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Proposed Draft

DRAFT UNECE STANDARD ON PPPs IN RAILWAYS

**Implementing the United Nations 2030 Agenda for Sustainable Development
through effective
“People-First Public-Private Partnerships”**

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DRAFT

1 **I Introduction**

2

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

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

11 **II Objectives of the Standard**

12

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

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

20 **III Scope of the Standard**

21

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

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

36

37 **IV Central Question**

38

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

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

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

43 3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents

44 3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and
45 air, water and soil pollution and contamination

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

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

49 5.1 End all forms of discrimination against all women and girls everywhere 5.5 Ensure women's full
50 and effective participation and equal opportunities for leadership at all levels of decision-making in
51 political, economic and public life

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

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

55 8.1 Sustain per capita economic growth in accordance with national circumstances and, in particular,
56 at least 7 per cent gross domestic product growth per annum in the least developed countries

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

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

60 9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and
61 transborder infrastructure, to support economic development and human well-being, with a focus
62 on affordable and equitable access for all 9.2 Promote inclusive and sustainable industrialization
63 and, by 2030, significantly raise industry's share of employment and gross domestic product, in line
64 with national circumstances, and double its share in least developed countries 9.4 By 2030, upgrade
65 infrastructure and retrofit industries to make them sustainable, with increased resource-use
66 efficiency and greater adoption of clean and environmentally sound technologies and industrial
67 processes, with all countries taking action in accordance with their respective capabilities

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

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

70 11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all,
71 improving road safety, notably by expanding public transport, with special attention to the needs of
72 those in vulnerable situations, women, children, persons with disabilities and older persons 11.a
73 Support positive economic, social and environmental links between urban, per-urban and rural areas
74 by strengthening national and regional development planning

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

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

77 13.2 Integrate climate change measures into national policies, strategies and planning

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

80 17.17 Encourage and promote effective public, public-private and civil society partnerships, building
81 on the experience and resourcing strategies of partnerships

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

83

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

87 Typical contracting approaches in rail PPPs include:

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

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

- 101 • **High Speed 1** Formerly known as the Channel Tunnel Rail Link, the line created a faster
102 shared line for domestic trains between the UK and France. It was the UK's first high-speed
103 rail project and Britain's first new railway in a century. Conceived and awarded as DBFOM
104 project it was a large scale project and overcame various financial, legal, structural and
105 technical hurdles. It is characterised by:-

- 106 ○ **Procurement Strategy.** The initial contracts provided enough flexibility for two
107 subsidiaries of the concessionaire to take over the project when the project was at
108 risk and needed reformation.
- 109 ○ **State Aid** played a key role in realising the project and when the project
110 encountered difficulty underscored the importance of government support for
111 projects both programmatically and fiscally in order to ensure their long term
112 success. That support allowed for the restructuring and ensured the continuation of
113 the project and realization of the outcomes.
- 114 ○ **Unique Format.** There is no concession fee payable in the project and there is no
115 compensation payable either for termination for contractor default. Instead, the
116 project focuses on long cure periods to allow time to find solutions and the parties
117 set default thresholds comparatively higher than other rail projects in order to
118 incentivize making the project work.
- 119 ○ **Regulatory Regime** The system is governed by a separate regulatory regime that
120 exists solely to regulate the track access charges for HS 1 which allows for careful
121 and responsive charging but also supports the overall viability of the project.
122 (For full case study please refer Annex 2)
123
- 124 • **South East Atlantic HSR** A 50 year concession to develop a new high speed railway between
125 Tours and Bordeaux in France. It has reduced travel time between Paris and Bordeaux by
126 almost one hour and ridership projections are positive. At Euro 7.8 Bn it is the largest
127 DBFOM PPP project in France and one of the largest in Europe. It was completed on time
128 and has been running since early July 2017. Notable aspects are:-
- 129 ○ **Project Financing.** The project finances were raised in a unique PPP format having a
130 mix of public and private funding. The French Government came forward with
131 guaranteed bank debt as part of the French stimulus package of 2009, which was
132 designed to encourage PPP financing for large, priority projects. The balance was
133 taken care by private equity and debt funds raised by the private partners.
- 134 ○ **State Aid.** The French Government was also instrumental in successful raising
135 finances through EIB and eventually seeing the project through to bankability.
136 Having State Aid supports the project realizing and providing value for money.
- 137 ○ **Concession** The duration is 50 years. Such duration reassures investors in a capital
138 intensive project that their return on investment is relatively secure. While the
139 traffic risk is with the promoters, it has contract mechanisms that encourage on time
140 completion and revenue production.
- 141 ○ **Timely Completion** One of the most important aspects of PPP is to complete the
142 project on time and move into revenue production as soon as possible. Despite the
143 size and complexity of the project it was completed in a timely manner.
144 (For full case study please refer Annex 2)
145
- 146 • **HSL Zuid** A 125 Km high speed railway line connecting Amsterdam Zuid and Rotterdam via
147 Schiphol airport. It is a 25 year concession primarily funded by the Dutch transport ministry.
148 A EUR 5 Billion project it is based on DBFM model. One interesting aspect of the project is its
149 separation of the construction works from track and signalling to have better risk
150 management profile. Salient features are:-

