HOW TO GET THERE: MANAGING THE TRANSITION TO LOW EMISSION BUS FLEETS

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Principles behind bus fleet renewal or extension and bus technology selection

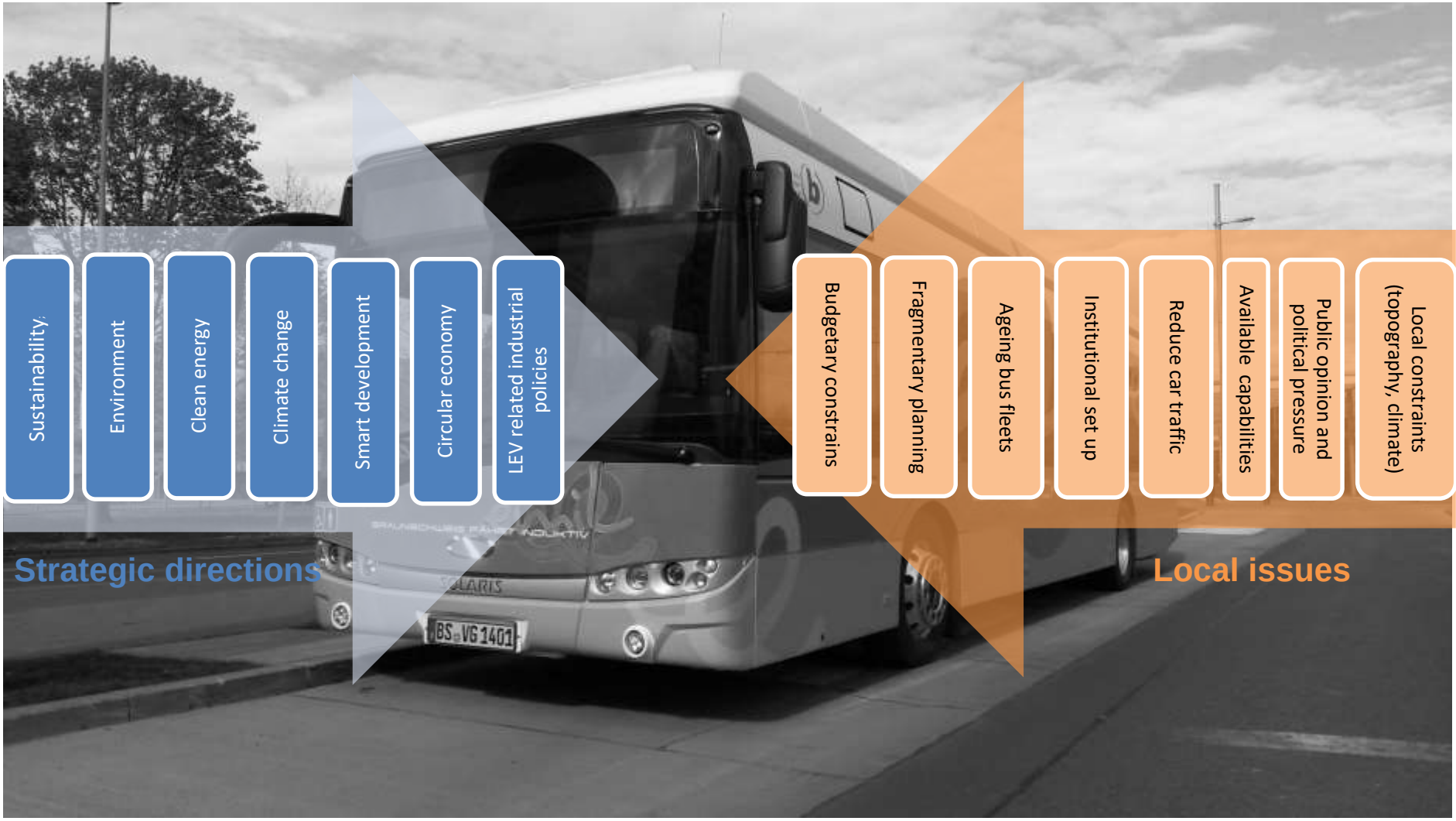
The key role of bus transport

- Established transport mode with an important social role. Often more accessible and affordable than other PT modes;
- More flexible and adaptable to demand changes. Suitable for small cities and less dense urban areas;
- Vulnerable to traffic congestion and often perceived as less reliable as a result;
- Typically accommodates a significant percentage of local travel (10 – 40%);
- Accounts for a small share of overall mileage and GHG emissions;
- Increased competition from active modes, car sharing and other PT modes; and
- Can generate significant environmental impacts (noise, air pollutants), although along busy corridors or in localized areas.

