

Lasting Infrastructure Cost Benchmarking

Results and Benefits of 20
Years of Benchmarking

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This presentation answers a handful of guiding questions

- > What is LICB?**
- > What are the challenges ahead for infrastructure managers?**
- > How can LICB support infrastructure managers?**
- > How did the expenditures and cost drivers develop?**
- > How can the comparative results be used?**
- > What are the lessons learned and what is next for LICB?**

LICB is a UIC-led platform for continuous comparison and tracking of trends

Annual comparisons



Maintenance and Renewal Expenditures



Network Characteristics and Utilisation



Key Work Activities (Track Renewals ...)



Asset Performance (Failure Statistics)

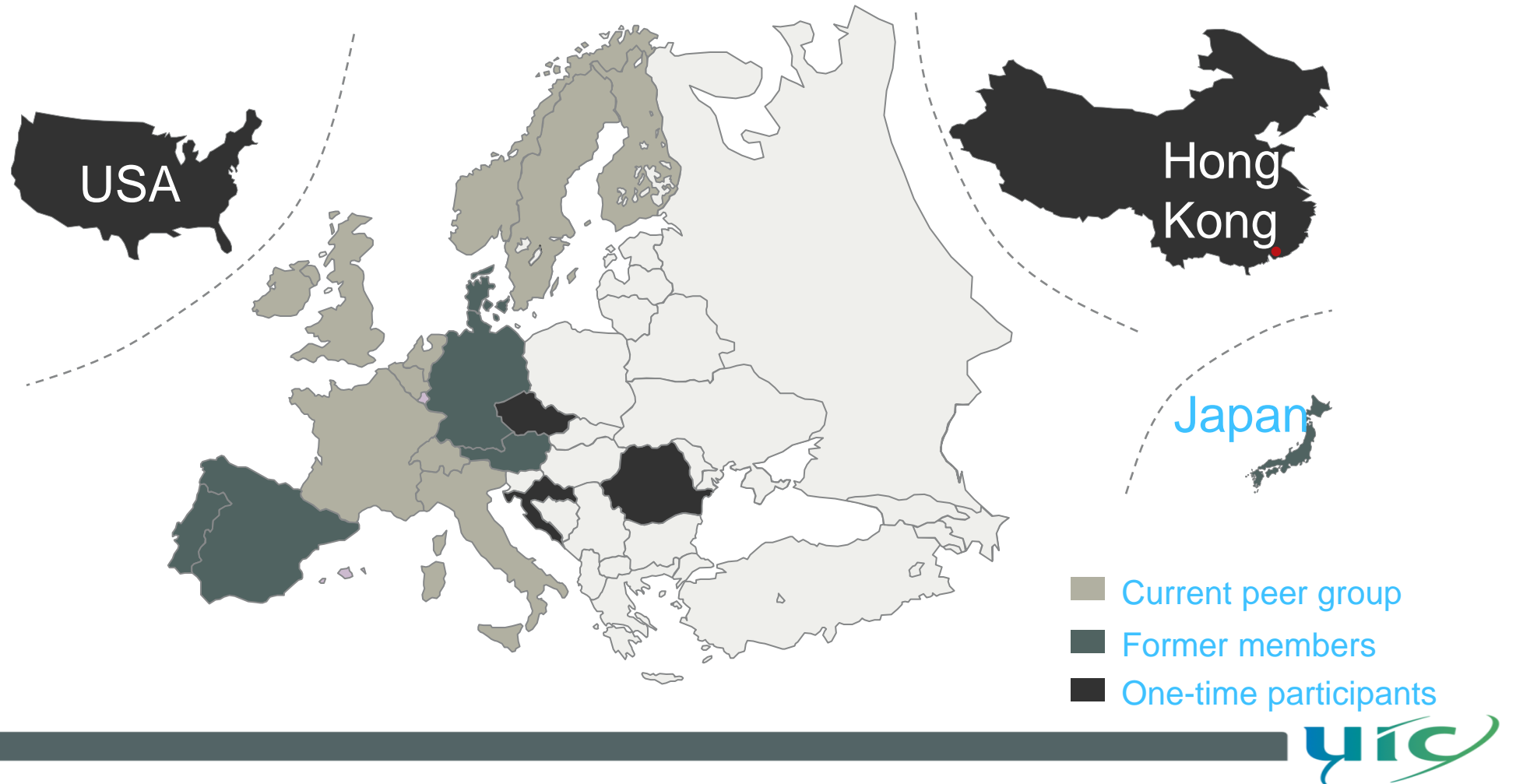
Development

1996

- Cost Driver Analysis
- Normalisation Methodology
- Toolbox of Good Practices
- Annual Updates
- Trend Evaluation
- LICBweb-Tool
- Steady State
- Asset Performance
- Smart KPIs
- Work Efficiency