- 151 ○ **Funding** The funding for the civil works including tunnels, bridges and elevated
152 sections was provided by the Dutch transport ministry (EUR 2.6 Billion) while
153 finances for all other works including track and signalling were raised by the private
154 concessionaire. It was a fairly typical private finance initiative/ PPP type structure
155 i.e. small amount of base equity with majority of sponsors contribution being
156 injected via subordinate debt as well as the use of equity bridge facility.
- 157 ○ **Project Delays** The project suffered from four years delay due to public opposition
158 and government prolonged decision making process.
159 (For full case study please refer Annex 2)

160 **B Pros and cons of PPPs in the Rail Sector**

161
162 It is generally recognised that transport by rail is an important element in encouraging economic
163 growth and development. Initially most railways were privately owned but subsequently many of
164 these were taken over by national and provincial governments. Transport by rail is usually more
165 energy efficient than other modes of transport and therefore investment in rail schemes is a key
166 component of a low carbon transport strategy. Since 1985 PPPs have seen success in varying degree
167 in railway PPP Projects. An attractive aspect of PPPs in Rail is the potential to significantly augment
168 railway infrastructure if well planned, and executed. In such capital intensive projects the capital
169 deployed and gains accrued need to be viewed over the entire life cycle of a railway PPP project.

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

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

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

- 179 • Private sector delivery of projects is often quicker than public sector delivery. This fact
180 coupled with Rail projects means existing railway lines can become decongested much more
181 quickly, new links for passengers can be created more rapidly, and/or the economic benefits
182 of natural resource utilization (i.e. linking mines, ports and special zones) can be realized
183 sooner.
- 184 • Most Rail systems in the developing world are owned and operated by government which
185 are perennially short of funds for capital intensive new rail projects and the maintenance
186 and refurbishment of existing rail systems. A well designed PPP can mobilise private capital
187 and therefore augment capacity of the government to undertake its long awaited Rail
188 projects.
- 189 • Driven by profitability, private sector rail operators are better motivated, and flexible, to be
190 efficient and innovate in the day to day operations and maintenance of a rail system. For
191 example, they are more likely to introduce new, modern technology to improve operations

192 or extend the life of the asset, or make more efficient use of rail tracks thereby improving if
193 not maximizing the system's capacity.

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

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

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

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

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

- 222 • Poor governance is major cause of failure of PPP Rail projects. The PPP mode provides
223 accessibility, safe travel, employment opportunities and other benefits leading to early
224 achievement of SDGs. Delay or failure of Rail PPP directly impacts the achievement of SDGs.
- 225 • There are many cases where the agreements are drafted in great details but
226 implementation leaves much to be desired. Case of **HSL Zuid**, a 125 Km high speed railway
227 line connecting Amsterdam Zuid and Rotterdam via Schiphol airport is worth studying
228 wherein four years delay was caused due to poor and prolonged decision making on part of
229 public authorities. It delayed achievement of SDGs and thereby deprived the dependent
230 population of SDG benefits having tangible and intangible financial implications as well.
- 231 • Wherever the railways are being run by the Government, the railway bureaucracy is found
232 to be having maximum inertia and minimum project aptitude. It is prominently visible in

233 India where Rail PPP projects remain few and far between and the regular EPC projects
234 suffer long delays and cost overruns in routine. On September 29 there was a stampede
235 due to inadequate capacity of existing 'Foot Over Bridge (FOB)' at Elphinstone rail station.
236 As many as 22 people were killed and over 35 injured. Railways could neither plan to
237 construct the bridge in EPC mode or in PPP mode due to apparent procedural and
238 bureaucratic delays. Having sensed that, last month Military Engineers had to be called by
239 railways minister to construct an additional FOB at same station.

