



Submission for Third Review of the Adaptation Fund

Partnership on Sustainable Low Carbon Transport (SLoCaT) - April 2017

This submission was developed by the Secretariat of the Partnership on Sustainable, Low Carbon Transport (SLoCaT), with active support from a number of SLoCaT members¹ and is made on behalf of the full SLoCaT membership listed in Annex 1 in response to request for submissions **to the Third Review of the Adaptation Fund pursuant to Decision 1/CMP.12, Paragraph 3.**

I. Introduction

The Partnership on Sustainable, Low Carbon Transport (SLoCaT) is a multi-stakeholder initiative working on sustainable transport with over 90 organizations representing multi-, and bilateral development organizations; UN Organizations; representative bodies from the transport sector; Business sector; academe and civil-society. For a full list of members of the SLoCaT Partnership supporting this submission see Annex1.

The main objective of the SLoCaT Partnership is to promote the integration of sustainable transport in global policies on sustainable development and climate change.

Over the last two years the SLoCaT Partnership, together with Michelin Challenge Bibendum, acting as convenors of the Paris Process on Mobility and Climate (PPMC) are the focal points of the Transport sector in the Global Climate Action Agenda (GCA). In this role we are consistently trying to raise attention to the importance of adaptation in the transport sector.

The SLoCaT Partnership thanks the Parties to the Kyoto Protocol for the opportunity to submit our views to the Third Review of the Adaptation Fund.

¹ In addition; the SLoCaT Secretariat would like to acknowledge and thank International Road Federation, PIANC and John Dora Consulting Limited for their contribution to this submission.

II. Main Messages of Submission

- Recognise the need to raise attention to the importance of adaptation in the transport sector including in Developing Countries,
- Support and implement a framework of “Quick Win” actions for transport adaptation,
- SLoCaT and the GCA Transport initiatives can provide technical support and advice to the work of the Adaptation Board.

A. Specific suggestions on behalf of the transport and development community:

i. Raise attention to the importance of Adaptation in the transport sector

There is a growing recognition that adaptation must become more widespread in the transport sector, and the COP22 Declaration on Accelerated Action on Adaptation in Transport² underscores the critical need for surface transport systems and services to become more resilient to climate change. To date the transport sector’s action on climate change has been largely focused on mitigation, and the transport and development community launched the Declaration in response to the COP22 Moroccan Presidency’s political priority to increase attention to adaptation.

Organizations and individuals who signed the Declaration are committed to raising the profile of adaptation in discussions on climate change and transport through numerous actions, which include encouraging the development of and adoption of technical standards to ensure that transport infrastructure is climate resilient to reduce minimize future risk; leveraging additional climate finance to shift public and private investments towards more resilient and sustainable transport systems; and developing appropriate monitoring and reporting procedures to improve transport adaptation efforts over time. It is of note that much of the world’s transport infrastructure for the next 100 years has yet to be built, whilst many developed nations have aged networks worth several \$100Bns that were never designed with resilience standards in mind, so attention to both existing and new transport infrastructure is needed.

In just eight days, the Declaration was signed by 395 individuals and by 55 organizations, and the Declaration was presented to UNFCCC Executive Secretary Patricia Espinosa during COP22³.

Low carbon transport has an important role to play in reducing greenhouse gas emissions – only by providing reliable and resilient services will low transport solutions be able to attract and maintain the patronage necessary to maximise its mitigation potential (for passengers and freight).

Adaptation in the transport sector is of particular importance in vulnerable Developing Countries.

The Adaptation Fund could help raise attention to the importance of Adaptation in the transport sector by, inter alia:

- Support to networking and knowledge management activities e.g. the Global Centre of Excellence in Climate Adaptation (GCEA) and for example dissemination of the work done by individual transport modal organizations⁴⁵
- Support to improve the understanding and consideration of transport/adaptation issues in national climate adaptation planning activities e.g. through capacity building activities with national implementing bodies.

² <http://www.ppmc-transport.org/wp-content/uploads/2016/11/Adaptation-Declaration-Final.pdf>

³ <http://www.slocat.net/news/1780>

⁴ https://www.irfnet.ch/files-upload/newsletters/2016/mailling_09112016/IRF_Manifesto_Adaptation.pdf

⁵ <http://navclimate.pianc.org/explore/adaptation>

With the objective to include specific transport adaptation projects in NDC's, NAP and NAPA's to build pipelines of more investable projects for the Adaptation Fund.