The main purpose of bus transport is catering for travel demand in a sustainable manner, also helping tackle private car use in cities.




Background (strategic vs. local)



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Transition to low-emission bus transport

The challenges ahead

- Reconcile strategic priorities with the actual local needs;
- Retaining or improving the quality of the system throughout and beyond the transition;
- Local constraints (e.g. climate) potentially affecting the effectiveness or suitability of certain solutions;
- Risks inherent to technological change, potentially affecting operations, fleet size or O&M cost;
- Legacy systems (e.g. trolleybus);
- Accommodation within the institutional set-up;
- Maturity / track record of some low emission technologies;
- Missing organisational and technical skills at the local level.

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Integrated planning

Where local and strategic meet

EU Policies

National strategies

Understanding and analysis of local context, problems and needs

Sustainable Urban Mobility Strategy

Land use planning | Active modes | Public transport | Highways | Demand management | Freight

Urban buses

Accessibility | Integration | Demand | Emissions | GHG | Cost | Social | …

Bus technologies must be assessed on the basis of their potential to address the identified local needs.

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Concept of operations

Delivering desired outcomes

- Fleet renovation should be implemented in the framework of a well-structured and holistic plan to foster urban sustainable transport;

- A comprehensive review of the local PT / bus sector (including operations, institutional set up) is required. Room for improvement and opportunities to deploy LEV (e.g. suitable lines, environmentally sensitive areas) should be identified;

- Ensure that bus offer will be attractive and of sufficient quality:

    - Potential impacts on the current offer / level of service need to be thoroughly investigated (e.g. capacity, reliability, comfort, safety);
    - Opportunities to improve bus transport with measures complementary to the fleet upgrade should be identified (e.g. bus lanes).

- Evaluation of operational risks, including technology related aspects; and

- Public and stakeholder consultation as a means to gauge local perception.

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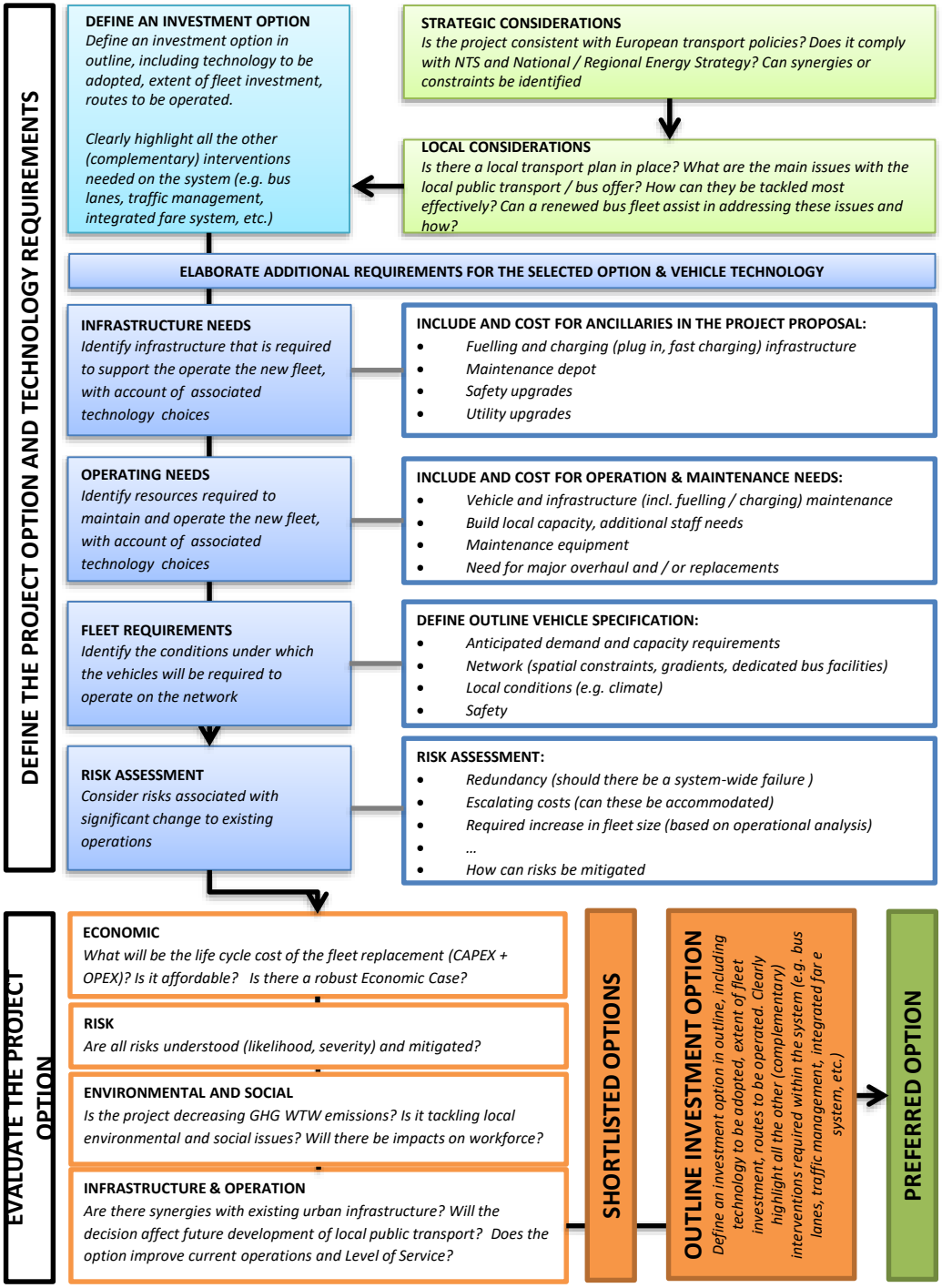
Option Generation and Appraisal



