

GRØNN OSLO BYDISTRIBUSJON

Develop environmentally friendly and efficient solutions for freight distribution in the center of Oslo.



Green Urban Distribution (2012-2014)

Vision: Zero emissions in urban goods distribution

Main objective:

To develop environmentally friendly and efficient solutions for urban freight distribution in Oslo.

Secondary objectives:

- M1 Develop solutions for better use of road spaces
- M2 Develop solutions for better use of day and week time
- M3 Demonstrate usage of environmentally friendly and energy efficient vehicles in unmanned deliveries.

Green Urban Distribution

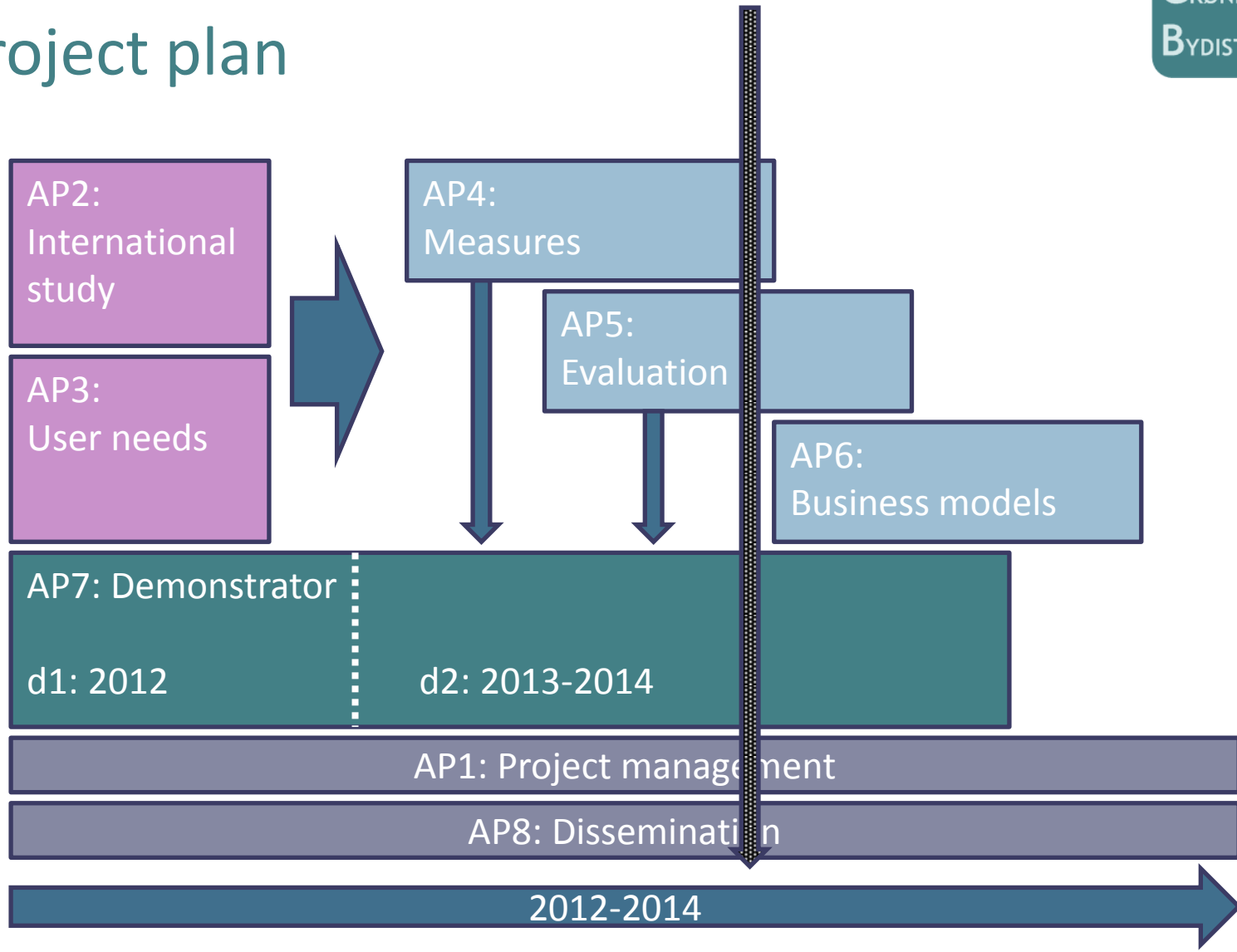
- **What:** research project aimed at identifying and demonstrating green and efficient solutions for urban freight distribution through
 - Improved organization
 - Service innovation
 - Technology
- **Who:** SINTEF Technology and society, the Municipality of Oslo, Institute of Transport Economics, the Norwegian Public Roads Administration, and several industry partners (goods owners, transport organizations, carriers, vehicle and technology suppliers)
- **How:** funded by The Regional Research Fund in Norway

