Measure title: **Commuter Travel Plans in Aalborg**

City: **Aalborg** *Project:* **Archimedes** *Measure number:* **30**

Executive summary

The objective of the measure was to raise the modal share of alternative transport modes by encouraging commuters to change their travel behaviour.

Commuter travel plans have been created by the City of Aalborg for public and private organisations in the ARCHIMEDES corridor**.** The **g**reen commuter travel plans were implemented at 7 companies that in total employ approximately 20,000 people.

The commuter travel plans contain a first part with the description of the current travel behaviour of the employees based on a questionnaire; a second part with the employees experienced drivers and barriers for more sustainable transport (also based on results from the questionaires) and a third part with recommendations on viable mobility initiatives for the company.

The implemented initiatives differ among the companies but include, information campaigns on green commuting - involving information on how the employees could minimise their individual motrorised commuting by using eg. public transport, bikeroutes or car-pooling. Trail periods with electric bicycles at some companies, organisation of car-pooling and improved facilities for cyclists.

At each of the companies an after survey was carried out to assess the impacts of the plan and its related initiatives. The questionaire aimed at evaluating the employees awareness of the initiatives implemented and the potential change in modal split that these initiatives had caused at the companies. Unfortunatly the response rate in after survey was quite low (compared to resonse rates in the before survey), and this has an impact on the evaluation results.

Since the impacts differ between the companies and are also influenced by differences in response rates between before and after data, it is not possible to draw well documented overall quantitative conclusions for the 7 companies. Even so, interesting results have been reached at the level of the individual companies, and are summarised in the following points, baring in mind the potential errors of the evaluation:

- The campaign and the tool provided to enhance carpooling at Siemens Windpower has had a positive effect at the administrative level. The modal share of car pooling increased in a 13%.
- A 13% increase in modal share of cycling trips by employees of Alfa Laval, after trials with electric bicycles and provision of new bike sheds and showers for cyclists.
- A 7% increase in public transport use among employees of the Municipality Department of Health and Sustainable Development company SBU.
- Average increase in the modal share for bikes at the seven companies, however not all companies experienced an increase in bike use after the implementation of commuter plans. SBU, with a high share of cyclists had the most remarkable decrease in bike-use (6%), while Alfa Laval experienced the highest increase with 13%.
- The average share of car-pooling remained almost stable with notable variations between the companies. At SBU the modal share of car-pooling (Car with passenger and car passenger) decreased with 11% while the car alone increased by 8%. Post Danmark experienced the highest increase of car-pooling with 3%, whereas the car alone decreased by 8%.

The number and type of initiatives implemented at each company varies, with more information/awareness actions on the one hand and testing of hands-on initiatives, such as lending of electric bikes, bike sheds, and bicycle repair services, on the other hand. As expected, the employees of companies that implemented many hands-on initiatives have a higher awareness-level of the initiatives and the commuter plan. A longer time span before conducting the evaluation would be

preferable, since then more initiatives could have been implemented and the initiatives implemented would have had a longer time to shows its effects on travel behaviour.

Recommendations on commuter travel plans:

- The companies should engage in the development and dissemination of the plans, this provides ownership of the plans and secures a strategic anchoring of the plan in the organisation.
- Initiatives that involves test of 'hands on' initiatives, such as electric bikes, causes a high awareness level among employees. Whereas information campaigns alone have a more limited potential to change travel behaviour. Information and concrete initiatives must therefore go hand in hand.
- Legislative requirements are important to motivate the companies to focus on changing commuter behaviour amongst their employees. (e.g. the number of parking spaces available). Goodwill and image doesn't do it alone.
- Commuter travel plan should both be seen as a strategic document and an action plan with concrete initiatives towards the employees.

A Introduction

A1.1 Objectives and target groups

The measure objectives are:

(A) High level / longer term:

- To reduce pollution in the city
- To raise the modal share of alternative transport

(B) Strategic level:

- To increase the number of bus passengers
- To increase the number of cyclists and pedestrians
- To increase the share of car sharing and car pooling

(C) Measure level:

(1) To elaborate and implement a number of commuter travel plans

(2) To encourage involved target groups to use more sustainable means of transport

A1.2 Target groups

- Employees/students at the involved companies/institutions in the CIVITAS corridor

A2 Description

Commuter travel plans are a way of working to deliver behavioural changes in a positive and informative way. Commuter travel plans focus at the daily commuting to/from a workplace and work with tailored information and initiatives to make this behaviour greener and more sustainable.

Commuter travel plans have been created by the City of Aalborg for public and private organisations in the ARCHIMEDES corridor stretching from the city centre to the university area located approx. 5 km southeast of the city centre. The demonstration recorded the employees preferred means of transportation and their willingness to shift mode or to use car pooling by internet based surveys. This survey has also highlighted areas, which need improvements to facilitate pedestrian movements, the use of bicycles or public transport.

As the first visible step for the employees, a survey of travel behaviour was conducted at the company. The survey was developed in co-operation with Aalborg University to use for their commuter plan and has been generalised so it could be used as a tool for implementing commuter travel plans at other companies.

Based on the results of the survey the City of Aalborg produced the commuter travel plans for various companies. Throughout the process, initiatives for sustainable mobility were discussed with the working group at the companies.

This campaign has been the first in Aalborg to include the employees of private organisations. The ARCHIMEDES project has contributed to purchases of information material for the companies, and an Internet-based application for collection of data on travel behaviour supplemented by targeted information for the commuters. Furthermore, ARCHIMEDES facilitated a second round of surveys to evaluate the effect of the commuter travel plans and the implemented initiatives for sustainable mobility.

A3 Person in charge for evaluation of this measure

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B Measure implementation

B1 Innovative aspects

The innovative aspects of the measure are:

- **Targeting specific user groups** – The measure targeted new groups of employees and students in the ARCHIMEDES corridor. Furthermore, the measure explored the possibilities of changing travel behaviour by directly targeting the needs and wishes of the target group.
- **New organisational arrangements or relationships** – The co-operation with companies in the corridor on developing and implementing commuter travel plans was new. The Technical and Environmental Department in Aalborg elaborated a commuter plan in 2005. The experiences around the work with this commuter plan have been the foundation for this measure combined with the development of the first commuter plan in cooperation with Aalborg University..

B2 Planning of Research and Technology Development Tasks

There are no research tasks within this measure.

B3 Situation before CIVITAS

The Technical and Environmental Department in Aalborg had elaborated a Commuter Plan in 2005. The work with this commuter plan has been the foundation for this measure. For instance the experiences with the 2005 plan questionnaires were used to work out the questionnaires, and the further development of the first commuter plan at Aalborg University.

Before the measure there was no awareness about existing commuter plans at other companies in Aalborg. Therefore, the commuter travel plan concept was unfamiliar to companies in Aalborg.

B4 Actual implementation of the measure

The planning, implementation and evaluation within this task have been carried out continuously, meaning that results gained in the process of working out one plan were used in the planning and implementation of the next plan, thus creating an iterative process. The process described below illustrates the steps related to the initial planning of the measure and describes the typical development phases of a commuter travel plan. This means that the process from stage 2 to stage 5 has been repeated for the 10 commuter plans that were conducted as part of this measure.

Stage 1: Planning and investigation *(September 2008 – Summer 2011) – Planning of the processes, including investigation of best practices and developing a concept for the commuter travel plans in Aalborg.*

The initial planning phase focused on setting up the framework for the work with the plans. The phase included:

- Preparation of an information-brochure to provide companies with information about the content of a commuter travel plan. The brochure addressed the companies and provided good arguments for them to participate in the implementation of commuter travel planning.
- Development of a toolbox with different initiatives as the starting point for suggesting relevant initiatives in the final commuter travel plans.
- Development of a content structure for the final plans. Both the toolbox and the content structure were based on national as well as international experiences with commuter travel plans.

The next step was to prepare the agreements with companies interested in participating. In close dialogue with the companies, working groups with representatives from the company were established in order to secure a dialogue throughout the work and create ownership towards the plan.

It proved to be challenging to convince companies to participate in the project. Therefore, the process of marketing the concept and getting companies to participate was longer than initially expected. In total 10 companies have participated in the project. Of these initial 10 entities, 7 companies completed the full travel plan process. The goal was to get at least 8-9 companies to participate, however the number of participating companies is considered satisfactory considering the unproven context for implementing such plans.

Stage 2: Data collection *(May 2009 – Spring 2012)* – Collecting data at involved companies. A survey with basic questions was produced and used as the basis (business as usual) at all the companies. This survey was adjusted with extra question related to the specific context at the company (for instance in relation to companies with specific initiatives). The survey was made as both an online survey and a paper version, depending on the needs of each individual company; e.g. whether the employees had access to a computer on a daily basis. At some companies both versions were used for different departments of the company.

The data collection took place over a several weeks at each company.

Figure 1: Screen Dump From the Internet-Based Survey Conducted at the Companies.

Stage 3: Development of commuter travel plans– *(May 2009-Spring 2012) The commuter travel plans were continuously developed for the involved companies.*

The commuter travel plans consist of three parts:

- First part with a mapping of the current travel behaviour. The mapping is based on the results from the survey conducted at the company.

- The second part consists of a mapping of individual drivers and barriers against more sustainable travel behaviour. The description is made with the current travel behaviour in mind in order to secure that the most viable focus areas are chosen.
- The third part includes recommendations on viable initiatives for the company. Implementation of the initiatives suggested in the plan is the responsibility of the company, while the City of Aalborg supported the company in the implementation of initiatives and provided information material to the different campaigns and initiatives.

Figure 2: Front Page of the Commuter Travel Plan for Aalborg University.

This process included a series of meetings with the working group at the companies to agree on the focus of the plan. Normally this process stretched out over a period of approximately three months.

Stage 4: Introducing Initiatives – *(May 2009-Spring 2012)*: Based on the results from the first commuter travel plan, tailored initiatives are chosen and implemented in cooperation with the company.

The initiatives represented a broad range of options from information campaigns, making it possible for employees to borrow an electric bike, new bike facilities and organisation of various events at the companies. The detailed overview of the selected initiatives at each company is included below in section C2.1.

Stage 5: Evaluating Initiatives and adjusting - (Spring 2012): The initiatives were evaluated through a second round of questionnaires, and the results of this evaluation were communicated to working groups or contact persons at the company. Some companies considered the work with the plan to be done, whereas other companies chose to use the evaluation results to adjust future initiatives.

Initiatives were implemented in a period of approximately one year from the development of the plan. A period of one year was chosen to secure sufficient time to implement the initiatives and monitor their results.

Figure 3: Electric bikes for loan at one of the companies involved in the project.

Figure 4: Front and Back of the Information Leaflet handed out to the new Students at Aalborg University (Title: New today - Green tomorrow).

B5 Inter-relationships with other measures

The measure is related to other measures as follows:

Measure 9 – Modernising Travel Information: The measure will inter-relates with measure 9, Modernising Travel Information. One of the tools used in some of the commuter travel plans was the modernised travel information. In some om the information materials at the comapnies the web pages were available.

Measure 53 – Workplace Car Sharing in Aalborg: Where relevant promoting the car-sharing scheme has been an integrated part of the commuter travel plans.

C Planning of Impact evaluation

C1 Measure methodology

C1.1 Impacts and Indicators

C1.1.0 Scope of the impact

When working with behavioural changes and transportation habits, the high level/longer term objective with this measure is to reduce pollution in the city and raise the modal share of alternative transport modes. The focus on commuting underlines that a purpose of this measure is to be able to reduce the peak hour traffic. The purpose is, furthermore, to reduce congestion and improve the urban- and environmental quality of the city.

By targeting a specific group, the purpose of the measure was to work with information and proposition that are tailored to change the current travel behaviour for the employees at each company. Apart from increasing the share of bicyclists and public transport users a specific objective was to increase the share of people using car sharing or car-pooling. The expected measureable impacts from the measure were changes in attitudes towards green transport that finally should be reflected in changes in transport behaviour.

Data were collected through before and after questionnaires at each company involved in the measure.

