Project Level Application

Step 1: Select Green Road Theme(s) and project characteristics
(Note: Clear all checkboxes in both Step 1 and 2, and select 'All' in Degree of impact before making selections)

1 C02	2 Res	3 W&L	4 Pol	5 QoL	6 Bio	7 Dis	8 Mat	9 Inc	10 Con	11 Saf	12 Aff
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

See the terms used in this sheet in detail via this link: **Glossary**

Geography and Climate	Mountainous	Flat	Arid	Tropical	Pacific Islands
	☑	☐	☐	☐	☐
Standard of road	Low-Volume/rural	Paved highways	Expressed highways		Urban roads
	☑	☐	☐		☐
Road project stage	Planning	Design	Construction/Implementation		Maintenance
	☐	☐	☑		☐
Degree of impact	Incremental	Progressive	Transformative		All
	○	○	○		◉

Step 2:
Select Enabling factor(s) aligning with the current conditions or policies

- ☐ Improved Design Standards
- ☐ Modified Tendering Procedures
- ☐ Policy Development
- ☐ Environmental Standards
- ☐ Regulatory Frameworks
- ☐ Improved Planning Systems
- ☐ Public Awareness and Education
- ☐ Collaborative Partnerships
- ☐ Roadmaps for Green Roads
- ☐ Supply systems: available Resources and Materials
- ☐ Application of New Technologies
- ☐ Connection with other programs

