Review of the PPP work since the eighth and final session of the Team of Specialists on PPPs on 20-21 October 2016

Draft UNECE Standard on PPPs in Railways

Conference room paper submitted by the secretariat

Summary

A project team co-led by Mr. Naresh Bana, Ms. Doris Chevalier and Mr. Jonathan Beckitt prepared a draft standard on PPPs in rail, which the secretariat is circulating as received from the project team co-leaders for information only. The next step is for the draft to go to public review, where stakeholders, including the expert networks in the UNECE Transport Division, are encouraged to provide their comments and feedback for consideration and inclusion in a revised version for consideration by the Bureau of the Working Party on PPPs.

The Working Party is requested to take note of the draft standard, which is subject to change. Participants are encouraged to provide comments on the draft directly to the secretariat at: ppp@unece.org.
Proposed Draft

Draft UNECE Standard on PPPs in Railways

SOURCE: Rail Project Team
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I Introduction

The Sustainable Development Goals (SDGs) identify a range of measures to encourage the building of energy efficient infrastructure and to promote inclusive and sustainable development for the world’s population. To realise this, the 2030 Agenda recognises that successful delivery of the SDGs will depend on global partnerships and cooperation between public, private and civil society.

UNECE supports the use of global partnerships for sustainable development and has produced this Standard to provide guidance to governments considering the use of Public-Private Partnerships (PPPs) to deliver investment in railway infrastructure as a way of meeting the SDGs and achieving People First Public Private Partnerships (PfPPPs).

II Objectives of the Standard

If managed well, Rail PPPs can help governments tackle development needs by bringing sustainable investment, replicable processes and expertise to complex rail systems. This Standard is intended to assist governments in the successful use of rail PPPs as a step towards achieving the SDGs and specifically the achievement of PfPPPs.

There are many different models of PPP in the rail sector worldwide. The challenge for governments developing rail PPPs is to ensure consistency between their project delivery strategy and programme, and the achievement of the SDGs and PfPPPs.

III Scope of the Standard

This UNECE Standard offers guidance on best practice in relation to the development and implementation of PPPs in the rail sector. PPPs in rail is capital investment in rail infrastructure, and often railway stations and rolling stock, that are funded using primarily commercial finance repaid over a long-term concession period. This is to be distinguished from light rail transit (LRT) and other metropolitan/urban rail systems such as metro railways, monorails, subways, skybus, etc. which only ferry passenger traffic.

For the purpose of this Standard, the term PPP is defined as an arrangement under which a public authority grants a long term contract (with a duration typically exceeding 20 years) to a private sector partner for the design, financing, construction or refurbishment, operation, maintenance of rail facilities and the provision of related services. The term ‘public authority’ may include a government department or a statutory provider of transport services. Under the terms of these contracts, the private sector partner will raise private capital to pay for the new facilities, which in most cases will be repaid by a lease, rental fee, or service concession from the public authority, provided the facilities and services are made available and meet a specified outcome standard.

IV Central Question
To achieve the SDGs, significant investment in the improvement of railway infrastructure is required. The following SDGs are considered relevant in this context.

**SDG 3** Ensure healthy lives and promote well-being for all at all ages

*Transport by rail is statistically safer than transport by road*

3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents

3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination

**SDG 5** Achieve gender equality and empower all women and girls

*Use of the PPP model provides an opportunity to seek to achieve gender equality through the tendering process*

5.1 End all forms of discrimination against all women and girls everywhere 5.5 Ensure women’s full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life

**SDG 8** Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

*Transport by rail is an important element in encouraging economic growth and development*

8.1 Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries

**SDG 9** Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

*Investment in railway infrastructure is generally for the long term*

9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all 9.2 Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry’s share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities

**SDG 11** Make cities and human settlements inclusive, safe, resilient and sustainable

*Improved rail links can facilitate cross-border traffic*

11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons 11.a
Support positive economic, social and environmental links between urban, per-urban and rural areas by strengthening national and regional development planning

SDG 13 Take urgent action to combat climate change and its impact

Transport by rail is usually more energy efficient than other modes of transport

SDG 17 Strengthen the means of implementation and revitalise the global partnership for sustainable development

Transport by rail is usually more energy efficient than other modes of transport

13.2 Integrate climate change measures into national policies, strategies and planning

A. Project Types and Examples of Rail PPPs

There are a number of examples of PPPs in the rail sector. The PPP models for rail can be adapted to suit the circumstances of a particular project and desired outcome, and the benefits that can be achieved by flexible application of the model.

Typical contracting approaches in rail PPPs include:

- **DBFOM** [Design, Build, Finance, Operate and Maintain]: The concessionaire takes construction and operation risk over the life of the rail concession, as well as, in some cases, traffic risk.
- **DBFM** [Design, Build, Finance and Maintain]: As with DBFOM, the concessionaire takes construction and maintenance risk of the rail system, but operation risk is retained by the public authority.
- **DBF** [Design, Build and Finance]: The concessionaire is responsible only for building the railway infrastructure and the associated financing.
- **O&M** [Operation and Maintenance]: The rail construction works package is procured separately by the public authority and the concessionaire only takes operational risk.

