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**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](mailto:ppp@unece.org).

# **Proposed Draft**

## **Draft UNECE Standard on PPPs in Railways**

**SOURCE:** Rail Project Team

**ACTION:** Interim Draft

**STATUS:** Draft v7

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## 41 **I Introduction**

42

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

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

## 51 **II Objectives of the Standard**

52

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

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

## 60 **III Scope of the Standard**

61

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

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

## 76 **IV Central Question**

77

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

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

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

82 3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents

83 3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and  
84 air, water and soil pollution and contamination

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

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

88 5.1 End all forms of discrimination against all women and girls everywhere 5.5 Ensure women's full  
89 and effective participation and equal opportunities for leadership at all levels of decision-making in  
90 political, economic and public life

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

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

94 8.1 Sustain per capita economic growth in accordance with national circumstances and, in particular,  
95 at least 7 per cent gross domestic product growth per annum in the least developed countries

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

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

99 9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and  
100 transborder infrastructure, to support economic development and human well-being, with a focus  
101 on affordable and equitable access for all 9.2 Promote inclusive and sustainable industrialization  
102 and, by 2030, significantly raise industry's share of employment and gross domestic product, in line  
103 with national circumstances, and double its share in least developed countries 9.4 By 2030, upgrade  
104 infrastructure and retrofit industries to make them sustainable, with increased resource-use  
105 efficiency and greater adoption of clean and environmentally sound technologies and industrial  
106 processes, with all countries taking action in accordance with their respective capabilities

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

108 *Improved rail links can facilitate cross-border traffic*

109 11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all,  
110 improving road safety, notably by expanding public transport, with special attention to the needs of  
111 those in vulnerable situations, women, children, persons with disabilities and older persons 11.a

112 Support positive economic, social and environmental links between urban, per-urban and rural areas  
113 by strengthening national and regional development planning

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

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

116 13.2 Integrate climate change measures into national policies, strategies and planning

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

119 17.17 Encourage and promote effective public, public-private and civil society partnerships, building  
120 on the experience and resourcing strategies of partnerships

121 **A. Project Types and Examples of Rail PPPs**

122

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

126 Typical contracting approaches in rail PPPs include:

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

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

- 140 • **High Speed 1** Formerly known as the Channel Tunnel Rail Link, the line created a faster  
141 shared line for domestic trains between the UK and France. It was the UK's first high-speed  
142 rail project and Britain's first new railway in a century. Conceived and awarded as DBFOM  
143 project it was a large scale project and overcame various financial, legal, structural and  
144 technical hurdles. It is characterised by:-
  - 145 ○ **Procurement Strategy.** The initial contracts provided enough flexibility for two  
146 subsidiaries of the concessionaire to take over the project when the project was at  
147 risk and needed reformation.
  - 148 ○ **State Aid** played a key role in realising the project and when the project  
149 encountered difficulty underscored the importance of government support for

150 projects both programmatically and fiscally in order to ensure their long term  
151 success. That support allowed for the restructuring and ensured the continuation of  
152 the project and realization of the outcomes.

- 153 ○ **Unique Format.** There is no concession fee payable in the project and there is no  
154 compensation payable either for termination for contractor default. Instead, the  
155 project focuses on long cure periods to allow time to find solutions and the parties  
156 set default thresholds comparatively higher than other rail projects in order to  
157 incentivize making the project work.
- 158 ○ **Regulatory Regime** The system is governed by a separate regulatory regime that  
159 exists solely to regulate the track access charges for HS 1 which allows for careful  
160 and responsive charging but also supports the overall viability of the project.

161 (For full case study please refer Annex 2)

162

- 163 ● **South East Atlantic HSR** A 50 year concession to develop a new high speed railway between  
164 Tours and Bordeaux in France. It has reduced travel time between Paris and Bordeaux by  
165 almost one hour and ridership projections are positive. At Euro 7.8 Bn it is the largest  
166 DBFOM PPP project in France and one of the largest in Europe. It was completed on time  
167 and has been running since early July 2017. Notable aspects are:-

- 168 ○ **Project Financing.** The project finances were raised in a unique PPP format having a  
169 mix of public and private funding. The French Government came forward with  
170 guaranteed bank debt as part of the French stimulus package of 2009, which was  
171 designed to encourage PPP financing for large, priority projects. The balance was  
172 taken care by private equity and debt funds raised by the private partners.
- 173 ○ **State Aid.** The French Government was also instrumental in successful raising  
174 finances through EIB and eventually seeing the project through to bankability.  
175 Having State Aid supports the project realizing and providing value for money.
- 176 ○ **Concession** The duration is 50 years. Such duration reassures investors in a capital  
177 intensive project that their return on investment is relatively secure. While the  
178 traffic risk is with the promoters, it has contract mechanisms that encourage on time  
179 completion and revenue production.
- 180 ○ **Timely Completion** One of the most important aspects of PPP is to complete the  
181 project on time and move into revenue production as soon as possible. Despite the  
182 size and complexity of the project it was completed in a timely manner.