C1.1.1 Selection of indicators

NO.	EVALUATION CATEGORY	EVALUATION SUB-CATEGORY	IMPACT	INDICATOR	DESCRIPTION	DATA /UNITS
	SOCIETY					
13		**Acceptance**	Awareness	Awareness level	Awareness of the policies/measures	Index (%), qualitative, collected, survey
	TRANSPORT					
26		**Transport System**	Modal split	Average modal split-passengers	Percentage of passenger-km for each mode	%, quantitative, derived
28			Vehicle Occupancy	Average occupancy	Mean no. persons per vehicle/day, per mode	Persons/vehicle, quantitative, derived, measurement
29			Modal split	Average modal split-trips	Percentage of trips for each mode	%, quantitative, derived

C1.1.2 Methods for evaluation of indicators

No.	INDICATOR	TARGET VALUE[1]	Source of data and methods	Frequency of Data Collection
13	Awareness level	Widespread knowledge of the commuter travel plan. Increased awareness of possible green transport modes.	Awareness questionnaires among employees at target companies were conducted. Depending on the company either an internet based survey or paper based questionnaires was used. The purpose of these questionnaires was to address the following issues: • The employees' awareness of the commuter travel plan. • The employees' awareness of their possible green transport modes. • The employees' statements about whether the commuter travel plan has initiated changes in the choice of transportation mode. • Evaluation of awareness towards the commuter plan and the concrete initiatives that is contained in this plan.	Continuously – Data was collected continuously at each company. Evaluation of the awareness of the initiatives happened continually after at least on year after the commuter plans and initiatives were implemented.
26	Average modal split-passengers	To increase the use of sustainable models (e.g. bus, cycle, car sharing/pooling).	Modelling of modal split based on data from the municipality district and modal split at the involved companies. Modal split data at the involved companies collected through questionnaires conducted before and after the implementation of the commuter travel plan, The questionnaires asked about their travelling behaviour and the changing potential. [2]	Two questionnaires per involved company – one in the beginning of the planning period and one as evaluation after a year
28	Average occupancy	To increase the average occupancy of private cars.	Specific occupancy rates at the involved companies to see if car pooling is increasing. Data collected through questionnaires conducted at the target companies.	Two per involved company - – one in the beginning of the planning period and one as evaluation after a year
29	Average modal split- trips	To increase the use of sustainable models (e.g.	Modelling of modal split based on data from the municipality district and	Two per involved company - – one in the beginning of the

[1] The commuter travel plans for each company will include more specific targets.

[2] Based on these numbers, calculations on reduced emissions can be made. However, these calculations are related with unsecurity (car type etc.) and are therefore not included directly as indicators.

No.	INDICATOR	TARGET VALUE[1]	Source of data and methods	Frequency of Data Collection
		bus, cycle, car sharing/pooling).	modal split at the involved companies. Modal split data at the involved companies collected through questionnaires conducted before and after the implementation of the commuter travel plan. The questionnaires asked about their travelling behaviour and the changing potential.	planning period and one as evaluation after a year

C1.1.3 Planning of before and after data collection

EVALUATION TASK	INDICATORS INVOLVED	COMPLETED BY (DATE)	RESPONSIBLE ORGANISATION AND PERSON
Questionnaires among companies to address awareness	13	After implementation of plan. Completed Month 34	City of Aalborg, Maria Quvang Lund Vestergaard
Collecting data for modal split and vehicle occupancy at involved companies by questionnaire	26, 27, 28, 29	Month 32 / Month 40	City of Aalborg, Maria Quvang Lund Vestergaard
D12.2 Baseline and first results from data collection	All indicators	Month 34	City of Aalborg, Anna Driscoll
D12.3 Draft results template available	All indicators	Month 45	City of Aalborg, Gustav Friis
D12.4 Final version of results template available	All indicators	Month 48	City of Aalborg, Gustav Friis.

C1.2 Establishing a baseline

The before surveys were used to establish a baseline for the commuting behaviour at each company. These surveys are seen as the suitable and relevant way to get data reflecting the specific situation in regards to modal split etc. at the company before the commuter plans and initiatives were implemented. The surveys at the companies were as described and designed to reach every employee at the company. The companies are of different types and different sizes, but in average a response rate around 30-66% was achieved in the first round of surveys.

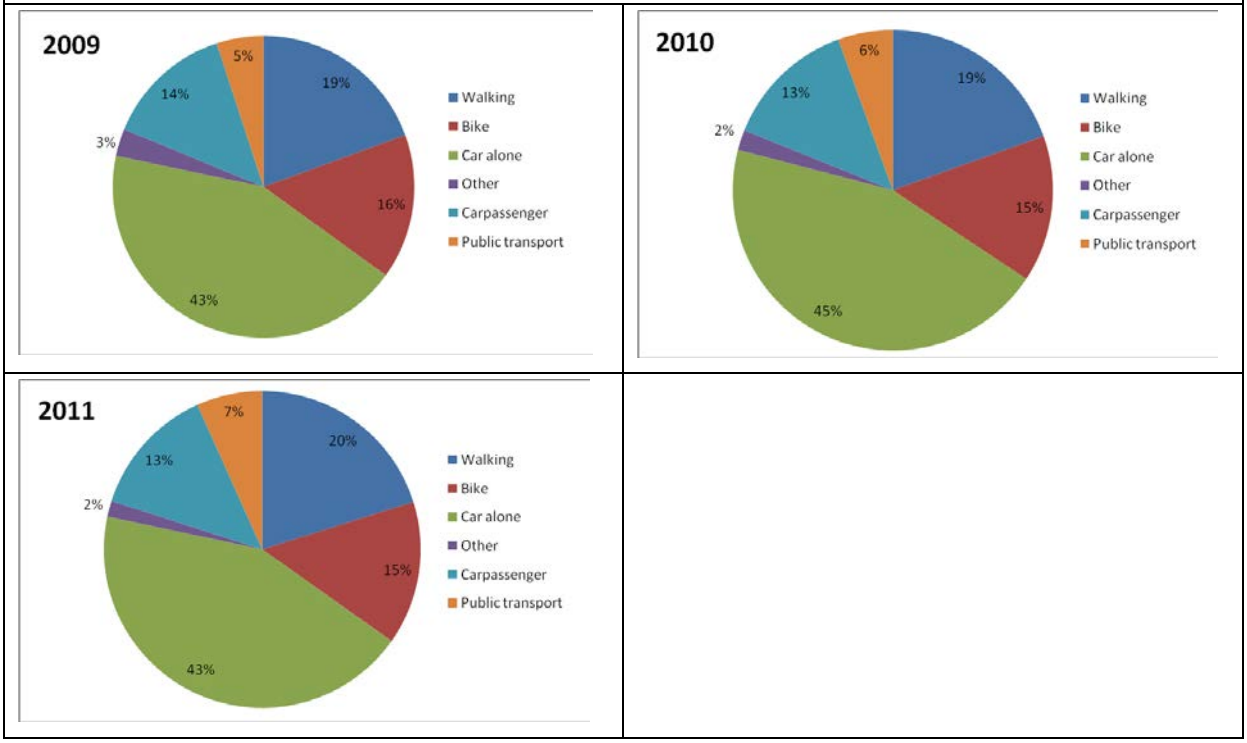
Besides the surveys that were used to evaluate the commuter travel plan in general (one before and one after the initiatives were implemented) supplementary surveys were conducted to evaluate the users experiences with specific initiatives. For example, supplementary surveys were made for the electric bikes initiatives at all companies that implemented this initiative. The results from this supplementary survey have been be included in the evaluation as well.

C1.3 Methods for Business as Usual scenario

Business as usual would be not conducting the commuter travel plan at the company. Data from the first surveys conducted at the companies will be used as baseline data for the companies commuting behaviour before the commuter plan was implemented. The modal split established on behalf of the data collected in the first survey can be seen as the business as usual scenario. This business as usual scenario will be compared with the general development in modal split in the municipal district in the same period 2008-2009. This is to see if the change in modal split at the companies separates from the general development in modal split in the municipal district. The average modal split for the municipal district is shown in figure 5.

Figure. 5 Modal split for the Municipal district of Aalborg from 2009-2011

(Based on transport surveys made in the municipal district).



	2009	**2010** (change from previous year)	**2011** (change from previous year)	**Change from 2009-2011**
Walking	19%	20% (+1%)	20% (0%)	+1%
Bike	16%	15% (-1%)	15% (0%)	-1%
Car alone	43%	45% (+2%)	44% (-1%)	+1%
Other	3%	2% (-1%)	2% (0%)	-1%
Car passenger	14%	13% (-1%)	13% (0%)	-1%
Public transport	5%	6% (+1%)	7% (+1%)	+2%

Table 1: Change in modal split from 2008-2011 on the average municipal level (based on figure 5):

As seen in figure 5, average modal split on the municipal level hasn't changed much in the period from 2009-2011, the modal shares remains quite stable. Because of this for the Business As Usual scenario of the companies involved, is assumed to be the same as the before situation.

C2 Measure results

In this section the evaluation results from the commuter travel plans at the involved companies are presented. The results from each company are presented separately to be able to evaluate the various initiatives implemented at each company. The effect of the commuter travel plans for the companies are evaluated in relation to the categories: 'Transport' and 'Society', hence focusing on both the actual change in transport behaviour at each company and the change in awareness level around the commuter travel plans and future transport behaviour among employees.

The process of the commuter travel plans was initiated at 10 companies, however 7 companies implemented the commuter travel plans and therefore 7 commuter travel plans are evaluated. The table below gives an overview of the participating companies and the number of employees at each company.

Company	**Description of company and location**	**Number of Employees**	**Response rates in surveys**
SIEMENS WIND POWER Aalborg	Produces blades for wind turbines. Located in the eastern area of the outskirts of the city.	250 employees in the administration 900 employees in the production	Before: 40% After: 34%
Aalborg University	University. Main campus area located in the south eastern part of the city approx. 5 km from the city centre.	14.000 students 3.000 employees	Before: 30% After: 20%
NT	Public transportation company in Northern Jutland. Located in the central part of the city at the bus terminal.	150 employees	Before: 39% After: 18%
Department for Sustainable Development (SBU)	Public administration responsible for sustainable development within the municipality. Located in the city centre.	60 employees	Before: 66% After: 75%
Post Danmark	Danish company responsible for the delivery of post in	370 employees	Before: 51% After 16%

	Northern Jutland. Located in the city centre next to the bus terminal/station.		
Alfa Laval	Alfa Laval is a world leader in heat transfer, centrifugal separation and fluid handling. In Aalborg, there is Alfa Laval's global centre for boiler technology.	450 employees	Before: 60% After: 29%
City Trafik	City-Traffic is a one of the two bus companies in Aalborg. City Trafik provides urban bus services as well as regional and local bus routes.	200 employees	Before 44% After: 21%
Commuter Travel Plans initiated, but not implemented			
Tech College Aalborg	Tech College Plan is a vocational education institution with a broad range of educations. The college also offers continuing education. Plan not implemented due to low response rate in initial survey.		
Tulip	Manufacturer of meatballs and sausages. Plan not implemented because no initiatives were chosen for implementation.		
The Northern Region of Denmark	The North Denmark Region is a public authority that is responsible for three main tasks; health care, regional development and social services and special education. Initiatives will be implemented, but due to participation late in the project a commuter travel plan will not be produced.		

Table 2: Overview of participating companies, short description, number of employees and response rates.

As it can be seen in table 2, the measure has included different types of companies from production companies or educational institutions to public administrations. In addition, the companies are of very different sizes. In total green commuter travel plans have been implemented at 7 companies that in total employ approximately 20,000 people.

The basis for the evaluation of the commuter travel plans was that initiatives should be implemented within the first year after the plan was conducted. The commuter plans would then be evaluated after one year. However, some companies had a longer time frame to implement and see the potential effects of the initiatives implemented (up to 2.5 years). In section C2.1, it will be indicated when the plan was conducted and when the plan was evaluated in order to show the varying time frames that the effects of the initiatives should be seen within. Every commuter plan was conducted in cooperation with a working group at each company. In average it took around two months to conduct the commuter plan at each company. The preparations of the plan involved evaluation of the data received from the first round of questionnaires around travel behaviour and appointing potential initiatives to change commuting behaviour at the company.

The surveys conducted before the commuter plans were implemented have also been used as the Business as Usual scenario (B-a-U), since the assumption is that this is the most useful way to compare the changes in modal split after the implementation of the initiatives. Data about modal split trends in the municipal district have been used to compare the developments at each company with the general evolution in the same time period.

The response rates in the second round of surveys are in general considerable lower than the obtained in the first survey (in average 21% lower - excluding the company SBU where the response rate was higher in the second round). This affects the basis for comparison of the results from before and after.

For some of the companies the low response rate doesn't cause significant problems since the sample size (number of employees that responded) is high, this is the case for Siemens Windpower and Aalborg University. For the companies with a low population size: Nordjyllands Trafikselskab, Post Danmark and Alfa Laval, the characteristics of the sample population before and after was analysed to see if the population was similar, and hence could provide some basis for comparison in spite of the lower sample size. Comparisons of the companies have been be made with these possible errors in mind.

Company	Gender		Average age			Average distance to work	
	Before	After	Before	Age groups	After	Before	After
Nordjyllands Trafikselskab	38% Male 62% Female	39%Male 61% Female	- 11% 42% 16% -	<18 18-24 25-44 45-64 >64	- 4% 54% 39% 4%	12,0 km	21,5 km
Post Danmark	79% Male 21% Female	67% Male 33% Female	- - 49% 51% -	<18 18-24 25-44 45-64 >64	- - 50% 50% -	12,5 km	12,8 km
Alfa Laval	79% Male 21% Female	62% Male 38% Female	- 5% 49% 45% 1%	<18 18-24 25-44 45-64 >64	- 3% 52% 45% -	17,0 km	18,2 km

Table 3: Sample characteristics for the companies with low response rate and low population size.

In the following sections results of the commuter travel plan at each company will be presented.
Firstly the companies are evaluated by the indicator 'Transport', afterwards by the indicator 'Society'.

C2.1 Transport and Society

The evaluation will be presented company by company. Firstly the companies are evaluated by the indicator 'Transport', afterwards by the indicator 'Society'.