Case studies for individual projects are set out in annex 2 with further examples of PPPs in the rail sector set out in Annex 3. A broad outline with certain characteristics and discernible patterns of the approaches is given below:

- **High Speed 1** Formerly known as the Channel Tunnel Rail Link, the line created a faster shared line for domestic trains between the UK and France. It was the UK’s first high-speed rail project and Britain’s first new railway in a century. Conceived and awarded as DBFOM project it was a large scale project and overcame various financial, legal, structural and technical hurdles. It is characterised by:-
  - **Procurement Strategy.** The initial contracts provided enough flexibility for two subsidiaries of the concessionaire to take over the project when the project was at risk and needed reformation.
  - **State Aid** played a key role in realising the project and when the project encountered difficulty underscored the importance of government support for
projects both programmatically and fiscally in order to ensure their long term success. That support allowed for the restructuring and ensured the continuation of the project and realization of the outcomes.

- **Unique Format.** There is no concession fee payable in the project and there is no compensation payable either for termination for contractor default. Instead, the project focuses on long cure periods to allow time to find solutions and the parties set default thresholds comparatively higher than other rail projects in order to incentivize making the project work.

- **Regulatory Regime** The system is governed by a separate regulatory regime that exists solely to regulate the track access charges for HS 1 which allows for careful and responsive charging but also supports the overall viability of the project.

(For full case study please refer Annex 2)

- **South East Atlantic HSR** A 50 year concession to develop a new high speed railway between Tours and Bordeaux in France. It has reduced travel time between Paris and Bordeaux by almost one hour and ridership projections are positive. At Euro 7.8 Bn it is the largest DBFOM PPP project in France and one of the largest in Europe. It was completed on time and has been running since early July 2017. Notable aspects are:-
  - **Project Financing.** The project finances were raised in a unique PPP format having a mix of public and private funding. The French Government came forward with guaranteed bank debt as part of the French stimulus package of 2009, which was designed to encourage PPP financing for large, priority projects. The balance was taken care by private equity and debt funds raised by the private partners.
  - **State Aid.** The French Government was also instrumental in successful raising finances through EIB and eventually seeing the project through to bankability. Having State Aid supports the project realizing and providing value for money.
  - **Concession** The duration is 50 years. Such duration reassures investors in a capital intensive project that their return on investment is relatively secure. While the traffic risk is with the promoters, it has contract mechanisms that encourage on time completion and revenue production.
  - **Timely Completion** One of the most important aspects of PPP is to complete the project on time and move into revenue production as soon as possible. Despite the size and complexity of the project it was completed in a timely manner.

(For full case study please refer Annex 2)

- **HSL Zuid** A 125 Km high speed railway line connecting Amsterdam Zuid and Rotterdam via Schiphol airport. It is a 25 year concession primarily funded by the Dutch transport ministry. A EUR 5 Billion project it is based on DBFM model. One interesting aspect of the project is its separation of the construction works from track and signalling to have better risk management profile. Salient features are:-
  - **Funding** The funding for the civil works including tunnels, bridges and elevated sections was provided by the Dutch transport ministry (EUR 2.6 Billion) while finances for all other works including track and signalling were raised by the private concessionaire. It was a fairly typical private finance initiative/ PPP type structure
i.e. small amount of base equity with majority of sponsors contribution being injected via subordinate debt as well as the use of equity bridge facility.

- **Project Delays**  The project suffered from four years delay due to public opposition and government prolonged decision making process.

(For full case study please refer Annex 2)

### B Pros and cons of PPPs in the Rail Sector

It is generally recognised that transport by rail is an important element in encouraging economic growth and development. Initially most railways were privately owned but subsequently many of these were taken over by national and provincial governments. Transport by rail is usually more energy efficient than other modes of transport and therefore investment in rail schemes is a key component of a low carbon transport strategy. Since 1985 PPPs have seen success in varying degree in railway PPP Projects. An attractive aspect of PPPs in Rail is the potential to significantly augment railway infrastructure if well planned, and executed. In such capital intensive projects the capital deployed and gains accrued need to be viewed over the entire life cycle of a railway PPP project.

Smaller projects are also possible. Many governments combine sometimes distinctly different projects in order to make the whole ‘Bankable’. Governments must be careful of the trade-off that must be arrived at when bundling smaller projects, which is the loss of competition when several smaller projects are bundled into one and the potential efficiency gains from such bundling be evaluated meticulously.

Other salient advantages and disadvantages of PPP in railway projects may be as listed in paragraphs below.

**Advantages:** There are many tangible and intangible advantages of PPPs in Rail which further aid early achievement of SDGs:-

- Private sector delivery of projects is often quicker than public sector delivery. This fact coupled with Rail projects means existing railway lines can become decongested much more quickly, new links for passengers can be created more rapidly, and/or the economic benefits of natural resource utilization (i.e. linking mines, ports and special zones) can be realized sooner.