Oslo

- Capital of Norway
- 650 000 inhabitants, increase by 30 % by 2030
- Freight distribution increase by 50 % by 2030
- Pollution and local emissions – especially wintertime



Project plan

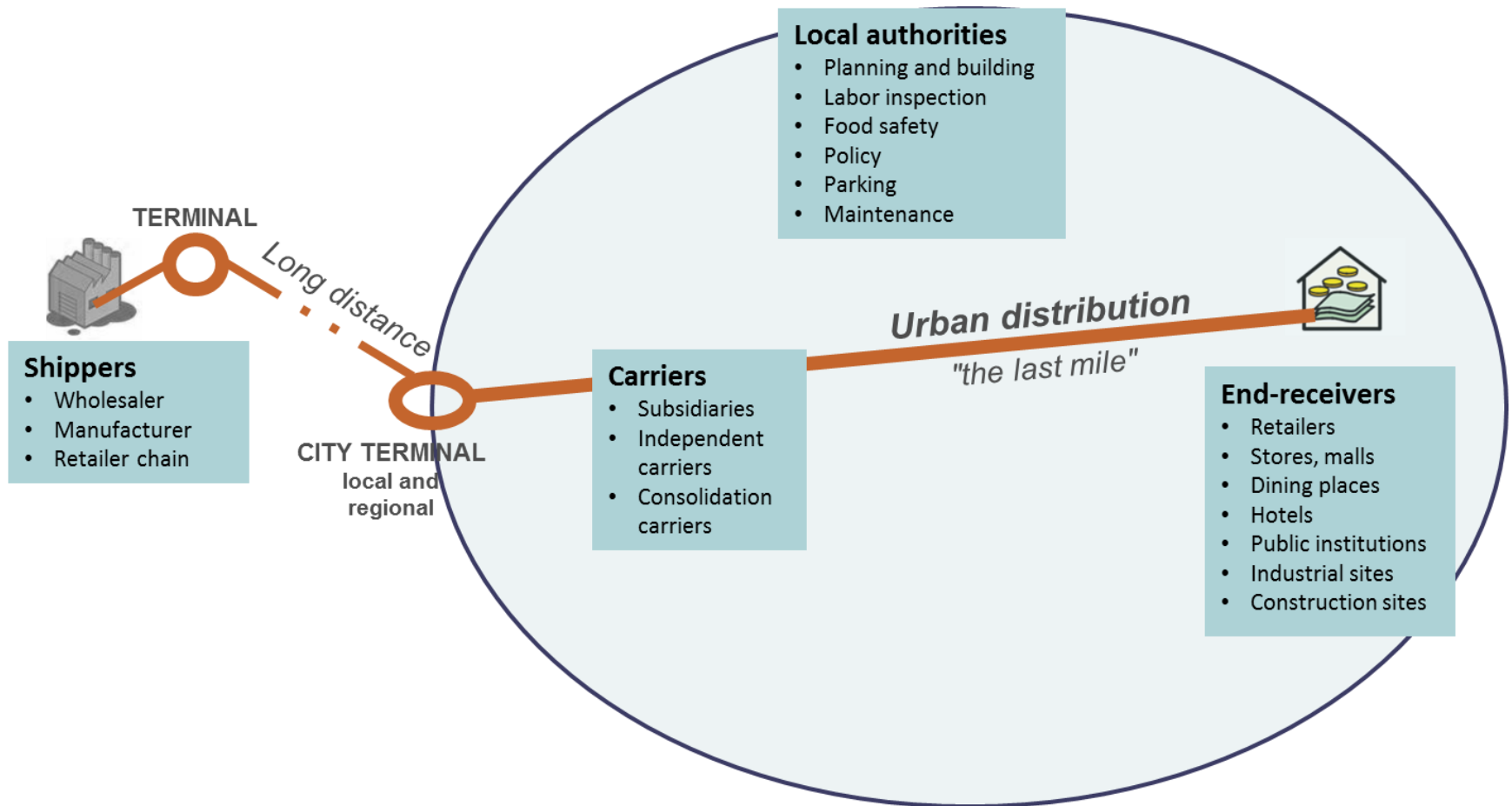


Urban freight transport

- Crucial for living cities and the economic system
- Characterized by
 - Lack of coordination
 - Inaccessible and unavailable loading bays
 - Ineffective stock receipts
 - Improvised solutions
- These challenges result in inefficient distribution and increased emissions