2017

More than 20 IMs have contributed to the project since its initiation in 1996



Infrastructure managers are facing rising expectations

EC White Paper (extract)

By 2030

- EU-wide multimodal TEN-T core-network
- Triple length of existing high-speed rail network

By 2050

- Completion of European high-speed rail network
- Majority of medium-distance passenger transport should go by rail

National Targets (examples)

- Reduction of maintenance expenditures per gtkm by 11% (SBB)
- Savings in expenditures by almost 20% (NR)
- 33% cut in total subsidies (Infrabel)

Current Challenges (examples)

Many IMs in Europe:

- (Over-)ageing assets
- Renewal backlogs

Bane NOR:

- Renewal backlog almost 10 times as high as average annual renewal expenditures

Trafikverket:

- Specific components decreased to approx. half their theoretical life span
- TSR leading to increase in travel time

LICB often has been the starting point for good practice exchange and in-depth cooperation

Objectives

- Long-term expenditure levels
- Relative cost-position among peers
- Areas with most promising improvement potentials

Methodology

- Fair and meaningful comparison of expenditures
- Normalisation of expenditures accounting for factors such as network configuration and utilisation

Benefits

- Start for further initiatives to improve maintenance and renewal activities
- Analysis and identification of optimal ratio between maintenance and renewal activities
- Internal and external communication tool, e.g. transparency needs in budget negotiations
- Input for econometric studies and academic research

Spending in the rail infrastructure has been significantly ramped up since 1996

Development¹⁾ of

Network size (main track)

