

## Summary

# Policies for sustainable commuting

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*This report presents the results of a stated preference study that was conducted among commuters to six key areas in Oslo and Akershus, with high density of work locations. The study examines a large range of location specific policy measures that could change commuting to these areas to more environmentally friendly travel behaviour. A major finding of the study is that parking policies aimed at gasoline and diesel vehicles is effective to get commuters with car to switch to public transit, walking, cycling or telecommuting. For the measures to be effective, it is essential that there is a real opportunity to choose other means of transport. Improvement in public transport, can be effective in peripheral areas, but access to public transport at home location is a consistent challenge for commuters to these areas. Differentiated parking policies that favour electric cars promotes commuting with electric cars, a policy that is recommended for the peripheral areas, but not for central areas such as Sentrum and Blindern. A long distance between home and workplace does not makes walking or cycling an attractive alternative to car.*

This study is a part of the project “Travel behaviour change in Oslo and Akershus, a study of six key areas”. The study focuses on one of the objectives of the project and examines area specific policy measures for diverting commuters to more environmentally modes of transport to each of some selected areas. The study has been financed by the Regional Research Council for Oslo and Akershus, Akershus county, Ruter AS, The Norwegian Railway Administration, Municipality of Oslo and the National Road Administration.

The selected areas in Oslo and Akershus are:

1. Alna – Nedre Linderud – Nedre Kalbakken
2. Blindern
3. Nydalen
4. Sentrum
5. Fornebu
6. Ahus

The selected area specific policy measures in this study are limited to:

- Parking cost and parking distance at work;
- Measures to improve public transport services (frequency, transfers, distance to/from station, seat availability);
- Cycle path, changing facilities and secure cycle parking at work, monetary incentives to cycle to work;
- Monetary incentive to walk to work;
- Trade-offs between teleworking and parking cost and parking distance;
- Trade-offs between teleworking and attributes of public transport services, and;
- Incentives to switch to electric car as a main car and as a second car in a household.

Stated Preference (SP) technique is used in this study. SP technique relies on choice among hypothetical alternatives described by different attributes. A respondent chooses the

alternative that best suits her/him. Attributes in a SP experiment relates to a “policy” (or policies). The SP data collected is analysed using discrete choice theory, an econometric approach for predicting choices between a set of alternatives. The valuation of the attributes can be derived by either willingness to pay (WTP) or willingness to accept (WTA). WTP and WTA are economic values, derived from trade-off between two situations, of a specific change in the amount that a person needs to pay (WTP), or to be paid (WTA), to be as well off as the person would have been without the change.

Recommendations for area specific policy measures are based on both descriptive analysis of the collected data and the derived WTP or WTA measures from the estimation of the econometric models.

Parking policies (parking cost and parking restrictions) levied on gasoline/diesel cars are effective policies in all zones to divert commuters with car to public transport, cycling or teleworking. However, this policy is effective with the presence of alternative modes of travel (e.g. public transport and cycle) or the use of electric car for commuting. Differential parking policies levied on gasoline/diesel and electric cars can divert car use to both public transport as well as the use of electric car for commuting to work. While we recommend this approach for the peripheral areas, we do not recommend to differentiate between gasoline/diesel car and electric car in the central areas, given the present electric car take-off and the very good public transport accessibility in the central areas.

Improvements in public transport services to increase the accessibility to public transport services at all the peripheral areas will divert car use to public transport. However, accessibility to public transport at home is an obstacle, that can be addressed by provision of park and ride or similar services.

Provision of cycling infrastructure (cycle path, secure parking and changing facilities at work can) divert commuting by car and public transport to cycling. A long distance between home and work location is a hindrance to cycling (or walking) that differs between selected areas and consequently with differences in the extent of success of the policies for promotion of cycling. The extents of the monetary incentives to cycle or walk to work will also depend of home to work distance.

The possibilities of teleworking vary between selected areas depending on the prevailing work characteristics. The commuters with high level of education (skilled workers) generally enjoy higher income and most have more possibilities to work at distance. With increase in parking cost and parking distance, this segment of commuters increase their frequency of teleworking. Similarly, commuter with public transport increase their frequency of teleworking with a decrease in public transport services, but to a lesser extent.

The following tables summarises the policy recommendations for the selected areas Oslo and Akershus. “XXX” (and marked in blue) in these tables stands for the most effective policy measure, while “X” stand for the least effective policy measure.

