



Capacity Strategy TT 2027

Administration des Chemins de Fer

Société Nationale des Chemins de fer Luxembourgeois

Version 2.0

20.10.2023



Revision of the document

Version	Date	Author	Modifications
0.1	12.07.2023	Kevin PYREK	First draft
0.2	14.07.2023	Kevin PYREK	Redaction chapter 2
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1.4	18.10.2023	Olivier BROY	Ready for validation
2.0	20.10.2023	Kevin PYREK	Validated by CFL GI and ACF

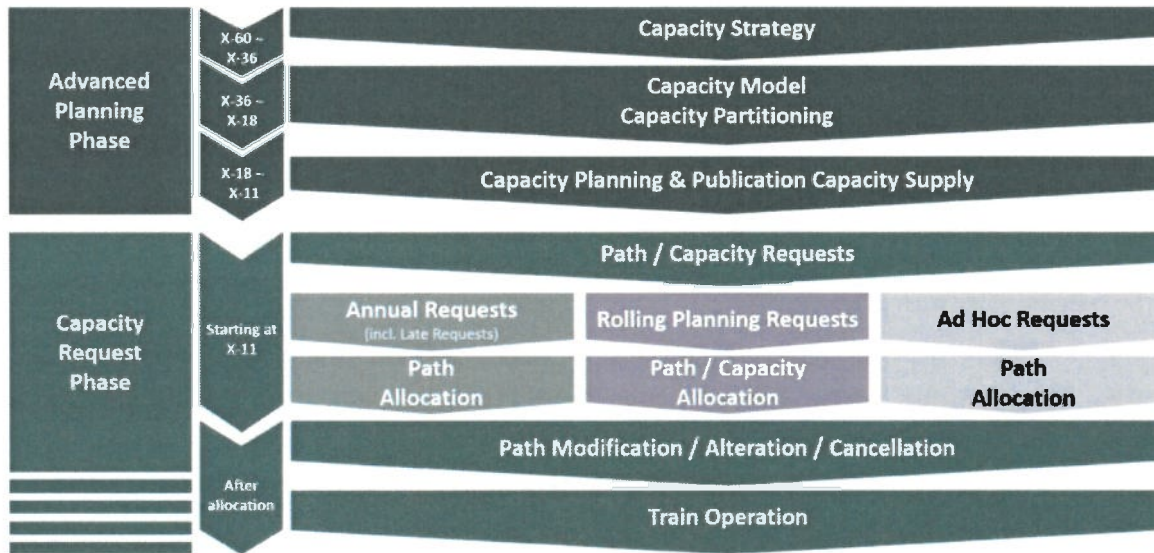


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0 Introduction

An essential scope of the TTR process is the advanced planning based on the Capacity Strategy. It consists of collecting knowledge of the available capacity and combining it with the general capacity needs in order to optimize the use of the available infrastructure. Infrastructure Managers and Allocation Bodies (hereafter IMs), in consultation with the involved stakeholders, shall prepare a Capacity Strategy, based on the capacity planning and allocation concept.



As illustrated in Figure 1, the first phase of the Capacity Strategy starts at X-60 (5 years) prior to timetable-change and must be completed by X-36 (3 years). During this phase, the IM should define all connected geographical areas, including those of neighbouring networks, as well as the associated service facilities and terminals. In the second phase, each strategy which might have an impact on other IMs must be harmonized and validated with the concerned IMs between X-54 and X-36.

Finally, TTR expects each Infrastructure Manager (IM) to publish a Capacity Strategy 3 years prior to timetable-change (X-36). Every Capacity Strategy is validated by the IM and/or the AB itself. The general aim of the Capacity Strategy is to provide an indication of the key values of capacity planning, i.e. on changes in the availability of the infrastructure, Temporary Capacity Restrictions (TCRs or "negative capacity") as well as on commercial capacity ("positive capacity") for a given timetable.

The Capacity Strategy 2027 is nationally published, and includes four chapters:

- Description of the geographic area
- Expected capacity of infrastructure in TT2027
- Expected Temporary Capacity Restrictions (TCRs) with major impact
- Expected traffic flows, whereby the values displayed apply for Timetable 2027 to relevant border points within the geographical scope.