- Raise understanding of the close interrelation and interdependence of transport mitigation and adaptation measures.

ii. Quick Wins for Transport Adaptation

The SLoCaT Partnership's mitigation-focused transport "quick win" actions⁶ can be complemented with additional quick wins on adaptation such as those described in Annex II. Effective adaptation and resilience-strengthening needs to be responsive and flexible. Depending on local circumstances, measures might involve the development of early-warning systems; integration of climate risk considerations in transport planning and in transport asset management systems; improvements in maintenance provisions to protect adaptive capacity; refurbishing or retrofitting existing transport infrastructure and services (e.g. through maintenance of rural roads to reduce food loss and waste, a significant contributor to global GHG emissions); and integrating resiliency measures into both new and or replacement transport infrastructure and services (e.g. by engineering rail rights-of-way to withstand more frequent and extreme heat and precipitation events). Indeed, one low-cost strategy being adopted by major infrastructure owners in all sectors, is to adapt infrastructure when replacing existing, life expired assets; the challenge here is for the design engineers and funders to have available standards that are relevant to the future climate, or to adopt an adaptive design policy much as per the TE2100 programme⁷.

The Adaptation Fund could help implement the Adaptation related Quick Wins in transport sector by, inter alia:

- Support for improved maintenance and adaptation of existing infrastructure,
- Support for integration of climate risk considerations in transport planning and transport asset management systems,
- Support for strengthened transport infrastructure and operational resilience,
- Support for the development and dissemination of suitable design and maintenance standards and technical guidance.

iii. Support

SLoCaT and its global network of partners are prepared to provide any technical and policy support or advice necessary to assist the work of the Adaptation Board on transport.

⁶ <http://www.ppmc-transport.org/quick-win-actions/>

⁷ <https://www.gov.uk/government/publications/thames-estuary-2100-te2100/thames-estuary-2100-te2100>

Annex I: Members of the Partnership on Sustainable, Low Carbon Transport (SLoCaT)

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1. African Development Bank
 2. African Transport Policy Program
 3. Agence Française de Développement
 4. Alstom
 5. Asian Development Bank
 6. Association in Peace with the Environment (Guatemala)
 7. Brake
 8. Bus Rapid Transit Centre of Excellence
 9. CAF-Development Bank of Latin America
 10. Center for Clean Air Policy
 11. Centre for Green Mobility
 12. Center for Science and Environment
 13. Center for Sustainable Transport Mexico
 14. Center for Transportation and Logistics Studies, Gadjah Mada University
 15. Centre for Environment Planning & Technology Ahmedabad
 16. China Urban Transport Research Centre
 17. Clean Air Asia
 18. Clean Air Institute
 19. Climate Bonds Initiative
 20. Climate Works
 21. CODATU
 22. Concito
 23. Despacio
 24. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
 25. Dopplemayr
 26. EMBARQ, The WRI Ross Center for Sustainable Cities
 27. European Bank for Reconstruction and Development
 28. European Cyclists' Federation
 29. European Institute for Sustainable Transport
 30. European Investment Bank
 31. FIA Foundation
 32. First African Bicycle Information Organization
 33. Ford Foundation
 34. Global Environmental Facility
 35. Grutter Consulting
 36. Health Bridge
 37. Hewlett Foundation
 38. Innovation Center for Energy and Transportation
 39. Institute for Global Environmental Strategies
 40. Institute for Transportation and Development Policy
 41. Institute of Transport Studies, University of California, Davis
 42. Institute for Transport Studies, University of Leeds, UK
 43. Institute of Urban Transport India
 44. Inter-American Development Bank
 45. International Association for Public Transport
 46. ICLEI-Local Governments for Sustainability
 47. International Energy Agency
 48. International Road Assessment Program
 49. International Road Federation
 50. International Transport Forum
 51. International Union of Railways
 52. Islamic Development Bank
 53. Korean Transport Institute
 54. Michelin Challenge Bibendum
 55. National Center for Transportation Studies, Philippines
 56. Nordic Development Fund
 57. Polis Network
 58. REN 21
 59. Renewable Energy and Energy Efficiency Partnership
 60. Research for Community Access Partnership
 61. Ricardo Energy & Environment
 62. Rupperecht Consulting
 63. Smarter Than Car
 64. SNCF
 65. Stockholm Environment Institute
 66. Sustainable Transport Africa
 67. The Energy and Resources Institute
 68. Transport and Environment
 69. Transport Planning and Research Institute
 70. Transport Research Laboratory
 71. Uganda Road Sector Support Initiative
 72. UNIFE-The Association of European Rail Industry
 73. United Nations Centre for Regional Development
 74. United Nations Development Program
 75. United Nations Department for Economic and Social Affairs
 76. United Nations Department for Economic and Social Affairs for Asia and the Pacific
 77. United Nations Economic Commission for Europe
 78. United Nations Economic Commission on Latin America and the Caribbean
 79. United Nations Human Settlement Program
 80. United Nations Industrial Development Organization
 81. University Capetown
 82. Victoria Transport Policy Institute
 83. Volvo Research and Education Foundations
 84. Walk 21
 85. World Bank
 86. World Business Council on Sustainable Development
 87. World Cycling Alliance
 88. World Health Organization
 89. Wuppertal Institute for Climate, Environment and Energy
 90. World Wide Fund For Nature International
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Annex II. Quick wins for adapting existing transport infrastructure