Stakeholders in urban distribution

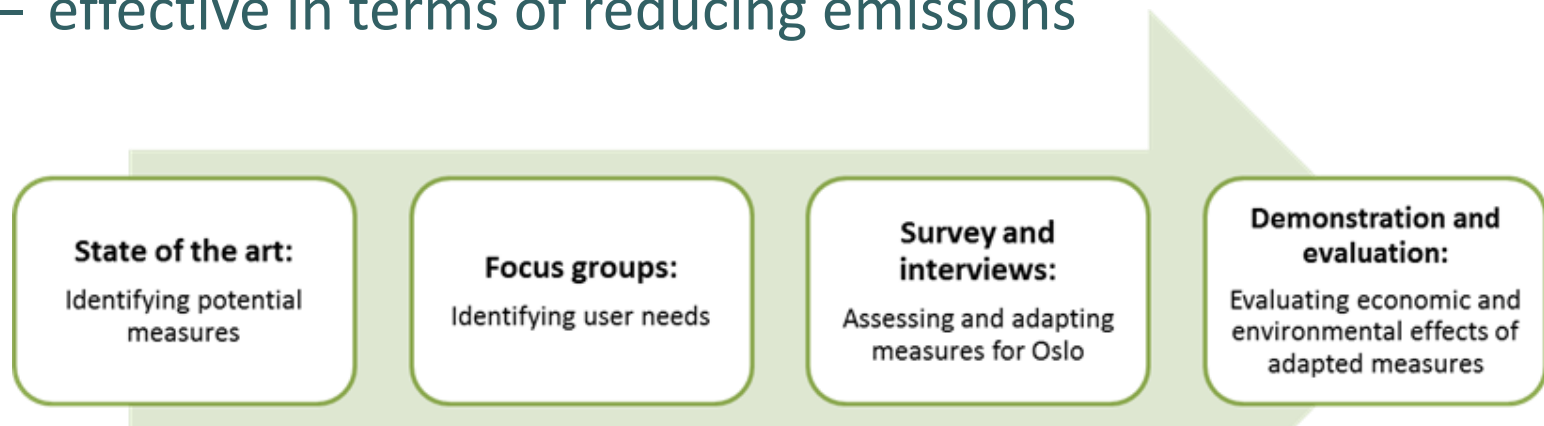


Stakeholder survey

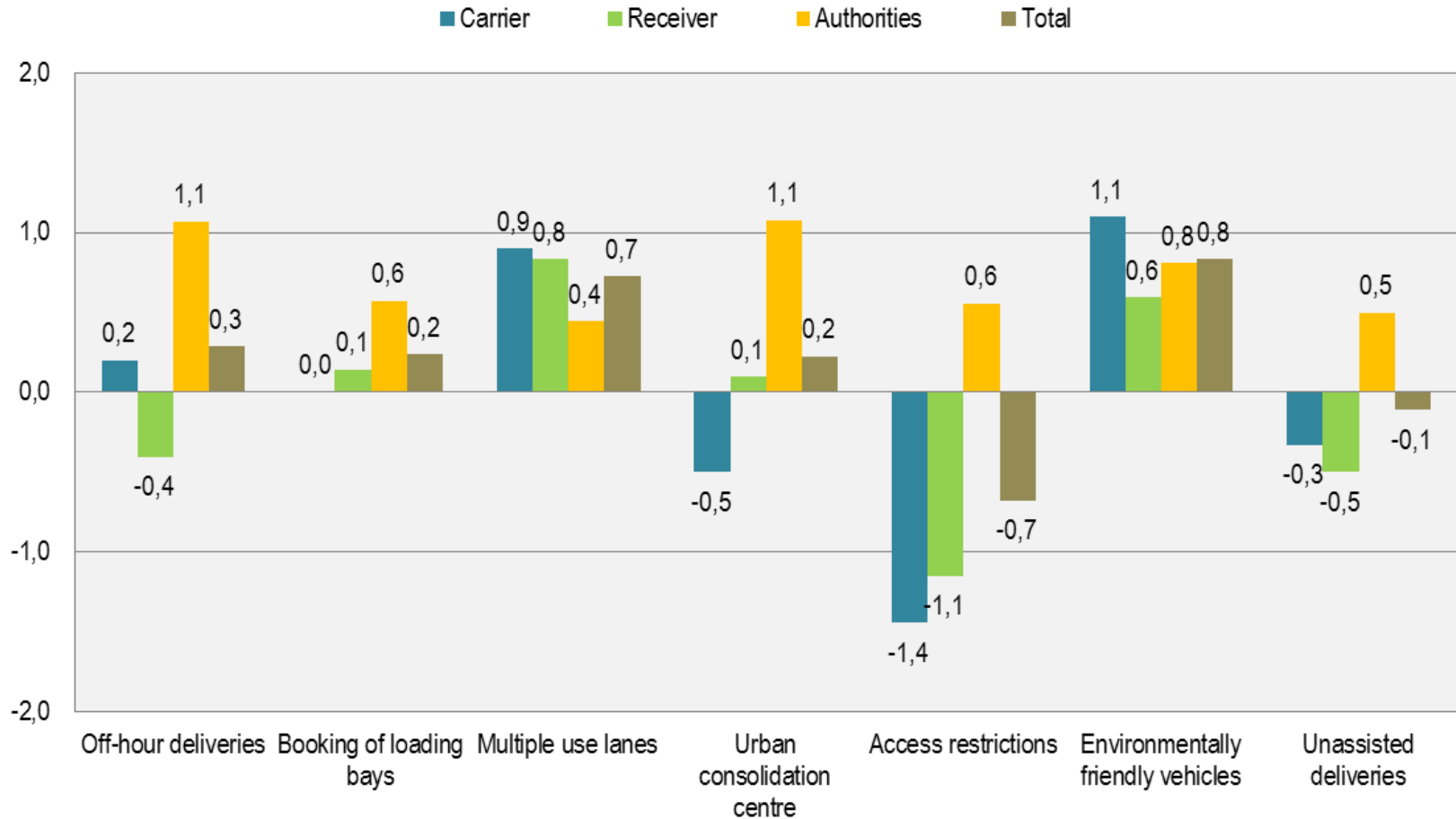
- 67 responses from carriers, receivers and authorities
- Invited by e-mail with link to web survey
- Asked to assess consequences of 7 selected measures
- Scale from -2 to 2
(from very negative consequences to very positive consequences)
- Could also comment on every measure

Finding effective measures

- Successful measures must be
 - adapted to the local context of the city center of Oslo
 - in accordance with stakeholder concerns
 - economically viable
 - effective in terms of reducing emissions



Overall survey results



Demonstration (d1) – pilots 2012



Ford Connect – week 23



Renault Kangoo week 38



Mia – week 35

- Environmentally friendly vehicles tested in Bring Express' logistics system in the centre of Oslo
- Focus on optimization of route, battery capacity and load factor
- Development of evaluation method using measurements to assess the effect / impact of the measures (good data quality is important)



How can this bike be an EV-cargo bike?