The present document meets the requirement of RNE's Capacity Strategy Handbook, version 3.0. It builds on the Capacity Strategy 2026, which was published as a common document with other IMs (see above) but includes extended projects for 2027. The intended audience of the Capacity Strategy includes all applicants and end-customers, as well as all other stakeholders of rail capacity planning and allocation.



0.1 Contact details

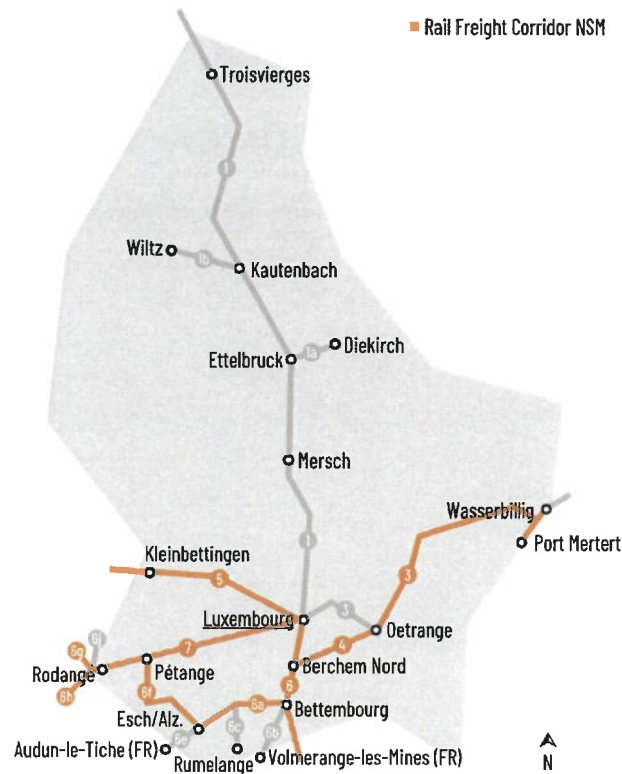
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0.2 Geographical Scope





0.3 List of involved IMs

In Luxembourg exists only one infrastructure manager.

	Société Nationale des Chemins de fer Luxembourgeois Direction Gestion Infrastructure B.P. 1803 L-1018 Luxembourg
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0.4 List of service facilities

Terminal Bettembourg

	CFL-TERMINALS s.a. Terminal Intermodal Z.A.E. Wolser E L-3437 Dudelange
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Centre de remisage et maintenance Luxembourg (Storage and maintenance facilities)

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1 Expected Capacity of Infrastructure in TT 2027

1.1 Additional Available Capacity

Network segment	Description	Effect	Rough quantifications of the effect	Impact on capacity as of
Luxembourg – Bettembourg	New line Luxembourg – Bettembourg New platforms in Howald Reorganization tracks in Luxembourg, Howald and Bettembourg	Separate lines for traffic to France and national	Doubling of capacity between Luxembourg and Bettembourg	From 2027
Luxembourg – Ettelbruck	New Blocks	Additional capacity	Timetable stabilisation Capacity augmentation of 5-30% (depending on timetable construction)	Intended 2025 – 2027

1.2 Reduced Available Capacity

Network Segment	Description	Effect	Rough quantifications of the effect	Impact on capacity as of
Luxembourg – Hollerich (Lines 5 and 7)	Track & Platform reorganization	2 instead of 4 tracks between Luxembourg and Hollerich	Decrease of 50% of the capacity between Luxembourg and Hollerich (part of RFC NSM)	2027 – 2034



2 Temporary Capacity Restrictions

2.1 Principles for TCR Planning

In Luxembourg, 4 kinds of TCRs can be distinguished:

- **Total closures:** all tracks of a line or a station are continuously closed during a defined time;
- **Partial closures:** one or more tracks of a line or a station are closed continuously during a defined time. At least one track remains open.
- **Recurring closures:** all, one or more tracks of a line or a station are closed in a defined time window during a defined time.
- **Small impact closures:** short total or partial closures that are programmed mainly in periods outside of regular train traffic.

The request should be introduced by the IM and validated by the ACF, namely the Luxembourgish Allocation Body. Considering introduced TCRs, trains are cancelled or re-routed in the real timetable, but not considered in the planned timetable, yearly published by the ACF.

