

Why is the Green Roads Toolkit essential?

- 29 million km of roads in Asia and the Pacific region, with a forecast for 8 million km of new roads by 2030!
- 0.4 Billion people in Asia lack adequate road access.
- \$520 billion annual cost of transportation infrastructure
- 36 Billion Tons of CO2 emitted into the atmosphere annually, with the road sector contributing 18% of global CO2 emissions!

Enormous footprint of roads:

The unified MDB commitment to Paris align operations requires the move from regular roads to green roads

We need Best Green Road practices in:

- ✓ Decarbonization
- ✓ Climate resilience/ adaptation
- ✓ Water and land management,
- ✓ Reducing pollution,
- ✓ Improving quality of life,
- ✓ Preserving biodiversity,
- ✓ Disaster preparedness,
- ✓ Sustainably sourcing materials,
- ✓ Fostering inclusive growth.



What is the Green Roads toolkit?

- A tool for maximizing benefits : Focuses on making road projects better while reducing any harm.
- A Collection of Best Practices : Includes 150 different Green Roads practices that can be applied to road management, planning, design, construction, and asset management
- Easy to Search : Organized into nine green themes and can be filtered by different categories.
- Includes additional helpful tools : Comes with checklists and other tools, including assessment of enabling framework
- Customizable Use : Designed to support the creation of tailored road programs that promote sustainability

Green Roads toolkit: practices

Generating overview of relevant best

ADB	META	IRE							-				,	-											
Project Level Application		Step 1: Select Green Fload Theme(s) and project characteristics (Note: Clear all checkboxes in both Step 1 and 2 before making selections)		2 Res	3 W&L □	Dal	5 QoL D	Бio Di	is M	8 9 Mat Inc	TU Con	Saf	12 Aff		Step 2		or(s) align	sina with	the curren	nt conditi	ions or po	icies			
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		Degree of impact	li	ncrement	tal		gressiv	ve			sformativ	ve													
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Green Road Theme	Intervention Area	No. Pracitce Name	1 C0 2	Re	W					8 Ma 9 t Inc		11 1 Saf <i>i</i>		al Card of	and the state of	aderica de con	orested	and by and	Partito Mari	e de de sed	ACC SOLICE AND SOLICE	or Come in	or and a second	Ment Danger	pt.
1. Decarbonization	1.4. Vegetative measures to sequester CO2	1.4.1 Roadside tree planting for sequestering CO2	•			0				0		0										-			
2. Climate Resilience	2.1. Resilient routing/ avoiding vulnerable areas	2.1.1 Moving roads out of channel migration zones		•	0												П								
2. Climate Resilience	2.1. Resilient routing/ avoiding vulnerable areas	2.1.2 Avoid unstable and wet areas		•				C									П								
2. Climate Resilience	2.2. Climate resilient road drainage design	2.2.1 Preventing stream diversion at road-stream crossings		•		0		C)			0													
2. Climate Resilience	2.2. Climate resilient road drainage design	2.2.2 Avoid using multiple small culverts		•																					
2. Climate Resilience	2.2. Climate resilient road drainage design	2.2.3 Climate resilient culvert design		•	0			C)																
2. Climate Resilience	2.2. Climate resilient road drainage design	2.2.4 Road surface drainage to prevent water concentration		•		0		C) (0															
2. Climate Resilience	2.3. Increased Stabilization of road sides	2.3.1 Complete ground cover in disturbed areas		•	0																				

Green Roads Toolkit

Each Practice documentation

includes:

- Description
- Details of the practice
- Examples/illustrations/photos
- Enabling factors
- Costs and benefits
- References

How each practice was documented:

- Generated from project experiences worldwide
- Informed by expert judgment
- Collected through open calls for good practices
- Supported by the Community of Practice

Calling for Good Green Road Practices





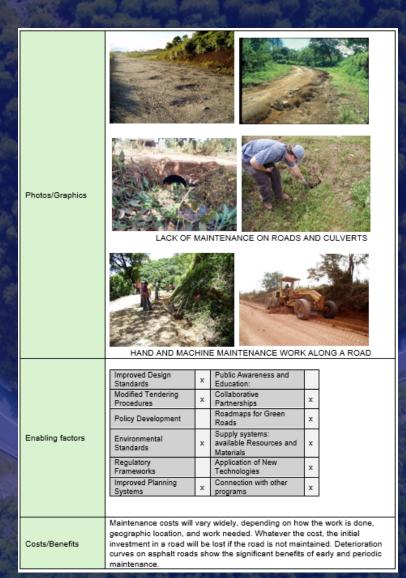




Road Ecology and support from the project team.