- Most Rail systems in the developing world are owned and operated by government which are perennially short of funds for capital intensive new rail projects and the maintenance and refurbishment of existing rail systems. A well designed PPP can mobilise private capital and therefore augment capacity of the government to undertake its long awaited Rail projects.

- Driven by profitability, private sector rail operators are better motivated, and flexible, to be efficient and innovate in the day to day operations and maintenance of a rail system. For example, they are more likely to introduce new, modern technology to improve operations or extend the life of the asset, or make more efficient use of rail tracks thereby improving if not maximizing the system’s capacity.

**Disadvantages:** PPP Rail projects have following disadvantages which have an adverse effect on realising the SDGs:-
The key to any PPP project is the concession agreement. PPP Rail project takes additional time and cost to arrive at a comprehensive agreement with scope to integrate myriad types of agreements (state support agreement, agreements peculiar to construction and operations of Railways, Escrow arrangements etc.). Despite this many a times the concession agreements have not been able to live and keep intact its sanctity over the entire duration of the concession. It impacts achievement of SDGs.

The capital costs of a Rail project are often high, an in a PPP there is a requirement, that the project generate sufficient revenue to cover the actual costs of the project plus and a reasonable rate of return. Yet many Rail systems around the world have operated with subsidies or tariffs that do not reflect the actual cost of building and operating the system. The result is, converting to private system can mean the fares or tariff must increase to cover the project actual costs which is a disadvantage to users at least in terms of perceptions, because users have been used to artificially low fares.

Successful PPPs in the rail sector have the following characteristics:

- They are well implemented and optimally governed. Chances of timely completion of PPP rail projects are statistically proved to be better. Availability of railways optimally aids achievement of SDGs as it enhances accessibility, provides comfortable travel environment along with safe and healthy commuting.
- They exhibit a high degree of transparency and public accountability.
- They are durable and can accommodate restructuring during the life of the concession. Provisions to restructure the SPV, monetising the project and scope for adapting to evolving technology are some of the features making PPP Rail successful.
- They allow for innovative forms of financing such as real estate development.
- Risk management takes care of pre-implementation and post commercialisation issues. Termination events are well defined to cover all above mentioned issues.

Conversely, unsuccessful PPPs in the rail sector are characterised by:-

- Poor governance is major cause of failure of PPP Rail projects. The PPP mode provides accessibility, safe travel, employment opportunities and other benefits leading to early achievement of SDGs. Delay or failure of Rail PPP directly impacts the achievement of SDGs.
- There are many cases where the agreements are drafted in great details but implementation leaves much to be desired. Case of HSL Zuid, a 125 Km high speed railway line connecting Amsterdam Zuid and Rotterdam via Schiphol airport is worth studying wherein four years delay was caused due to poor and prolonged decision making on part of public authorities. It delayed achievement of SDGs and thereby deprived the dependent population of SDG benefits having tangible and intangible financial implications as well.
- Wherever the railways are being run by the Government, the railway bureaucracy is found to be having maximum inertia and minimum project aptitude. It is prominently visible in India where Rail PPP projects remain few and far between and the regular EPC projects suffer long delays and cost overruns in routine. On September 29 there was a stampede due to inadequate capacity of existing ‘Foot Over Bridge (FOB)’ at Elphinstone rail station. As many as 22 people were killed and over 35 injured. Railways could neither plan to construct the bridge in EPC mode or in PPP mode due to apparent procedural and
bureaucratic delays. Having sensed that, last month Military Engineers had to be called by railways minister to construct an additional FOB at same station.

It goes on to confirm that efficient governance and quick process to procure PPP Rail projects can help achievement of SDGs by saving lives of people and making day to day travel safe, comfortable and sustainable. PPPs Meeting People First Objectives (PFP PPP) in Rail are those that enhances the developmental impact of PPPs, inter alia, their contribution to poverty eradication, more equitable income allocation, less dependency on fossil fuels, engaging with stakeholders in a meaningful dialogue while building the capacity of public and private sector to deliver such projects. PFP PPPs in Rail are also projects, which are economically viable from both economics and business perspective and ideally have direct economic transformational impact on the population served by the project. Focus of People-first PPP is obviously ‘People’ among all stakeholders of the project. The people-first objectives may include:

- **Accessible, comfortable, safe and healthy commuting** between urban centres for greater efficiency and employment possibility.
- **Affordable housing and family support eco-system** can come up and sustain alongside the PPP rail project.
- PPP rail projects are linear and can easily accommodate **utilities and other support services** i.e. electricity, gas, communication cables, water pipelines etc.
- **Security and safety in communities** are best served by having a reliable and safe railway in the neighbourhood.
- **Employment generation** by making direct recruitment in construction, operations and maintenance of rail project and also by positively impacting the economic activity of the neighbourhood.
- **Reduction in Taxes** is achieved when enhanced economic activity leads to larger pool of public funds, providing reasons to introduce tax rate cuts.
- **Flexibility to move** is one of the most prominent people-first objectives wherein the commuter is free to take the train of her choice at preferred time without incurring any extra costs.
- **Extra Time availability** with commuter implies availability of productive time which may be put to use for generation of additional income, leading to commuter’s enhanced purchasing power.