2.1.1 Clustering of TCRs to minimize the gravity of impact and duration

TCR clustering is a common practice to minimize gravity and duration of impact, but also to reduce the involved resources. Most of the time, the IM coordinates large impact TCRs due to renewal¹ or investment² projects in advance to combine them on single TCRs. Furthermore, those TCRs are used as well to organize (small)³ maintenance works⁴ if possible. Moreover, TCRs are coordinated with external actors (for example highway infrastructure authority, tram operator) to minimize the national traffic impacts. The clustering starts at X-37, directly by creation of TCRs.

2.1.2 Description of connected areas where TCRs due to shortage of capacity shall not be planned simultaneously

In Luxembourg, no alternative routes are predefined in case of TCRs. Alternative routes have to be tailor-made and international coordination (DB Netz, SNCF Réseau and Infrabel) has to be done in order to ensure the access to:

- Rail Freight Corridor NSM
- Industrial Railway Network « Réseau Tertiaire »
- Private branches to be as less impacted as possible
- Port Mertert
- Terminal Bettembourg

However, the simultaneous closure of certain segments can lead to conflicts. Therefore, the following principles are considered, if possible:

¹ Renewal projects: a.o. track renewal on several km, catenary, bridge, platform renewal

² Investment projects: political and strategic projects, a.o. new line, track adaptation, station track reorganisation, construction of new platforms

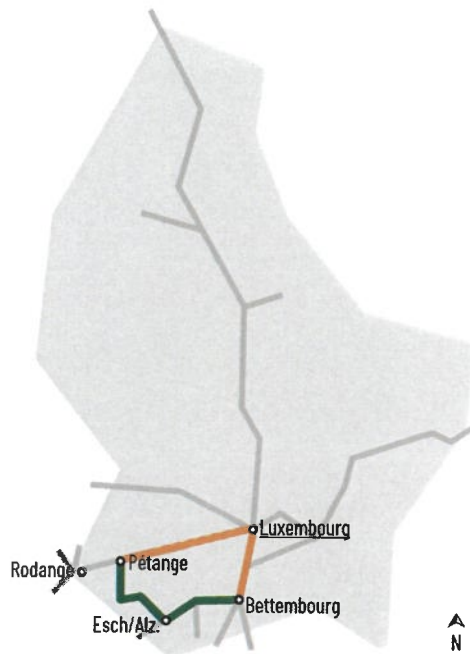
³ Small maintenance works: a.o. screw clamping, vegetation works, control drives

⁴ Maintenance works: a.o. punctual gutter, switch, tie replacement, embankment stabilisation, adaptation of electrical traction installations



In order to guarantee the traffic on the Rail Freight Corridor NSM, one of the following axles has to stay opened:

- ■ **Bettembourg – Esch/Alz. – Pétange**
- ■ **Bettembourg – Luxembourg – Pétange**



Closures on the segments Pétange – Rodange-frf and Bettembourg – Bettembourg-frf are coordinated with SNCF Réseau.

One of both border lines must stay open to allow the freight traffic to France:

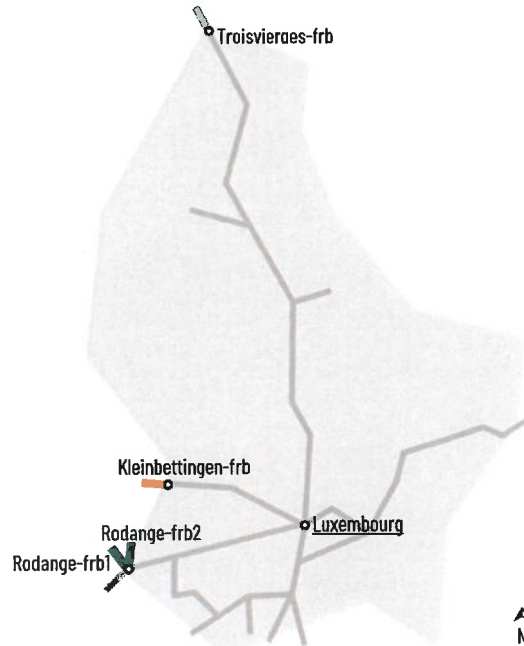
- ■ **Bettembourg – Bettembourg-frf (French boarder)**
- ■ **Pétange – Rodange-frf (French boarder)**