Example of practice documentation

2.4.1.	Staying Current on Road Maintenance													
Description	Many roadway drainage problems occur because of lack of maintenance, where ruts form or a road is flat, concentrating water, and leading to erosion and formation of gullies. Culverts that are not cleaned lead to plugging and then damage to re roadway from local flooding. Raveling of a road surface can be a safety problem, as well as dust problems and loss of valuable roadway materials													
	Geography and Climate	Mountainous	Flat	Arid	T	ropical		Pacific Islands						
	Standard of	x Low- Volume/rural	x Paved	x highways		x pressex ghways		x Urban roads						
	road	х		×		×		×						
Area of applicability	Road project	Planning	Design	Constructi	ion/Imple	ementat	tion	Maintena	nce					
	stage	×						×						
	Degree of	Incremental	Prog	ressive		Tra	nsfor	mative						
	impact	х												
Green Road objectives served		N&L Pol	5 6 QoL Bio	7 Dis	8 Mtl	9 Inc	10 Con	11 Saf	12 Aff					
Details of the good practice, incl. examples	Road maintenance is a fundamental part of road management so planned ongoing and recurrent maintenance is a must. Additionally, some maintenance items are occasional and may be in the category of deferred maintenance. A road maintenance plan needs to be developed and executed. Road maintenance typically includes grading and reshaping the road surface, cleaning ditches, clearing brush for sight distance, cleaning culverts, filling potholes, painting or replacing signs, replacing riprap armoring, and periodically surface treatments such as seal coats. Environmentally Sensitive Maintenance is a concept used today to accomplish needed timely maintenance but also to not create environmental problems by excessive grading, removal of too much vegetation, or conducting maintenance at a time harmful to wildlife. Maintenance can be accomplished in a variety of ways, including contracts, Performance based contracts, force account teams, micro-enterprises, or community-based maintenance. All have advantages and disadvantages, but the key is that some maintenance scheme is set up for every road network. Ideally a maintenance group will consist of some mechanized equipment, (such as a grader, compactor, water, and dump trucks, backhoe), and hand laborers to do brushing, pothole filling, culvert cleaning, etc. A road should not be built unless a guaranteed maintenance plan is in olace!!													



Douglas, R. 2015. Low-Volume Road Engineering: Design, Construction, and Maintenance. CRC Press, Taylor & Francis Group. ISBN: 978-1-4822-1263-1, 326 p.

Gesford, A; Anderson, J. 2008. Environmentally Sensitive Maintenance for Dirt and Gravel Roads. PA-2008-001-CP-83043501-0, Pennsylvania State Center for Dirt and Gravel Roads Studies, in cooperation with Commonwealth of Pennsylvania, Pennsylvania DOT, & EPA. Harrisburg, PA

Remarks/Further reading or viewing/References

http://www.epa.gov/owow/nps/sensitive/sensitive.html

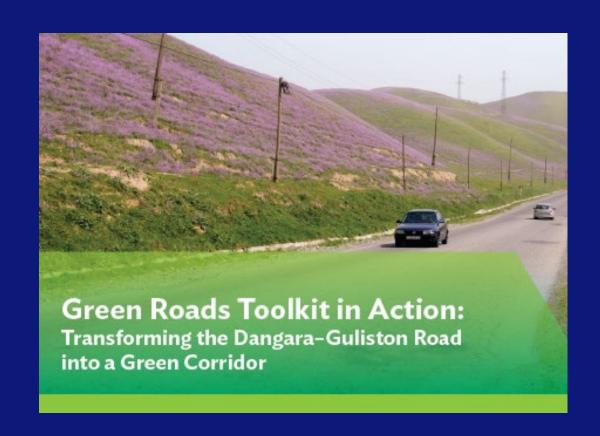
Giummarra, G., Editor. 2009. Unsealed Roads Manual: Guidelines to Good Practice, Third Edition. Australian Roads Research Board (ARRB Group Ltd.). Vermont South, Victoria, Australia. A useful manual for gravel road design and maintenance, particularly in semi-arid regions. http://www.arrb.com.au/admin/file/content/3/c6/LocalRoadsNews69.pdf