South East Atlantic HSR is a 50 year concession for a new high-speed railway between Tours and Bordeaux in France which has reduced travel time between Paris and Bordeaux by almost one hour and ridership projections are positive. It is a fit case wherein all the above mentioned people first objectives are seemingly achieved taking it closer to achievement of SDGs. Completed in time this DBFOM PPP Project is since running smoothly.

PPPs that deliver investment in railway infrastructure in the manner contemplated by the SDGs typically are concerned with construction, maintenance and operation and may not involve provision of passenger services. They exhibit many of the characteristics of PFOs and should therefore be capable of meeting those objectives.
Considering all aspects i.e. conventional PPP parameters and PfPPP goals, it is inferred that DBFOM PPP rail project model is best suited for infrastructure development and achievement of People First Objectives leading to accomplishment of SDGs.

V Delivering the Model

The recommendations on the following pages represent a concise statement of matters that should be considered when determining whether to implement a project using DBFOM PPP as a means of delivering investment in railway infrastructure. They provide guidance in the selection of suitable projects, which can be supported by advice from the specialist Centre of Excellence.

A Project Selection and Baseline Requirements

A1 Prepare an evidence-based delivery plan

In preparing for a Rail DBFOM PPP, governments should draw upon experience from other rail PPP projects and also other jurisdictions to develop a robust and evidence-based plan for delivery of the PPP (DBFOM PPP Delivery Plan). The plan should set out the process of analysing the ‘Financial Viability’ of the project in great details. Coupled with meticulously planned ‘revenue model’ it constitutes the foundation of DBFOM project. It should be considered a live document subject to strategic review at routine intervals. It needs to take account of lessons learned in projects where railway infrastructure has been developed using a DBFOM PPP model.

A2 Financing the DBFOM Model

A2.1 Carry out transparent business model analysis

Within the PPP Delivery Plan, the government should develop an overall financial and economic model for the DBFOM PPP (Business Case) that clearly sets out the whole life cost, the charging basis for making the railway infrastructure available, and objective criteria for the financial, social, environmental and economic benefits it will yield. The project should be costed in outline terms prior to commencement of procurement, and should only proceed if and when it is bankable and represents the best value for money of the realistically deliverable options.

A2.2 Develop a clear planning context

Rail DBFOM model viability depends on revenue generation post commissioning. Earning through traffic and other possible sources need to be projected as accurately as possible keeping in view all factors which are in realm of possibilities over the entire concession period. Governments should develop traffic forecasts to fully assess current and future supply and demand for rail services in the project demographic area and taking into account possible competition from other modes of transport. Governments may enter into ‘State Support Agreement’ which ensures the identified revenue streams of such DBFOM project are not adversely impacted and patronage risk is minimised.
A2.3 Setup performance standards

The Business Case should feature detailed output-based specifications that set the performance standards for the DBFOM project. These should be in conformity with national/ international standards for railway infrastructure. Measurement of performance goals should be objective leaving no room for discretion. There should be clear and realistic contractual sanctions on the private sector partner if such standards are not adequately achieved during the concession period.

B  Financing Requirements

B1 Sources of finance and governance structures

B1.1 Financial institutions to remain on board from beginning

A typical DBFOM PPP rail project is likely to be in range of many hundred million dollars. It is thus advisable to identify prospective lenders. These could be local and international commercial debt, international financial institutions (including Development Finance Institutions and Export Credit Agencies), government debt (including capital grant and other forms of public subsidy) and the local and international capital markets. Provisions should exist for ‘Viability Gap Funding (VGF)’. Further, there should be regular, structured interaction while developing the business model, deciding the qualifying conditions, formulating the bid criteria and identifying current and future revenue streams along with associated risks. Such onboarding is helpful in working out needs for new legislation or requirements to modify an existing statute. It would aid an expeditious ‘Financial Close’ post signing of concession agreement as there would be little time required for lender’s decision making.

B1.2 Offer robust payment security that guarantees investment return and debt repayment

A framework should be established to manage government commitments arising from the DBFOM projects, including fiscal commitments such as ongoing subsidies or payments for the use of the railway infrastructure, and contingent liabilities such as guarantees. Governments should maximise project financial viability by offering bidders and investors formal instruments having sovereign backing so as to assure timeliness and adequacy of payments. It would reduce the cost of finance and enhance ‘bankability’ of the project.

B1.3 Develop a standardised ‘shadow’ financial model against which to compare value generated by DBFOM project via other models

Governments should develop a robust and locally relevant system of capital and operating cost benchmarks. This system should be used to establish transparent evidence that the DBFOM model represents the best possible value for money as compared to alternative ways of achieving its objectives – particularly the direct delivery of the same project by the public sector. Such information could be critical for shaping public opinion.

B2 Consultation and Risk Assessment
B2.1 Realistically match capacity

Considering the scale and dimensions of DBFOM PPP projects, governments in low and middle income countries should formally consult with private sector contractors, service providers and advisors with relevant expertise in the rail sector to:

- Assess market capacity to deliver the project, and develop a programme of capacity building if necessary;
- Ensure that there is capacity and capability to accurately assess and accept the risks proposed to be transferred to the private sector; and
- Test in advance areas of risk allocation that are innovative or unprecedented.