1. Company - SIEMENS WINDPOWER

Facts

250 persons are employed in the administration and 900 persons in the production at Siemens Windpower. The first round of surveys was conducted in the beginning of 2009 and the second round of surveys was conducted in May 2012.

INDICATOR: TRANSPORT

Initiatives implemented

- Information campaigns to employees around transport behaviour. The green commuter travel plan was circulated to the employees and information around initiatives, e.g. the electric bikes was communicated to the employees.
- Use of electric bikes. 10 bikes were borrowed to 10 employees at Siemens, for a three-month period. 7 electric bikes were out on loan by ARCHIMEDES, while 3 electric bikes were purchased by Siemens Windpower. The condition for borrowing an electric bike was that the user should be a dedicated car-driver who was willing to try commuting by electric bike. The purpose was to explore the potentials for this technology to get more people out of their cars.
- Car-pooling initiatives (Increase awareness - create model to facilitate car-pooling). A excel spread sheet was created where employees could indicate if they had/needed possibilities for car-pooling between the companies factories in Aalborg and Brande, or to and from work.

Facts - evaluation

Response rate (Before 40%) (After 34%)

Figure. 6 Modal Split Before (B-a-U) - ALL	**Modal split After - ALL**

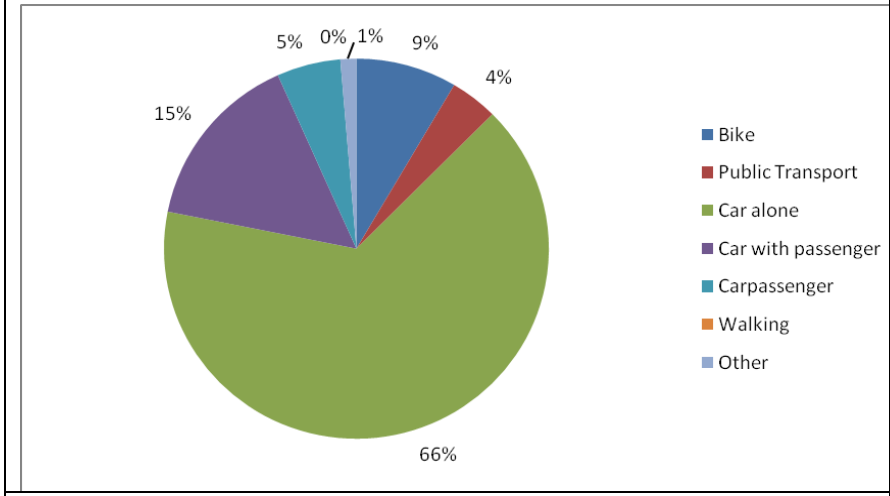
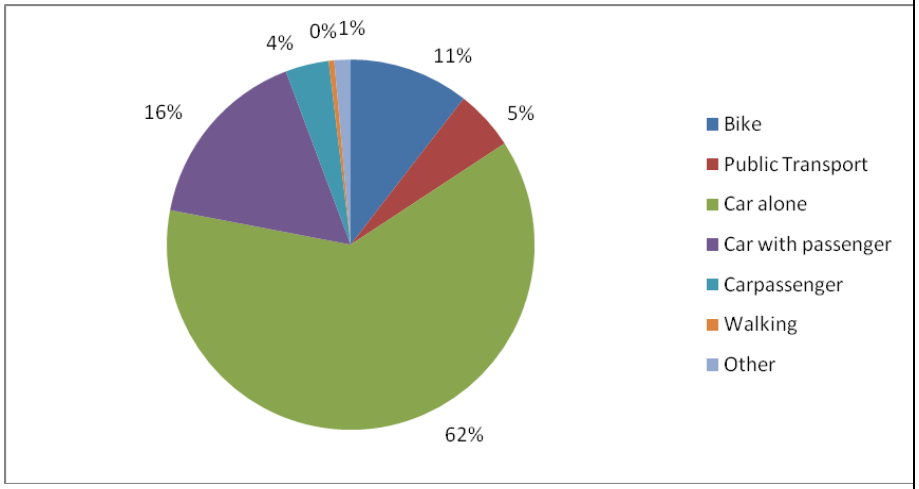

	

Figure 7 Modal Split Before (B-a-U) - ADMINISTRATION	**Modal Split After - ADMINISTRATION**

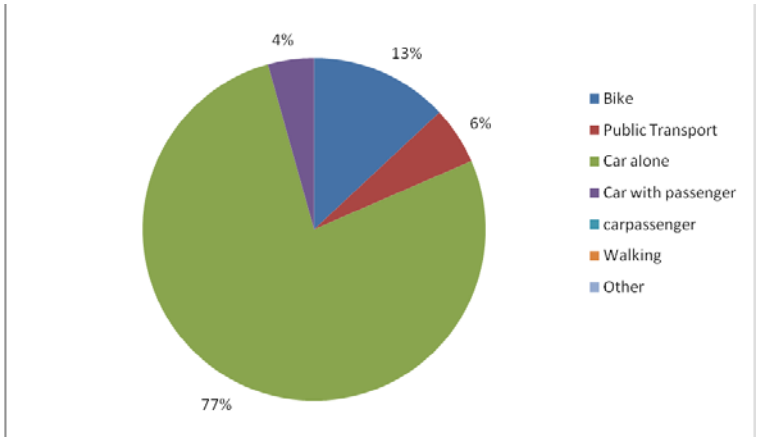
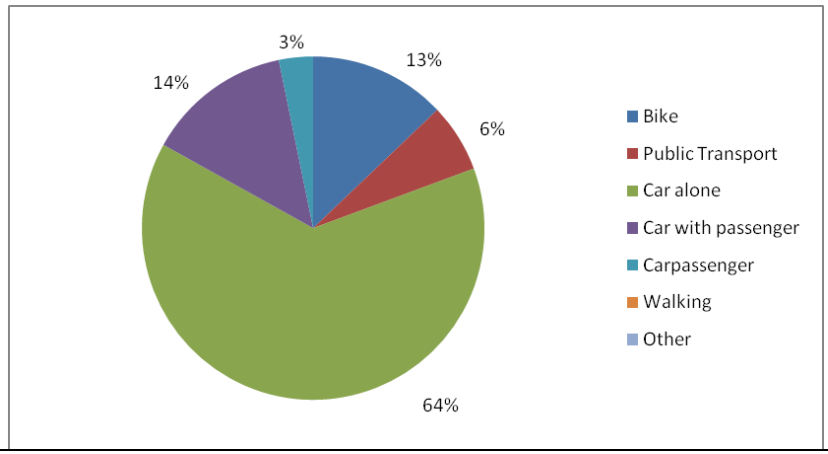
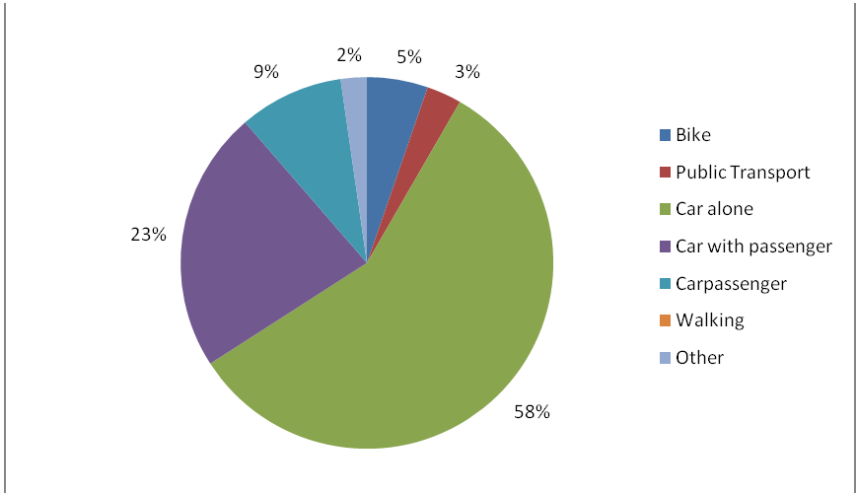


Figure 8 Modal Split Before (B-a-U) - FACTORY



Modal Split After - FACTORY



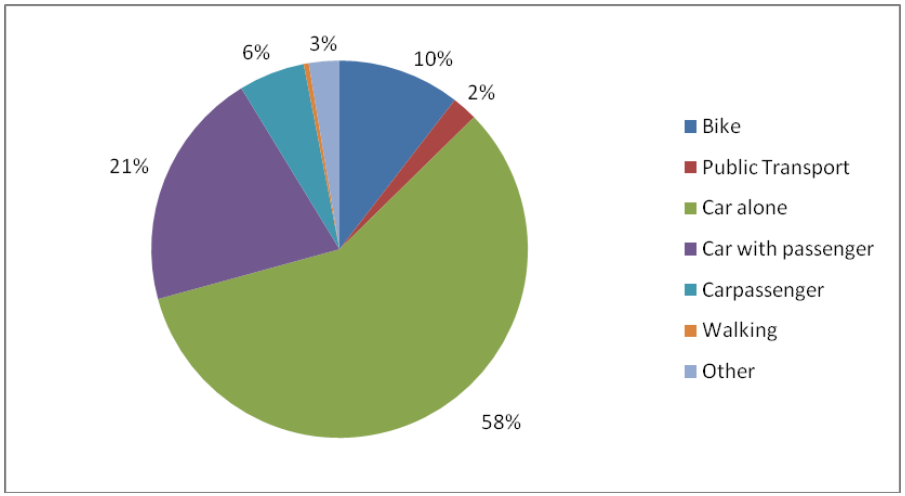


Table C2.2.1: Indicators

Indicator	Before (Winter-spring 2009)	B-a-U (Winter-spring 2009)	After (Winter- spring - 2012)	Difference: After –Before	Difference: After – B-a-U
26 modal split (all)	Bike 9% Public transport 4% Car alone 66% Car with passenger 15% Car passenger 5% Walking 0% Other 1%	Bike 9% Public transport 4% Car alone 66% Car with passenger 15% Car passenger 5% Walking 0% Other 1%	Bike 11% Public transport 5% Car alone 62% Car with passenger 16% Car passenger 4% Walking 0% Other 1%	Bike +2% Public transport +1% Car alone -4% Car with passenger +1% Car passenger -1% Walking 0% Other 0%	Bike +2% Public transport +1% Car alone -4% Car with passenger +1% Car passenger -1% Walking 0% Other 0%
28 Vehicle Occupancy (share car-pooling)	All: 20% Admin: 4% Factory: 32%	All: 20% Admin: 4% Factory: 32%	All: 20% Admin: 17% Factory: 27%	All: 0% Admin: +13% Factory: -5%	All: 0% Admin: +13% Factory: -5%
29 Modal Split (municipal average)	Bike 16% Public transport 5% Car alone 43% Car passenger 14% Walking 19% Other 3%	Bike 16% Public transport 5% Car alone 43% Car passenger 14% Walking 19% Other 3%	Bike 15%* Public transport 7%* Car alone 43%* Car passenger 13%* Walking 20%* Other 2%*	Bike -1% Public transport +2% Car alone 0% Car passenger -1% Walking +1% Other -1%	Bike -1% Public transport +2% Car alone 0% Car passenger -1% Walking +1% Other -1%

*Figures are from 2011 - data from 2012 are not available

Initiative - Electric Bikes

An example of an initiative implemented at Siemens Wind-power was the lending of 10 electric bikes on a three months period (from the 4th of May 2010 - onwards). In this period, 10 employees, both from the administration and the factory borrowed an electric-bike.

The location of SIEMENS Wind-power in the outskirts of the city results in that a lot of people living in the city centre have a 7-8 km commute to work. This commuting distance can be seen as too long for biking. Electric bikes prolong the commuting distance by bike, and are therefore seen as a suitable and sustainable mode of transport for this kind of commuting distance. The criteria for lending the bike was that you should previously have been driving to work by car and have more than 5 km to work.

Results from this initiative showed that:

- Amongst the 10 respondents - people went from cycling less than once a week (both ways equals one trip) to cycle more than two times a week in the three months period, on average.

- The evaluation showed that some cycled relatively longer distances than they were used to.
- Some of the respondents indicated that they think they would travel more (or the same level as before) by bike after the experience with electric bikes.
- One respondent sold his/her car as a result of his/her experience with using the electric bike, now he/she handles the daily commuting by bike or public transport.
- Many respondents indicate health as an important motivation for using the electric bike.
- Some would have liked to try the electric bike in winter conditions to see how the technology works under these circumstances - how the colder weather would affect their use of the electric bike.

The experiences gathered in the evaluation of the electric bikes initiatives are similar for all the companies that implemented this initiative, therefore the main results from this initiative will only be evaluated here.

INDICATOR: SOCIETY

Table C2.2.2: Awareness level

Indicator	Before (Winter-spring 2010)	B-a-U (Winter-spring 2010)	After (January 2012)	Difference: After –Before	Difference: After – B-a-U
13 Awareness	Not available		Stronger awareness on car-pooling*	Not available	Not available

*****Awareness level haven't been measured quantitatively at Siemens Windpower, the estimate of awareness of car-pooling is based on evaluation from the working group.

