

Introducing renewable fuels in public bus transport – challenges and opportunities

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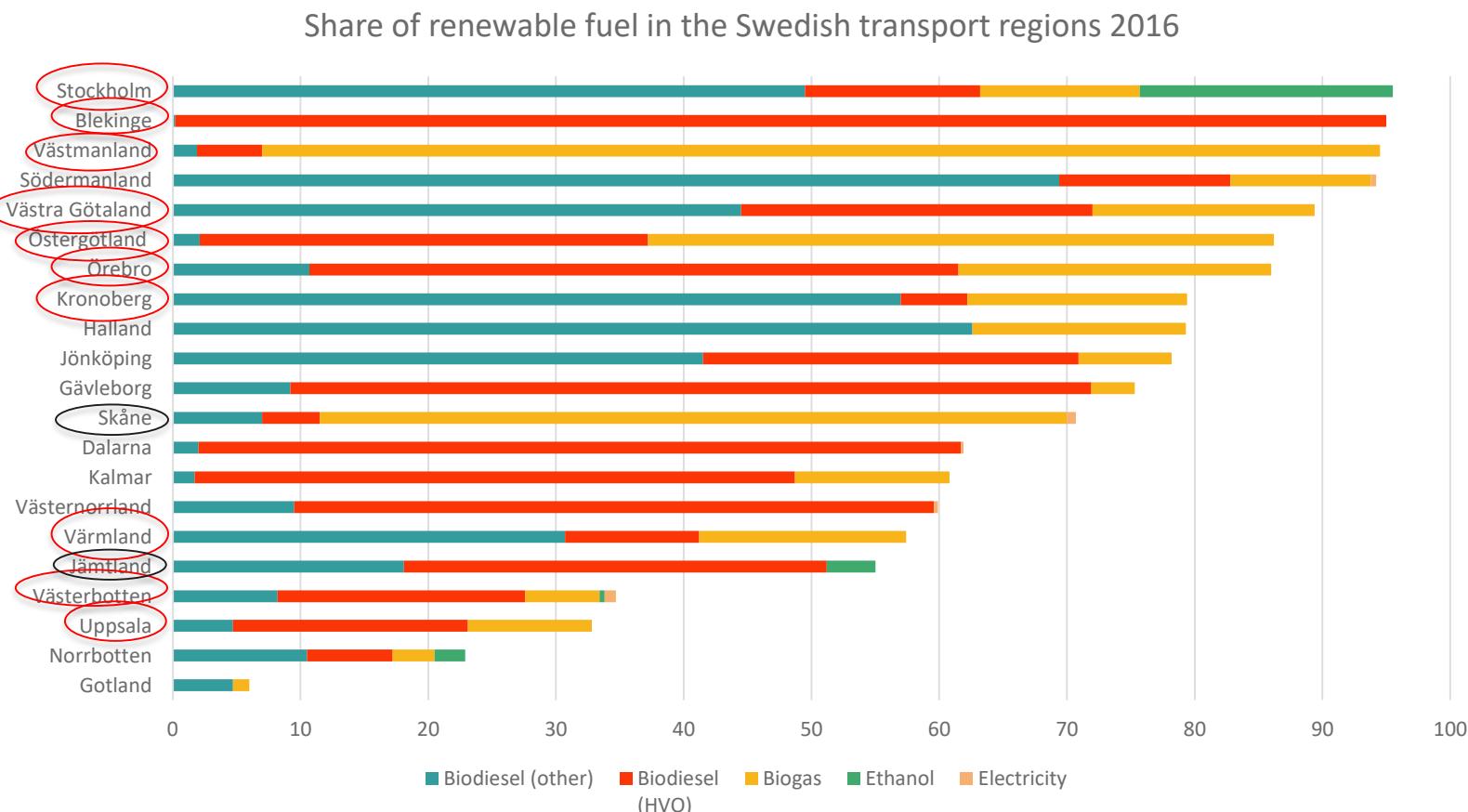
Swedish national targets

