

**R-PATA (P42518): Connecting the Railways of the Greater Mekong Subregion
Technical Assistance Concept Paper**

Date: 3 February 2016

<p>1. Country partnership strategy (CPS) / Regional cooperation strategy (RCS): The Greater Mekong Subregion Economic Cooperation Program Strategic Framework (2012–2022) stresses the importance of ensuring that all Greater Mekong Subregion (GMS) countries are connected to a GMS rail network by 2020 and promoting the development of a seamless rail network in the GMS.¹ To meet this objective, the GMS countries identified and agreed upon nine priority missing rail links that, when completed, would provide greater railway connectivity in the GMS.² In this regard, an essential requirement is to evaluate and prepare suitable financing options for the missing rail links, by ensuring that a minimum suitable data of comparable standard and detail is available for each of the identified missing rail links to allow preliminary Feasibility Studies (pre-FS) assessment of regional rail network development in the GMS. For some of the missing rail links, more information is already available and this additional information and assessment will be updated by the technical assistance (TA).</p> <ul style="list-style-type: none"> • Year included in CPS/RCS/COBP/RCOBP/CPS or RCS midterm review report: 2011 • Document reference number and date approved: The Greater Mekong Subregion Economic Cooperation Program Strategic Framework (2012–2022). • In case of change in the TA title, type, or amount, please state reason: N/A 	
<p>2. TA Type CDTA <input type="checkbox"/> R-CDTA</p> <p> PATA <input checked="" type="checkbox"/> R-PATA</p> <p> RDTA <input type="checkbox"/> R-RDTA</p>	<p>3. Cluster:</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p>4. Categorization of TA: <input type="checkbox"/> Category A TA <input checked="" type="checkbox"/> Category B TA</p>	
<p>5. Merits for using the TA approach over the grant-financed project approach: N/A</p>	
<p>6. Coverage</p> <p><input type="checkbox"/> Country <input checked="" type="checkbox"/> Subregional <input type="checkbox"/> Interregional GMS countries: CAM, PRC, LAO, MYA, THA, VIE</p>	
<p>7. For RDTA: Medium-Term Corporate Strategic Priorities for Research: N/A</p> <p><input type="checkbox"/> Promoting Inclusive Growth <input type="checkbox"/> Address increasing commodity price</p> <p><input type="checkbox"/> Addressing Climate Change <input type="checkbox"/> Demographic Change</p> <p><input type="checkbox"/> Regional Integration <input type="checkbox"/> Other</p>	
<p>8. Name of the Specialist (project team leader) in charge of the project: James Leather</p> <ul style="list-style-type: none"> • Local Number: 6605 • Email Address: jleather@adb.org 	<p>9. Name of the Alternate Specialist: Valerie Lisack</p> <ul style="list-style-type: none"> • Local Number: 5026 • Email Address: vlisack@adb.org
<p>10. Department/Division: SERD/SETC</p>	
<p>11. Key Development Issues to be addressed:</p> <p>Regional connectivity is required to support continued economic growth within the GMS. Increasing trade and economic interaction between GMS countries requires transport networks and systems that can carry significantly higher freight volumes and do so cost effectively over long distances. Rail based transport is the most efficient mode for transporting large volumes over long distances and thus vital to support growing intra-regional trade. To this end, the GMS countries seek to improve regional railway connectivity to promote cost-efficient, safe, and environmentally-sustainable transport within and beyond the GMS.</p> <p>Completion of the missing rail links is the most pressing need for rail connectivity, as identified at the GMS Ministerial Meeting in Hanoi in August 2010. The GMS Ministerial Meeting endorsed the Strategic Framework for Connecting the GMS Railways and its recommendations.³ A GMS railway coordination body, the Greater Mekong Railway Association (GMRA), has been established to support physical connectivity and service interoperability.⁴ A Memorandum of Understanding establishing the GMRA was signed at the 19th</p>	

¹ ADB. 2011. *Greater Mekong Subregion Economic Cooperation Program Strategic Framework (2012–2022)*. Manila (<http://www.adb.org/sites/default/files/institutional-document/33422/files/gms-ec-framework-2012-2022.pdf>).