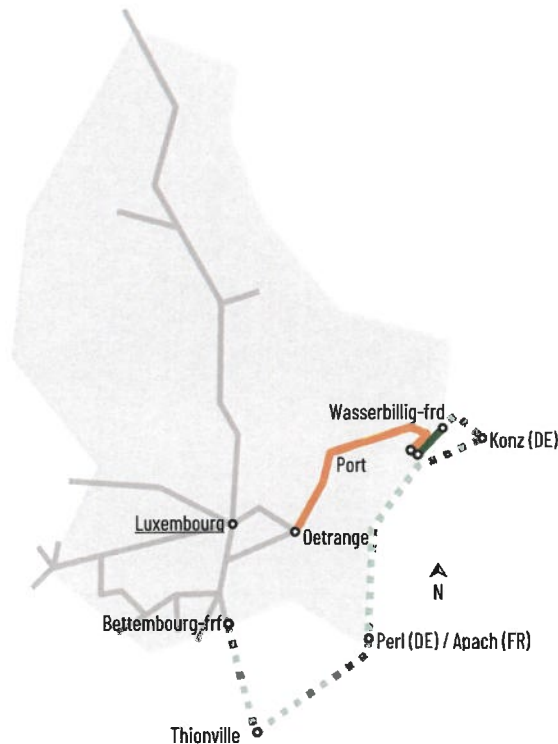
If two of the three following lines are impacted by TCRs, at least one must stay fully accessible to allow the freight traffic to Belgium:

- Luxembourg – Troisvierges-frb (Belgian boarder)
- Luxembourg – Kleinbettingen-frb (Belgian boarder)
- Luxembourg – Rodange-frb1 and Luxembourg – Rodange-frb2 (Belgian boarders)





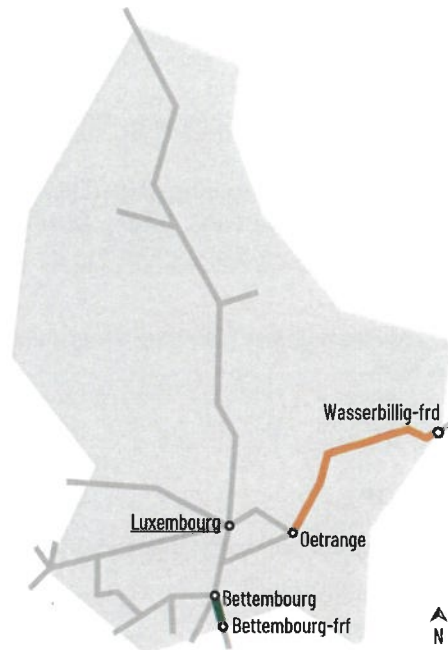
For the access to the Port Mertert, the closures on the following sections are incompatible:

- Port Mertert – Oetrange
- Port Mertert – Wasserbillig-frd (German boarder)
- If necessary, the access to Port Mertert can be discussed in trilateral coordination groups with DB Netz and SNCF Réseau.



One of both border lines must stay open to allow the freight traffic to Germany:

-  Oetrange – Wasserbillig-frd (German boarder)
-  Bettembourg – Bettembourg-frf (French boarder)



2.1.3 Description of the periods when TCRs will be executed if their nature makes it possible (nights, weekends)

TCRs are planned in Luxembourg according to the following hierarchy:

- During weekends: continuously from Saturday morning to Monday morning
- During school holidays: continuously (major TCRs in summer)
- During nights: duration 3h - 6h
- Other periods if necessary

2.1.4 Description of the periods when regular TCR windows will be planned (nights, weekends)

Most TCRs in Luxembourg are planned on defined periods (ex. all nights from 00:40 to 04:00 for two weeks). TCR windows stay rather exceptional and are only planned for closures with complex works on the concerned segments. In other words, the Luxembourgish IM tries to organize tailor-made TCRs as much as possible in advance to avoid capacity wastes. Currently, the large amount TCRs on the Luxembourgish network gives the IM the possibility to execute unplanned works without creating additional TCRs.