No.	'Quick win' and associated actions	Why it should be included ...	Who?	When?
1.	Build and embed institutional capacity to identify and manage climate risks Equally relevant to new infrastructure adaptation			
1a.	<p>Raise awareness of climate hazards and risks to existing transport systems, infrastructure and operations.</p> <p>Build and institutionally embed at all levels the capacity to manage climate-related risks, taking into account existing adaptive capacity and asset life cycles.</p> <p>Integrate climate risk considerations in transport planning and transport asset management systems</p>	<p><i>Already locked in climate-related changes [in seasonal or extreme precipitation or temperature, storm activity, wind strength, fog, etc.] as well as an increased frequency of extreme events will affect existing infrastructure – not only transport systems, assets, and operations but also energy, ICT, access arrangements, vehicles and so on.</i></p> <p><i>Resilience can be improved and costs significantly reduced if infrastructure owners and operators are well prepared. There can also be insurance benefits.</i></p> <p><i>In a resource constrained world it is important to prioritize investments based on country defined criteria. Many countries do this through transport planning and through transport asset management systems. It is important to include climate risk considerations into these processes as it will support informed decision making in investment prioritization.</i></p>	<p>International associations Government agencies and policy makers⁸ Transport infrastructure owners and operators Energy companies Technology and service providers Insurance companies Training providers</p> <p>Government agencies and transport infrastructure owner</p>	<p>Immediate</p> <p>Immediate</p>
2.	Develop real-time monitoring and early warning systems; prepare and publicize contingency plans			
2a.	<p>Develop and implement real time monitoring of relevant climate-related hazards and their impacts on the performance of transport systems, infrastructure and operations.</p> <p>Develop early warning systems; use integrated and online technology including smart phone and similar apps to disseminate warnings.</p> <p>Ensure continuous feedback: review, revise and update systems based on experience and evolving good practice.</p>	<p><i>The increased frequency of extreme events presents one of the most urgent challenges for the transport infrastructure sector. Effective early warning systems will be vital, not only to prevent injury or loss of life, but also to enable transport system or asset owners and operators to reduce costs by reducing damage and accelerating post-event recovery.</i></p> <p><i>Linking data on observed climate-related hazards with knowledge of how transport infrastructure was affected by those hazards is essential: it provides observational evidence on the significance of risks / vulnerabilities facing infrastructure, and on critical climate-related thresholds, in turn informing decisions about the need for, and timing of risk management measures.</i></p>	<p>Government agencies Transport infrastructure owners and operators Technology and service providers Insurance companies</p>	<p>By 2020</p>

⁸ Legal/regulatory approaches will also be important in the longer run but are not included here as a Quick Win

2b.	<p>Prepare contingency or disaster response plans; undertake awareness raising, education and training activities on climate hazards and locally appropriate responses.</p> <p>Ensure continuous feedback: review, revise, update systems based on experience and evolving good practice.</p>	<p><i>Vital for business preparedness and resilience; also for safety.</i></p> <p><i>Awareness raising, education and training should involve not only infrastructure owners and operators, but also other organisations involved with the operation of the wider transport network, and local communities because a resilient community is better able to assist with getting the transport network back into operation post-event</i></p>	<p>Government agencies and policy makers Transport infrastructure owners and operators Training providers</p>	<p>Immediate</p>
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3. Monitor asset condition and prioritize maintenance activity to maximize adaptive capacity