Green Road Practices found **83**

GR objectives served: ● Core contributions ○ Secondary contributions

Enabling factors

Green Road Theme	Intervention Area	No.	Practice Name	1 C02	2 Res	3 W&L	4 Pol	5 QoL	6 Bio	7 Dis	8 Mat	9 Inc	10 Con	11 Saf	12 Aff	Improved Design Standards	Modified Tendering Procedures	Policy Development	Environmental Standards	Regulatory Frameworks	Improved Planning Systems	Public Awareness and Education	Collaborative Partnerships	Roadmaps for Green Roads	Supply systems: available Resources and Materials	Application of New Technologies	Connection with other programs
1. Decarbonization	1.1. Road Network Planning and Road Transport Management	1.1.2	Optimize traffic signal timing	●			○	○					○	○	○	■		■	■	■						■	
1. Decarbonization	1.1. Road Network Planning and Road Transport Management	1.1.5	Facilitate the use of fuel-efficient vehicles	●										○				■	■	■		■		■	■	■	■
1. Decarbonization	1.2. Design of roads and road aplliencies	1.2.5	Use of energy-efficient lighting along roads and in tunnels	●							○			○	○	■		■	■	■	■			■		■	
1. Decarbonization	1.3. Road Construction	1.3.1	Newly emerging asphalt mixtures and compositions	●							○					■	■		■	■				■	■	■	
1. Decarbonization	1.3. Road Construction	1.3.2	Material recycling in road construction	●							○					■	■		■	■				■	■	■	
1. Decarbonization	1.3. Road Construction	1.3.3	Using energy friendly “Green Cement”	●				○			○							■	■			■			■	■	
1. Decarbonization	1.4. Vegetative measures to sequester CO2	1.4.1	Roadside tree planting for sequestering CO2	●	○	○	○	○	○			○		○		■	■	■	■	■	■	■	■	■	■	■	■
2. Climate Resilience	2.1. Resilient routing/ avoiding vulnerable areas	2.1.1	Moving roads out of channel migration zones		●	○										■			■		■			■			■
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		●	○				○						■		■	■	■			■	■		■	■
2. Climate Resilience	2.2. Climate resilient road drainage design	2.2.4	Road surface drainage to prevent water concentration		●		○			○	○					■			■	■		■		■		■	■
2. Climate Resilience	2.3. Increased Stabilization of road sides	2.3.1	Complete ground cover in disturbed areas		●	○										■			■	■		■	■	■	■	■	■
2. Climate Resilience	2.3. Increased Stabilization of road sides	2.3.2	Deep-rooted vegetation for slope stabilization		●	○			○							■			■				■	■		■	■
2. Climate Resilience	2.3. Increased Stabilization of road sides	2.3.3	Hardening road embankments		●											■			■		■		■	■	■	■	
2. Climate Resilience	2.3. Increased Stabilization of road sides	2.3.4	Preventing road surface water concentration		●	○										■			■					■	■	■	■
2. Climate Resilience	2.3. Increased Stabilization of road sides	2.3.5	Armoring the roadway driving surface		●	○					○					■	■	■	■	■	■	■	■	■	■	■	■
2. Climate Resilience	2.3. Increased Stabilization of road sides	2.3.6	Stabilization of unstable cut and fill slopes		●	○										■			■			■	■	■	■	■	■
2. Climate Resilience	2.4. Enhance Climate Resilience of roads and bridges	2.4.1	Need for best engineering practices for climate resilience	○	●						○					■			■		■		■	■	■	■	
2. Climate Resilience	2.4. Enhance Climate Resilience of roads and bridges	2.4.2	Climate adaptation measures for bridges		●											■		■	■	■			■		■	■	
2. Climate Resilience	2.4. Enhance Climate Resilience of roads and bridges	2.4.4	Vulnerability assessment for infrastructure		●					○								■			■	■					■
2. Climate Resilience	2.6. Nature-based Solutions for enhanced climate resilience of roads	2.6.1	Promoting Nature-based Solutions for roads		●	○		○	○							■	■		■			■	■	■	■	■	■
3. Water and Land Management	3.1. Water harvesting and run-off storage	3.1.1	Floodwater spreaders along road surfaces		○	●			○	○		○			○	■		■	■	■	■	■	■	■			■
3. Water and Land Management	3.1. Water harvesting and run-off storage	3.1.2	Directing water to retain ponds/ditches at the roadside		○	●	○		○	○		○				■		■	■	■	■	■	■	■			■
3. Water and Land Management	3.1. Water harvesting and run-off storage	3.1.4	Infiltration structures fed from road drainage		○	●	○	○	○	○		○				■		■	■	■	■		■	■			■