Comments:

The table above illustrates the change in modal split for Siemens Wind power before and after the initiative of the commuter travel plans were initiated. As seen on diagram Figure 6 modal split has changed slightly towards greener travel modes (Public transport, bike, car-pooling) at the company level in general (administration + factory employees) whereas the change in modal split is more significant at the administration level.

At the administration level, Figure 7, the share of individual car use decreased from 77% in the B-a-U scenario to 64% after the implementation of the commuter travel plan. Car-pooling increased with 13 percent points from 4% to 17%. The bike-share remains stable, which indicates that the car-pooling initiative provided the biggest potential for change. In comparison to the average municipal modal split the biggest difference is seen in commuting by car alone which on company level dropped from with -4% from 2010-2012, whereas the municipal average grew with +1%.

The results indicate that the change potential towards greener transport modes was highest among the employees in the administration. Important reasons for this variation might be that the employees at the factory level have changing working hours (including night shifts) that might affect their flexibility towards greener transport modes, since these modes are more inconvenient to use, especially at night shifts. Furthermore the before scenario showed that the employees at the factory level beforehand showed a positive commuting behaviour indicated by a share of 32% commuting in a car with a passenger which might also explain why the modal share in this regard have not change as much as seen at the administrative level. On the factory level you also see a variation in the modal share for bikes. The share went from 5% in the before scenario to 10% after the initiatives were implemented. The lending of electric bikes to employees might explain some of this variation.

Figure 5 shows the general work related commuting behaviour in the municipal district. Comparison between Figure 5 and Figure 6 shows that the modal share at Siemens Wind power is close to the general modal split for the municipal district. Smaller differences are seen in the share of bike trips to work 17% in the municipal district compared to 11% at Siemens Wind Power. This difference is likely caused by the location of Siemens Wind Power in the outskirts of Aalborg and the lack of bike lanes at some parts of the route to the factory. The effect of the location on the travel behaviour also shows by the share of car trips to work which is 62% for the municipal district, but 82% for Siemens Wind power. However of these 82% of the trips, 20% are trips with more than one passenger in the car, and this share has increased after the commuter travel plan was implemented which is positive in relation to achieving greener commuting behaviour at the company.

As seen at the table C2.2.1 for modal split after the implementation of the commuter plan at Siemens Wind Power a larger share, especially in the administration are using car-pooling. It has not been possible to get specific numbers of how many employees that are enrolled in a specific car-pooling initiative, but the responsible person for the commuter travel plans at Siemens Wind Power state that a spread sheet has been made to facilitate the car-polling at the company in general. However, she states that there is a much stronger ownership of car-pooling initiatives in the specific departments. The employees have a strong focus on car-pooling and there exists a culture for facilitating this, especially between the factories that are located in different parts of the country. An important lesson to learn from this is that initiatives might function better if they are rooted at the department level and are therefore closer to the employee.

2. Company - Nordjyllands Trafikselskab

Facts: 150 persons are employed at Nordjyllands Trafikselskab. The first round of surveys was conducted in August 2009 and the second round of surveys was conducted in April 2012.

INDICATOR: TRANSPORT

Initiatives implemented

- Use of electric bikes. 7 bikes were borrowed to 7 employees at Nordjyllands Trafikselskab, for a three-month period. The condition for borrowing an electric bike was that the user should be a dedicated car-driver who was willing to try commuting by electric bike. The purpose was to explore the potentials for this technology in order to get more people out of their cars.
- CO_2 neutral week - week with information about the employees transport behaviour and CO_2 emissions.

Facts - evaluation

Response rate (Before 39%) (After 18%)

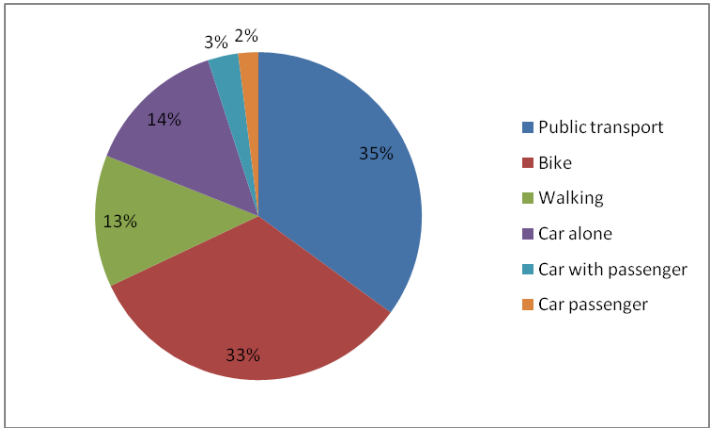
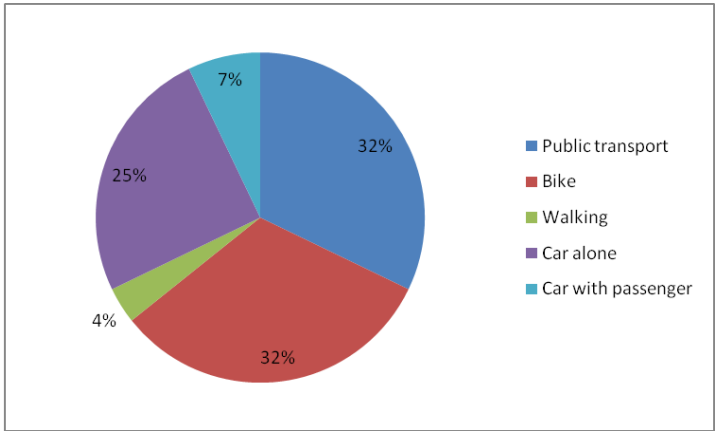
Figure 9 Modal Split Before (B-a-U) - ALL	**Modal split After - ALL**
	

Table C2.2.3: Indicators

Indicator	**Before (August 2009)**	**B-a-U (August 2009)**	**After (April 2012)**	**Difference: After –Before**	**Difference: After – B-a-U**
26 modal split	Bike 33% Public transport 35% Car alone 14% Car with passenger 3% Car passenger 2% Walking 13%	Bike 33% Public transport 35% Car alone 14% Car with passenger 3% Car passenger 2% Walking 13%	Bike 32% Public transport 32% Car alone 25% Car with passenger 7% Car passenger 0% Walking 4%	Bike -1% Public transport -3% Car alone +11% Car with passenger +4% Car passenger -2% Walking -9%	Bike -1% Public transport -3% Car alone +11% Car with passenger +4% Car passenger -2% Walking -9%

	Other 0%	Other 0%	Other 0%	Other 0%	Other 0%
28 Vehicle Occupancy (share car-pooling)	All: 5%	All: 5%	All: 7%	All: +2%	All: +2%
29 Modal Split (municipal average)	Bike 16% Public transport 5% Car alone 43% Car passenger 14% Walking 19% Other 3%	Bike 16% Public transport 5% Car alone 43% Car passenger 14% Walking 19% Other 3%	Bike 15%* Public transport 7%* Car alone 43%* Car passenger 13%* Walking 20%* Other 2%*	Bike -1% Public transport +2% Car alone 0% Car passenger -1% Walking +1% Other -1%	Bike -1% Public transport +2% Car alone 0% Car passenger -1% Walking +1% Other -1%

*Figures are from 2011 - data from 2012 are not available

INDICATOR: SOCIETY

Table C2.2.4: Awareness of the initiatives implemented:

Awareness of:	Percentage aware	If aware →	I have used the initiative	I haven't used the initiative	I don't think the initiative makes a difference
• Green commuter plans	57%		-	-	-
• Information brochures	25%		29%	57%	14%
• Electric Bikes	86%		4%	67%	29%
• CO_2 Neutral week	18%		0%	80%	20%

People have predominantly heard of the green commuter travel plans from a colleague (50%) or through information brochures (44%) (people were given the possibility to choose more categories)

Table C2.2.5: Awareness level

Indicator	Before (Winter-spring 2009)	B-a-U (Winter-spring 2009)	After (May 2012)	Difference: After –Before	Difference: After – B-a-U
13 Awareness	Not available	-	Strong awareness of the electric bikes - and in general high awareness of the commuter travel plans.	Not available	Not available

Comments:

Figure 9 shows that the modal split before and after, in many ways, are similar. The biggest change is seen in the share of employees walking to and from work which has decreased from 13% to 4%. The share of employees commuting to work by car alone has increased from 14% to 25%, which is also significantly above the municipal average (the municipal level from 2009-2011 shows an increase on +1%). This variation can be caused by the relatively small sample size, especially in the second round of surveys, and the methodological challenges that this causes. A positive aspect to address this is that the company already, given that it is a public transport authority, has a high share of employees commuting to work by public transport, hence the potential for further change might be less than other companies, given the existing 'green' modal share of the company. The share of car-pooling has increased slightly from 5-7%, which is more than the municipal average which deceased with 1% in the same period.

In general there is a high degree of awareness around the commuter plans (above 50%) amongst the employees. The initiative that has generated most attention is the possibility to use electric bikes at the company, whereas the initiative with information about CO_2 neutral week hasn't had the same attention. This indicates that the practical initiatives such as getting the possibility to use an electric bike raises greater attention, however it hasn't changed the modal share in favour of bikes, which beforehand was relatively high (33%).

3. Company - City Trafik

Facts: 200 persons are employed at City Trafik. The first round of surveys was conducted in April 2011, and the second round of surveys was conducted in April 2012.

INDICATOR: TRANSPORT

Initiatives implemented

- Use of electric bikes. 10 bikes were borrowed to 10 employees at City Trafik, for a three-month period. 7 electric bikes were out on loan by ARCHIMEDES, while 3 electric bikes were purchased by City Trafik. The condition for borrowing an electric bike was that the user should be a dedicated car-driver who was willing to try commuting by electric bike. The purpose was to explore the potentials for this technology in order to get more people out of their cars.
- Information about possibilities for car-pooling. No new systems were set-up, but information of existing possibilities (official websites etc.) for car-pooling was provided.

Facts - evaluation

Response rate (Before 44%) (After 21%).

Figure 10 Modal Split Before (B-a-U) - ALL	**Modal split After - ALL**

Measure title: **Measure 30 – Commuter Travel Plans in Aalborg**

City: **Aalborg** *Project:* **ARCHIMEDES** *Measure number:* **30**

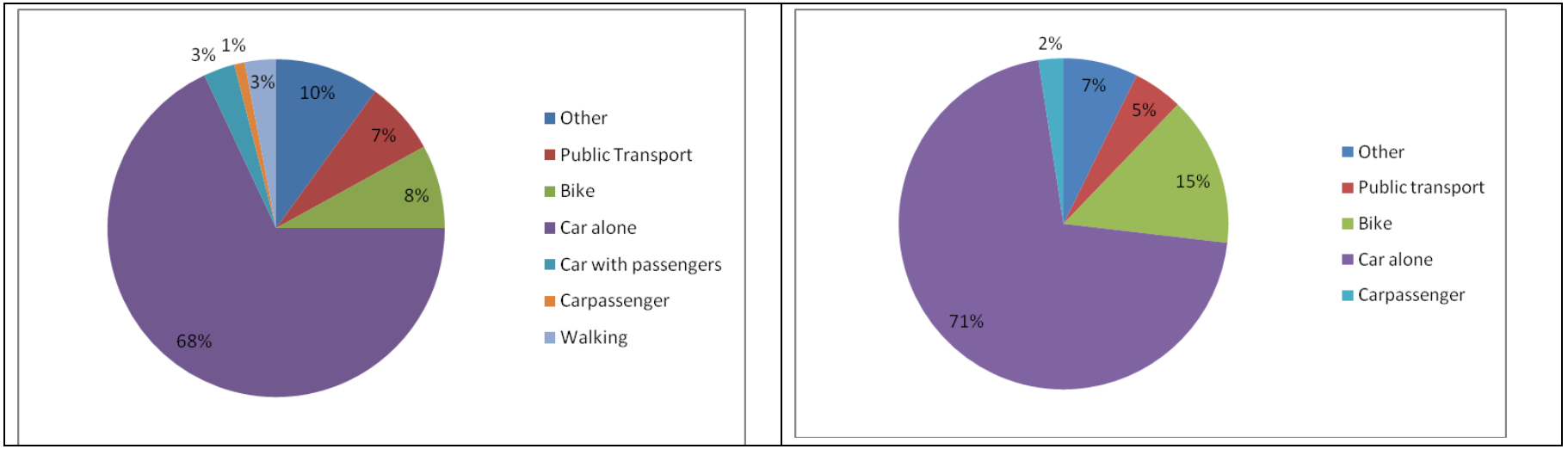


Table C2.2.6: Indicators

Indicator	**Before (April 2011)**	**B-a-U (April 2011)**	**After (April- 2012)**	**Difference: After –Before**	**Difference: After – B-a-U**
26 modal split	Bike 8% Public transport 7% Car alone 68% Car with passenger 3% Car passenger 1% Walking 3% Other 0%	Bike 8% Public transport 7% Car alone 68% Car with passenger 3% Car passenger 1% Walking 3% Other 0%	Bike 15% Public transport 5% Car alone 71% Car with passenger 0% Car passenger 2% Walking 0% Other 0%	Bike +7% Public transport -2% Car alone +3% Car with passenger -3% Car passenger +1% Walking -3% Other 0%	Bike +7% Public transport -2% Car alone +3% Car with passenger -3% Car passenger +1% Walking -3% Other 0%
28 Vehicle Occupancy (share car-pooling)	4%	4%	2%	-2%	-2%
29 Modal Split (municipal average)	Bike 15% Public transport 7% Car alone 43% Car passenger 13% Walking 20% Other 2%	Bike 15% Public transport 7% Car alone 43% Car passenger 13% Walking 20% Other 2%	Bike 15%* Public transport 7%* Car alone 43%* Car passenger 13%* Walking 20%* Other 2%*	Figures on municipal average only available for year 2011	Figures on municipal average only available for year 2011

*Figures are from 2011, data from 2012 are ~~is~~ not available.