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

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

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

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

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

281 **V Delivering the Model**

282

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

287 **A Project Selection and Baseline Requirements**

288 **A1 Prepare an evidence-based delivery plan**

289

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

297 **A2 Financing the DBFOM Model**

298 **A2.1 Carry out transparent business model analysis**

299

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

306 **A2.2 Develop a clear planning context**

307

308 Rail DBFOM model viability depends on revenue generation post commissioning. Earning through
309 traffic and other possible sources need to be projected as accurately as possible keeping in view all
310 factors which are in realm of possibilities over the entire concession period. Governments should
311 develop traffic forecasts to fully assess current and future supply and demand for rail services in the

312 project demographic area and taking into account possible competition from other modes of
313 transport. Governments may enter into 'State Support Agreement' which ensures the identified
314 revenue streams of such DBFOM project are not adversely impacted and patronage risk is
315 minimised.

316 **A2.3 Setup performance standards**

317
318 The Business Case should feature detailed output-based specifications that set the performance
319 standards for the DBFOM project. These should be in conformity with national/ international
320 standards for railway infrastructure. Measurement of performance goals should be objective leaving
321 no room for discretion. There should be clear and realistic contractual sanctions on the private
322 sector partner if such standards are not adequately achieved during the concession period.

323 **B Financing Requirements**

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

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

326
327 A typical DBFOM PPP rail project is likely to be in range of many hundred million dollars. It is thus
328 advisable to identify prospective lenders. These could be local and international commercial debt,
329 international financial institutions (including Development Finance Institutions and Export Credit
330 Agencies), government debt (including capital grant and other forms of public subsidy) and the local
331 and international capital markets. Provisions should exist for 'Viability Gap Funding (VGF)'. Further,
332 there should be regular, structured interaction while developing the business model, deciding the
333 qualifying conditions, formulating the bid criteria and identifying current and future revenue streams
334 along with associated risks. Such onboarding is helpful in working out needs for new legislation or
335 requirements to modify an existing statute. It would aid an expeditious 'Financial Close' post signing
336 of concession agreement as there would be little time required for lender's decision making.

337 **B1.2 Offer robust payment security that guarantees investment return and debt** 338 **repayment**

339
340 A framework should be established to manage government commitments arising from the DBFOM
341 projects, including fiscal commitments such as ongoing subsidies or payments for the use of the
342 railway infrastructure, and contingent liabilities such as guarantees. Governments should maximise
343 project financial viability by offering bidders and investors formal instruments having sovereign
344 backing so as to assure timeliness and adequacy of payments. It would reduce the cost of finance
345 and enhance 'bankability' of the project.

346 **B1.3 Develop a standardised 'shadow' financial model against which to compare value** 347 **generated by DBFOM project via other models**

348
349 Governments should develop a robust and locally relevant system of capital and operating cost
350 benchmarks. This system should be used to establish transparent evidence that the DBFOM model
351 represents the best possible value for money as compared to alternative ways of achieving its

352 objectives – particularly the direct delivery of the same project by the public sector. Such
353 information could be critical for shaping public opinion.

354 **B2 Consultation and Risk Assessment**

355 **B2.1 Realistically match capacity**

356

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

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

365 Consultees should include the following:

- 366 • Contractors;
- 367 • Designers;
- 368 • Sponsors / equity investors;
- 369 • Legal, financial, technical and insurance advisors;
- 370 • Senior lenders and, where appropriate, international financial institutions;
- 371 • Insurance and reinsurance companies; and

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

373

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

377

378 **C Legal Requirements**

379

380 **C1 Establish a legislative framework**

381

382 The legislative framework for a DBFOM PPP in railways will be in sync with government’s transport
383 and environmental policy, economic and fiscal policy, and other relevant policies such as those
384 governing urban planning and land use. The framework should also be consistent with global
385 initiatives such as the UN SDGs. The union government entities procuring DBFOM projects in
386 railways would need to enact necessary legislations and enter into agreements with multiple state
387 governments to sustain monopoly and assure financial viability of project wherein it may not allow a
388 certain level of competition which may adversely impact the revenue stream of project during the
389 concession period or as agreed. This might also involve amending existing laws in areas such as

390 insolvency. *[Legislation should comply with the UNCITRAL Legislative Guide on Privately Financed*
391 *Infrastructure Projects, and Model Legislative Provisions on Privately Financed Infrastructure Projects*
392 *and should be permissive rather than restrictive].*

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

394

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

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

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

408

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

415

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

421

422 The railway PPP project in DBFOM mode have been fairly successful on routes which are exclusive to
423 a particular ports or mines etc. while success has eluded in mainstream passenger and freight lines.

424 In middle and low-income countries railway maintenance on passenger intensive lines generally not
425 given to concessionaire on safety issues. There is little or no regulation for tariff and freedom of
426 tariff fixation cannot be given to private operator as railway is also politically sensitive sector in such
427 countries as preferred travel mode of masses. It also appreciated that competing facilities over the
428 same rail network can enhance risk and shortage or delayed provisioning of rolling stock can
429 influence revenue streams of DBFOM projects.

