

Road Infrastructure Maintenance: Lessons from Africa and the Pacific

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Africa Roads

- Road Density: <10 km/100Km²
 - 25% paved
 - Asset maintenance is challenging
 - 6.6km/\$mn GDP (USA 0.7km, world 3.5km)
 - country situations vary widely

Four regional corridors are important, less than 10,000km, \$200 bn in trade

In contrast, secondary and rural roads carry less than 10% of traffic, but are key to increasing agricultural productivity



Regional Comparison of Road Conditions

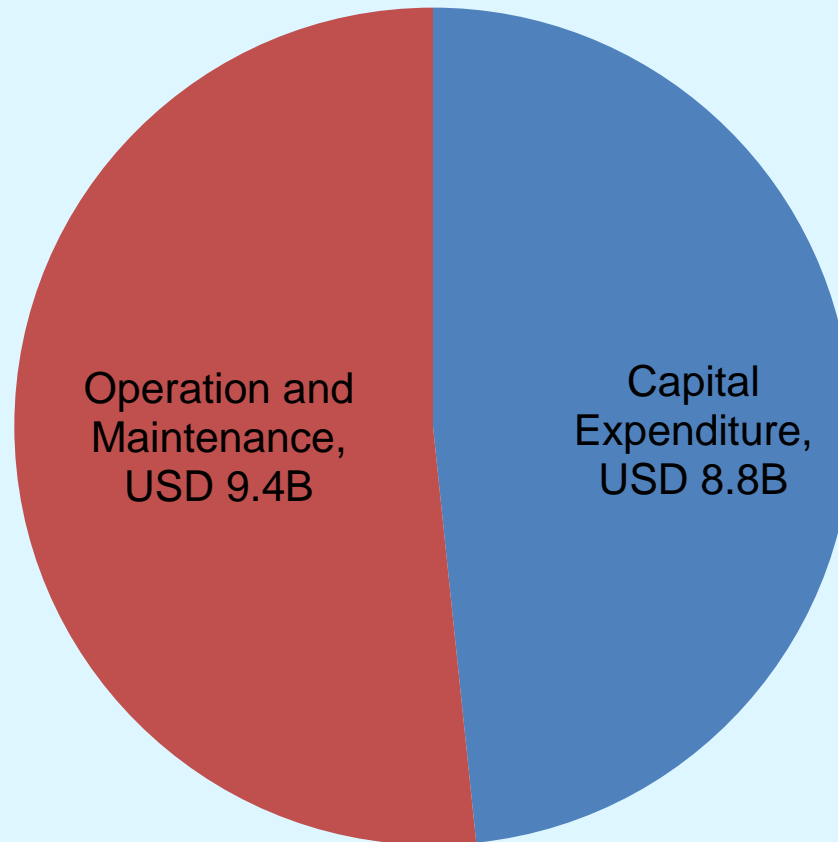
Region	Data Points	Low	Median	High	Data Source
Africa	26	23	64	95	ARM
LAC	11	65	77	100	WRS/WB
Asia	11	4	88	100	WRS/WB
Europe	12	72	100	100	WRS/WB

Caution: cross-regional comparisons are difficult due to differences in classification, measurement date and procedures.

Source: World Bank, AICD 2009



Transport Needs in Sub-Saharan Africa (Mostly roads)



Source: World Bank, AICD 2009



Road Maintenance – Institutional Reform in Africa

Pre-80s

Recognition that poor maintenance was costly . Road Deterioration Models were developed

Mid-80s

Development of “user pays” model followed by Road Sector Reforms. Knowledge sharing fostered

1990s

Road agencies take the lead in road management. Introduction of Second Generation Road Funds

21st Century

Increased acceptance of commercial management of roads.



Road Funds

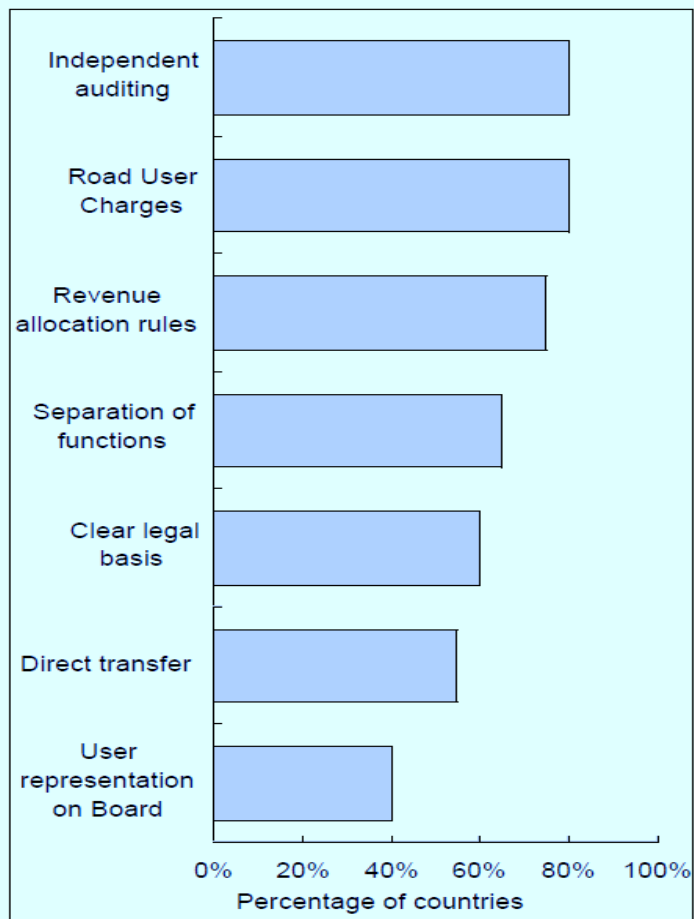
Characteristics of Second Generation Funds