Table I shows the area specific policy measures directly levied on commuters with car. Parking policies are strongly recommended for all the selected areas. This policy will divert commuters with car to other modes of travel, particularly with public transport and when travel distance allows to cycling and walking. It also provides incentive for the commuters that their work characteristics allow teleworking to do so (see Table IV). However, this policy should be accompanied with improvements in public transport services to the

periphery areas, especially for Alna and Fornebu (see Table II) and provision of cycling infrastructures, especially for Ahus (see Table III).

**Table I.** Area specific policies directed at car commuters

Work Location	Aimed at car commuters		Policies to Promote Electric Car	
	Parking Cost	Parking Distance	Differential Parking Cost	Differential Parking Distance
Alna	XX	XX	XXX	XXX
Blindern	XXX	XXX	X	X
Nydalen	XXX	XXX	XXX	XXX
Sentrum	XXX	XXX	X	X
Fornebu	XX	XX	XXX	XXX
Ahus	XXX	XXX	XXX	XXX

As mentioned earlier, differential parking policies levied on gasoline/diesel cars and electric car can divert commuters with gasoline/diesel car to electric car for commuting. While we recommend this approach for the peripheral areas, we do not recommend to differentiate between gasoline/diesel car and electric car in the central areas, such as Sentrum and Blindern, given the present electric car take-off and the very good public transport accessibility in the central areas.

Table II shows the recommendations for public transport area specific policies. One aspect of the public transport services that is shared almost equally among the selected areas is “seat availability”. Commuters to work travel during rush hours when public transport is most congested, and they almost value seat availability equally.

While centrally located areas, i.e., Blindern and Sentrum, have good accessibility with public transport, the peripheral areas benefit from improvements in public transport services. However, as it was pointed out earlier, adequate accessibility to public transport at home location is a hindrance for some commuters, especially for commuters to Alna and Fornebu, unless this policy is complemented by park and ride or similar services.

**Table II.** Area specific policies directed at public transport

Work Location	Distance to Station	Transfer	Frequency	Seat
Alna	XXX	XXX	XXX	XX
Blindern	X	X	X	XXX
Nydalen	XX	XX	XX	XX
Sentrum	X	X	X	XXX
Fornebu	XXX	XXX	XXX	XX
Ahus	XX	XXX	XXX	XX

Table III shows the area specific policies to promote cycling and walking. The monetary incentives to walk or cycle to work is most effective for Blindern due to the short home-work distance as well as the profile of part of these commuters.

**Table III.** Area specific policies to promote cycling and walking

Work Location	Policies to Promote Cycling				Walk
	Cycle Lane	Secure Parking	Changing Facility	Monetary Incentive	Monetary Incentive
Alna	X	X	X	X	X
Blindern	XXX	XXX	XX	XX	XX
Nydalen	XX	XX	XX	X	X
Sentrum	X	X	X	X	X
Fornebu	XX	XX	XX	X	X
Ahus	XX	XX	XX	X	X

Provision of cycling infrastructures, i.e. cycle lane, secure parking and changing/shower facilities at work, is also most effective to divert car commuters to cycling at Blindern followed by Ahus and Nydalen. The profile of car commuters to Sentrum and the long home-work distance of commuters to other selected areas makes cycling policies less effective.

Table IV shows the area specific policies to promote teleworking. The work characteristics and the profiles of commuters to Alna, Ahus and Sentrum do not allow extensive telecommuting. Parking policies can promote telecommuting to Blindern, Fornebu and Nydalen.

**Table IV.** Area specific policies to promote teleworking

Work Location	Parking Cost	Parking Distance
Alna	X	X
Blindern	XXX	XXX
Nydalen	XXX	XXX
Sentrum	XX	XX
Fornebu	XXX	XXX
Ahus	X	X

In summary, a major finding of the study is that parking policies aimed at gasoline and diesel vehicles is effective to get commuters with car to switch to public transit, walking, cycling or telecommuting. For the measures to be effective, it is essential that there is a real opportunity to choose other means of transport. Improvement in public transport, can be effective in peripheral areas, but access to public transport at home location is a consistent challenge for commuters to these areas. Differentiated parking policies that favour electric cars promotes commuting with electric cars, a policy that is recommended for the peripheral areas, but not for central areas such as Sentrum and Blindern. A long distance between home and workplace does not makes walking or cycling an attractive alternative to car.