Electrified main track

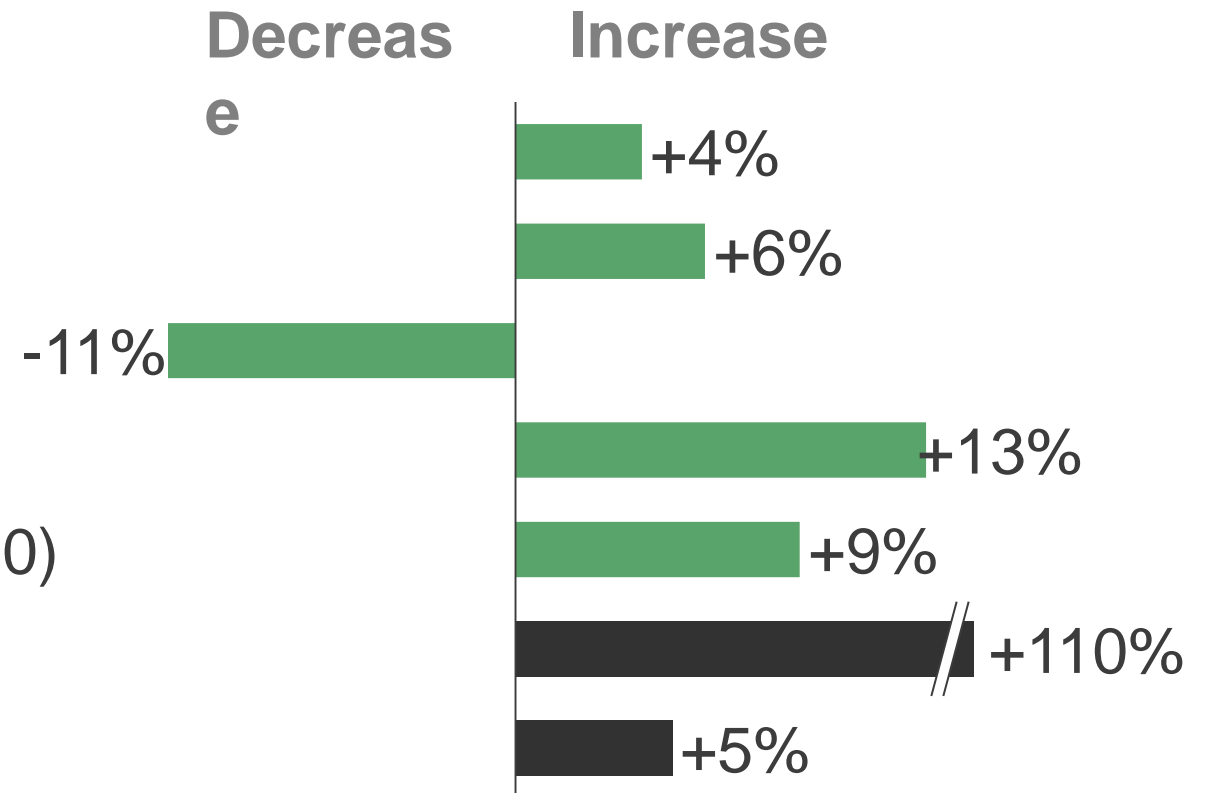
Switch density

Train frequency

Asset failure frequency (since 2010)

Renewal expenditures

Maintenance expenditures

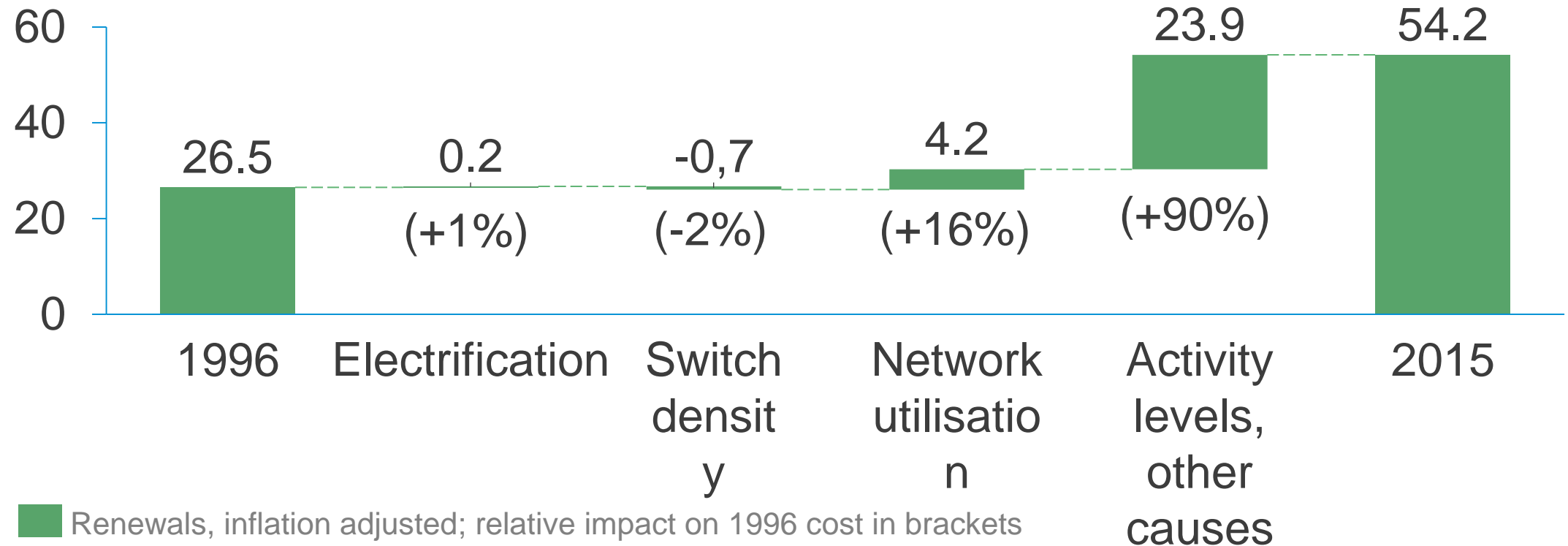


¹⁾ 1996–2015, totals / weighted averages of eight current LICB participants, inflation adjusted to 2015 price

The increase in renewal expenditures has to be explained mainly by increasing activity levels

Average annual renewal expenditures (eight LICB participants)