² Agreement of the nine priority missing rail links was agreed at the 1st GMRA General Meeting held in Kunming, Peoples Republic of China in March 2015

³ ADB. 2010. Technical Assistance Completion Report: Greater Mekong Subregion: Railway Strategy Study. Manila (TA 7255-REG).

⁴ ADB. 2013. *Greater Mekong Subregion: Planning the GMS Railway Coordination Office*. Manila (TA 7678-REG).

GMS Ministerial Conference in December 2013. The level of commitment demonstrates the strong desire from GMS member governments to support railway network development. The TA will provide policy advice to support in the preparation of the missing rail links to seek suitable financial and investment support. Details of the nine missing links are included in Appendix 4. The initial cost estimate for total investment of all nine links amount to some \$35 billion and, thus, the need to provide support and advise to consider strategic development of the regional rail network and suitable financing options from nation, donor, or private sector investors. The links vary in length from short sections of under 10 kilometers (km) to links closer to 1,000 km; however, all are important as each will provide the key international connections between GMS countries.

12. TA Description:

The TA will prepare, as a minimum, pre-feasibility studies for the agreed nine priority missing rail links in the GMS. In certain cases, some of the missing links have information and assessment beyond pre-feasibility level and this information will be used for such links to augment the TA studies by adding additional data, analysis and assessment. Based on the findings of these studies, a program for development of the rail network will be presented to GMS countries, together with options for suitable financing modalities. Alternate scenarios reflecting network impact of regional rail development will also be prepared to demonstrate the interactive nature of national and regional plans over time. The policy advice provided by the TA will support the development of regional rail connectivity, in addition and in parallel to the growth of national rail networks, forming a complete rail network in the region.

a. Link to Country Partnership Strategy/Regional Cooperation Strategy

The GMS Economic Cooperation Program Strategic Framework highlights the need for a GMS rail network to promote trade and support regional corporation.⁵ The ADB Transport Operational Plan highlights the increased focus on support to the rail subsector. The R-PATA directly responds to the GMRA Board's request for ADB support to study regional railway connectivity.

b. Impacts

The expected impact of the R-PATA is greater railway connectivity in the GMS.

c. Outcome

The outcome of the TA will be suitable investment program prepared for viable missing rail links.

d. Outputs

The TA has four outputs: (i) pre-feasibility studies for those links with limited data and more detailed feasibility studies where additional information is already available; (ii) criteria prepared to assess and prioritize viable missing rail links; (iii) potential financing modalities for viable missing rail links prepared; and (iv) network impact scenarios developed for alternate regional rail development.

Each of the agreed nine missing rail links will be studied and reports prepared to a minimum of pre-feasibility level of detail. The studies will be based on existing studies and data, which will be augmented with additional data where required. Each of the nine missing rail links will be evaluated for economic and financial viability, as well as to highlight key social and environmental considerations. The findings of the studies will be presented through workshops with respective countries and rail operators in the GMS.

Based on these studies, criteria to assess suitable financing and implementation arrangements to prioritize viable missing rail links from among the agreed nine priority missing rail links will be prepared for discussion and agreement of with GMRA, respective countries, and rail operators. Based on the criteria selected, each of the nine missing rail links will be evaluated and potential implementation time bound horizons prepared. The findings of the prioritization of the viable missing rail links will be presented through workshops to respective countries and rail operators in the GMS.

Potential financing modalities for viable missing rail links will be prepared and presented through workshops to respective countries and rail operators in the GMS. Based on the preferred financing modalities, financing and implementation options will be prepared for the viable missing rail and presented through workshops to respective countries and rail operators.

Network impact scenarios for alternate regional rail development will be prepared in 10-year time bound horizons, from 2015 to 2055. The scenarios will use indicative trade volume flows and alternate trade route transportation costs across to prepare alternate regional rail network development scenarios linked to potential opening dates of missing rail links. The findings of the analysis will propose a regional rail development program for the GMS with horizon years of years of opening of missing rail links. The findings will be presented through workshops to GMRA, respective countries, rail operators, and potential investors, including ADB.

⁵ Footnote 1.

