these facilities companies could make bikes available for their employees, since they would clearly have an interest in healthy workers. Or, there could be public transport links to the city.
- GPS monitoring of cars in order to enable better coordination of traffic.
- Prohibiting lorries from the city and establishing trans-loading terminals where freight shipments are transferred to smaller vehicles.
- More by-pass roads around the city.
- Underground parking facilities with green areas on top.
- If more workplaces were located at the periphery instead of downtown, some of the traffic problems in central Copenhagen would be solved.

Chapter 6 – Appendix

6.1 Annex overview

- Annex 1 – Programme of the interview meeting.
- Annex 2 – Material sent to the participants. Invitation letter, confirmation letter, scenarios etc.
- Annex 3 – Questionnaire and interview guide in national language.
- Annex 4 – Transcript of group interviews in the national language.
- Annex 5 – Frequency tables. Data processing of quantitative material including demographics.
- Annex 6 – Comments from the last open text box in the questionnaire.