183 (For full case study please refer Annex 2)

184

- 185 ● **HSL Zuid** A 125 Km high speed railway line connecting Amsterdam Zuid and Rotterdam via  
186 Schiphol airport. It is a 25 year concession primarily funded by the Dutch transport ministry.  
187 A EUR 5 Billion project it is based on DBFM model. One interesting aspect of the project is its  
188 separation of the construction works from track and signalling to have better risk  
189 management profile. Salient features are:-

- 190 ○ **Funding** The funding for the civil works including tunnels, bridges and elevated  
191 sections was provided by the Dutch transport ministry (EUR 2.6 Billion) while  
192 finances for all other works including track and signalling were raised by the private  
193 concessionaire. It was a fairly typical private finance initiative/ PPP type structure



- 194 i.e. small amount of base equity with majority of sponsors contribution being  
195 injected via subordinate debt as well as the use of equity bridge facility.
- 196 ○ **Project Delays** The project suffered from four years delay due to public opposition  
197 and government prolonged decision making process.  
198 (For full case study please refer Annex 2)

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

200

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

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

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

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

- 218 • Private sector delivery of projects is often quicker than public sector delivery. This fact  
219 coupled with Rail projects means existing railway lines can become decongested much more  
220 quickly, new links for passengers can be created more rapidly, and/or the economic benefits  
221 of natural resource utilization (i.e. linking mines, ports and special zones) can be realized  
222 sooner.
- 223 • Most Rail systems in the developing world are owned and operated by government which  
224 are perennially short of funds for capital intensive new rail projects and the maintenance  
225 and refurbishment of existing rail systems. A well designed PPP can mobilise private capital  
226 and therefore augment capacity of the government to undertake its long awaited Rail  
227 projects.
- 228 • Driven by profitability, private sector rail operators are better motivated, and flexible, to be  
229 efficient and innovate in the day to day operations and maintenance of a rail system. For  
230 example, they are more likely to introduce new, modern technology to improve operations  
231 or extend the life of the asset, or make more efficient use of rail tracks thereby improving if  
232 not maximizing the system's capacity.

233 **Disadvantages:** PPP Rail projects have following disadvantages which have an adverse effect on  
234 realising the SDGs:-

- 235 • The key to any PPP project is the concession agreement. PPP Rail project takes additional  
236 time and cost to arrive at a comprehensive agreement with scope to integrate myriad types  
237 of agreements (state support agreement, agreements peculiar to construction and  
238 operations of Railways, Escrow arrangements etc.). Despite this many a times the concession  
239 agreements have not been able to live and keep intact its sanctity over the entire duration of  
240 the concession. It impacts achievement of SDGs.
- 241 • The capital costs of a Rail project are often high, and in a PPP there is a requirement, that the  
242 project generate sufficient revenue to cover the actual costs of the project plus and a  
243 reasonable rate of return. Yet many Rail systems around the world have operated with  
244 subsidies or tariffs that do not reflect the actual cost of building and operating the system.  
245 The result is, converting to private system can mean the fares or tariff must increase to  
246 cover the project actual costs which is a disadvantage to users at least in terms of  
247 perceptions, because users have been used to artificially low fares.

248 Successful PPPs in the rail sector have the following characteristics:

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

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

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

277               bureaucratic delays. Having sensed that, last month Military Engineers had to be called by  
278               railways minister to construct an additional FOB at same station.

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

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

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

313               PPPs that deliver investment in railway infrastructure in the manner contemplated by the SDGs  
314               typically are concerned with construction, maintenance and operation and may not involve provision  
315               of passenger services. They exhibit many of the characteristics of PFOs and should therefore be  
316               capable of meeting those objectives.

317 Considering all aspects i.e. conventional PPP parameters and PfPPP goals, it is inferred that **DBFOM**  
318 **PPP rail project model** is best suited for infrastructure development and achievement of People First  
319 Objectives leading to accomplishment of SDGs.