13. Risks	<p>The TA might experience several risks, including: access to relevant information, and potential changes in priorities over time, both at the national and regional level; this will be addressed by ensuring the TA is implemented in close collaboration with national rail bodies and, where possible, through national consultant teams. The relationship of physical connections, technical standards, and interoperability requirements of rail operations may add complexities and thus increase the risk of reaching a suitable solution; an international rail specialist will be included in the TA team to provide the necessary level of specific rail knowledge and expertise to augment the national teams and provide oversight on the regional connectivity and operations of a trans-national boundary rail system.</p>
14. Implementation Arrangements	<p>a. Proposed executing agency: The executive agency for the R-PATA will be ADB, with the Southeast Asia Department, Transport and Communications Division as the focal point. ADB will coordinate closely with the respective GMS governments, national rail bodies, and the GMRA Board on all aspects of the TA implementation. GMRA's working group on Network Connectivity will serve as the steering committee for the TA to ensure close relationship with national plans and priorities.</p> <p>b. Institutional, organizational, procurement, and/or financial management assessments on the executing and implementing agency previously conducted <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>c. ADB inputs ADB will provide 4 person-months of international staff time to manage the R-PATA, supported by a national officer in HQ for 4 person-months.</p> <p>Implementation will require 22 person-months of individual consultants, including 1 international railway specialist for 10 person-months, and 1 national project coordination specialist for 12 person-months. The railway specialist will provide the necessary specific rail expertise for cross-national boundary rail operations, while the project coordinator will ensure smooth working relationships between the national rail bodies, national study teams, the international specialists, and ADB. In addition to the individual consultants, teams will be recruited to prepare the assessment of each of the nine missing links. The team will be composed of international or national consultants and, where possible, such teams will be considered for one or more of the studies. The level of inputs required for this study team will vary as available data and existing studies are at different levels of detail; it is estimated that around 30 person months of consultants will be engaged for the studies. To the extent possible, output-based contracts will be used for study team consulting services. Recruitment of consultants will be done in accordance with ADB's Guidelines on the Use of Consultants (2013, as amended from time-to-time). The consultant's outline terms of reference are included as Appendix 3. Disbursements will be done in accordance with ADB's <i>Technical Assistance Disbursement Handbook</i> (2010, as amended from time-to-time).</p> <p>d. Complementary inputs to be provided by the government and/or other TA providing agencies The GMS governments will provide counterpart staff from relevant agencies and rail operators to support the rail expert and project teams to collate existing data and reports.</p>
15. Nature and/or extent of government and/or beneficiary involvement in identifying or conceptualizing the assistance:	<p>The TA directly responds to the request from GMS countries for further analysis and prioritization of the missing rail links, to benchmark these on a level basis and to enable the full network impacts of regional rail connectivity to be understood and thus focus on those missing links that appear viable under suitable financing structures.</p>
16. Cost Estimates and Proposed Financing Arrangements	<p>The TA is estimated to cost \$500,000 equivalent. It is proposed that the \$500,000 equivalent will be provided on a grant basis is provided from the People's Republic of China Regional Cooperation and Poverty Reduction Fund.⁶ It is estimated that \$350,000 will be required for the consultants, \$100,000 for workshops and data collection, under ADB management and \$50,000 allocated for contingencies.</p>

⁶ Approval from the People's Republic of China Regional Cooperation and Poverty Reduction Fund was received in January 2016 for the amount of \$500,000.

Source		Amount (\$)
ADB		0
People's Republic of China Regional Cooperation and Poverty Reduction Fund		500,000
Total		500,000
^a Administered by ADB. Source: ADB estimates.		
17. Initial assessment on eligibility of expenditure		
<input checked="" type="checkbox"/> Proposed activities are likely to comply with specific fund regulations, agreements and/or guidelines. <input type="checkbox"/> Waiver from the Board may be necessary for exceeding the normal limit of the use of pilot testing on the project approach.		
18. Monitoring and Evaluation		
The TA will be managed by ADB. Stakeholders oversight will be provided through the national rail organizations, relevant line agencies and the GMRA. The findings of the TA will be disseminated to each of the GMS countries as well as to potential donors and investment partners.		
19. Estimated period of TA implementation:		
a.	Approval of TA	February 2016
b.	Physical completion of TA	June 2017
c.	Closing of TA	December 2017