INDICATOR: SOCIETY

Table C.2.2.7: Awareness of initiatives implemented

Awareness of:	Percentage aware	If aware →	I have used the initiative	I haven't used the initiative	I don't think the initiative makes a difference
• Green commuter plans	37%		-	-	-
• Information brochures	24%		40%	50%	10%
• Electric Bikes	56%		9%	83%	9%
• Information of car-pooling	15%		17%	83%	0%

People have predominantly heard of the green commuter travel plans from a colleague (33%) or through information brochures (47%) (people were given the possibility to choose more categories).

Table C2.2.6: Awareness level

Indicator	Before (Winter-spring 2010)	B-a-U (Winter-spring 2010)	After (May 2012)	Difference: After –Before	Difference: After – B-a-U
13 Awareness	Not available	-	High awareness of electric bikes and lower awareness of the commuter plans.	Not available	Not available

Comments:

Figure 10 show that the commuting behaviour by car alone is still high (71%) in the after scenario compared to the average in the municipal district (44%) This is significant since the company is a public transport operator and it could therefore be expected that the share of commuting by public transport would be higher than 7% (before) and 5% (after), as it was the case at the public transport authority (Nordjyllands Trafikselskab). However, not many initiatives were implemented at the company and hence it can be hard to see actual effects on the modal split. The share of car-pooling hasn't changed significantly (from 2 to 3%) but as seen in the evaluation of awareness to the initiative there hasn't been much attention towards this initiative. The working group at the company also refers that this initiative was not implemented as successfully as intended - it wasn't communicated well to the employees.

The modal share of commuting by bike has changed significantly (from 8 to 15%) which is positive and comparable to the municipal average. This change might be influenced by the increased awareness and possibility to try electric bikes which were one of the initiatives implemented at the company.

One of the persons that tried out an electric bike for a three months period stated in the evaluation that: *"my next car should be an electric bike"*.

4. Company – Department for Health and Sustainable Development SBU

Facts: 60 persons are employed at SBU. The first round of surveys was conducted in August 2009 and the second round of questionnaires was conducted in April 2012.

INDICATOR: TRANSPORT

Initiatives implemented

- Use of electric bikes. 7 bikes were borrowed to 7 employees at SBU, for a three-month period. The condition for borrowing an electric bike was that the user should be a dedicated car-driver who was willing to try commuting by electric bike. The purpose was to explore the potentials for this technology in order to get more people out of their cars.
- Company bikes - the employees had the possibility to borrow a bike to use to, especially, shorter work-related trips (meetings etc.).
- Hertz car sharing (initiated by other ARCHIMEDES measure). Work related car trips should be done with the use of Hertz car-sharing.

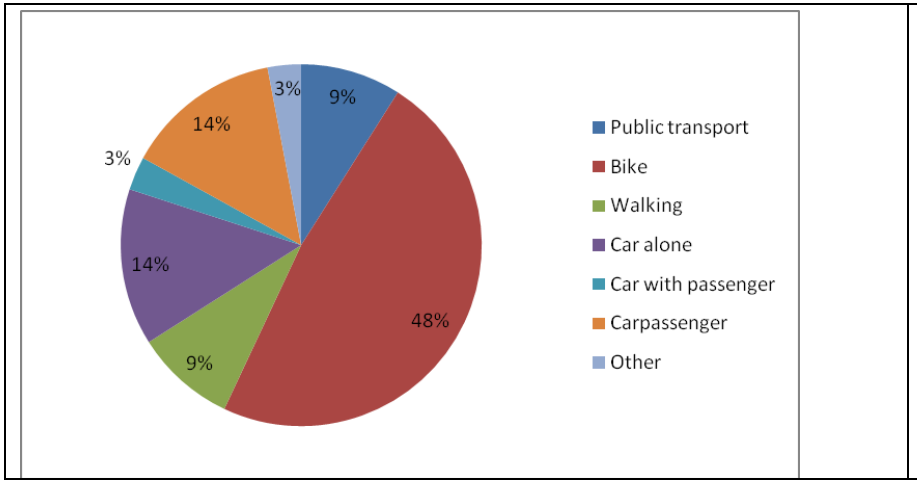
Facts - evaluation

Response rate (Before 66%) (After 75 %)

Figure 11 Modal Split Before (B-a-U) - ALL	**Modal split After - ALL**

Measure title: **Measure 30 – Commuter Travel Plans in Aalborg**

City: **Aalborg** *Project:* **ARCHIMEDES** *Measure number:* **30**



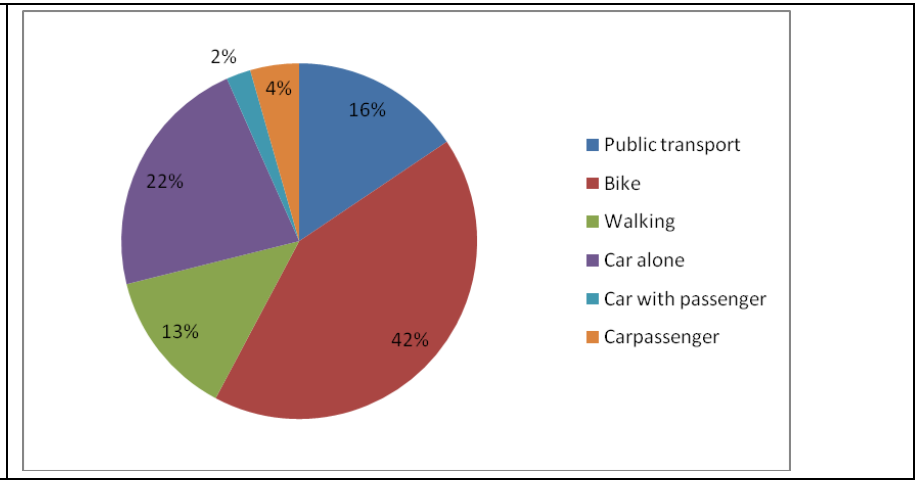


Table C2.2.7: Indicators

Indicator	**Before (August 2009)**	**B-a-U (August 2009)**	**After (April 2012)**	**Difference: After –Before**	**Difference: After – B-a-U**
26 modal split	Bike 48% Public transport 9% Car alone 14% Car with passenger 3% Car passenger 14% Walking 9% Other 3%	Bike 48% Public transport 9% Car alone 14% Car with passenger 3% Car passenger 14% Walking 9% Other 3%	Bike 42% Public transport 16% Car alone 22% Car with passenger 2% Car passenger 4% Walking 13% Other 0%	Bike -6% Public transport +7% Car alone +8% Car with passenger -1% Car passenger -10% Walking +4% Other -3%	Bike -6% Public transport +7% Car alone +8% Car with passenger -1% Car passenger -10% Walking +4% Other -3%
28 Vehicle Occupancy (share car-pooling)	17%	17%	7%	-10%	-10%
29 Modal Split (municipal average)	Bike 16% Public transport 5% Car alone 43% Car passenger 14% Walking 19% Other 3%	Bike 16% Public transport 5% Car alone 43% Car passenger 14% Walking 19% Other 3%	Bike 15%* Public transport 7%* Car alone 43%* Car passenger 13%* Walking 20%* Other 2%*	Bike -1% Public transport +2% Car alone 0% Car passenger -1% Walking +1% Other -1%	Bike -1% Public transport +2% Car alone 0% Car passenger -1% Walking +1% Other -1%

*Figures are from 2011, data from 2012 was not available.

INDICATOR: SOCIETY

Table C2.2.8: Awareness of initiatives implemented

Awareness of:	Percentage aware	If aware →	I have used the initiative	I haven't used the initiative	I don't think the initiative makes a difference
• Green commuter plans	27%		-	-	-
• Information brochures	22%		20%	80%	0%
• Electric Bikes	53%		8%	83%	8%
• Company bikes	91%		29%	71%	0%
• Hertz car sharing	38%		7%	93%	-

People have predominantly heard of the green commuter travel plans from a colleague (67%) or through information brochures (42%) (people were given the possibility to choose more categories).

Table C2.2.9: Awareness level

Indicator	Before (Winter-spring 2010)	B-a-U (Winter-spring 2010)	After (May 2012)	Difference: After –Before	Difference: After – B-a-U
13 Awareness	Not available	Not available	Very high awareness of company bikes and electric bikes, lower awareness of the green commuter plans.	Not available	Not available

Comments:

In both the before and the after scenario (figure 11) the bike share at SBU is significantly higher that the municipal average (48 and 42% compared to 16 and 15%). This indicates that the company already have a very green commuting profile. The 'after' evaluation shows that the share of carpooling has decreased from 17-7% which is a considerable decrease; however the total number of journeys made by car is slightly lower in the 'after' evaluation (31% compared to 28%). The share of public transport has increased from 9 - 16% which is positive in a change towards greener modes and this is above the average development on the municipal district level in the same period which was +2%. Concerning awareness level the results from SBU indicates that the electric bikes and the company bikes had raised the biggest awareness and this together with the results from City Trafik, Nordjyllands Trafikselskab and Siemens, show that the 'physical' initiatives has proven to cause the highest awareness amongst the initiatives.

5. Company - ALFA LAVAL

Facts: 450 persons are employed at Alfa Laval. The first round of surveys was conducted in March 2011 and the second round of surveys was conducted in April 2012.

INDICATOR: TRANSPORT

Initiatives implemented

- Use of electric bikes. 6 bikes were borrowed to 6 employees at Alfa Laval, for a three-month period. The condition for borrowing an electric bike was that the user should be a dedicated car-driver who was willing to try commuting by electric bike. The purpose was to explore the potentials for this technology in order to get more people out of their cars.
- Newly established Bike sheds
- Newly established shower facilities

Facts - evaluation

Response rate (Before 60%) (After 29 %)

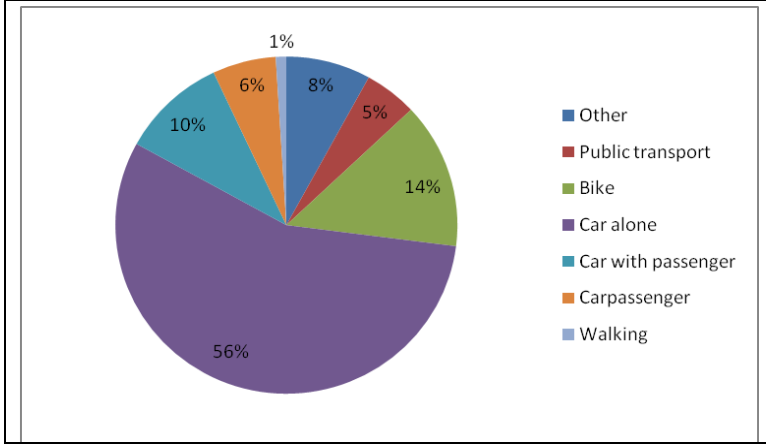
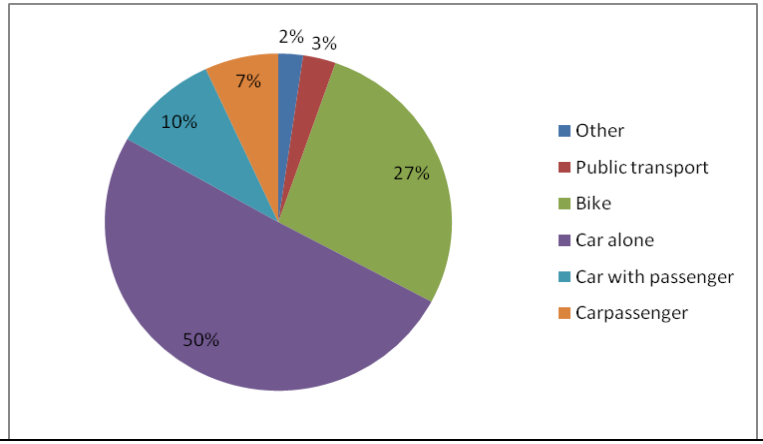
Figure 12 Modal Split Before (B-a-U) - ALL	**Modal split After - ALL**
	

Table C2.2.10: Indicators

Indicator	**Before (March 2011)**	**B-a-U (March 2011)**	**After (April 2012)**	**Difference: After –Before**	**Difference: After – B-a-U**
26 modal split	Bike 14% Public transport 5% Car alone 56% Car with passenger 10% Car passenger 6% Walking 1% Other 8%	Bike 14% Public transport 5% Car alone 56% Car with passenger 10% Car passenger 6% Walking 1% Other 8%	Bike 27% Public transport 3% Car alone 50% Car with passenger 10% Car passenger 7% Walking 0% Other 2%	Bike +13% Public transport -2% Car alone -6% Car with passenger 0% Car passenger +1% Walking -1% Other -6%	Bike +13% Public transport -2% Car alone -6% Car with passenger 0% Car passenger +1% Walking -1% Other -6%
28 Vehicle Occupancy (share car-pooling)	16%	16%	17%	+1%	+1%
29 Modal Split (municipal average)	Bike 15% Public transport 7% Car alone 43% Car passenger 13% Walking 20% Other 2%	Bike 15% Public transport 7% Car alone 43% Car passenger 13% Walking 20% Other 2%	Bike 15%* Public transport 7%* Car alone 43%* Car passenger 13%* Walking 20%* Other 2%*	Figures only available for year 2011	Figures only available for year 2011

*Figures are from 2011, data from 2012 is not available.