Consultees should include the following:

- Contractors;
- Designers;
- Sponsors / equity investors;
- Legal, financial, technical and insurance advisors;
- Senior lenders and, where appropriate, international financial institutions;
- Insurance and reinsurance companies; and

B2.2 Clearly set out risk transfer proposals

A formal schedule of risks along with mitigation/allocation plan adds to objectivity of DBFOM procurement process and fosters competition while reducing uncertainties associated with such long term concession agreements.

C Legal Requirements

C1 Establish a legislative framework

The legislative framework for a DBFOM PPP in railways will be in sync with government’s transport and environmental policy, economic and fiscal policy, and other relevant policies such as those governing urban planning and land use. The framework should also be consistent with global initiatives such as the UN SDGs. The union government entities procuring DBFOM projects in railways would need to enact necessary legislations and enter into agreements with multiple state governments to sustain monopoly and assure financial viability of project wherein it may not allow a certain level of competition which may adversely impact the revenue stream of project during the concession period or as agreed. This might also involve amending existing laws in areas such as insolvency. [Legislation should comply with the UNCITRAL Legislative Guide on Privately Financed Infrastructure Projects, and Model Legislative Provisions on Privately Financed Infrastructure Projects and should be permissive rather than restrictive].

C2 Standardisation of procurement protocols and documentation
Standardisation brings objectivity, arrests ambiguity, aids decision making and reduces litigation. DBFOM projects in rail sector may follow the standard framework as given below:

- Unambiguous terms of for pre-qualification of bidders.
- Standard form of business model, clear setting out the scope, objectives and compliance with predetermined approval criteria;
- Well defined procurement timescales, transparent tendering, objective bid evaluation criteria and well identified scope for negotiation following selection of a preferred private partner;
- Standard processes with least scope for discretion to ensure deft contract management and monitoring performance throughout the delivery and operational phase; and
- Standard contract documentation including clear guidelines for its use and the extent to which it can be varied to suit specific DBFOM project issues.

D Feasibility for low and middle income countries

The projects highlighted in Annex 2 are all examples of Rail PPPs that have been implemented in developed countries. Further there are numerous examples of successful and not so successful DBFOM PPP Rail projects in middle income countries like India which can be suitably studied and lessons drawn. Governments can study the lessons learnt from these projects and hopefully avoid having to undertake their own research initiatives that can be costly both in terms of time, money and resources.

The railway systems in low and middle-income countries are mostly owned and operated by public authorities. The bureaucracy leaves little room for innovation, obtaining project finance on market terms and expeditious construction. If adopted; DBFOM model can effectively reduce dependency on government financial support in rail projects, rekindle the railway infrastructure growth, focus private investor interest in railway sector and bring in strategic investment i.e. highspeed railways.

The railway PPP project in DBFOM mode have been fairly successful on routes which are exclusive to a particular ports or mines etc. while success has eluded in mainstream passenger and freight lines. In middle and low-income countries railway maintenance on passenger intensive lines generally not given to concessionaire on safety issues. There is little or no regulation for tariff and freedom of tariff fixation cannot be given to private operator as railway is also politically sensitive sector in such countries as preferred travel mode of masses. It also appreciated that competing facilities over the same rail network can enhance risk and shortage or delayed provisioning of rolling stock can influence revenue streams of DBFOM projects.

In addition to the recommendations in Sections V A, B and C a common feature of successful PPPs in the rail sector is good project management coupled with unequivocal government support and meaningful consultation with stakeholders.

E Other issues related to the Rail sector
For DBFOM to be successful and sustainable it is important that governments assess and build market capacity as necessary to ensure the appropriate allocation of risks to the party best able to manage them. It is also essential that any Rail PPP has popular support and governments considering the use of PPPs should first consult broadly with consumers and civil society to ensure that the PPP will meet their needs in the best possible way. There should be regulation to ensure the rules of DBFOM concession are adhered to and revenue streams are optimised.

**E1 Regulation**

DBFOM model, to succeed needs to have an independent regulator who will regulate the performance standards and tariff. In developing the legislative framework under C1, governments may consider establishing such a regulatory framework to govern access to railway infrastructure, and the manner in which its maintenance and operation is remunerated. Absence of an Independent regulator is a big impediment in developing railway infrastructure in DBFOM PPP mode of rail projects.

**E2 Patronage**

The traffic forecasts prepared when developing the planning context for the PPP under A2.2 should be considered in conjunction with the assessment of potential sources of finance under B1.1 and the need for subsidies, payments or guarantees under B1.3.

**E3 Mixed Economy Infrastructure**

Governments should consider whether capacity should be reserved for different categories of services and how priority should be allocated between them. Governments should also have regard to the consequential impact on line speeds and the availability of railway infrastructure.