POLICY AND ADVISORY TECHNICAL ASSISTANCE AT A GLANCE

1. Basic Data		Project Number: 42518-024	
Project Name	Connecting the Railways of the Greater Mekong Subregion	Department /Division	SERD/SETC
Country	REG	Executing Agency	Asian Development Bank
2. Sector	Subsector(s)	Financing (\$ million)	
✓ Transport	Rail transport (non-urban)		0.50
		Total	0.50
3. Strategic Agenda	Subcomponents	Climate Change Information	
Inclusive economic growth (IEG)	Pillar 1: Economic opportunities, including jobs, created and expanded	Climate Change impact on the Project	Medium
Regional integration (RCI)	Pillar 1: Cross-border infrastructure		
4. Drivers of Change	Components	Gender Equity and Mainstreaming	
Governance and capacity development (GCD)	Institutional development	No gender elements (NGE)	✓
Partnerships (PAR)	Official cofinancing Regional organizations		
5. Poverty Targeting		Location Impact	
Project directly targets poverty	No	Not Applicable	
6. TA Category:	B		
7. Safeguard Categorization	Not Applicable		
8. Financing			
Modality and Sources		Amount (\$ million)	
ADB		0.00	
None		0.00	
Cofinancing		0.50	
PRC Regional Coop. and Poverty Reduction Fund		0.50	
Counterpart		0.00	
None		0.00	
Total		0.50	
9. Effective Development Cooperation			
Use of country procurement systems		No	
Use of country public financial management systems		No	

PRELIMINARY DESIGN AND MONITORING FRAMEWORK

Impact

The impact of the R-PATA will be greater railway connectivity in the GMS; the project is aligned with the Greater Mekong Subregion Economic Cooperation Program Strategic Framework (2012–2022).¹

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
Outcome Suitable investment program prepared for viable missing rail links	a. By 30 June 2018, investment options for viable missing rail links adopted by the GMRA Board.	a. GMRA Board General Meeting summary report/minutes	Reduced interest for regional connectivity.
Outputs 1. Pre-feasibility studies for those links with limited data and more detailed assessment feasibility studies where additional information is already available for the agreed nine missing rail links 2. Criteria prepared to assess and prioritize viable missing rail links 3. Potential financing modalities for viable missing rail links prepared 4. Network impact scenarios developed for alternate regional rail development.	1. By 30 June 2017, viable missing rail links agreed by GMRA Board and national government rail organizations. 2. By 31 January 2017, criteria prepared for prioritization of missing rail links. 3. By 30 April 2017, alternate financing modalities prepared. 4. By 31 May 2017, network impact report prepared.	1. Consultant reports, and workshop procedures. 2. Consultants reports, GMRA meeting reports/minutes, and workshop procedures. 3. Consultants reports and workshop procedures. 4. Consultants reports, GMRA meeting reports/minutes, and workshop procedures.	International relationships deteriorate and consensus of approach cannot be reached.

Key Activities with Milestones

1. Studies for the agreed nine missing rail links

- 1.1 Collate and review existing study data of nine missing rail links (from 1 May 2016 to 31 July 2016).
- 1.2 Augment studies with additional data where required (from 1 August 2016 to 31 December 2016).
- 1.3 Evaluate nine missing rail links for economic and financial viability as well as highlight key social and environmental considerations (from 1 January 2017 to 31 March 2017).
- 1.4 Present findings through workshops with respective countries and rail operators (from 1 September 2016 to 30 June 2017).

2. Criteria to assess and prioritize viable missing rail links

- 2.1 Prepare evaluation criteria list (from 1 to 31 January 2017).
- 2.2 Discuss and agree criteria list with GMRA, respective countries, and rail operators (from 1 to 28 February 2017).
- 2.3 Evaluate nine missing rail links against agreed evaluation criteria (from 1 March 2017 to 30 April 2017).
- 2.4 Present findings through workshops with respective countries and rail operators (from 1 to 31 May 2017).

¹ ADB. 2011. *Greater Mekong Subregion Economic Cooperation Program Strategic Framework (2012–2022)*. Manila.