INDICATOR: SOCIETY

Table C2.2.11: Awareness of initiatives

Awareness of:	Percentage aware	If aware →	I have used the initiative	I haven't used the initiative	I don't think the initiative makes a difference
• Green commuter plans	66%		-	-	-
• Information brochures	39%		6%	82%	12%
• Electric Bikes	89%		3%	82%	15%
• Bike sheds	14%		22%	72%	6%
• Shower facilities	27%		14%	78%	8%

People have predominantly heard of the green commuter travel plans from a colleague (27%) or through information brochures (57%) (people were given the possibility to choose more categories).

Table C2.2.12: Awareness level

Indicator	Before (Winter-spring 2011)	B-a-U (Winter-spring 2011)	After (May 2012)	Difference: After –Before	Difference: After – B-a-U
13 Awareness	Not available	-	Very high awareness of the electric bikes and high awareness of the commuter plans.	Not available	Not available

Comments:

The results show a positive change towards greener modes. The company has implemented many initiatives to enhance the use of bikes to commute to work, and this seems to have given positive results. The share of commuting alone by car- has decreased from 56 to 50% whereas the share of commuting by bikes has increased from 14 to 27%, an increase of 13 percent points, well above the municipal district average which is 15%. This could indicate that the initiatives have had a positive effect. Looking at the awareness level we see again that the initiative that has caused the highest awareness is the possibility to borrow electric bikes, however there is also awareness of the bike sheds and the shower facilities, even though less has used these. Yet a high awareness level of the green commuter travel plans (66%) might have affected the modal change.

6. Company - AALBORG UNIVERSITY

Facts: There are 14.000 students and 3.000 employees at Aalborg University. The first round of surveys was conducted in May 2009, and the second round of surveys was conducted in May 2012.

INDICATOR: TRANSPORT

Initiatives implemented

Some of the initiatives implemented at AAU were not directly initiated by the green commuter travel plans but by other ARCHIMEDES initiatives, however these initiatives might have had an important effect on the commuting behaviour at the university, and they are therefore included in this evaluation.

- Bicycle pump stations Information campaigns (cycle maps distributed to new students)
- Homepage green.aau.dk (information about commuting at AAU)
- Hertz car-sharing (only employees) (initiated by other ARCHIMEDES measure)
- Bike commuter route to AAU (initiated by other ARCHIMEDES measure)
- WebPages for traffic information and commuting behaviour www.mitNT.dk and www.trafikken.dk/Nordjylland (in other ARCHIMEDES measure)

Facts - evaluation *Response rate (Before 30%) (After 20 %)*

Figure 13 Modal Split Before (B-a-U) - ALL	**Modal split After - ALL**

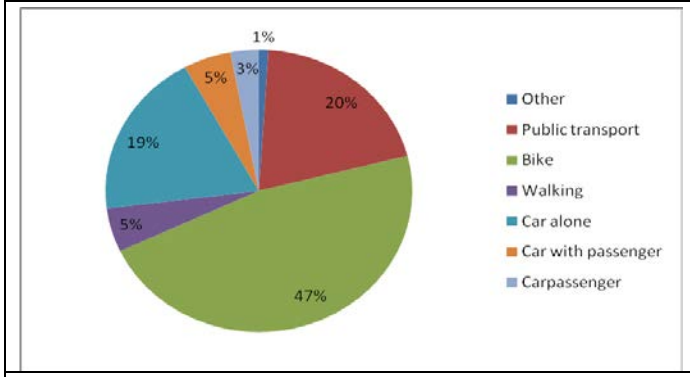
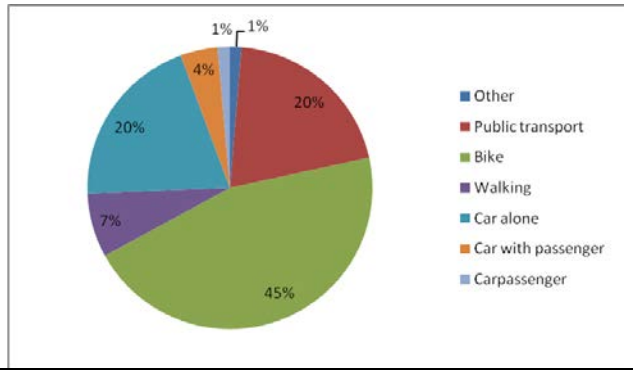

	

Figure 14 Modal Split Before (B-a-U) - EMPLOYEES	**Modal split After - EMPLOYEES**

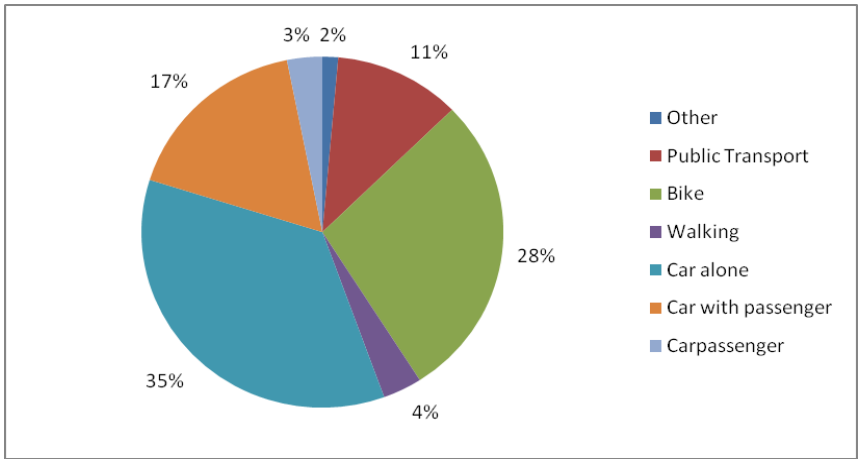
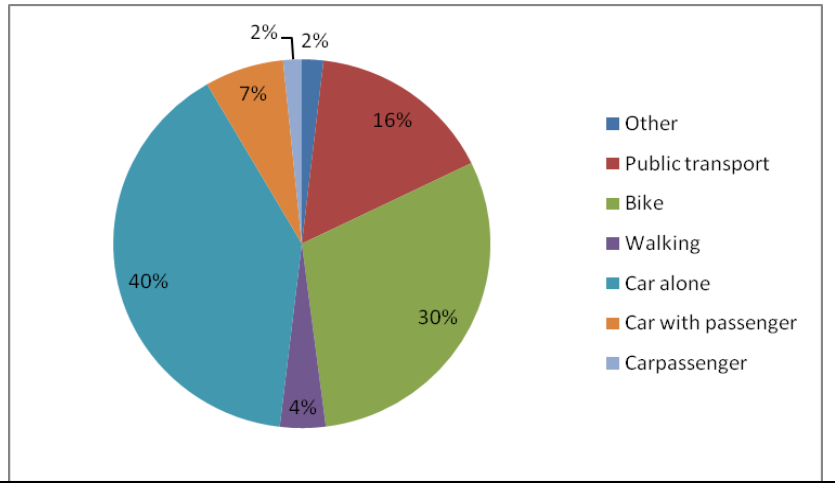

	

Figure 15 Modal Split Before (B-a-U) - STUDENTS	**Modal split After - STUDENTS**

Measure title: **Measure 30 – Commuter Travel Plans in Aalborg**

City: **Aalborg** *Project:* **ARCHIMEDES** *Measure number:* **30**

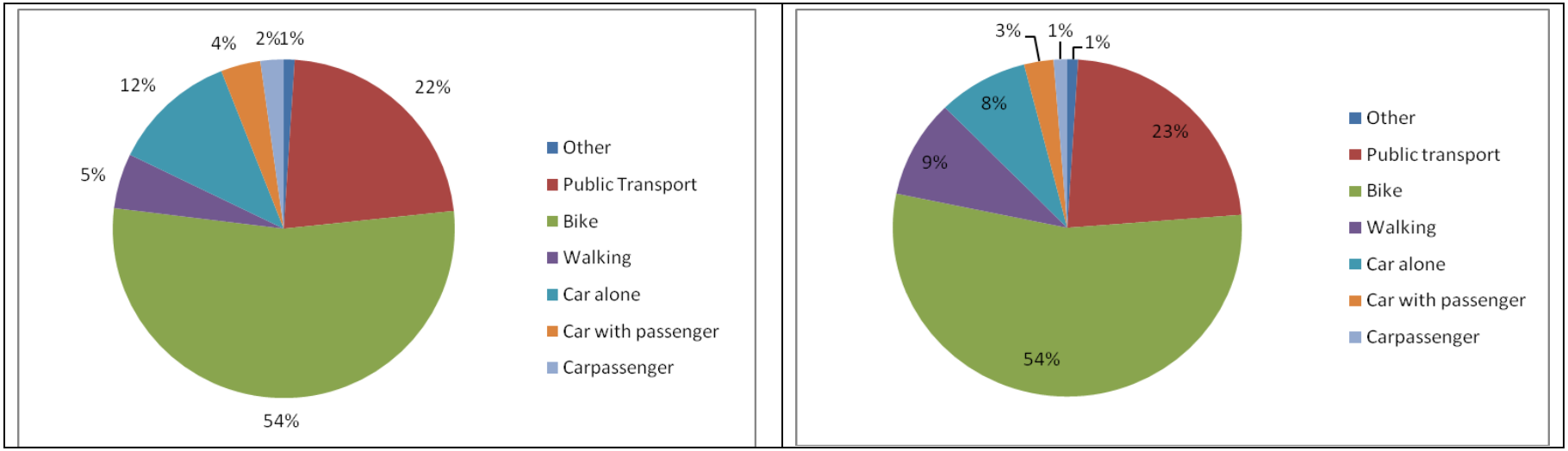


Table C2.2.13: Indicators

Indicator	**Before (May 2009)**	**B-a-U (May 2009)**	**After (May 2012)**	**Difference: After –Before**	**Difference: After – B-a-U**
26 modal split (All)	Bike 47% Public transport 20% Car alone 19% Car with passenger 5% Car passenger 3% Walking 5% Other 1%	Bike 47% Public transport 20% Car alone 19% Car with passenger 5% Car passenger 3% Walking 5% Other 1%	Bike 45% Public transport 20% Car alone 20% Car with passenger 4% Car passenger 1% Walking 7% Other 1%	Bike -2% Public transport 0% Car alone +1% Car with passenger -1% Car passenger -2% Walking +2% Other 0%	Bike -2% Public transport 0% Car alone +1% Car with passenger -1% Car passenger -2% Walking +2% Other 0%
26 modal split (Students)	Bike 54% Public transport 22% Car alone 12% Car with passenger 4% Car passenger 2% Walking 5%	Bike 54% Public transport 22% Car alone 12% Car with passenger 4% Car passenger 2% Walking 5%	Bike 54% Public transport 23% Car alone 8% Car with passenger 3% Car passenger 1% Walking 9%	Bike 0% Public transport +1% Car alone -4% Car with passenger -1% Car passenger -1% Walking +4%	Bike 0% Public transport +1% Car alone -4% Car with passenger -1% Car passenger -1% Walking +4%

	Other 1%	Other 1%	Other 1%	Other 0%	Other 0%
26 modal split (Employees)	Bike 28% Public transport 11% Car alone 35% Car with passenger 17% Car passenger 3% Walking 4% Other 2%	Bike 28% Public transport 11% Car alone 35% Car with passenger 17% Car passenger 3% Walking 4% Other 2%	Bike 30% Public transport 16% Car alone 40% Car with passenger 7% Car passenger 2% Walking 4% Other 2%	Bike +2% Public transport +5% Car alone +5% Car with passenger -10% Car passenger -1% Walking 0% Other 0%	Bike +2% Public transport +5% Car alone +5% Car with passenger -10% Car passenger -1% Walking 0% Other 0%
28 Vehicle Occupancy (share car-pooling)	(All) 7% (Students) 16% (Employees) 20%	(All) 7% (Students) 16% (Employees) 20%	(All) 5% (Students) 11% (Employees) 9%	(All) -2% (Students) -5% (Employees) -11%	(All) -2% (Students) -5% (Employees) -11%
29 Modal Split	Bike 16% Public transport 5% Car alone 43% Car passenger 14% Walking 19% Other 3%	Bike 16% Public transport 5% Car alone 43% Car passenger 14% Walking 19% Other 3%	Bike 15%* Public transport 7%* Car alone 43%* Car passenger 13%* Walking 20%* Other 2%*	Bike -1% Public transport +2% Car alone 0% Car passenger -1% Walking +1% Other -1%	Bike -1% Public transport +2% Car alone 0% Car passenger -1% Walking +1% Other -1%

INDICATOR: SOCIETY

Table C2.2.14: Awareness of initiatives implemented

Awareness of:	Percentage aware		If aware	I have used the initiative		I haven't used the initiative		I don't think the initiative makes a difference	
	Employees	Students	→	Employees	Students	Employees	Students	Employees	Students
• Green commuter plans	11%	5%		-	-	-	-	-	-
• Bike pump stations	32%	50%		18%	25%	78%	73%	4%	2%
• Information campaigns	4%	2%		16%	10%	78%	83%	7%	7%
• Homepage green.aau.dk	5%	1%		7%	21%	81%	79%	12%	0%
• Hertz Car sharing	12%	-		1%	-	99%	-	-	-
• Bike commuter route	31%	41%		39%	58%	57%	39%	4%	3%

• Trafikken.dk/nordjylland	33%	17%		37%	38%	54%	55%	9%	7%
• mitNT.dk	6%	8%		36%	32%	58%	55%	7%	13%

Employees have predominantly heard of the green commuter travel plans from a colleague (26%), through information at the homepage (18%) or through the questionaries that was send arround (28%). (people were given the possibility to choose more categories).