3. Water and Land Management	3.1. Water harvesting and run-off storage	3.1.5	Surface storage fed from road drainage (repurposed borrow pits, ponds and cisterns)		○	●	○		○		○					■		■	■	■	■		■	■			■
3. Water and Land Management	3.1. Water harvesting and run-off storage	3.1.6	Using roads as reservoir embankments		○	●	○		○	○		○				■		■	■	■	■	■	■	■			■
3. Water and Land Management	3.2. Agricultural Water management	3.2.1	Cascading irrigation fed from road drainage		○	●	○		○	○		○				■		■	■	■	■	■	■	■			■
3. Water and Land Management	3.2. Agricultural Water management	3.2.2	Connecting road drainage cuts to farm trenches		○	●	○		○	○		○				■		■		■	■	■	■	■			■
3. Water and Land Management	3.2. Agricultural Water management	3.2.3	Controlled (gated) culverts		○	●				○		○				■		■		■	■	■	■	■		■	■
3. Water and Land Management	3.3. Groundwater management	3.3.1	Use of infiltration bunds for groundwater recharge along roadsides		○	●	○		○	○		○				■		■	■	■	■	■	■				■
3. Water and Land Management	3.3. Groundwater management	3.3.2	Roadside spring protection and management		○	●			○			○				■		■	■	■	■	■	■	■		■	■
3. Water and Land Management	3.3. Groundwater management	3.3.3	Non vented road drifts as sand dams		○	●				○						■		■	■	■	■		■	■			■
3. Water and Land Management	3.3. Groundwater management	3.3.4	Use of water harvesting measures upstream and downstream of the road		○	●	○		○	○		○				■		■	■	■	■	■	■	■	■		■
3. Water and Land Management	3.5. Preventing landslides	3.5.1	Catchment management in sensitive and unstable areas		○	●							○	○	○	■		■	■	■	■	■	■	■			■
3. Water and Land Management	3.5. Preventing landslides	3.5.2	Soil bioengineering for Green Roads		○	●			○	○						■	■		■				■	■	■	■	■
3. Water and Land Management	3.6. Erosion and Gully control	3.6.2	Erosion control options for soil and water protection		○	●			○							■			■			■		■	■	■	
4. Reducing Pollution	4.1. Consider road construction materials	4.1.2	Additives used in road materials as pollutants	○			●				○					■		■	■			■		■	■	■	■
4. Reducing Pollution	4.6. Capture and remove pollutants	4.6.1	Planting roadside grass buffer filter strips to absorb dispersed road runoff pollutants				●		○							■		■	■	■	■						
4. Reducing Pollution	4.6. Capture and remove pollutants	4.6.2	Planting roadside vegetation to intercept road dust and ambient pollutants taking into account distance from the road and aerodynamics	○			●		○							■		■	■	■	■		■				
4. Reducing Pollution	4.6. Capture and remove pollutants	4.6.3	Using special accumulator plants for bioremediation of soils along roads	○			●									■		■	■	■	■		■		■	■	
5. Improving Quality of life	5.1. Dust Control	5.1.1	Road stabilization in towns and rural areas			○	○	●								■			■		■	■	■	■	■	■	■
5. Improving Quality of life	5.1. Dust Control	5.1.2	Binding agents and dust palliatives on unpaved roads					●								■			■			■	■	■	■	■	
5. Improving Quality of life	5.2. Beautification	5.2.1	Scenic roads and roadside facilities					●								■			■			■		■	■		■
5. Improving Quality of life	5.3. Noise control	5.3.1	Reducing noise from roads					●								■		■	■	■	■	■	■	■			
5. Improving Quality of life	5.4. Temperature Control	5.4.2	Separating non-motorized bicycle and pedestrian lanes from vehicles					●				○				■			■			■		■	■		
5. Improving Quality of life	5.5. Traffic Safety	5.5.1	Controlling speed for traffic and pedestrian safety					●								■		■	■			■	■	■			■
6. Preserving Biodiversity	6.1. Protect and harness invertebrea biodiversity	6.1.1	Habitat management						●				○	○	○	■	■	■	■	■				■			
6. Preserving Biodiversity	6.1. Protect and harness invertebrea biodiversity	6.1.2	Developing water points (with road water harvesting) away from roads		○	○			●						○	■	■		■	■							
6. Preserving Biodiversity	6.1. Protect and harness invertebrea biodiversity	6.1.8	Reduce light pollution	○	○			○	●					○	○	■		■	■				■		■	■	