- Fossil-fuel independent vehicle fleet in 2030
 - In 2020, 90% of vehicle km in public transport should be made with renewable fuel
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- 2016: 77% renewable fuel in public bus transport
 - Fuel choice: RME (29%), HVO (23%), biogas (21%), ethanol (5%) and electricity (0.1%)



Renewable fuels in the Swedish bus sector

Introduction RF in Swedish regions 6-96 %



Green public procurement

- 90% of regular bus traffic is procured
- Functional requirements: (e.g. a limit to the maximum amount of CO₂ released)
- Specific requirements: (e.g. demanding a specific type of fuel such as biogas)
- Traffic not procured



Previous research

Functional requirements

- Cost efficient
- Flexible
- Choice of fuel left to operator
- Less far-reaching use of GPP

Specific requirements

- Acceptance of increased costs
- Political backing
- Information and knowledge in region
- Create a market



Aim and method

Aim

Check if findings from previous studies were valid in other regions

- Which strategies for introduction of renewable fuels do regions have?
- Why have different regions chosen different strategies?
- What challenges and opportunities do the regions experience with the different strategies?



Method

- Qualitative study
 - 10 Swedish transport regions
 - Semi-structured interviews
 - Document studies



Results and analysis

Ways to go...

Functional requirements

Specific requirements

Own the traffic



Functional requirements

| | |
|-----------------------------|---|
| Geographical context | <ul style="list-style-type: none">- Used for all type of traffic but foremost regional, school and service- Sectorial guidelines important |
| Reasons | <ul style="list-style-type: none">- Most cost efficient solution- Too small to create a market- Operators have more knowledge of market- Fear of being lock-in, technologies develop fast- Insecure of availability- Easiest way to reach national targets |
| Results in | <ul style="list-style-type: none">- Biodiesel (RME/HVO)- No cost increase- Flexibility to change fuel during contract |



“It is the economy. In theory today we could say that we want electric buses in all city traffic for example, that is technically possible, but as it is today ...It would lead to that we would have to cut down on traffic volume to get those buses in and that the politicians don’t want”

Interview H



Specific requirements

| | |
|-----------------------------|---|
| Geographical context | <ul style="list-style-type: none">- Used in densely populated areas, towns and single lines |
| Reasons | <ul style="list-style-type: none">- Politicians or producers want to create a market for fuel production or infrastructure- Region has further environmental targets than share of renewable fuel |
| Results in | <ul style="list-style-type: none">- Biogas/ethanol/electricity- Increased costs (fuel, vehicle, infrastructure) - needs political support- Availability can be a problem- Lock them to a fuel- Can create a market (for infrastructure, production)- Have regional co-benefits- Do not want to be in the forefront for future fuels |



“There we also made an active choice in procurement and pointed at that those two vehicles should run on biogas and the reason was that Kumla wanted a biogas pump in the municipality and to motivate the building of that then.”

Interview E



Own the traffic yourself

| | |
|-----------------------------|--|
| Geographical context | <ul style="list-style-type: none">- PTA/Municipality own the traffic- Single towns and one region |
| Reasons | <ul style="list-style-type: none">- Only way to be in forefront- Wants to use fuel available in region |
| Results in | <ul style="list-style-type: none">- Biogas- Availability can be a problem- Costly if market not mature enough- Flexible in change of fuel- Have regional co-benefits- Do not want to be in the forefront for future fuels |



“However it is also interesting that we regulate our own future a bit since we are not in competition so we can change fast. This had been a difficult journey to make, the one we have made in Västmanland if we had procured. Because if you take procured traffic it is often a ten year contract on the procured traffic and then you have to decided on one thing when you procure. Then you sit there for ten years. We can make the change successively.”

Interview K



Conclusions

- Functional requirements are preferred by many since it is both more cost efficient and more flexible
- However, if a region want to push for another fuel than biodiesel to for example decrease air/noise pollution or get regional co-benefits they today have to use either specific requirements or own the traffic themselves



Thank you!

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