**E4 Cost Overruns**

A major issue in the development of new railway infrastructure can be the allocation of liability for cost overruns due to the size and complexity of rail schemes compared to other types of infrastructure. It will be important to provide a credible strategy for addressing this issue when assessing potential sources of finance under B1.1.

**E5 Early Termination Arrangements**

The suite of standard forms of contract documentation developed under C2 will include provisions regulating early termination, for example in the event of material failure to perform the contract. A particular issue for railway infrastructure is finding suitable replacement operators with the necessary competence. Contracts should allow sufficient time pre-termination for satisfactory arrangements to be put in place, including preservation of key sub-contracts to ensure continuity of service.
E6 Real Estate Development

A key feature of projects involving the development of railway infrastructure is the potential for development of adjoining areas of real estate such as railway stations or car parks, which can make a financial contribution to the project as well as providing possible urban regeneration benefits.

VI Indicators of Compliance

The Indicators of Compliance for a Rail PPP project relate directly to the SDGs.

VII Credits and References

These recommendations are based on a UNECE project which took place between June 2015 and [ ] 2017, managed by a multidisciplinary team of experts with experience of PPPs in the rail sector and sustainable development. The project comprised a review of published information, and responses to detailed questionnaires from public and private sector organisations with experience of programmes of this kind, whose contribution is gratefully acknowledged. Recommendations are aimed at governments considering the development and implementation of PPPs in the rail sector.

We are very grateful for the active contribution of agencies and organisations in the countries listed in Annex 1 who contributed to the development of the standard by making available published guidance, project case studies and/or responding to detailed questions based on their own experience.

The full list of projects and programmes from which lessons and experience were considered based on published information in the development of the Standard is available on the project team website at [ ] for governments seeking more detailed advice, experience and lessons learned from the delivery of PPP. The Standard will be maintained by UNECE and the Rail PPP Centre of Excellence.

Annex 1

Projects and programmes in the following countries were considered by the team developing the Standard as sources of lessons and experience based on published information.

Australia, Finland, France, Germany, India, the Netherlands, Poland, Russia, Turkey, United Kingdom, USA

Annex 2 – Case Studies

1. High Speed 1
High Speed 1 (HS1) is the high speed rail link between London and the Channel Tunnel. It connects Britain to Europe, securing around an 80% share of the London - Paris and London - Brussels travel market.

In March 1994, the UK Government launched a public works concession for the construction and operation of a new high-speed railway between St Pancras station in London and the Channel Tunnel. The development of the new line - then known as the Channel Tunnel Rail Link (CTRL) - was the UK element of the Paris-Brussels-Köln-Amsterdam-London trans-European transport network priority project. It was Britain’s first new railway line in over 100 years. More importantly, it is the physical connection between the UK rail network and the fast-expanding European inter-operable high-speed rail network.

The concession was awarded to London & Continental Railways Limited (LCR), a consortium company formed to bid for the project. The principal shareholders of the company were Bechtel, SNCF, National Express, EdF and UBS. LCR signed the concession agreement in February 1996 to design, construct, finance, operate and maintain the new line. Government support for the project was provided by way of capital grant as part of the concession arrangements.

LCR’s original financing plan involved an IPO, however the traffic forecasts for the Eurostar business proved insufficient and a restructuring involving Railtrack, the privately owned operator of the domestic rail network, was implemented in 1998. This resulted in the CTRL being built in two phases with interim finance for construction being provided by way of government guaranteed bonds amounting to £6 billion in total. A further restructuring involving Network Rail in 2002 was necessitated by Railtrack’s insolvency.

The first section of the CTRL from the Channel Tunnel to north Kent was opened to international services in September 2003; and the second section from north Kent to St. Pancras International - via new stations at Ebbsfleet and Stratford - was opened in November 2007. The new railway was renamed ‘High Speed 1’ (HS1).

The principal sources of income for HS1 are track access charge payments in respect of both international (Eurostar) and high speed domestic train services. Track access charges for the domestic train services are effectively guaranteed by the UK government and it is this revenue that underpins the financing for HS1.

A further restructuring was undertaken during 2008 and a sale process resulted in the sale of the HS1 business in November 2010 to Borealis Infrastructure and Ontario Teachers’ Pension Plan for £2.1 billion.
HS1 is currently operated under contract by Network Rail (CTRL) Limited, a wholly-owned subsidiary of Network Rail.

**Key features** of the project are:

- **Procurement strategy**: At the time of the Railtrack restructuring in 1998, the overriding imperative was to keep to the project timetable. A re-tender was not therefore considered to be an attractive option and so the transaction was structured as a hive down of the project to two subsidiaries of LCR which in turn contracted with Railtrack. Railtrack’s interest was transferred to Network Rail in 2002 and the sale of the concession in 2010 was structured as a business sale.

- **State Aid**: The various restructurings have required a number of notifications to the EU Commission and clearance was obtained on each occasion subject to conditions.

- **Concession**: The concession agreement is not a typical PPP arrangement and contains unique and innovative features. No concession fee is payable and there is no compensation payable for termination caused by contractor default. There are long cure periods to allow time to find a solution and higher thresholds are set for contractor default.