Students have predominatly heard of the green commuter travel plans through information brochures (24%) and through the questionaire (31%).

Table C2.2.15: Awareness level

Indicator	Before (Winter-spring 2009)	B-a-U (Winter-spring 2009)	After (May 2012)	Difference: After –Before	Difference: After – B-a-U
13 Awareness	Not available	-	High awareness of the bike pump stations and the new commuter bike route to the university.	Not available	Not available

Comments:

The change in modal split on the general level (including both students and employees) haven't changed much in the evaluation period. The same is evident for the before and after modal split for students. The modal split among the employees seems to have changed slightly. Amongst the employees the share of public transport has increased from 11-16% and the share of bikes from 28-30%, which is positive. However the general bike share (both employees and students) was already above the average municipal level (around 47% compared to 15-16%), which gives less potential for increasing an already high share of green modes. The students are more willing to bike compared to the employees, and this indicates that there is potential to facilitate for further modal changes amongst employees. It furthermore shows that it is important to nurse the green travel behaviour amongst the students, and it might indicate that more students live in bike travel distance to school.

The initiatives that reached the highest awareness levels were the bike pump stations (32 and 50%) and the bike commuter route (31 and 41%), which is supporting the potential to maintain a high bike share in the future. The awareness of the initiatives was higher among students, which might be influenced by their higher bike share.

7. Company - POST DANMARK

Facts: There are 370 people employed at Post Danmark. The first round of surveys was conducted in March 2011 and the second round of surveys was conducted in April 2012.

INDICATOR: TRANSPORT

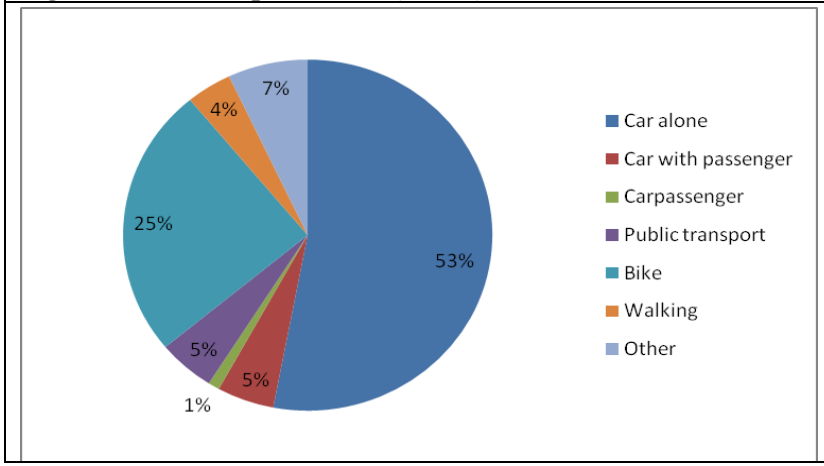
Initiatives implemented

- Campaign for green commuting. Information of possibilities to take public transport to and from work - time schedules provided to eliminate employees prejudice of limited public transport departures in the early morning hours, when many employees show up at work.
- Photo competition for green travel behaviour to work. Employees were encouraged to enter the competition, by showing their green commuting behaviour to and from work by photos.
- Winter bicycle check, all employees got the possibility get a 'service' check of their private bicycles before winter.

Facts - evaluation

Response rate (Before 51 %) (After 16 %)

Figure 16 Modal Split Before (B-a-U)



Modal split After

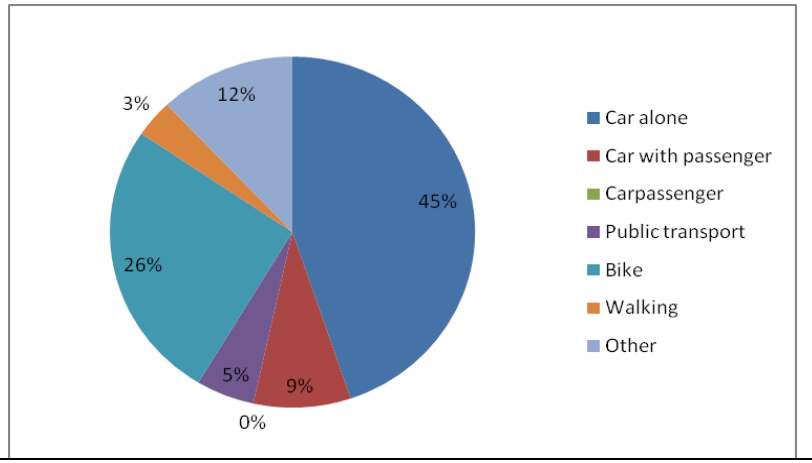


Table C2.2.16: Indicators

Indicator	**Before (March 2011)**	**B-a-U (March 2011)**	**After (April 2012)**	**Difference: After –Before**	**Difference: After – B-a-U**
26 modal split	Bike 25% Public transport 5% Car alone 53% Car with passenger 5% Car passenger 1% Walking 4% Other 7%	Bike 25% Public transport 5% Car alone 53% Car with passenger 5% Car passenger 1% Walking 4% Other 7%	Bike 26% Public transport 5% Car alone 45% Car with passenger 9% Car passenger 0% Walking 3% Other 12%	Bike +1% Public transport 0% Car alone -8% Car with passenger +4% Car passenger -1% Walking -1% Other +5%	Bike +1% Public transport 0% Car alone -8% Car with passenger +4% Car passenger -1% Walking -1% Other +5%
28 Vehicle Occupancy (share car-pooling)	6%	6%	9%	+3%	+3%
29 Modal Split (municipal average)	Bike 15% Public transport 7% Car alone 43% Car passenger 13% Walking 20%	Bike 15% Public transport 7% Car alone 43% Car passenger 13% Walking 20%	Bike 15%* Public transport 7%* Car alone 43%* Car passenger 13%* Walking 20%*	Figures only available for year 2011	Figures only available for year 2011

	Other 2%	Other 2%	Other 2%*		

*figures are from 2011, data from 2012 are not available.

INDICATOR: SOCIETY

Table C2.2.17: Awareness of initiatives implemented

Awareness of:	Percentage aware	If aware →	I have used the initiative	I haven't used the initiative	I don't think the initiative makes a difference
• Green commuter plans	66%		-	-	-
• Campaigns for green commuting	62%		18%	76%	5%
• Photo competition for green travel behaviour to work	49%		10%	67%	23%
• Winter bicycle check	78%		23%	72%	4%

People have predominantly heard of the green commuter travel plans through information brochures (51%) (people were given the possibility to choose more categories). However the response rate is very low in the 'after' survey, only 16%, this influences the validity of the results.

Table C2.2.18: Awareness level

Indicator	Before (Winter-spring 2011)	B-a-U (Winter-spring 2011)	After (May 2012)	Difference: After –Before	Difference: After – B-a-U
13 Awareness	Not available		In general a high awareness level of all initiatives implemented (almost all awareness is above 50%).	Not available	Not available

Comments:

The modal share of commuting alone by car has decreased from 53 to 45%, and the share of car pooling has increased from 6 to 9%. The share of public transport and bike is almost the same, and this indicates that the potential for change was car occupancy. In general there is a high awareness around both the commuter plan and the initiatives initiated by this. The working group has very active in encouraging employee's participation in the initiatives and informing the employees around these, though the effects of the initiatives are not showing that clear in the changes in modal split.

COMPARISON OF COMPANIES

In the table below the results from the seven companies are compared by change in modal split.

Table C2.2.19: Comparison of companies

Company	Number of employees	Difference in modal split: after-BaU						
		Bike users	PT users	Car alone	Car with passenger	Carpassenger	Walking	Other
Siemens Windpower	1.150	+2%	+1%	-4%	+1%	-1%	0%	0%
Nordjyllands Trafikselskab	150	-1%	-3%	+11%	+4%	-2%	-9%	0%
City Trafik	200	+7%	-2%	+3%	-3%	+1%	-3%	0%
SBU	60	-6%	+7%	+8%	-1%	-10%	+4%	-3%
Alfa Laval	450	+13%	-2%	-6%	0%	+1%	-1%	-6%
Aalborg University	17.000	-2%	0%	+1%	-1%	-2%	+2%	0%
Post Danmark	370	+1%	0%	-8%	+4%	-1%	-1%	+5%
Average	-	+2%	-0,4%	+0,7%	+0,5%	-2%	-1,1%	-0,6%

Table C2.2.19 shows that there has been an average increase in the modal share for bikes at the seven companies, however not all companies experienced an increase in bike use after the implementation of commuter plans. SBU had the most remarkable decrease in bike-use with 6%, while Alfa Laval experienced the highest increase with 13%. The Share of car-pooling remains almost stable on average, however the variations between the companies are notable. At SBU the modal share of car-pooling (Car with passenger and car passenger) decreased with 11 % while the share of car alone increased by 8%. Post Danmark experienced the highest increase in the modal share of car-pooling with 3%, whereas the modal share of car alone decreased by 8%. It can be difficult to link the changes in modal share directly to the effects of the commuter travel plans. This can be due to other societal factors and physical conditions that influence

the results (whether, petrol prices etc.) and more importantly the errors that the small sample size in especially the second round of questionnaires causes for the results. Therefore the awareness indicators for each company are more interesting as a result of the effect that the commuter travels plans and the initiatives have had.

C3 Achievement of quantifiable targets and objectives

No.	Target	Rating
1	To elaborate and implement a number of commuter travel plans	*
2	Encourage involved target groups to use more sustainable means of transport	**

NA = Not Assessed O = Not Achieved * = Substantially achieved (at least 50%)
**** = Achieved in full *** = Exceeded**

1: Commuter plans were elaborated for 10 companies, 7 have, by the end of the ARCHIMEDES project had implemented the commuter plans with specific initiatives.

2: Initiatives have been implemented on the basis of survey results around travel behaviour among the employees at the companies: hereby the initiatives could be fitted the specific situation at each company.

C4 Up-scaling of results

The commuter travel plans are tailored the specific travel behaviour, the specific location and the specific needs at the companies.

There are large differences in the how the employees commute and which initiatives that are launched at the companies. Therefore, it will not be possible to draw conclusions on how this measure could be up-scaled in general, but the experience around this measure could be used when implementing commuter travel plans in the future.

C5 Appraisal of evaluation approach

The evaluation of the commuter travel plans was conducted by a second round of questionnaires to the companies approximately one-two years after the plans were implemented. In this round the questionnaires focused on the change in modal split at the companies after the plans and initiatives were implemented to see if there were any changes. Also the awareness level among the employees towards the commuter travel plan, and the initiatives implemented were evaluated.

The sample population for the second round of questionnaires at each company was the same, with variations in new employees etc. However, there cannot be certainty that it is the same people that answered the questions in first and second round. By shortening the number of questions in the second round of questionnaires there should potentially be a higher response rate securing valid results.

The number of initiatives implemented at each company varies. There is also variation in the type of initiatives implemented; whether they are information or test of more hands on initiatives, such as lending of electric bikes, bike sheds, and bicycle repair services. This involves evaluation of many different initiatives and hence different awareness levels at the companies. It could be expected that the employees at the companies that implemented many hands-on initiatives have a higher awareness-level towards the commuter travel plans or the initiatives initiated through these plans.

Furthermore, a longer time span before conducting the evaluation would be preferable, hereby more initiatives could have been implemented, and the initiatives implemented would have had a longer time to shows its effects.