Comart – week 34

Evaluation framework

- Survey results serve as an input to demonstration 2 (d2) in the project – which measures to demonstrate
- The demonstrator will be carried out the coming winter/ spring
- The demonstrator will be evaluated with a universal framework design
- Four impact areas – transport, economics, environment and society
- 20 indicators

Evaluation of demonstration 1 (d1)

- (d1) tested 5 environmentally friendly distribution vehicles

| Transport | Economics | Environment | Society |
|---|--|--|---|
| <ul style="list-style-type: none"> Battery for one day Save 4.8 l diesel/ day | <ul style="list-style-type: none"> No differences | <ul style="list-style-type: none"> - 0,17 kg CO₂ per km - 0.49 kg NO_x per km | <ul style="list-style-type: none"> High acceptance High employee satisfaction |

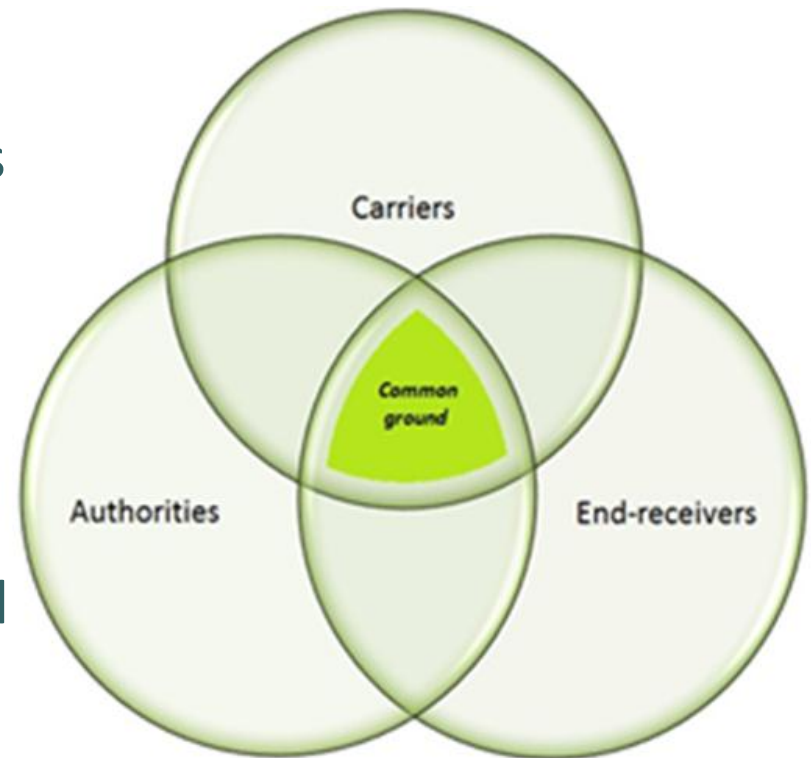


Demonstration (d2), spring 2014

- Urban consolidation centre
 - Consolidated shipments to end-receivers in designated area inside or outside the city centre
- Distribution
 - Last mile distribution by electric bicycle or electric van
 - Limited access to designated area for a selection of vehicles
- Security measures limiting access for larger vehicles
- *Vital questions:*
 - *Where should such a centre be located?*
 - *Who should be responsible for operating the centre?*
 - *Who should be responsible for last mile distribution?*

Conclusion

- Finding successful measures requires identifying common ground
- Win-win vs. suboptimal outcomes
- Knowledge on effects of different measures
- Cooperation between commercial actors and public authorities



GRØNN OSLO BYDISTRIBUSJON

Sustainable distribution of goods requires cooperation between public authorities, transporters, goods owner, customers, technology and vehicle suppliers and research institutions.

Further info:
helge.jensen@bym.oslo.kommune.no
astrid.bjorgen.sund@sintef.no