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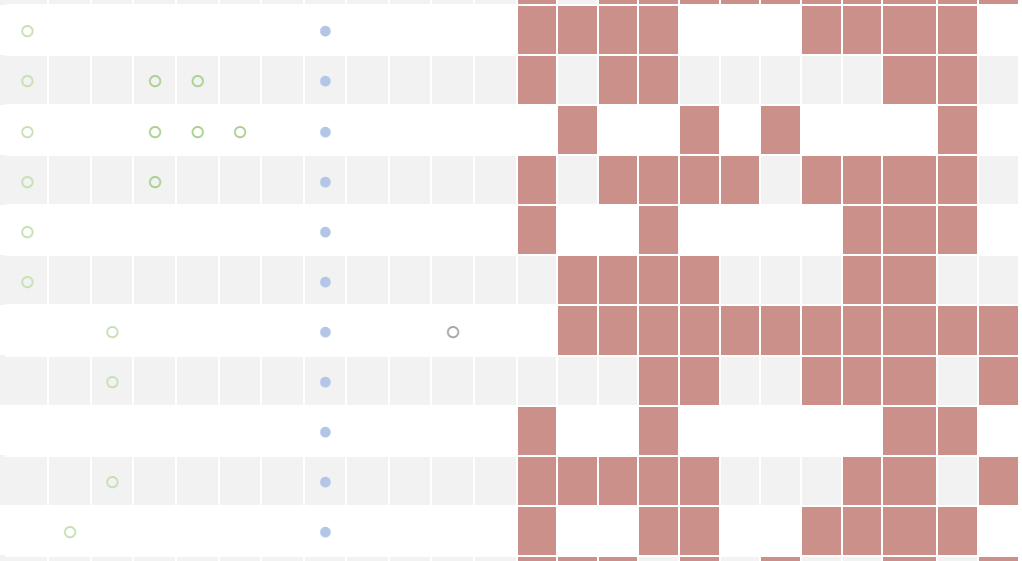
6. Preserving Biodiversity	6.1. Protect and harness invertebrea biodiversity	6.1.9	Creating biodiversity corridors by linking road side tree planting with perpendicular hedges	
6. Preserving Biodiversity	6.2. Protect and harness vertebrea biodiversity	6.2.1	Fencing of sensitive areas	
6. Preserving Biodiversity	6.2. Protect and harness vertebrea biodiversity	6.2.2	Safe passages (culverts, ecoducts, wildlife overpasses and underpasses)	
6. Preserving Biodiversity	6.2. Protect and harness vertebrea biodiversity	6.2.3	Road-side oases and mini-wetlands (fed by road water harvesting)	
6. Preserving Biodiversity	6.2. Protect and harness vertebrea biodiversity	6.2.5	Aerial bridges (Canopy Crossings) for wildlife connectivity	
6. Preserving Biodiversity	6.2. Protect and harness vertebrea biodiversity	6.2.6	Broken road-side vegetation to foster species diversity	
6. Preserving Biodiversity	6.2. Protect and harness vertebrea biodiversity	6.2.8	Defragmentation-reestablishing wildlife migration corridors	
6. Preserving Biodiversity	6.3. Protect aquatic ecosystems	6.3.2	Avoid alteration and sedimentation of streams that affect fishing grounds	
6. Preserving Biodiversity	6.4. Protect Improved roadside flora	6.4.2	Fostering roadside flora: hydroseeding	
7. Disaster Preparedness	7.1. Flood mitigation by road network	7.1.1	Flood compartmentalization by roads	
7. Disaster Preparedness	7.1. Flood mitigation by road network	7.1.2	Roads-cum-flood embankments	
7. Disaster Preparedness	7.3. Road network capacity to deal with emergencies	7.3.1	Road network capacity to deal with emergencies	
7. Disaster Preparedness	7.3. Road network capacity to deal with emergencies	7.3.2	Information Technology (IT) and early warning systems	
7. Disaster Preparedness	7.4. Evacuation and access plans	7.4.1	Emergency communications (signage and messaging)	
7. Disaster Preparedness	7.4. Evacuation and access plans	7.4.2	Emergency traffic management	
7. Disaster Preparedness	7.5. Fire prevention	7.5.1	Access for fire and emergency equipment & fire breaks	
7. Disaster Preparedness	7.5. Fire prevention	7.5.2	Fire break along roads	
7. Disaster Preparedness	7.5. Fire prevention	7.5.3	Use of fire resistance material	
8. Sustainable Materials Sourcing and Construction Practices	8.1. Design	8.1.3	Alternatives to hot mix asphalt	
8. Sustainable Materials Sourcing and Construction Practices	8.1. Design	8.1.4	Polymer modified bitumen (PMB)	
8. Sustainable Materials Sourcing and Construction Practices	8.2. Material choice	8.2.1	Efficient life-cycle use of material	
8. Sustainable Materials Sourcing and Construction Practices	8.2. Material choice	8.2.3	Use of bio-based material as binding agent	
8. Sustainable Materials Sourcing and Construction Practices	8.2. Material choice	8.2.5	Use of marginal materials	
8. Sustainable Materials Sourcing and Construction Practices	8.3. Sourcing	8.3.2	Reduce haulage costs	
8. Sustainable Materials Sourcing and Construction Practices	8.3. Sourcing	8.3.3	Sustainable extraction of building material	
8. Sustainable Materials Sourcing and Construction Practices	8.3. Sourcing	8.3.4	Repurposing of extraction sites (borrow pits, stone/clay removal) flat land-play fields	
8. Sustainable Materials Sourcing and Construction Practices	8.3. Sourcing	8.3.5	Reuse of excavation material	
8. Sustainable Materials Sourcing and Construction Practices	8.4. Operation and Maintenance – tailored to Small Island material options	8.4.2	Environmental analysis and reclamation plan for pits and quarries	
8. Sustainable Materials Sourcing and Construction Practices	8.4. Operation and Maintenance – tailored to Small Island material options	8.4.3	Stabilization of coral rock and sands	
9. Fostering Inclusive Growth	9.1. Local sourcing	9.1.1	Local fair sourcing of material (sand, gravel, bricks)	
9. Fostering Inclusive Growth	9.2. Employment generation and local capacity building	9.2.3	Local community involvements on road rehabilitation – example of Makueni in Kenya	
9. Fostering Inclusive Growth	9.2. Employment generation and local capacity building	9.2.4	Community engagement for planting/maintaining roadside trees	
9. Fostering Inclusive Growth	9.5. Gender and Indigenous population considerations	9.5.1	Promoting gender equality and indigenous populations through road and transport projects	
9. Fostering Inclusive Growth	9.5. Gender and Indigenous population considerations	9.5.2	Making special provisions for persons with disability and elderly	