- **Operator arrangements**: The operation and maintenance of the railway is sub-contracted to Network Rail (CTRL) Limited under a long term contract that is co-terminus with the concession agreement.

- **Electricity supply arrangements**: Traction power for HS1 is provided by a dedicated supply and distribution network built and maintained by EdF under a long term contract.

- **Regulatory Regime**: A separated regime was established to regulate the track access charges for HS1. It is based on the regime that applies to the UK domestic rail network. The Office of Road and Rail is the regulator for both.

- **Stations**: The charging arrangements for HS1 stations provide for the accrual of a fund to finance lifecycle expenditure on a long term basis.

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**2. South East Atlantic HSR**

Reseau Ferre de France (RFF) signed a 50 year concession with the LISEA consortium in June 2011 for the development of a new high speed railway line between Tours and Bordeaux. The concession provides for the financing, design, construction, operation and maintenance of the new line with a projected construction period of 6 years.
The LISEA consortium is led by Vinci SA along with CDC Infrastructure, and SOJAS and AXA Private Equity as investors.

The new line will be 302 km long, with 38 km of connecting line to the conventional rail network. It will reduce the journey time between Paris and Bordeaux to 2 hours 5 minutes which is a shorter journey time than by road or air, and is expected to increase annual passenger numbers by between 3.5 and 5 million.

The project represents a total investment of EUR 7.8 billion. LISEA will be remunerated in the form of traffic-related fees paid by users operating trains capable of travelling on the new line. Traffic risk rests with LISEA.

Financing comes from both public and private sources with EUR 1 billion of bank debt guaranteed by the French government and around EUR 700 million provided by Fonds d’Epargne, managed by the Caisse des Dépôts and guaranteed by RFF. Both guarantees carry a premium rate.

The LISEA shareholders are contributing nearly EUR 800 million of equity and the remaining finance is being provided by a mix of non-guaranteed bank debt and EIB finance as part of TEN-T programme put in place jointly with the European Commission.

The financing package is the first to benefit from the French government guarantee mechanism put in place under the 2009 French stimulus package designed to encourage PPP financing for large priority projects. It also includes public subsidies of EUR 4 billion made by the French government, and subsidies from local communities and the European Union.

RFF, as the operator of the French national rail network, will benefit from the additional revenues which the new line will provide on adjacent lines through traffic growth along the entire Paris-Bordeaux rail link. Furthermore, RFF is investing close to EUR 1 billion by way of enhancements to the existing railway infrastructure (linking the new line to the existing network, capacity development leading to the Bordeaux train station, traffic control centre, and electric power modification).

**Key features** of the project are:

- Concession length: A longer than usual concession period of 50 years was agreed in order to provide better value for money financing.
• Traffic risk: Patronage risk is borne by the concessionaire to achieve a better risk and reward package.

3. HSL Zuid

HSL Zuid is a 125km high speed railway line stopping at three stations: Amsterdam Zuid, Amsterdam Schiphol Airport and Rotterdam, before continuing to the Belgian border to connect with services to Antwerp, Brussels and Paris.

The principal objectives of the project were to connect Rotterdam, Schiphol and Amsterdam to the European High Speed Rail Network, to encourage economic development, and to provide an alternative to air travel to European destinations.

HSL Zuid is a dedicated double track infrastructure project, designed for a maximum line speed of 300km per hour. The Dutch Transport Ministry was the client and financier of all civil works (including tunnels, bridges and elevated sections) throughout the project, and retains ownership of the line.

Construction of the railway civil works was divided into several D&B contracts, each worth about EUR 400 million, awarded to different contracting consortia. The track, power supply and signalling systems were developed by Infraspeed (a consortium comprising Fluor Infrastructure, Siemens Nederland, Koninklijke BAM Groep, Innisfree and HSBC Infrastructure) under a DBFM contract with a requirement that the track must achieve an availability target of 99%. The contract runs for 25 years from 2006 till 2031, with an availability charge paid to Infraspeed, depending on whether the 99% target is achieved.

Following privatisation of Dutch railways, HSL Zuid was the first rail project developed with minimal influence from the national rail operator, NS, however the concession for operating the new line was awarded to a joint venture between NS and KLM (High Speed Alliance or HSA). HSA was loss making from the outset due to ongoing project delays and quality issues with the rolling stock ordered from Ansaldo Breda. HSA was taken over by NS in 2015.

Project delays were caused by a variety of factors. There was public opposition to the route and disagreements in government prolonged the decision-making process. The choice of security system also caused delays: the specifications of the standard were confirmed late, which also delayed ordering and supply of trains. Opening of the line (in 2008) was subject to a four year delay overall.
Total cost was approximately EUR 5 billion with EUR 2.6 billion coming from the Transport Ministry and around EUR 1.7 billion provided by the FES fund (based on revenues from gas exports dedicated to economic development). Private funding amounted to EUR 940 million.

A key feature of the project was the separation of the construction works package from track and signalling to achieve a better risk allocation.