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Life Cycle Cost: a tool to sustainability

- Capital and operational expenditure can vary quite significantly as a result of the adoption of a different technology, potentially affecting the financial sustainability of operations;

- While a given technology may be more efficient, theoretically enabling operational savings on a per-vehicle basis, these can be offset by other additional requirements;

- A comparison of life cycle expenditure of different alternatives under consideration will help identify risks to the financial sustainability of the project or the local transport sector as a whole;

- The CVD is an important tool including calculation methodologies for procurement which should enhance transition to low-emission technologies;

- In some cases, budget constraints or the need to tackle urgent issues (e.g. severe capacity constraint on a bus corridor) will be a major factor in the decision making process.

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Risk Assessment

The analysis of strategic, local, operational, technical and environmental factors will enable identifying possible risks to the successful delivery and operation of the alternatives under consideration:

- ✓ Cost: uncertain or excessive capital, operational, maintenance or replacement expenditure for both rolling stock and other associated infrastructure;
- ✓ Financial: risk of decreased revenue, currency risks;
- ✓ System and operational risks: decreased resilience of the system as a result of technology choice, disruption to operations, decreased capacity or level of service, safety risks;
- ✓ Socio-economic: decrease of PT patronage due to lack of service reliability
- ✓ Procurement (e.g. delays);
- ✓ Maintenance / replacement risks: for both rolling stock and infrastructure; and
- ✓ Energy / fuel risks: limited or expensive energy / fuel supply.

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The way forward

Why, where, how, when, how much...

- Integrated planning that identifies and addresses the issues and needs that a new, low-emission fleet would be best placed to solve;
- Bus concept of operations that effectively caters for travel needs and encourages mode shift from the private car;
- Identification of available options and technologies. Assessment of their suitability in view of the above and the local environment;
- Detailed appraisal of shortlisted options, including life cycle costs;
- Identification opportunities to improve bus transport through measures complementary to the fleet upgrade;
- Risk assessment, procurement strategy and deployment plan (incl. testing);
- Institutional, organizational improvements. Acquiring of new skills and training;
- Monitor and improve performance.

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The opportunity

LEV transition as the catalyzer of a seamless bus transport

- While desirable, a LEV fleet is not a guarantee for a seamless bus transport system. In fact, a trade off regarding flexibility / resilience may be expected when implementing some LEV solutions;
- Complementary measures that render the system more effective are likely to be required to offset this. This represents a unique opportunity to improve the performance of bus transport and urban systems overall.

Some examples:

- Dedicated bus infrastructure that renders the fleet less vulnerable to traffic congestion (e.g. bus lanes);
- Improved fleet management and driving skills;
- Improved integration and timetable coordination with other modes.

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Conclusion

There is significant potential for expanding low emission fleets across numerous urban areas in Europe. In order to ensure a seamless transition, the opportunities must be identified and defined on the basis of thorough local understanding and analysis. The transition to LEV fleets should be used as an opportunity to increase the quality of bus transport through institutional, operational and infrastructure improvements.




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Thank you!




More Information

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