Key Activities with Milestones
<p>3. Potential financing modalities for viable missing rail links</p> <p>3.1 Prepare list of financing modalities suitable for rail project investments (from 1 to 31 May 2017).</p> <p>3.2 Present financing modalities through workshops to respective countries and rail operators (from 1 to 30 June 2017).</p> <p>3.3 Prepare preferred financing modality for viable missing rail links (from 1 to 31 July 2017).</p> <p>3.4 Present preferred financing modality through workshops to respective countries and rail operators (from 1 to 31 May 2017).</p> <p>4. Network impact scenarios for alternate regional rail development</p> <p>4.1 Prepare indicative trade volume flows across GMS in 10-year time bound horizons, 2015 to 2055 (from 1 January 2017 to 28 February 2017).</p> <p>4.2 Develop alternate trade route indicative cost options including regional railway network as part of regional, multimodal transport network (from 1 January 2017 to 28 February 2017).</p> <p>4.3 Prepare alternate regional rail network development scenarios linked to potential opening dates of missing rail links (from 1 March 2017 to 30 April 2017).</p> <p>4.4 Propose regional rail time bound development program for the GMS (from 1 May 2017 to 30 June 2017).</p> <p>4.5 Present regional rail development program for GMS through workshops to GMRA, respective countries and rail operators (from 1 to 31 July 2017).</p>
<p>Inputs</p> <p>ADB: \$0</p> <p>ADB will provide 4 person-months of international staff time to manage the R-PATA, supported by a national officer in HQ for 4 person-months.</p> <p>Government: The government will provide counterpart support in the form of counterpart staff, access to information, technical expertise and organization of workshops, and other in-kind contributions.</p> <p>People's Republic of China Regional Cooperation and Poverty Reduction Fund: \$500,000 grant</p>
<p>Assumptions for Partner Financing</p> <p>Not Applicable</p>
<p>ADB = Asian Development Bank; GMRA = Greater Mekong Subregion Railway Association; GMS = Greater Mekong Subregion; HQ = headquarters; R-PATA = regional policy and advisory technical assistance.</p> <p>Source: Asian Development Bank.</p>

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS FOR CONSULTING SERVICES

R-PATA: Connecting the Railways of the Greater Mekong Subregion

- Railway expert (1, international)
- Project Coordinator (1, national)
- Consultant teams for missing rail link studies (estimated 30 person months of national consultants in total spread over each of the nine links)

A. Background

1. The six countries of the Greater Mekong Subregion (GMS)¹ wish to improve railway connectivity to promote efficient, safe, and environmentally-sustainable transport of goods and people in and beyond the GMS. To meet this objective, a GMS railway coordination body, the Greater Mekong Railway Association (GMRA), has been established to develop railway institutional capacity in respective GMS countries, as well as support railway connectivity and interoperability. A Memorandum of Understanding for the GMRA has been agreed by all parties and was signed at the 19th GMS Ministerial Conference in December 2013.

2. Specific objectives of the GMRA are to: (i) ensure that all GMS countries are connected to a rail network by 2020; (ii) develop the institutions and procedures required to effectively integrate the national railways; (iii) promote development of a seamless rail network by agreeing on technical standards of interoperability, and streamlining and harmonizing procedures for cross-border movement of people and goods; (iv) ensure that railway infrastructure and equipment are modern and sufficient to meet the demand for rail services; and (v) involve the private sector in the planning and development of the GMS railway network.

3. In relation to the first objective, to ensure GMS countries are connected to a rail network, agreement was reached at the first GMRA General Meeting in March 2015, to focus efforts on the agreed nine priority missing rail links. In the same meeting, the Board of GMRA formalized the request for ADB support to study railway connectivity through the following: (i) preparation and/or update of studies for the nine identified priority missing railway links; (ii) integration of regional and national railway plans; and, (iii) identify potential investment and financing options for railway rehabilitation and/or construction, the R-PATA will respond to this request. This terms of reference is in direct response to the request from the Board of GMRA.