3a.	<p>Undertake monitoring of infrastructure condition and performance against climate-related thresholds and sensitivities, and ensure adequate data management in order to:</p> <ul style="list-style-type: none"> (i) fill data gaps and correct inaccuracies (ii) support operational changes and (iii) inform decisions on when to adapt 	<p><i>Monitoring and effective management and use of the data collected are vital for many reasons.</i></p> <p><i>Data gaps can be filled and inaccuracies corrected; for example, refined asset GIS data can be used for accurate determination of locations, heights, etc.</i></p> <p><i>Reference to accurate local data, including when carrying out risk assessments, will facilitate an ahead-of-time understanding of <u>when</u> as well as how transport assets or operations need to be adapted. It can also help avoid maladaptation.</i></p> <p><i>With knowledge from monitoring and review processes, unnecessary expenditure can be avoided, and investments can be planned in advance rather than having to react to a potentially avoidable or unexpected event with high financial consequences.</i></p>	<p>Transport infrastructure owners and operators Technology and service providers</p>	<p>Immediate</p>
3b.	<p>Ensure existing infrastructure assets are adequately maintained to retain existing adaptive capacity as far as practicable.</p> <p>Review and amend operational procedures to ensure climate-related risks are being managed effectively.</p>	<p><i>Maintenance is often not a priority for transport infrastructure owners and operators. However, as experience is gained of the implications of (potentially climate change-related) extreme weather events, it is increasingly clear that effective maintenance (e.g. of drainage systems including culverts and trash screens; flood defence or reservoir embankments; water storage facilities) can significantly reduce infrastructure damage and assist post-event recovery.</i></p> <p><i>Revised or new operating protocols or procedures including optimising the scheduling of certain activities can help to maintain productivity and ensure business continuity and operational efficiency, inter alia by minimising interruptions or damage during an event.</i></p>	<p>Transport infrastructure owners and operators</p>	<p>Immediate</p>

Changes to operations and maintenance

regimes are usually much cheaper than retrofitting.

4. Develop and deliver programs for climate-resilient refurbishment, retrofitting or renewal, using nature-based solutions where relevant

<p>4a. When undertaking refurbishment or renewal, make provision to strengthen resilience and adapt systems and assets (e.g. including energy, ICT and vehicles) to projected climate hazards</p>	<p><i>Whenever infrastructure is due for refurbishment or replacement, system operators and asset owners should ensure that decisions build in climate projections, including observed local trends in annual or seasonal conditions and extreme events. This is essential to improve resilience and minimise the need for unexpected future modification.</i></p> <p><i>Staged or incremental adaptation, based upon climate change scenarios can help avoid locking-in to unsustainable e.g. single option solutions or maladaptation.</i></p>	<p>Government agencies and policy makers Transport infrastructure owners and operators Energy companies Consulting companies</p>	<p>As required</p>
<p>4b. Retrofit existing infrastructure where necessary and practicable, to strengthen resilience and improve longevity taking climate change into account</p>	<p><i>Opportunities for retrofitting (i.e. raising or strengthening physical assets, increasing capacity or otherwise adapting existing infrastructure) need careful consideration. In some cases such action might indeed be the most appropriate solution, but in others retrofitting can prove to be disproportionately expensive; may not be the most cost-effective solution; or may simply not be affordable. Retrofitting can carry a risk of maladaptation.</i></p> <p><i>Retrofitting decisions should therefore be based on the best available information including consideration of existing adaptive capacity and alternatives involving operational change, and taking into account the residual asset life.</i></p>	<p>Transport infrastructure owners and operators Consulting companies</p>	<p>As required</p>
<p>4c. To help manage the impacts of the changing climate, explore opportunities to use nature-based solutions.</p> <p>Develop options based on an understanding of ecosystem services</p>	<p><i>Nature can often help with flexible and climate-responsive solutions, for example to flood and erosion risk and related problems associated with the transport and accumulation of sediment and debris. Making space for water (or room for the river), planting native vegetation or creating landforms, and blue carbon solutions all make use of natural processes and provide examples of working, building or engineering with nature.</i></p> <p><i>Ecosystem-based approaches can provide no-regret options, that are cost effective and easy to implement, and offer multiple additional services such as carbon storage, water filtration, support for biodiversity and recreational value.</i></p> <p><i>Nature-based solutions can be particularly effective where resources are limited.</i></p>	<p>Government agencies and policy makers Transport infrastructure owners and operators Consulting companies International associations Environmental NGOs</p>	<p>As required</p>

Annex III: Quick wins for new transport infrastructure

5. Promote adaptive management and flexibility in infrastructure design through revised design standards, planning processes and evaluation techniques