430

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

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

435

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

442 **E1 Regulation**

443

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

450 **E2 Patronage**

451

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

455 **E3 Mixed Economy Infrastructure**

456

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

460 **E4 Cost Overruns**

461

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

466 **E5 Early Termination Arrangements**

467

468 The suite of standard forms of contract documentation developed under C2 will include provisions
469 regulating early termination, for example in the event of material failure to perform the contract. A

470 particular issue for railway infrastructure is finding suitable replacement operators with the
471 necessary competence. Contracts should allow sufficient time pre-termination for satisfactory
472 arrangements to be put in place, including preservation of key sub-contracts to ensure continuity of
473 service.

474 **E6 Real Estate Development**

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

478 **VI Indicators of Compliance**

479

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

481 **VII Credits and References**

482

483 These recommendations are based on a UNECE project which took place between June 2015 and [
484] 2017, managed by a multidisciplinary team of experts with experience of PPPs in the rail sector and
485 sustainable development. The project comprised a review of published information, and responses
486 to detailed questionnaires from public and private sector organisations with experience of
487 programmes of this kind, whose contribution is gratefully acknowledged. Recommendations are
488 aimed at governments considering the development and implementation of PPPs in the rail sector.

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

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

498 **Annex 1**

499

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

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

504 **Annex 2 – Case Studies**

505 **1. High Speed 1**

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



509

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

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

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

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

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

536 A further restructuring was undertaken during 2008 and a sale process resulted in the sale of the
537 HS1 business in November 2010 to Borealis Infrastructure and Ontario Teachers' Pension Plan for
538 £2.1billion.

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

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

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

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

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

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

557 • Electricity supply arrangements: Traction power for HS1 is provided by a dedicated supply
558 and distribution network built and maintained by EDF under a long term contract.

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

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

564

565 **2. South East Atlantic HSR**

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



570

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

573 The new line will be 302 km long, with 38 km of connecting line to the conventional rail network. It
574 will reduce the journey time between Paris and Bordeaux to 2 hours 5 minutes which is a shorter
575 journey time than by road or air, and is expected to increase annual passenger numbers by between
576 3.5 and 5 million.

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

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

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

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

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

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

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

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

601 **3. HSL Zuid**

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



605
606 The principal objectives of the project were to connect Rotterdam, Schiphol and Amsterdam to the
607 European High Speed Rail Network, to encourage economic development, and to provide an
608 alternative to air travel to European destinations.

609 HSL Zuid is a dedicated double track infrastructure project, designed for a maximum line speed of
610 300km per hour. The Dutch Transport Ministry was the client and financier of all civil works
611 (including tunnels, bridges and elevated sections) throughout the project, and retains ownership of
612 the line.

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

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

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

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

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

634 **Annex 3 – Examples of PPPs in the Rail Sector**

635

636 **1. Argentina**

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

643 **2. Brazil**

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

651 **3. China**

652 China's first PPP rail project is currently under construction in East China's Zhejiang Province. The
653 269 km high speed rail line will connect Hangzhou, Shaoxing and Taizhou in Zhejiang Province. The
654 estimated project cost is 44.9 billion yuan, 51% of which has been contributed by private
655 investment. Private investors include Fosun Group, Zhejiang Wanfeng Auto Holding Group and
656 Zhejiang Geely Holding Group. The contract period is 30 years, with four years allowed for
657 construction. The project is one of eight demonstration projects for social investment in the railway
658 sector.

659 **4. India**

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

665 **5. Portugal**

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

674 **6. Russia**

675 The Yamal-Nenets Autonomous District has entered into a PPP agreement for the construction of
676 what will be the world's northernmost operational railway with VIS Construction Group. The line is
677 intended to support the exploitation of mineral resources, and will not form part of the national
678 Russian Railways network. It will start at Bovanenkovo and will run 170 km northeast to the
679 Tambeyskoye gas field and the port of Sabetta which is being developed on the eastern side of the
680 Yamal Peninsula. The contract runs for 21 years and VIS TransStroy will design, finance and build the
681 line. Total project cost is estimated to be 113 billion roubles with completion due at the end of
682 2019.

683 **7. Singapore**

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

690 **8. Spain**

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

699 **9. Taiwan**

700 There is a high speed line running approximately 345 kilometres from Taipei to Kaohsiung.
701 Construction commenced in March 2000 and the line was completed in January 2007 after a 14
702 month delay. The project was tendered using a PPP model and a Taiwanese consortium was
703 awarded a concession in September 1997 to finance, construct and operate the line for a period of
704 35 years, with a concession of 50 years for station area development. The total cost of the project

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

707 **10. USA**

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

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