B. Technical Assistance Scope, Outputs, and Activities

4. The technical assistance (TA) aims to support greater railway connectivity in the GMS. The TA consists of four outputs, each with several activities. The four outputs include: (i) pre-feasibility studies for those links with limited data and more detailed assessment where available for the agreed nine missing rail links; (ii) criteria prepared to assess and prioritize viable missing rail links; (iii) potential financing modalities for viable missing rail links prepared; and (iv) network impact scenarios developed for alternate regional rail development. The activities to be undertaken to complete each of these outputs are outlined below. The international rail expert will be responsible for delivering each of the four TA outputs, activities described in paras. 5 to 8 below and in the specific tasks listed in para. 10. He/she will be

¹ GMS countries include Cambodia, People's Republic of China, Lao Peoples Democratic Republic, Myanmar, Thailand, and Viet Nam.

supported in the preparation of the studies by national teams, as required, their inputs will be defined by the international rail expert once the initial review of existing studies and available data has been undertaken. The project coordinator will assist the ADB and the international railway in the delivery of the TA, especially with respect to coordination with ADB, GMRA, respective countries and rail operators in the GMS, national study teams and in the preparation and delivery of the various workshops to discuss the TA findings.

5. Each of the agreed nine missing rail links will be studied and reports prepared to a minimum of pre-feasibility level of detail and where more details and assessment are available these will be used. The studies will be based on existing studies and data, which will be augmented with additional data where required. Each of the nine missing rail links will be evaluated for economic and financial viability as well as to highlight key social and environmental considerations. The findings of the studies will be presented through workshops with respective countries and rail operators in the GMS.

6. Criteria to assess and prioritize viable missing rail links from among the agreed nine priority missing rail links will be prepared for discussion and agreement of selected evaluation criteria with GMRA, respective countries and rail operators. Based on the criteria selected each of the nine missing rail links will be evaluated against agreed evaluation criteria and potential implementation time bound horizons prepared. The findings of the prioritization of the viable missing rail links will be presented through workshops to respective countries and rail operators in the GMS.

7. Potential financing modalities for viable missing rail links will be prepared and presented through workshops to respective countries and rail operators in the GMS. Based on the preferred financing modalities financing and implementation options will be prepared for the viable missing rail and presented through workshops to respective countries and rail operators.

8. Network impact scenarios for alternate regional rail development will be prepared in 10-year time bound horizons, from 2015 to 2055. The scenarios will use indicative trade volume flows and alternate trade route transportation costs across to prepare alternate regional rail network development scenarios linked to potential opening dates of missing rail links. The findings of the analysis will propose a regional rail development program for the GMS with horizon years of years of opening of missing rail links. The findings will be presented through workshops to GMRA, respective countries and rail operators.

C. Terms of Reference for Specialists

9. **International Railway Specialist (10 person months).** An international railway specialist, with relevant experience in coordination of international rail connectivity, as well as financing options for railway improvements and implementation will be engaged intermittently for 10 months, from May 2016 to July 2017. The specialist should have a relevant degree, preferably at post graduate level, and 10 years of relevant experience, preferably in developing countries.

10. The specialist will work with the GMRA member countries to prepare studies of the agreed nine missing links, prepare criteria to prioritize viable missing links and propose suitable financing modalities. The specialist will also prepare a report of alternate scenarios for network impacts of regional rail development. Specific tasks of the specialists will include, but not necessarily limited to, the following:

- (i) prepare a preliminary assessment of existing studies and data needs and other social and environmental considerations for the agreed nine missing links for the GMS railway network;
- (ii) assess the additional requirements to prepare the studies of each missing rail link, and to ensure a comparable level of detail and information is available for each link;
- (iii) prepare corresponding budget estimate and terms of reference (TORs) for the recruitment of the team of consultants that will undertake the additional studies of each missing link, as required;
- (iv) prepare criteria to evaluate and assess each of the nine missing rail links;
- (v) assist GMRA working group on Network Connectivity, respective countries and rail operators to prioritizing viable missing rail links;
- (vi) prepare suitable financing modalities for viable missing rail links; and
- (vii) prepare a report on alternate scenarios of alternate regional rail development.

11. **Project Coordinator (12 person months).** The national project coordination specialist will be engaged intermittently for 12 months between May 2016 and July 2017. The national consultant should have a relevant degree and proven track record in coordination activities, preferably with a multilateral development organization or similar body.