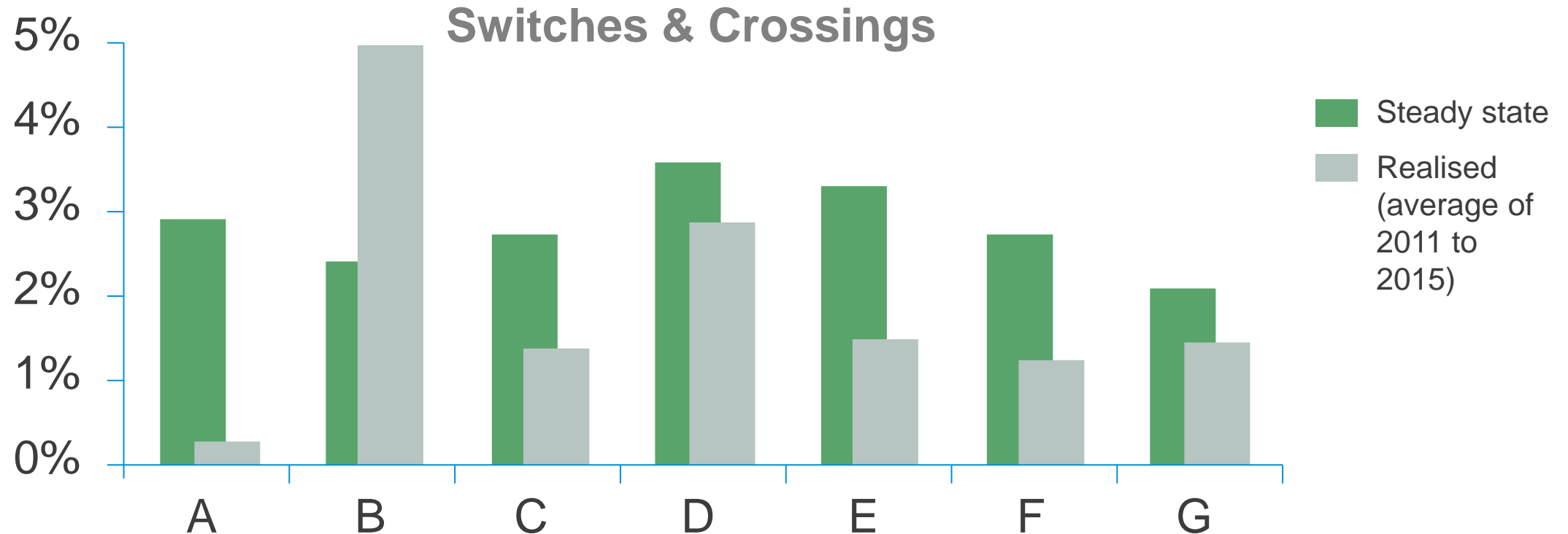
1.000 Euros per main track-km



However, most railway infrastructure managers realised renewal rates below steady state