However, in some exceptional cases, TCR windows can be planned. Those tailor-made measures are mostly organized by night and can occur all days with a weekly recurrency. They can be used for any works on the concerned segment. As well as regular TCRs, the TCR windows are not considered in the annual timetable. This means that trains have to be delayed or replanned by an ulterior demand.

2.1.5 Description of how the TCR allocation process will look like, how the coordination and consultation will be ensured

In Luxembourg, the only entity who is able to distribute the capacity on the national railway network is the Allocation Body ACF. By allocating capacity, the AB ACF has also the control over the Temporary Capacity



Restrictions. A first consultation between the AB ACF and the IM CFL takes place before the consultations with the neighbouring IMs at X-26. After accepting the TCR planning by ACF and the consultations with the RUs, ACF and IM CFL publish the TCR planning over their ways of distribution at X-13.

Two levels of consultation can be distinguished:

- **National:** all aspects of TCR planning, including TCR scenarios (number, duration, tracks) are discussed.
- **International:** they include the neighbouring IMs (DB Netz, SNCF Réseau and Infrabel) and additionally the concerned IMs by the RFC (SBB). During those meetings, only TCR schedules (date, time) are discussed. It is planned to extend the consultation to corresponding international RUs.

Regular consultation meetings are organized yearly (October-November). Additional meetings can be planned during the year by request from the RUs.

2.1.6 International coordination

The Luxembourgish Railway Network takes part to an international coordination group, composed of 5 IMs:

- ACF/CFL representing Luxembourg
- Infrabel representing Belgium
- DB Netz representing Germany
- SNCF Réseau representing France
- SBB representing Switzerland.

6 meetings are organized yearly to synchronize the major and high TCRs on both sides of a border point and to plan the deviation routes, considering the available and needed capacities for re-routing.

Additionally, ACF and CFL regularly coordinate with Infrabel and SNCF Réseau all TCRs with impact on each other's neighbouring network, starting from X-33. Ulterior TCRs to the current Capacity Strategy can also be discussed. Sporadically meetings with DB Netz are organized if needed. Parallel, a coordination of the border point Troisvierges-frb is organized with Infrabel to ensure the electric supply of the national and neighbouring networks if works are planned.

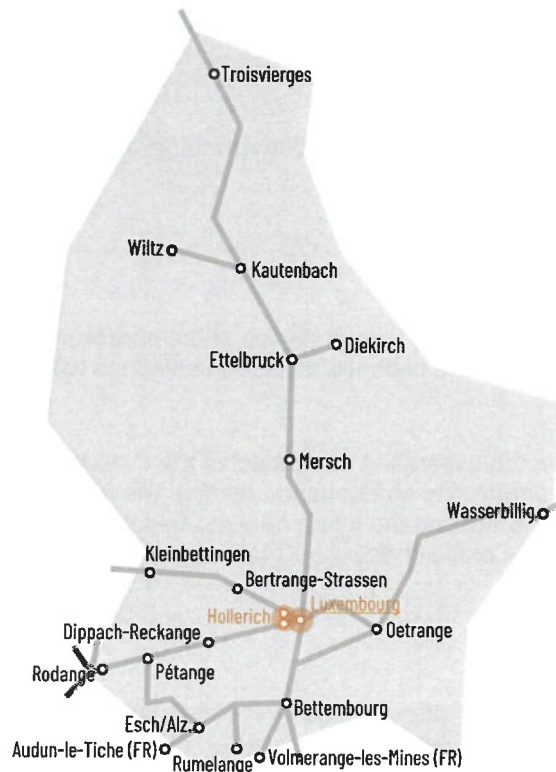
2.1.7 Description of currently existing (national, bi-, trilateral) escalation process(es) in case of disagreement of the involved stakeholders.

In case of disagreement of the involved national stakeholders, they can make protest by the national regulator *Institut Luxembourgeois de Régulation* (ILR). ILR is the public authority to be contacted by any applicants who consider that they have suffered unfair treatment, discrimination or any other prejudice.