## 320 **V Delivering the Model**

321

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

### 326 **A Project Selection and Baseline Requirements**

#### 327 **A1 Prepare an evidence-based delivery plan**

328

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

#### 336 **A2 Financing the DBFOM Model**

##### 337 **A2.1 Carry out transparent business model analysis**

338

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

##### 345 **A2.2 Develop a clear planning context**

346

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

355 **A2.3 Setup performance standards**

356

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

362 **B Financing Requirements**

363 **B1 Sources of finance and governance structures**

364 **B1.1 Financial institutions to remain on board from beginning**

365

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

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

378

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

385 **B1.3 Develop a standardised 'shadow' financial model against which to compare value**  
386 **generated by DBFOM project via other models**

387

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

393 **B2 Consultation and Risk Assessment**

394 **B2.1 Realistically match capacity**

395

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

- 399
- 400 • Assess market capacity to deliver the project, and develop a programme of capacity building  
if necessary;
  - 401 • Ensure that there is capacity and capability to accurately assess and accept the risks  
402 proposed to be transferred to the private sector; and
  - 403 • Test in advance areas of risk allocation that are innovative or unprecedented.

404 Consultees should include the following:

- 405 • Contractors;
- 406 • Designers;
- 407 • Sponsors / equity investors;
- 408 • Legal, financial, technical and insurance advisors;
- 409 • Senior lenders and, where appropriate, international financial institutions;
- 410 • Insurance and reinsurance companies; and

411 **B2.2 Clearly set out risk transfer proposals**

412

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

416

417 **C Legal Requirements**

418

419 **C1 Establish a legislative framework**

420

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

432 **C2 Standardisation of procurement protocols and documentation**

433

434 Standardisation brings objectivity, arrests ambiguity, aids decision making and reduces litigation.  
435 DBFOM projects in rail sector may follow the standard framework as given below:

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

446 **D Feasibility for low and middle income countries**

447

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

454

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

460

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

469

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

473 **E Other issues related to the Rail sector**

474

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

481 **E1 Regulation**

482

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

489 **E2 Patronage**

490

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

494 **E3 Mixed Economy Infrastructure**

495

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

499 **E4 Cost Overruns**

500

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

505 **E5 Early Termination Arrangements**

506

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



513 **E6 Real Estate Development**

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

517 **VI Indicators of Compliance**

518

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

520 **VII Credits and References**

521

522 These recommendations are based on a UNECE project which took place between June 2015 and [  
523 ] 2017, managed by a multidisciplinary team of experts with experience of PPPs in the rail sector and  
524 sustainable development. The project comprised a review of published information, and responses  
525 to detailed questionnaires from public and private sector organisations with experience of  
526 programmes of this kind, whose contribution is gratefully acknowledged. Recommendations are  
527 aimed at governments considering the development and implementation of PPPs in the rail sector.

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

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

537 **Annex 1**

538

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

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

543 **Annex 2 – Case Studies**

544 **1. High Speed 1**

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



548  
549 In March 1994, the UK Government launched a public works concession for the construction and  
550 operation of a new high-speed railway between St Pancras station in London and the Channel  
551 Tunnel. The development of the new line - then known as the Channel Tunnel Rail Link (CTRL) - was  
552 the UK element of the Paris-Brussels-Köln-Amsterdam-London trans-European transport network  
553 priority project. It was Britain's first new railway line in over 100 years. More importantly, it is the  
554 physical connection between the UK rail network and the fast-expanding European inter-operable  
555 high-speed rail network.

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

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

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

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

575 A further restructuring was undertaken during 2008 and a sale process resulted in the sale of the  
576 HS1 business in November 2010 to Borealis Infrastructure and Ontario Teachers' Pension Plan for  
577 £2.1billion.

578 HS1 is currently operated under contract by Network Rail (CTRL) Limited, a wholly-owned subsidiary  
579 of Network Rail.

580 **Key features** of the project are:

- 581 • Procurement strategy: At the time of the Railtrack restructuring in 1998, the overriding  
582 imperative was to keep to the project timetable. A re-tender was not therefore considered  
583 to be an attractive option and so the transaction was structured as a hive down of the  
584 project to two subsidiaries of LCR which in turn contracted with Railtrack. Railtrack's  
585 interest was transferred to Network Rail in 2002 and the sale of the concession in 2010 was  
586 structured as a business sale.
- 587 • State Aid: The various restructurings have required a number of notifications to the EU  
588 Commission and clearance was obtained on each occasion subject to conditions.
- 589 • Concession: The concession agreement is not a typical PPP arrangement and contains  
590 unique and innovative features. No concession fee is payable and there is no compensation  
591 payable for termination caused by contractor default. There are long cure periods to allow  
592 time to find a solution and higher thresholds are set for contractor default.
- 593 • Operator arrangements: The operation and maintenance of the railway is sub-contracted to  
594 Network Rail (CTRL) Limited under a long term contract that is co-terminus with the  
595 concession agreement.
- 596 • Electricity supply arrangements: Traction power for HS1 is provided by a dedicated supply  
597 and distribution network built and maintained by EDF under a long term contract.
- 598 • Regulatory Regime: A separated regime was established to regulate the track access charges  
599 for HS1. It is based on the regime that applies to the UK domestic rail network. The Office  
600 of Road and Rail is the regulator for both.
- 601 • Stations: The charging arrangements for HS1 stations provide for the accrual of a fund to  
602 finance lifecycle expenditure on a long term basis.