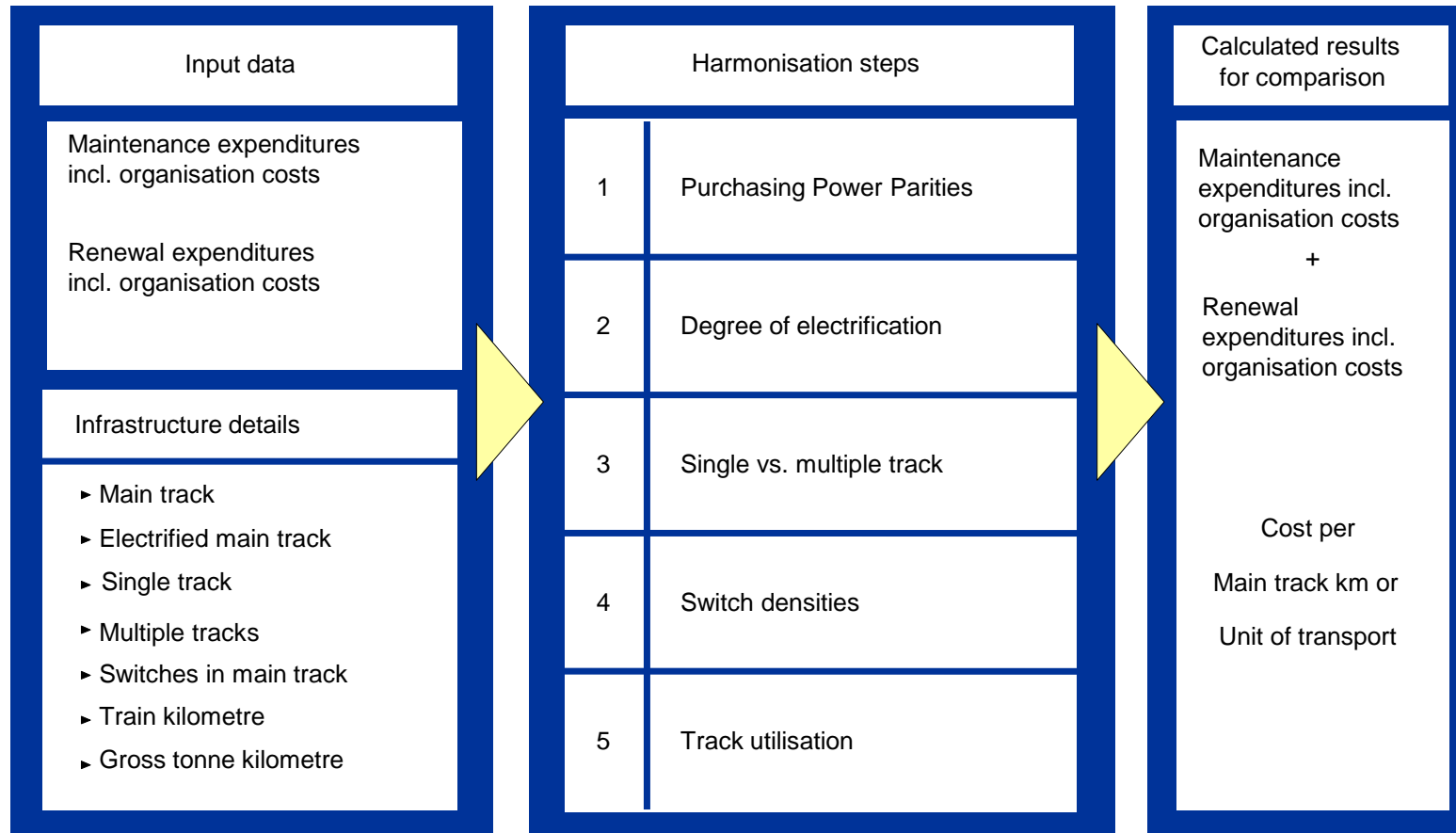
Realised vs. steady state renewal rates

in percent



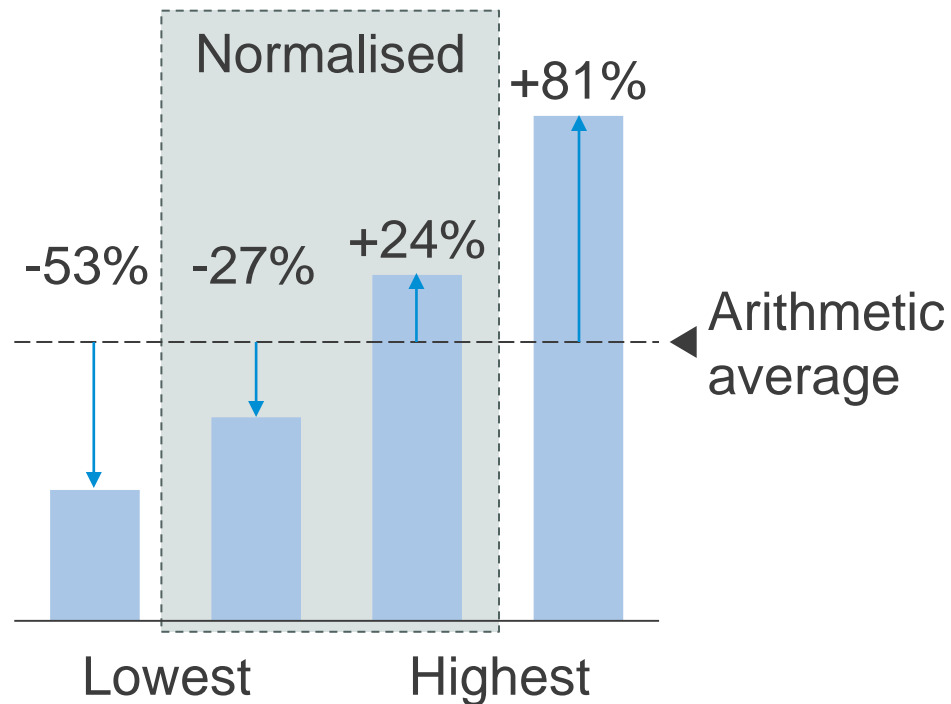
Methodology

Normalisation process



Normalised expenditure levels can be used to identify indicative gaps to good practice