12. The specialist will support international rail specialist and ADB in undertaking the activities and delivering the outputs for the TA. Specific tasks of the consultant will include, but not necessarily limited to, the following:

- (i) support ADB and the international railway expert in the preparation of the four TA outputs;
- (ii) coordinate with the national railway agencies on their existing studies, relevant data, and national railway development plans;
- (iii) organize missions and meetings with GMRA, national railway agencies and operators to discuss existing studies, data requirements, evaluation criteria, financing options and network impacts of regional rail network development. and
- (iv) raise awareness of the GMS railway network through the development of a website and information program.

D. Preliminary Terms of Reference for the Missing Links Study Team (s)

13. Consultants will be recruited to undertake and/or update assessment for each of the nine identified missing links. The consultant study team TORs will be defined once the international railway expert has undertaken a literature review of existing studies of the nine missing links and evaluated relevant data sources and availability. Depending on the requirements, the study team will consist of specialists with rail operations, signaling, engineering, economic, safeguard, and financial/financing expertise, etc. International expertise will be considered for identical or similar issues covering several countries whereas national expertise will be used to translate relevant national documentation (legal documents, technical standards, etc.) and if required, adjust to national context.

14. It is estimated that around 30 person months of consultants will be required. The detailed list of experts and corresponding person-months will be determined after the initial review by the international railway expert. Output-based contracts will be used for study team consulting services.

E. Deliverables

15. The international specialist will be responsible for preparing reports on each of the four outputs. The international specialist will be expected to attend relevant fact-finding meetings, as well as the GMRA working group and annual meetings and for discussions with respective countries and rail operators in the GMS.

16. The national specialist will support the international specialist in the preparation of the reports. He/she will coordinate with ADB, GMRA, respective countries and rail operators in the GMS, national study teams and in the preparation and delivery of the various workshops to discuss the TA findings.

17. The deliverables for the study team will be defined when their TORs will be drafted.

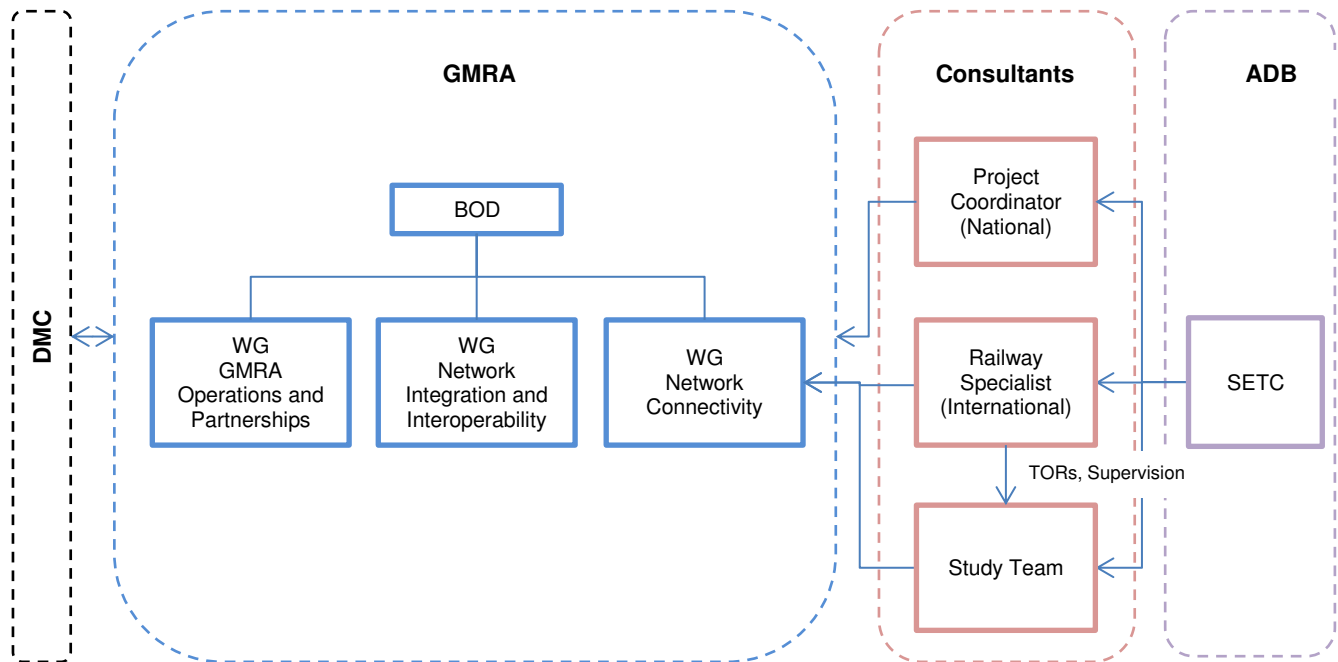
F. Time Schedule and Resources

18. The assignment is for 18 months. The consultants will be funded under ADB's PRC Regional Cooperation and Poverty Reduction Fund, with technical support provided by the Transport and Communications Division of the Southeast Asia Department.