603

## 604 **2. South East Atlantic HSR**

605 Reseau Ferre de France (RFF) signed a 50 year concession with the LISEA consortium in June 2011 for  
606 the development of a new high speed railway line between Tours and Bordeaux. The concession  
607 provides for the financing, design, construction, operation and maintenance of the new line with a  
608 projected construction period of 6 years.



609

610 The LISEA consortium is led by Vinci SA along with CDC Infrastructure, and SOJAS and AXA Private  
611 Equity as investors.

612 The new line will be 302 km long, with 38 km of connecting line to the conventional rail network. It  
613 will reduce the journey time between Paris and Bordeaux to 2 hours 5 minutes which is a shorter  
614 journey time than by road or air, and is expected to increase annual passenger numbers by between  
615 3.5 and 5 million.

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

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

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

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

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

635 **Key features** of the project are:

- 636 • Concession length: A longer than usual concession period of 50 years was agreed in order to  
637 provide better value for money financing.

- 638           • Traffic risk: Patronage risk is borne by the concessionaire to achieve a better risk and reward  
639           package.

### 640 **3. HSL Zuid**

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



644  
645 The principal objectives of the project were to connect Rotterdam, Schiphol and Amsterdam to the  
646 European High Speed Rail Network, to encourage economic development, and to provide an  
647 alternative to air travel to European destinations.

648 HSL Zuid is a dedicated double track infrastructure project, designed for a maximum line speed of  
649 300km per hour. The Dutch Transport Ministry was the client and financier of all civil works  
650 (including tunnels, bridges and elevated sections) throughout the project, and retains ownership of  
651 the line.

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

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

664 Project delays were caused by a variety of factors. There was public opposition to the route and  
665 disagreements in government prolonged the decision-making process. The choice of security system  
666 also caused delays: the specifications of the standard were confirmed late, which also delayed  
667 ordering and supply of trains. Opening of the line (in 2008) was subject to a four year delay overall.

668 Total cost was approximately EUR 5 billion with EUR 2.6 billion coming from the Transport Ministry  
669 and around EUR 1.7 billion provided by the FES fund (based on revenues from gas exports dedicated  
670 to economic development). Private funding amounted to EUR 940 million.

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

## 673 **Annex 3 – Examples of PPPs in the Rail Sector**

674

### 675 **1. Argentina**

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

### 682 **2. Brazil**

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

### 690 **3. China**

691 China's first PPP rail project is currently under construction in East China's Zhejiang Province. The  
692 269 km high speed rail line will connect Hangzhou, Shaoxing and Taizhou in Zhejiang Province. The  
693 estimated project cost is 44.9 billion yuan, 51% of which has been contributed by private  
694 investment. Private investors include Fosun Group, Zhejiang Wanfeng Auto Holding Group and  
695 Zhejiang Geely Holding Group. The contract period is 30 years, with four years allowed for  
696 construction. The project is one of eight demonstration projects for social investment in the railway  
697 sector.

### 698 **4. India**

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

### 704 **5. Portugal**

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

## 713 **6. Russia**

714 The Yamal-Nenets Autonomous District has entered into a PPP agreement for the construction of  
715 what will be the world's northernmost operational railway with VIS Construction Group. The line is  
716 intended to support the exploitation of mineral resources, and will not form part of the national  
717 Russian Railways network. It will start at Bovanenkovo and will run 170 km northeast to the  
718 Tambayskoye gas field and the port of Sabetta which is being developed on the eastern side of the  
719 Yamal Peninsula. The contract runs for 21 years and VIS TransStroy will design, finance and build the  
720 line. Total project cost is estimated to be 113 billion roubles with completion due at the end of  
721 2019.

## 722 **7. Singapore**

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

## 729 **8. Spain**

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

## 738 **9. Taiwan**

739 There is a high speed line running approximately 345 kilometres from Taipei to Kaohsiung.  
740 Construction commenced in March 2000 and the line was completed in January 2007 after a 14  
741 month delay. The project was tendered using a PPP model and a Taiwanese consortium was  
742 awarded a concession in September 1997 to finance, construct and operate the line for a period of  
743 35 years, with a concession of 50 years for station area development. The total cost of the project

744 was approximately US\$ 18 billion, including a government contribution of US\$ 3.2 billion and cost  
745 overruns of US\$ 1.7 billion.

746 **10. USA**

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

753

754