C6 Summary of evaluation results

- In many cases the modal split has changed towards greener modes after implementation of the commuter plan. It is though hard to determine if this is a direct effect of the commuter plan or other factors.
- Among all companies there is a higher awareness around the 'physical' initiatives such as electric bikes, company bikes, bike pump stations etc. than the information campaigns and other behavioural initiatives.
- Especially the electric bike initiative proves to be successful, but not many employees have had the chance to try these bikes - there could be a potential for modal shifts.
- Three of the participating companies have an awareness level above 50% towards the green commuter plans among their employees.
- Many of the participating companies already have a relatively 'green' commuting behaviour; hence the potential for change might be less than companies with a higher share of individual motorised transport.

C7 Future activities relating to the measure

Many of the companies indicate that they will use the commuter travel plan onwards to implement more initiatives to affect the travel behaviour at the company towards greener modes and behaviour. The document has a status as a strategic tool to keep focus on improving the transport behaviour towards greener modes. Some companies have indicated that they are especially interested in a second round of tests with the electric bikes, which have been a great success in several companies. Many of the initiatives implemented will continue to have an effect (e.g. improved bike facilities, car-pooling possibilities, car-sharing etc.).

D Process Evaluation Findings

D.0 Focused measure

X	0	No focussed measure
	1	Most important reason
	2	Second most important reason
	3	Third most important reason

D.1 Deviations from the original plan

The deviations from the original plan comprised:

Deviation 1: Number of companies, and initiatives implemented

Implementation of the commuter travel plans was initiated at 10 companies, however 7 companies implemented the commuter travel plans and therefore 7 commuter travel plans are evaluated. Experience gained through the work with implementing the commuter travel plans shows that the companies which established a working-group for implementing the plan as a strategic document in the organisation and implement specific initiatives towards the employees, have managed to activate the plan, cause awareness and potential for change in travel behaviour. This indicates that the implementation of the plan and initiatives requires involvement from both the municipal side (the ARCHIMEDES secretariat) and the company.

Deviation 2: Time frame for evaluating effects

This is not an actual deviation from the original plan, but more an important factor that have had an influence on the implementation of the plans and the initiatives implemented at the companies. The time frame is important in regards to implementing initiatives and seeing the effect of these initiatives. Many initiatives were suggested in the commuter travel plans in each company addressed on behalf of the travel behaviour among the employees. However, not all initiatives were implemented. The experience is that it takes time to implement initiatives, and in some cases the companies find some initiatives more or less relevant for their organisation. Therefore, the commuter travel plan should be seen as a strategic document that continuously should be fitted to the actual situation and needs at the company. Hereby, the period for evaluating the effects of these commuter travel plans should have a longer perspective than what is available within the ARCHIMEDES project.

D.2 Barriers and drivers

D.2.1 Barriers

Preparation phase

- **Financial crisis:** Finding companies who are willing to participate has proven to be difficult. , This is caused partly due to a lack of knowledge about the project and partly due to the financial situation.

Implementation phase

- **Physical structures:** For some companies the physical location was an important barrier for the change in modal split. Facilitating potential for change might involve new physical

infrastructures, which involve a more long-term municipal prioritisation of e.g. bike lanes, public transport, and other infrastructures. This goes beyond the company's scope

- **Contextual challenges:** the conditions for implementing commuter travel plans are different in national contexts, which cause difference in the process for implementing such plans. In a Danish context, there are no legislative requirements for such plans, and there are not many physical restrictions for e.g. number or parking places at each company. This affects the potential for change and requires that the companies' implements the initiative based in their free will and the wish for a green/ healthy image

Operation phase

- **Company engagement:** Implementation of suggested initiatives in the commuter travel plans depends on the companies' engagement and willingness. Many of the participating companies already have a 'green' commuting profile, which is positive and important to maintain, however the change potential could be higher at companies that didn't have this green profile.
- **Organisational anchoring:** A well functioning working group at the company to disseminate the plan in the organisation is a necessity for a successful outcome.

D.2.2 Drivers

Preparation phase

- **Image:** the possibilities for the company to promote themselves with a green image.
- **Institutional change:** At e.g. the university a general interest for environmental management made a synergy effect with the commuter plan project.
- **Economy:** Facilitating car-pooling within the company might save the company for expenses due to work related trips between departments.
- **Health:** Healthier employees cause less sick days and better well being at the company in general.

Implementation phase

- **Interest:** Implementing initiatives from the company's side to provide alternatives for their employees show that the company has an interest in the employees possibilities to get to and from work (and are willing to participate in improving these possibilities).

D.2.3 Activities

Preparation phase

- **Information material and presentations** was developed to meet the companies facilitating their needs and arguing that the implementation of a commuter plan could be beneficial for them in terms of less sick days for the employees and greener image.
- Due to reluctance among companies to join the scheme **direct phone calls** were performed.

Implementation phase

- The City of Aalborg took the leadership in the working groups to ensure that the process was running.

D.3 Participation

D.3.1. Measure Partners

- **City of Aalborg** - Responsible of the planning and implementation of the measure
- **Company 1: Aalborg University** - Aalborg University is with more than 14.000 students and 2000 employees one of the largest workplaces in the ARCHIMEDES corridor. Through summer/autumn 2009 a commuter travel plan was worked out and introduced at Aalborg University. The plan was worked out in cooperation with the environmental committee at the university. A working group with representatives from the environmental committee and students was formed.
- **Company 2: SIEMENS WINDPOWER** - SIEMENS WINDPOWER is one of the largest companies in Aalborg and as a manufacturer of windmills they are naturally interested in Sustainability and environment. There are 200 administrative personnel and 400 production personnel employed at the company. Through winter/spring 2010 a commuter travel plan was worked out by a working group. The working group consisted of representatives from both the administrative and production personnel and representatives from the ARCHIMEDES team.
- **Company 3: The department of Health and Sustainable development (SBU) at Aalborg Municipality** - SBU is a department in Aalborg Municipality which among other things is responsible for the busses in the city and by that function take part in the ARCHIMEDES project. There are 60 employees in the department. Through spring/summer 2010 a commuter travel plan was worked out by a working group. The working group consisted of representatives from the department SBU and representatives from the ARCHIMEDES team.
- **Company 4: NT (Regional Public Transport Authority)** - NT is local partner in the ARCHIMEDES project and has approx. 150 employees. In the fall 2010 a commuter travel plan for NT was finalised. The plan was worked out by a working group consisted of employees at NT and representatives from the ARCHIMEDES team.
- **Company 5: Post Danmark** - Post Danmark is local partner in the ARCHIMEDES project with the biodiesel measure and has approx. 370 employees. Through summer 2011 a commuter travel plan was worked out by a working group. The working group consisted of representatives from the administrative staff, the sending staff and representatives from the ARCHIMEDES team.
- **Company 6: Alfa Laval** - Alfa Laval in Aalborg produces boiler technology and has 450 employees. Through spring/summer 2011 a commuter travel plan was worked out by a working group. The working group consisted of representatives from the administrative staff, the production staff and representatives from the ARCHIMEDES team.
- **Company 7: City Trafik** - City-Traffic is a one of the two bus company in Aalborg and has 200 employees. Through spring/summer 2011 a commuter travel plan was worked out by a working group. The working group consisted of representatives from the administrative staff, the bus drivers and representatives from the ARCHIMEDES team.

D.3.2 Stakeholders

- **No stakeholders identified.**

D.4 Recommendations

D.4.1 Recommendations: measure replication

The commuter travel plans have increased awareness of greener travel modes in the involved companies. Many lessons learned by this initiative could be implemented in other cities, paying attention to the contextual differences that exists in different countries.

The lessons to learn are:

- **Recommendation 1:** An initiative that involves test of 'new' technologies such as electric bikes causes a high awareness level among employees. Whereas information campaigns alone have a more limited potential to change travel behaviour. Information and concrete initiatives must therefore go hand in hand.
- **Recommendation 2:** Legislative requirements are important to motivate the companies to focus on changing commuter behaviour amongst their employees. (e.g. the number of parking spaces available). Goodwill and image doesn't do it alone.
- **Recommendation 3:** General focus on involvement and engagement amongst the employees is important to inform about initiatives (e.g. leaflets, info-mails etc.).
- **Recommendation 4:** Even though there isn't registered a change in the bike and public transport share, it is important to continually support the good behaviour that is already seen amongst the employees at many of the companies, therefore maintenance of green travel behaviour is equally important to facilitate for change towards higher share of the green modes.

D.4.2 Recommendations: process (related to barrier-, driver- and action fields)

- **Recommendation5:** Companies should engage in the development and dissemination of the plans, this provides ownership of the plans and secures a strategic anchoring of the plan in the organisation.
- **Recommendation 6:** It is important to keep a continuous dialogue between the company and the municipality when developing and implementing the plan.
- **Recommendation 7:** There should be a focus on finding the good arguments to convince companies to participate (depending on the context), and make sure that a working group at the company creates ownership to the plan and initiates initiatives.
- **Recommendation 8:** Commuter travel plan should both be seen as a strategic document and an action plan with concrete initiatives towards the employees. This means that the employees do not have to be aware of the actual plan, more importantly they should know of the initiatives that affect their behaviour. The role of the plan is to work as a strategic instrument that continuously facilitates more initiatives (as illustrated on the figure below).

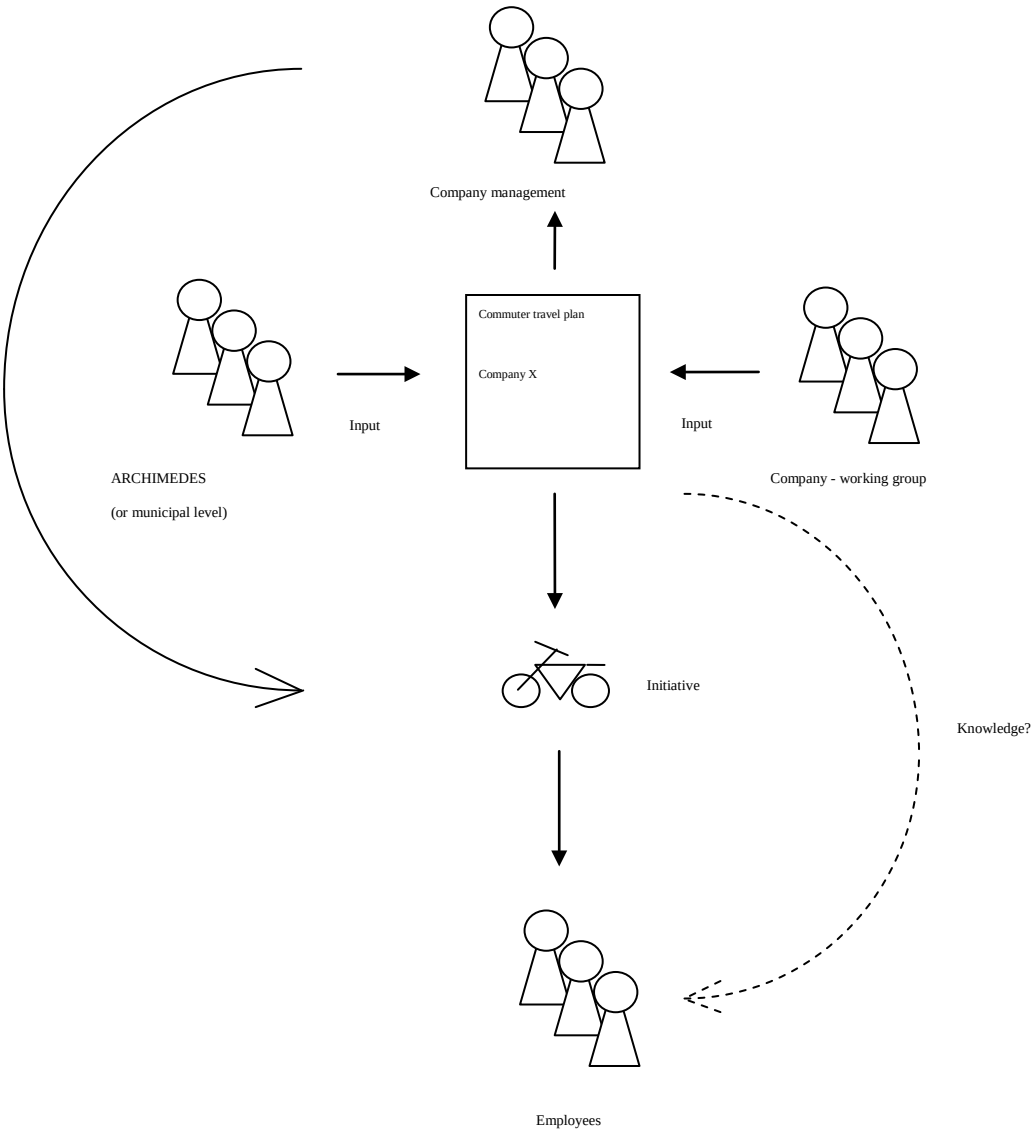


Figure 17: The commuter plan is both a strategic document and an action plan for concrete initiatives, and it should be used at these different levels.

Measure title: **Measure 30 – Commuter Travel Plans in Aalborg**

City: **Aalborg** *Project:* **ARCHIMEDES** *Measure number:* **30**

E Summary time schedule