

DECISION SUPPORT TREE

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TRL	Umberto Guida - UITP

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PROJECT FULL TITLE: ZERO EMISSION URBAN BUS SYSTEM

GRANT AGREEMENT NUMBER: 605485

SUMMARY SHEET

Programme	Seventh Framework Programme
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Project Title	Zero Emission Urban Bus System
Acronym	ZeEUS
Coordinator	UITP – International Association of Public Transport
Project Director	Umberto Guida, umberto.guida@uitp.org
Website	www.zeeus.eu
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Number of months	42 months

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Deliverable Title	
Project Title	Zero Emission Urban Bus System
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Abstract	The ZeEUS project demonstrated electric and hybrid bus operations in ten European cities in a project which was co-funded by the European Commission 7 th Framework Programme. Each city went through the process of designing routes, specifying and procuring vehicles and equipment, installing charging infrastructure, training staff and operating the buses. This report provides a decision support tree based on analysis of best practice and a process evaluation in nine of the cities. It indicates factors to be taken into consideration at different stages in preparing for electric bus operation. The information is based on experiences in Barcelona, Bonn, Cagliari, Eindhoven, London, Münster, Plzen, Stockholm and Warsaw among city authorities, bus operators, transport authorities, bus manufacturers, charging infrastructure providers and energy suppliers.
Key words	
Thumbs Index	Electric buses; Process evaluation; Decision-making; Planning operations; Operating e-buses

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DOCUMENT CHANGE LOG

Version number	Date	Main area of changes	Organisation name	Comments
1	01/04/2018	Text and diagrams	TRL	
1	30/04/2018	Finlisation	TRL	

CONTRIBUTING PARTNERS

#	Participant Partner Name	Short Name	Country
28	Transport Research Laboratory	TRL	UK

ACRONYMS

SOC: State of Charge

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1. EXECUTIVE SUMMARY

1.1 BACKGROUND TO ZEEUS

Zero Emissions Urban Bus Systems (ZeEUS) is a European Commission co-funded project under the FP7 research framework. The aim of ZeEUS is to demonstrate the potential for e-buses (electric buses) in an urban public transport environment in ten cities across Europe. A range of pure electric and hybrid vehicle technologies were trialled across the consortium, along with a number of different charging technologies and techniques.

The cities were faced with a range of challenges. These included operational challenges of setting up and running new bus services based on technologies with which they had little or no experience. At the same time there were organisational challenges associated with the new working arrangements involved in e-bus operations. In some cases this meant building new relationships between bus operators and transport authorities and the suppliers of charging equipment, electricity and e-buses.

1.2 DECISION SUPPORT TREE

When introducing new technologies, previous experience shows that although technical issues will be important to bus operators and others involved in planning and delivering services, there are many other issues affecting deployment. These may include financial concerns, political priorities, local regulations, operational or contractual requirements and lack of skills and experience.

This report summarises the findings from analysis of best practice and process evaluation in the experience of ZeEUS demonstrations in nine cities (Barcelona, Bonn, Cagliari, Eindhoven, London, Münster, Plzen, Stockholm and Warsaw). The findings are presented in the form of a decision support tree. This identifies seven stages in the decision making process for implementing an electric bus operation and in each stage, identifies the key points to consider. For each of the points to consider it identifies the main factors contributing positively and negatively (if they are not the opposite of a positive factor).

The decision making stages covered are:

1. Decision in principle
2. Understanding requirements and issues
3. Decision to proceed
4. Planning services and preparing for operation
5. Specification
6. Procurement
7. Preparing for implementation.

Further information on the points summarised in the decision support tree is available in the ZeEUS deliverables D51.4 Process Evaluation and D53.8 Good Practice and Lessons Learned.

2. INTRODUCTION

2.1 BACKGROUND TO ZEEUS

Zero Emissions Urban Bus Systems (ZeEUS) is a European Commission co-funded project under the FP7 research framework. The aim of ZeEUS is to demonstrate the potential for e-buses (electric buses) in an urban public transport environment in ten cities across Europe. A range of pure electric and hybrid vehicle technologies were trialled across the consortium, along with a number of different charging technologies and techniques.