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2.2. Pre-Announcement of Major Impact TCRs

Network segment	Purpose	Time of execution	Start (quarterly basis)	Impact (total closure/single track operation/speed restriction)	Impact to passenger & freight traffic ⁵
Hollerich	Modernisation and creation of a fully integrated interchange station	Jul 2027 – 2034	Q2/2027	Total station closure	<p>Cancellation of the passenger traffic at the station. Bypass for passenger and freight trains still possible with reduced capacity.</p> <p>Access to Luxembourg-Triage (marshalling yard) to be determined</p>
Luxembourg main station	Track reorganisation of the south-wester part of the station	Jul 2027 – Sep 2027	Q2/2027	<p>Total closure of the access to the lines Luxembourg – Kleinbettingen and Luxembourg – Pétange</p> <p>Partial closure of the access to the line Luxembourg – Bettembourg</p>	<p>No passenger trains on the sections Luxembourg – Dippach-Reckange and Luxembourg – Bertrange-Strassen</p> <p>Reduced capacity on the section Luxembourg – Howald</p>



⁵ If the information on “Time of execution” and “Impact to passenger & freight traffic” is not available during the creation of Capacity Strategy, then the field to be filled by “not available” or “N/A”



3 Traffic Planning Principles and Traffic Flows

3.1 Traffic Planning Principles

The basic details of the traffic planning principles are detailed below. It can be used in the scope of the Capacity Model (from X-30 to X-11) and the Capacity Supplies (from X-18 to X-12).

Main principles of the network	
Passenger train	Maximum 16 vehicles, 64 axles, 800 tons, 430m
Freight train	Maximum 750m, engine(s) included
Catenary	25kV 50Hz on each line of geographical area
Safety system	ETCS mandatory

Train's categories	
Passenger train	V120 (maximal speed 120km/h)
	V140
Freight train	MA80
	MA90
	ME100
	ME120
Empty loc running	HLP80 (haut-le-pied)
	HLP100
	HLP120

In order to have more details, please consult: *Network Statement, Appendice I of the RGE (IM CFL)*.

3.2 Traffic Flows

The traffic flows for the "Capacity Strategy" are analysed at the border points of Luxembourg. The capacity for 2027 has been elaborated based on the historical data, consultations with the neighbouring IMs as well as the data received from RUs.

The figures have also taken into consideration the impact of the transformation of our network. For passenger traffic, the Ministry of Mobility and Public Maintenance defined the forecast until 2035 in the [National Mobility Plan 2035](#). For freight traffic, we predicted the future demand based on discussions with our freight customers. We expect to include more details of it with the tool CAN (capacity Needs Announcements).

Luxembourg – Belgium

Border point	passenger train paths per hour per direction		freight train paths per hour
	long distance ⁶	regional ⁷	
Athus (BE) – Rodange	0	2	1
Aubange (BE) – Rodange	0	0	1
Sterpenich (BE) – Kleinbettingen	1	2	0
Gouvy (BE) – Troisvierges	1	0	0

⁶ High-speed and Intercity trains

⁷ National and international local trains



Luxembourg – Germany

Border point	passenger train paths per hour per direction		freight train paths per hour
	long distance	regional	
Igel (DE) – Wasserbillig	0	2	1

Luxembourg – France

Border point	passenger train paths per hour per direction		freight train paths per hour
	long distance	regional	
Mont St Martin (FR) – Rodange	-	2	1
Zoufftgen (FR) – Bettembourg	1	6	1



4 Validation

Mr. WERDEL Henri
Director of CFL (IM)
Luxembourg, 20th October 2023

Mr. MAHOWALD Claude
Director of ACF (AB)
Esch-sur-Alzette, 20th October 2023



Annex 1: Information on market involvement and opinion gathering

Due the existing of an Infrastructure Manager (CFL) and an Allocation Body (ACF) in Luxembourg, multiple meeting has been organised between these two entities to elaborate the *Capacity Strategy 2027*:

- ACF: Chapter 0, 1 and 3;
- CFL: Chapter 2.

The prevision of the needed capacity from the RUs is determinate by the experience of the past years and by the estimation of the RUs itself. A better prediction will be possible with the Capacity Needs Announcement.

Annex 2: Outlook to the upcoming TT years

All political scopes of the upcoming years are summarised in the [National Mobility Plan 2035](#), fixed by the [Ministry of transport](#). This document focuses on the urban development of Luxembourg and foresees the adaptation of the public transport infrastructure in the country up to 2035.