G. Supervision and reporting

19. ADB is the TA executing agency. All specialists will report to and work under the supervision of ADB's Southeast Asia Department and the GMRA Board of Directors through GMRA's working group on Network Connectivity. The two core consultants, international railway experts and the project coordinator will work from ADB Headquarters in Manila to ensure close working relationship with ADB staff and to coordinate activities with each of the GMS countries, and GMRA, including the work activities of the study team for each of the missing links. Field visits to GMRA member countries will be required for all specialists.

Supervision and Reporting Flow Chart



ADB = Asian Development Bank; BOD = board of directors; DMC = developing member countries; GMRA = Greater Mekong Railway Association; SETC = Southeast Asia Transport and Communications Division; TORs = terms of reference; WG = working group

GMRA Priority Missing Links

Corridor	Missing Link	Length (km)	Cost Estimate (\$ million)
Kunming, Ha Noi, HCMC, Phnom Penh, Bangkok (SKRL Main Line)	CAM: Poipet–Border Bridge/Aranyaprathet	6.5	6.5
	THA: Aranyaprathet–Klong Luk Bridge (Border Bridge with CAM)	6.0	3.5
Kunming, Ha Noi, HCMC, Phnom Penh, Bangkok (SKRL Main Line)	CAM: Bat Doeung–Snoul (Loc Ninh)	258.0	1,300.0
	VIE: Loc Ninh (Snoul) –Ho Chi Minh City	129.0	900.0
Kunming, Mandalay, Mawlyaning, Yangon, Bangkok (SKRL West Spur Line)	MYA: Dawei–(Banpunamron)	170.0	N/A
	THA: Banpunamron–Kanchanaburi	88.0	136.0
Kunming, Mandalay, Mawlyaning, Yangon, Bangkok (SKRL West Spur Line)	MYA: Lashio–Muse (Ruili)	232.0	N/A
	PRC: Ruili (Muse) –Baoshan	196.0	3,000.0
Kunming, Vientiane	LAO: Vientiane–Luangprabang–Boten (Mohan)	417.0	7,000.0
	PRC: Mohan (Boten) –Yuxi	504.0	7,200.0
Kunming, Ha Noi, Vung Ang, Thakek, Vientiane (SKRL East Spur Line)	LAO: Vientiane–Thakhek–Mu Gia	450.0	4,119.0
	VIE: Mu Gia–Vung Ang	119.0	N/A
GMS East-West Corridor	THA: Mukdahan–Savannakhet	N/A	N/A
	LAO: Thakhek–Savannakhet–Pakse–Vangtau (Chongmek)	342.0	5,000.0
	THA: Ubonrachatani–Chongmek (Vangtau)	78.0	N/A
	LAO: Savannakhet–Lao Bao	220.0	5,000.0
	VIE: Lao Bao–Dong Ha	114.0	800.0
Vientiane–Pakse–Phnom Penh	LAO: Pakse–Dong Kralor (Voun Kam)	N/A	N/A
	CAM: Voun Kam (Dong Kralor) –Snoul	249.0	1,200.0
Kunming, Ha Noi, HCMC, Phnom Penh, Bangkok (SKRL Main Line)	VIE: Lao Cai–Hekou	4.0	N/A
	PRC: Hekou–Lao Cai	4.0	20.0
Total Estimated Cost			35.685

CAM = Cambodia; HCMC = Ho Chi Minh City; LAO = Lao Peoples Democratic Republic; NA = not applicable; PRC = Peoples Republic of China; SKRL = Singapore-Kunming Railway Link; THA = Thailand; VIE = Viet Nam