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2.2 DECISION SUPPORT TREE

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The decision making stages covered are:

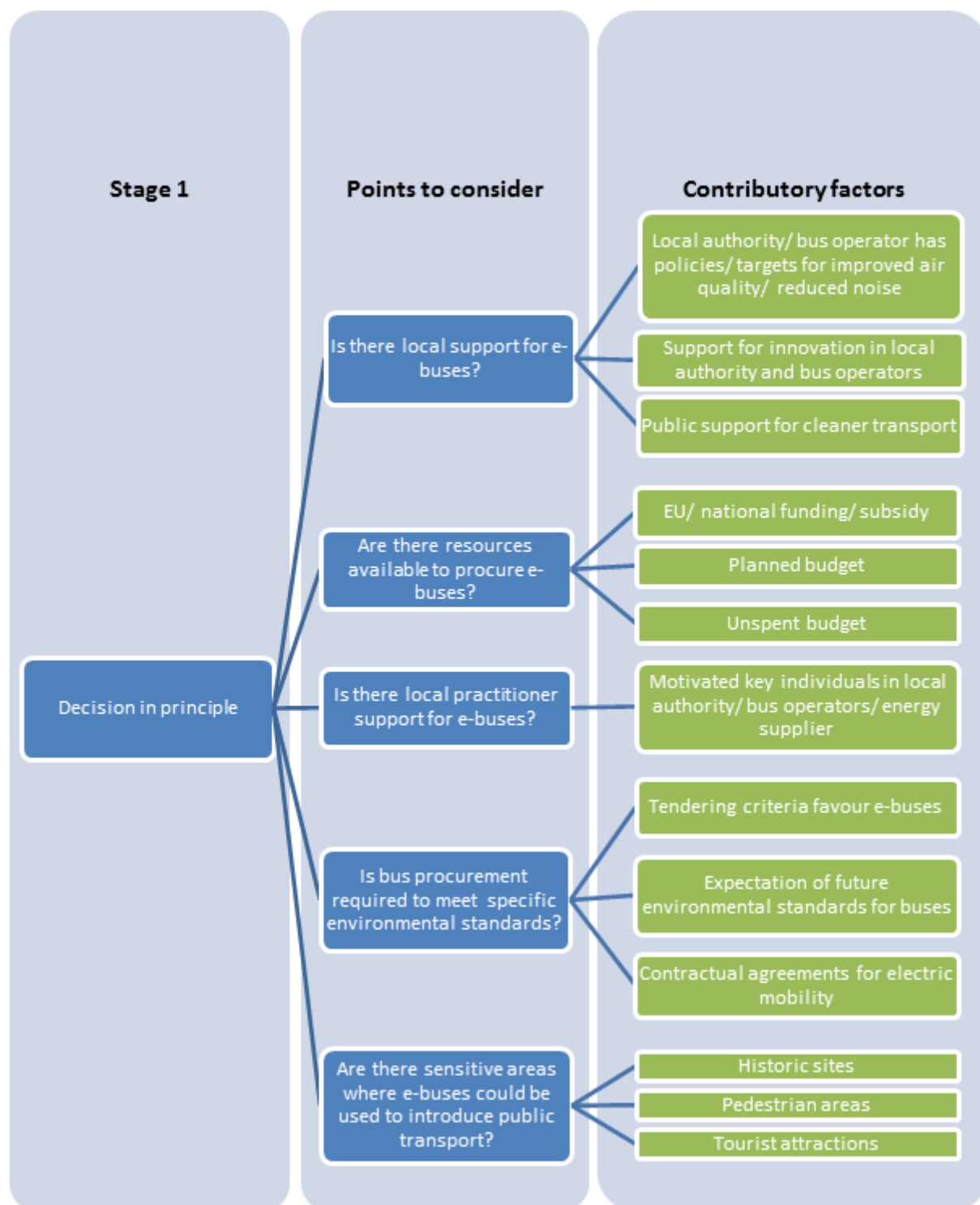
1. Decision in principle
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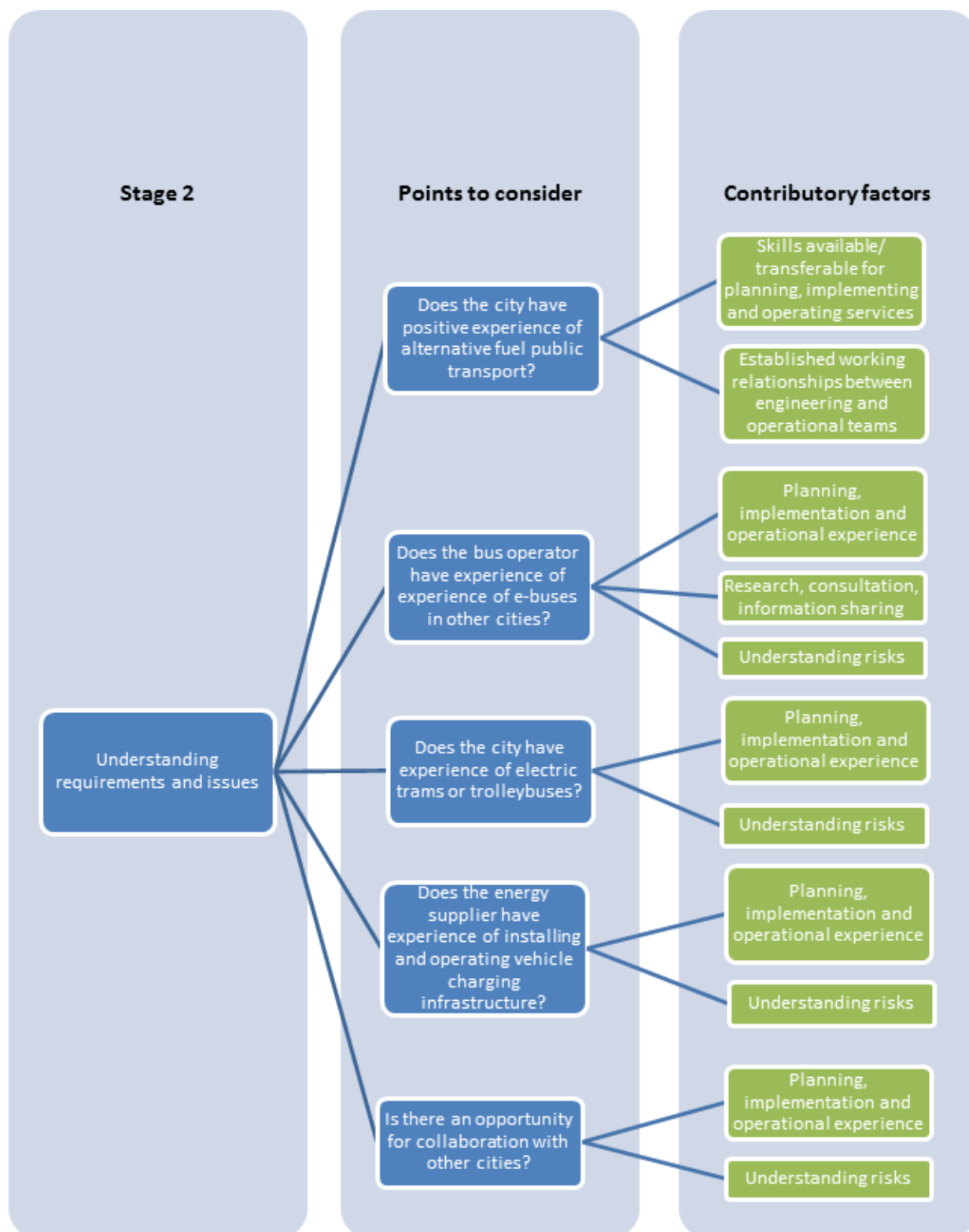
2.3 PARTNERS' CONTRIBUTION