Average annual maintenance and renewal expenditure levels¹⁾



Possible explanations for remaining differences

- Further structural and topological differences
- Line categories
- Maintenance standards and norms
- (Not) sufficient funding to implement an optimal LCC-strategy
- Infrastructure performance
- Efficiency levels in work execution
- ...

¹⁾ Cost indices based on 2011–2015 averages of eight participants

New web application

The screenshot displays the LICBweb application interface. At the top, the LICB logo is on the left, and the user's name 'M. Reisinger' with a 'Logout' link is on the right. A navigation bar contains 'Reports', 'Administration', and 'Profil'. The main content area is titled 'Desktop' and is divided into several sections:

- Welcome M. Reisinger:** A welcome message with a 'DB' logo and a paragraph of placeholder text.
- Assigned company:** A table showing 'Deutsche Bahn Deutschland AG'.
- Company data:** A table showing '5 Company data sets'.
- Email:** 'matthias.heinrich@bahn.de'.
- Last login:** 'September 12 / 2010 - 14:34'.
- User role:** 'Admin'.
- Approval:** A section with a green checkmark icon, listing three 'Basic data set' entries with their IDs and years (2010, 2010, 2009) and an 'Edit' button.
- Bulletin:** A section with an envelope icon, dated '10/13/2010' from 'P. Dundee', and a paragraph of placeholder text.

At the bottom, there are links for 'Help | Contact | Imprint' and 'System by SECUNDRED'.

- Easier entry of data
- Check on data quality
- Apply improved methodology
- Flexible calculation model
- Access to data and reports
- Accelerate the overall process

The new web-based IT-tool supports the LICB workflow

LICBweb

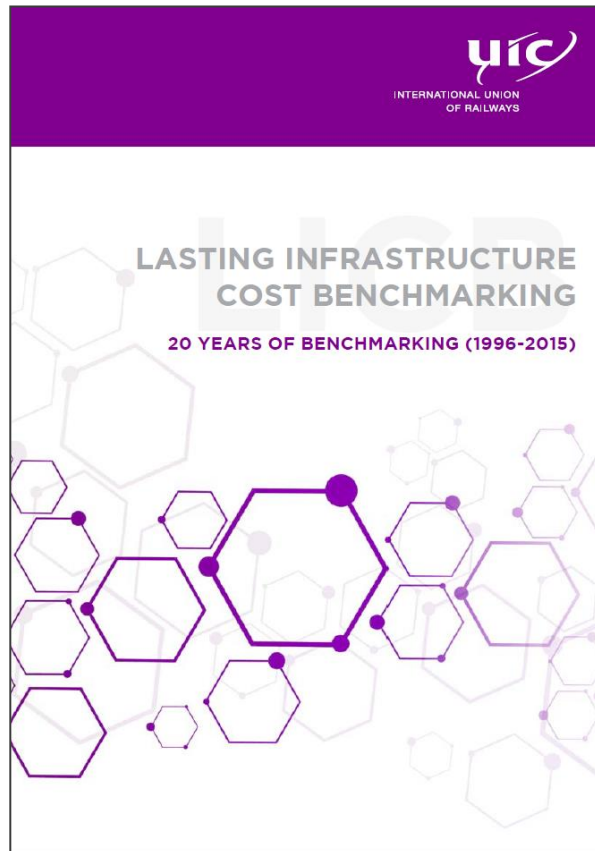


LICB is a useful tool for infrastructure managers helping to better manage LCC

- LICB is a typical top-down benchmarking analysing annual maintenance and renewals of existing infrastructure
- Results can be used to identify indicative gaps to good practice
- LICB is often used for communication with internal and external stakeholders
- The comparison can be used as starting point for further necessary in-depth analysis in order to derive target levels
- LICB continuously extends and enhances the benefits provided to its participants

Analysis of work efficiency

Integration of Key Cost Drivers as developed by the Asset Management Working Group



Thanks for your attention

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