World Bank 2010. Highway Development and Management Model-HDM-4, The World Bank Washington, DC. (Available at: http://www.worldbank.org/transport/roads/rd_tools/hdm4.htm)

Toolkit's Application in Tajikistan

Recommendations:

- Decarbonization Initiatives:
 Reuse existing
 materials, implement energy
 lighting, and develop international climate
 financing application for a re
 project along the national road corridors
- Climate Resilience Measures: bio engineering and improved drainage systems to enhance the road's ability to withstand climate -related impacts
- Water Management Improvements
 mudflow control and exploration of water harvesting/reuse options to optimize resource management
- Pollution Control and Biodiversity
 Protection: Safe decommissioning of petrol stations and introduction of underpasses to facilitate cattle and wildlife movements



Green Roads Webinar Series

DISABILITY-INCLUSIVE AND GENDER-RESPONSIVE TRANSPORT



ADB's Transport Sector Office, together with the Gender Equality Division and the Human and Social Development Sector Office, will host a webinar on Gender Responsive and Disability Inclusive Transport this 5 December to mark the International Day for People with Disabilities.

The webinar will explore the barriers people with disabilities face in accessing transport systems and examine how to identify address those barriers through including women and people with disabilities in the design, implementation and monitoring of transport systems projects.



ANTONI TSAPUTRA

Consultant
Disability Inclusion Expert, ADB



Consultant
Disability Inclusion Expert, ADB



PRABHJOT REHAN KHAN Senior Social Development Specialist Gender Equality Division, ADB



CLAIRE CHARAMNAC Social Development Specialist Gender Equality Division, ADB



Thursday, 5 December 2024 | 2:00-3:00 p.m. Manila time (GMT+8)

Green Roads Webinar Series

GREENING ROAD CONSTRUCTION USING LOW-CARBON CONCRETE AND 3D PRINTING



There is still room to reduce the emission of carbon dioxide and the workload throughout road life, even during construction works. Researchers are working on innovative approaches possibly applicable at steps during construction works, such as civil works material production and construction techniques.

This webinar will showcase the Taisei Corporation's recent development of low-carbon concrete using byproducts and 3D printing methods being used for concrete structures. The company has just started to use the technologies at actual project sites in Japan, exploring the applications to other countries. The speakers will present how those methods were produced and are being applied at worksites as well as the impacts of GHG emissions and workload reductions, and discuss their potential uses in future road development projects in the world.



Shigeyoshi MIYAHARA
Taisei Corporation, Advanced Center of Technology



Koji KINOMURA
Taisei Corporation, Advanced Center of Technology

Join via Zoom bit.ly/4g4ScaT

Thursday, 12 December 2024 | 2:00-3:00 p.m. Manila time (GMT+8)

Knowledge Sharing





Join the Green Roads Community of Practice

The Asian Development Bank (ADB) has initiated a green roads initiative by parterning with MetaMeta and the International Roads Federation (IRF Global) to create a Green Roads Toolkit. This comprehensive resource is designed to guide sustainable road development and operations, covering nine key dimensions: decarbonization, climate resilience, water and land management, pollution control, enhancing quality of life, biodiversity conservation, disaster preparedness, sustainable material sourcing, and fostering inclusive economic growth. Accessible via the ADB website, this toolkit serves as a vital resource for stakeholders in the road sector. The Community of Practice offers a platform for professionals and practitioners to exchange insights, successful strategies, and expertise on gree roads.

Webinar Recordings in YouTube



Green Roads Series