Company	Sections	Description of the partner contribution
TRL	1-9	The deliverable has been compiled by TRL. It uses material obtained in 15 interviews conducted by TRL and 3 conducted by VTT.

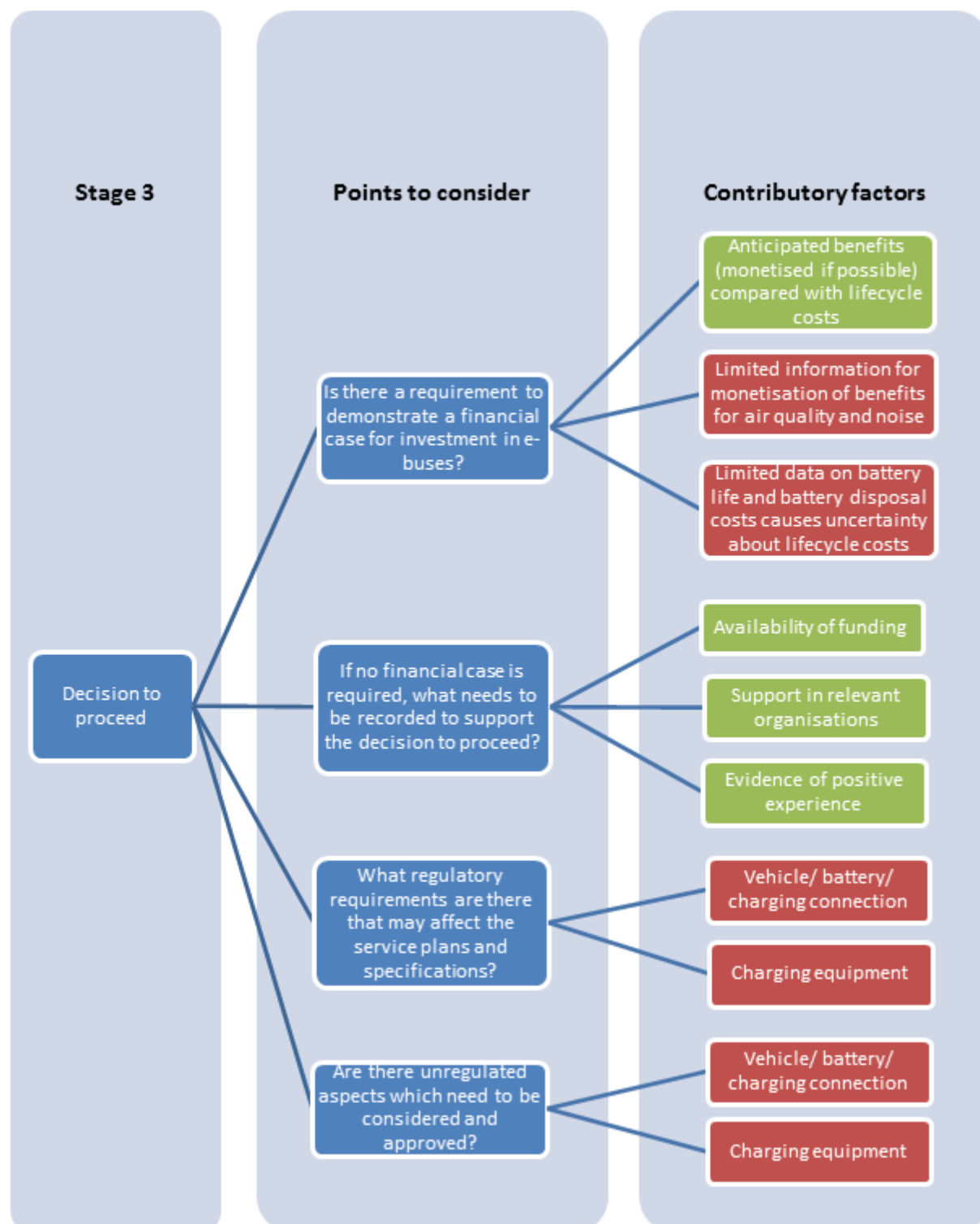
3. STAGE 1: DECISION IN PRINCIPLE



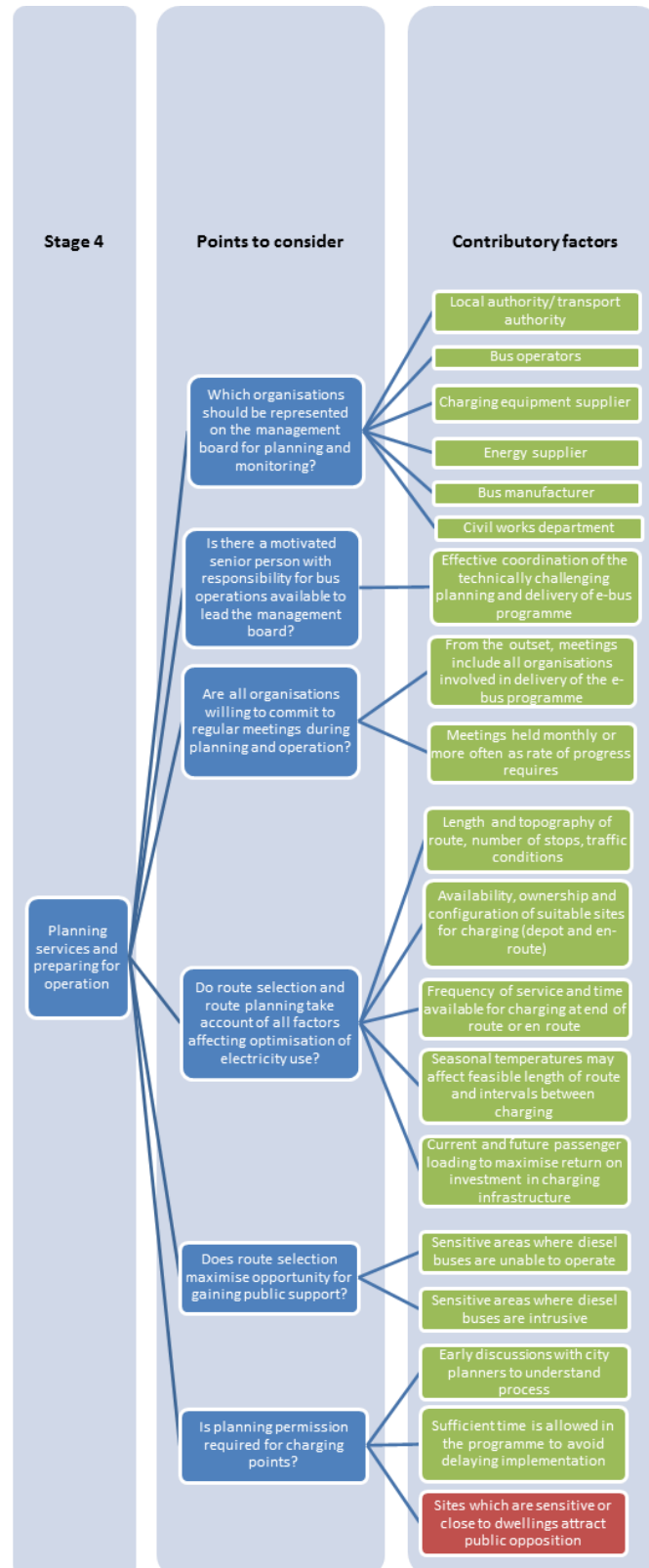
4. STAGE 2: UNDERSTANDING REQUIREMENTS AND ISSUES