Also relevant to refurbishing or retrofitting existing infrastructure

5a.	<i>Update new project planning processes to incorporate the risks associated with non-stationarity and other climate change uncertainties</i>	<i>The owners, operators and developers of new transport infrastructure need to understand how to incorporate the implications of the changing climate (e.g. non-stationarity, uncertainties in both emissions and climate change projections) into their project development and design. Transport infrastructure typically has a lifespan of many decades: whenever major infrastructure investments are taking place, the opportunity to 'piggyback' to enhance climate resilience should therefore be taken.</i>	<i>Government agencies and policy makers International associations Transport infrastructure owners and operators Consulting companies</i>	<i>Immediate</i>
5b.	<i>Promote enhanced flexibility in transport infrastructure design to facilitate future modification based on adaptive management principles</i>	<i>Over the decades, design has tended to become more 'exact' based inter alia on increased certainty, with a consequent reduction in the redundancy or adaptive capacity that is now essential to enable infrastructure to cope with climate change. The current non-stationarity across many climate-related parameters, together with the various uncertainties inherent in emissions and related climate projections mean that new transport infrastructure will increasingly need to be designed using probabilistic, risk-based methods, for staged or incremental implementation. Future modification or supplementation of assets and operations will then depend on monitoring outcomes.</i>	<i>International associations Transport infrastructure owners and operators Consulting companies</i>	<i>Immediate</i>
5c.	<i>Review and revise, or prepare new, design standards and construction codes to: (i) accommodate climatic non-stationarity and (ii) promote climate resilience</i>	<i>Existing standards and codes have not typically been prepared with climate change uncertainty and non-stationarity in mind. Design standards and construction codes need to reflect the adaptive management thinking discussed in 5b. above.</i>	<i>International associations Government agencies Standards agencies Consulting companies Academia</i>	<i>By 2020</i>
5d.	<i>Use zoning policies together with permitting procedures to avoid locating new infrastructure in high risk areas</i>	<i>Use planning policies, mechanisms and protocols to reduce risks, avoid conflicts and manage the allocation of space.</i>	<i>Government agencies and policy makers</i>	<i>By 2020</i>

6. Engage all stakeholders including those along the supply chain to exploit opportunities for integration, interconnectivity and efficiency				
6a.	<i>Facilitate the engagement of the full range of stakeholders including those along the supply chain as well as service providers and other ancillary players, to share knowledge and ideas, and maximise new infrastructure resilience</i>	<i>Resilience to climate change is not only about infrastructure assets and operations; it is also about system resilience, business resilience, and societal and environmental resilience.</i> <i>Early, focussed engagement with all interested parties can ensure lessons are learned (e.g. from other sectors) whilst facilitating the identification and implementation of holistic, resilient and integrated solutions including win-win opportunities.</i>	<i>Government agencies International associations Transport infrastructure owners and operators Energy companies Supply chain Insurance companies</i>	<i>Immediate</i>
6b.	<i>Exploit options for interconnected, integrated transportation, promoting connectivity and flexibility at both system and asset level</i>	<i>The future robustness of the transport network will depend in part on improved and efficient interconnectivity, with the ability to switch between modes and/or between routes according to conditions at the time.</i> <i>In developing such solutions, links should be made to existing early warning systems</i>	<i>Government agencies International associations Transport infrastructure owners and operators</i>	<i>Immediate</i>
7. Review and refocus business case development and investment financing criteria to facilitate delivery of climate-resilient infrastructure				
7a.	<i>Review, refocus and enhance economics rules, business case development processes and investment financing mechanisms in line with the above principles (connectivity, flexibility, adaptability)</i>	<i>Existing financing mechanisms in particular usually focus on one-off capital expenditures with no or insufficient resources to support subsequent maintenance or modification. Updated guidelines and mechanisms are needed that consider various climate scenarios and facilitate cost-benefit analysis based on disruption/contingencies.</i>	<i>Investment banks International associations Government agencies</i>	<i>2020</i>
8. Facilitate information exchange, share evolving good practice and feed back into industry guidelines and standards				
<i>Also relevant to existing infrastructure</i>				
8a.	<i>Promote science and technology transfer and the sharing of good practice</i> <i>Develop and promote industry guidelines in relation to the planning, modelling, design and implementation of climate-resilient transport infrastructure</i>	<i>Guidance, best practices, checklists, methodologies and other tools in support of adaptation are urgently required improve consistency, facilitate communication with other stakeholders such as financiers, and reduce transaction costs.</i> <i>There can be significant savings if steps are taken to avoid re-inventing the wheel each time a new transport infrastructure development takes place. Good practices and lessons learned need</i>	<i>International associations Government agencies Transport infrastructure owners and operators Technology companies Consulting companies</i>	<i>Immediate</i>

to feed back into industry guidelines and standards to ensure a continuous learning approach across the sector. Emerging standards on climate resilience (e.g. under ISO, see 5c.) will need to underpin such guidance.