Annex 3 – Examples of PPPs in the Rail Sector

1. Argentina

The Argentinian government has entered into a concession agreement with a private entity, Ferrovías Sociedad Anónimas Concesionarios, for the maintenance and operation of the railway line Belgrano Norte from Villa Rosa to Retira - Buenos Aires Metropolitan Area. The concession includes the use of rolling stock. The term of the contract is 24 years (extendable) and the concessionaire is obliged to grant track access to the railway companies specified in the concession agreement. Conditions for track access and the track access charges must be fair and reasonable.

2. Brazil

The original project, named Expresso Bandeirantes, was to build a high-speed rail line between São Paulo and Campinas using a PPP model; however the project was modified to provide a link to Rio de Janeiro. A bidding process commenced in 2009 and the line was planned to be operational by 2014 in time for the 20th FIFA World Cup. Delays occurred owing to lack of interest from local construction contractors and in December 2011 the government invited bids in two parts, splitting technology and construction. The bid submission date was initially set for November 2012 but there have been further delays in the procurement and the project is currently on hold.

3. China

China's first PPP rail project is currently under construction in East China's Zhejiang Province. The 269 km high speed rail line will connect Hangzhou, Shaoxing and Taizhou in Zhejiang Province. The estimated project cost is 44.9 billion yuan, 51% of which has been contributed by private investment. Private investors include Fosun Group, Zhejiang Wanfeng Auto Holding Group and Zhejiang Geely Holding Group. The contract period is 30 years, with four years allowed for construction. The project is one of eight demonstration projects for social investment in the railway sector.

4. India

Construction of a new 103 km railway line from Chiplun on the Konkan Railway and Karad on the Central Railway Section of Pune-Kolhapur is planned using a PPP model. The project is expected to cost around Rs 2500 Crores with the Maharashtra Government sharing 50% of the cost and Konkan Railway holding 26% of the equity. The new rail link will carry freight consisting of thermal coal for power generation and the cement industries.

5. Portugal
The Portuguese HSR network was intended to establish a high speed railway link between Lisbon and Madrid. The project was separated into six separate packages ready for procurement using a PPP model; however the project was abandoned in March 2012 by the Portuguese Government. There were a number of factors: the European financial crisis, the discovery of illegal clauses in the contracts and irregularities in the concession and the tender process. The project would have involved the construction of new lines totalling approximately 650 kilometres between Lisbon, Porto and Madrid, with the project’s total investment value being approximately EUR 8 billion. The project was to be financed by a mixture of European Union grants and public and private finance.

6. Russia

The Yamal-Nenets Autonomous District has entered into a PPP agreement for the construction of what will be the world’s northernmost operational railway with VIS Construction Group. The line is intended to support the exploitation of mineral resources, and will not form part of the national Russian Railways network. It will start at Bovanenkovo and will run 170 km northeast to the Tambeyskoye gas field and the port of Sabetta which is being developed on the eastern side of the Yamal Peninsula. The contract runs for 21 years and VIS TransStroy will design, finance and build the line. Total project cost is estimated to be 113 billion roubles with completion due at the end of 2019.

7. Singapore

The Kuala Lumpur-Singapore High-Speed Rail is intended as an alternative mode of public transport travel between Kuala Lumpur and Singapore. It will connect 7 cities in Malaysia to Singapore, following a coastal route. It will also provide safe, efficient and optimal transportation and will be the solution for heavy congestion in these areas. Journey time will be 90 minutes and line speed 300 km per hour. It has not yet been decided whether a PPP model will be used for the procurement. Construction is planned to commence in 2018.

8. Spain

The first AVE line was inaugurated in 1992 between Madrid and Seville and started the expansion of the network around the country. HSR in Spain has received significant European Union funding with the objective of promoting social integration, territorial integration, economic development and competitiveness. The remaining finance is provided by government funding. The network is government-owned with separate entities responsible for the rail infrastructure and the train operations. An example of the use of a PPP model is the introduction of ERTMS to the Albacete – Alicante section of the high speed line between Madrid and Valencia. A 22 year DBFM contract was awarded in December 2011 to a consortium led by Alstom.

9. Taiwan

There is a high speed line running approximately 345 kilometres from Taipei to Kaohsiung. Construction commenced in March 2000 and the line was completed in January 2007 after a 14 month delay. The project was tendered using a PPP model and a Taiwanese consortium was awarded a concession in September 1997 to finance, construct and operate the line for a period of 35 years, with a concession of 50 years for station area development. The total cost of the project
was approximately US$ 18 billion, including a government contribution of US$ 3.2 billion and cost overruns of US$ 1.7 billion.

10. USA

There are plans for high speed rail in California, the Midwest, New England, Florida, Texas, Pennsylvania, the Pacific Northwest, Colorado/New Mexico, and the Southwestern United States. The California High Speed Rail Authority is currently promoting the California High Speed Rail project, which is planned to link Anaheim, San Francisco, San Jose, Sacramento, Fresno, Los Angeles, Bakersfield, and other major cities within the state. Line speeds are expected to reach 354 km per hour with the first phase due for completion in 2029 and the remaining phase before 2040.