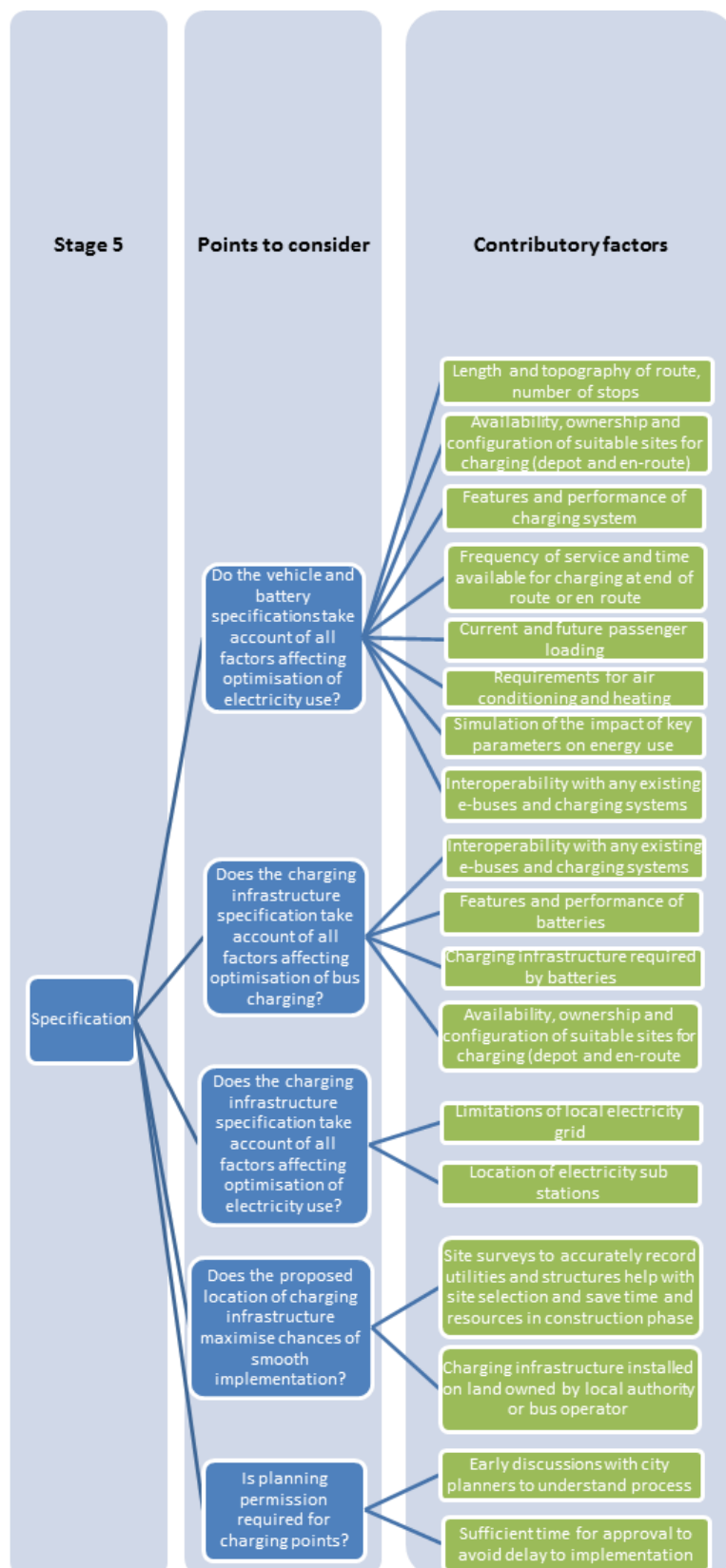
5. STAGE 3: DECISION TO PROCEED



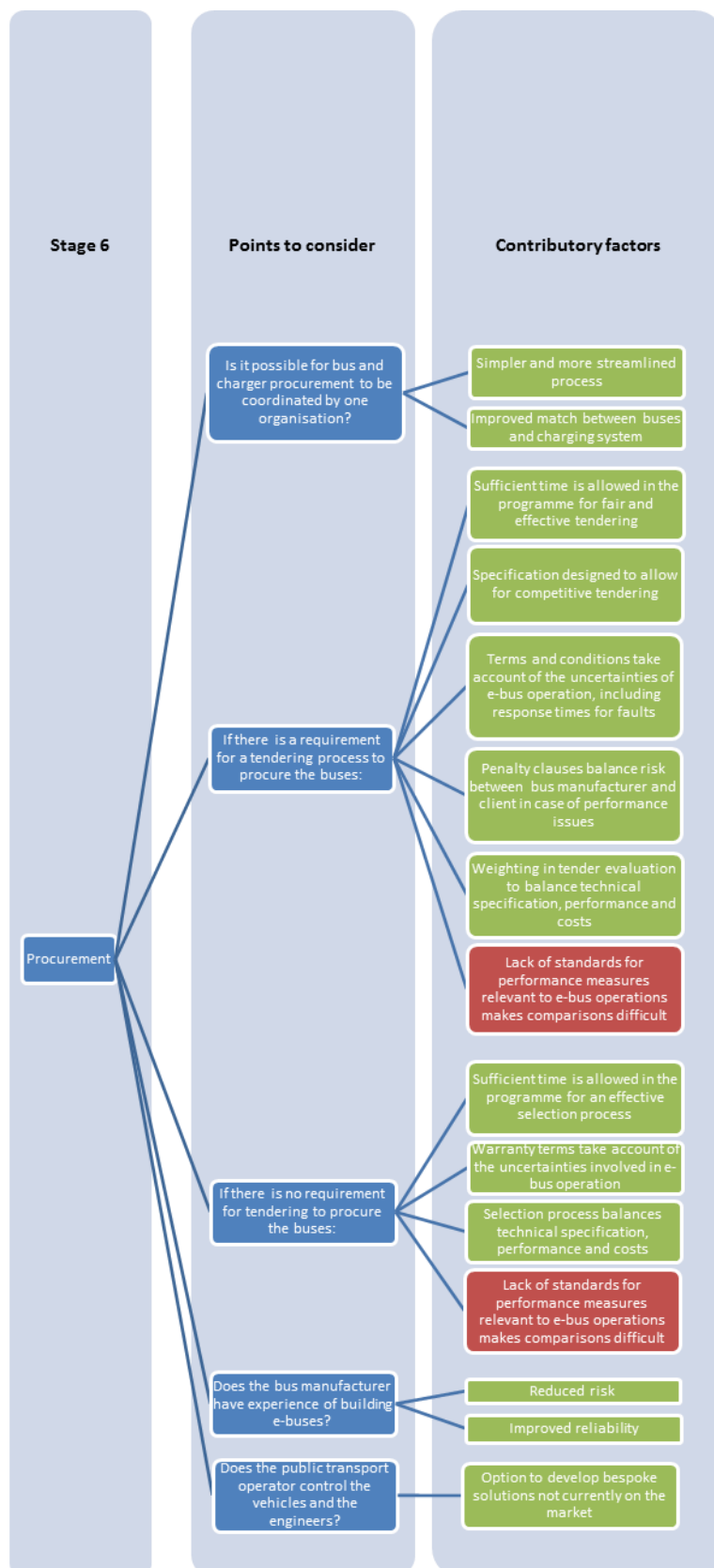
6. STAGE 4: PLANNING SERVICES AND PREPARING FOR OPERATION



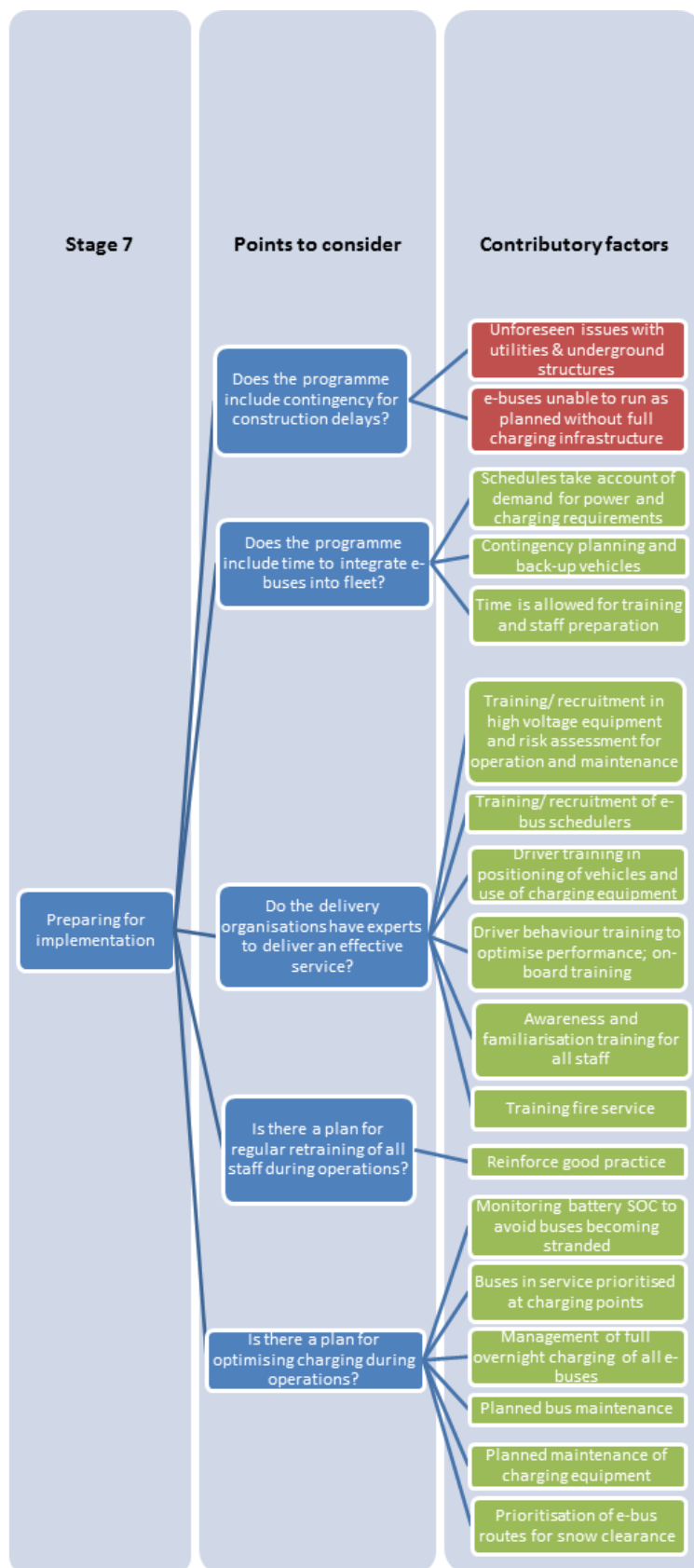
7. STAGE 5: SPECIFICATION



8. STAGE 6: PROCUREMENT



9. STAGE 7: PREPARING FOR IMPLEMENTATION



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