- Clear legal basis
- Separation of financing and technical functions
- Establish road user charges
- Direct transfer of revenues
- User representation on Board
- Clear revenue allocation rules
- Independent auditing
- Public reporting

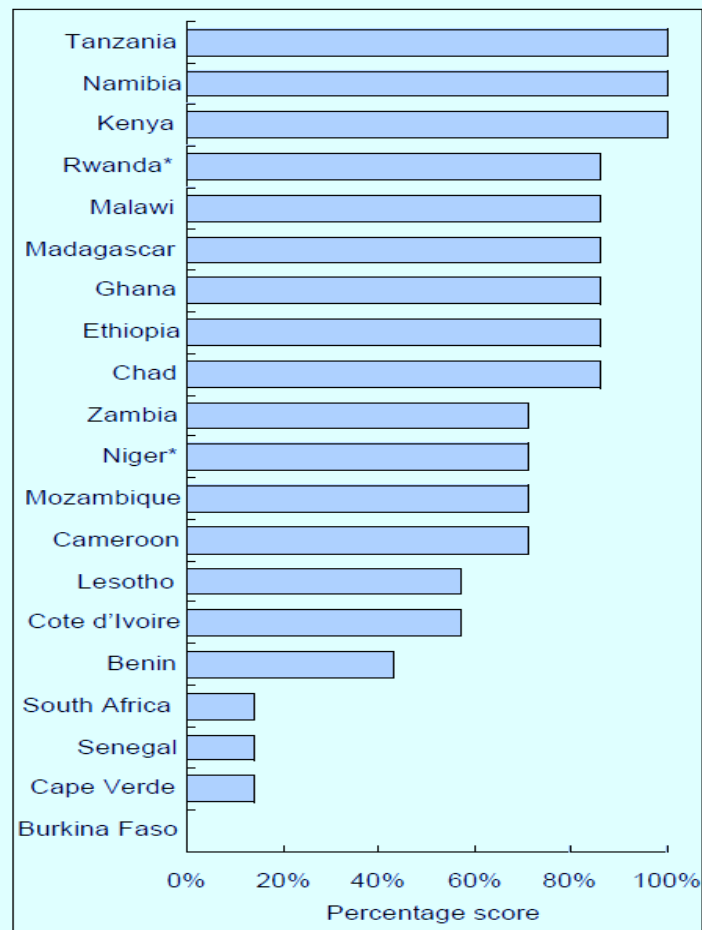


Roads Funds in Africa

(a) Prevalence of second-generation characteristics



(b) Scores on overall performance index



Source: World Bank, AICD 2009



Experience with Autonomous Road Agencies

- Agency approach seeks to split execution from strategy.
- Ideally overseen by a CEO with a Board which includes private sector.
- Choice of leadership and constitution of Boards have been mixed.
- But agency approach, with financing, have broadened maintenance alternatives.



Policy and Quality (1)

-Percentage of main road network in good or fair condition

Macro		Institutions	
-MIC	81	- RF & RA	82
- LIC (aid)	75	- RF only	70
- LIC (oil)	70	- RA only	62

Geography		Financing	
- Coastal	77	- Low levy	70
- Island	65	- High levy	79
Landlocked	73	- No levy	75



Policy and Quality (2)

-Percentage of rural network in good or fair condition

Macro		Institutions	
-MIC	57	- RF & RA	63
- LIC (aid)	53	- RF only	50
- LIC (oil)	57	- RA only	49

Geography		Financing	
- Coastal	58	- Low levy	53
- Island	15	- High levy	56
- Landlocked	53	- No Levy	52



Policy vs Quality (3)

Policy impact on main roads:

- an RF by itself is only marginally more effective than an RA
- together, RA and RF make a significant difference
- RF quality also has significant correlation
- countries with higher fuel levies do slightly better but not by much

BUT, policy does not have much impact on rural roads

- Resource allocation often driven by local considerations and priorities
- Technical capacity less readily available
- Measurements may be less accurate

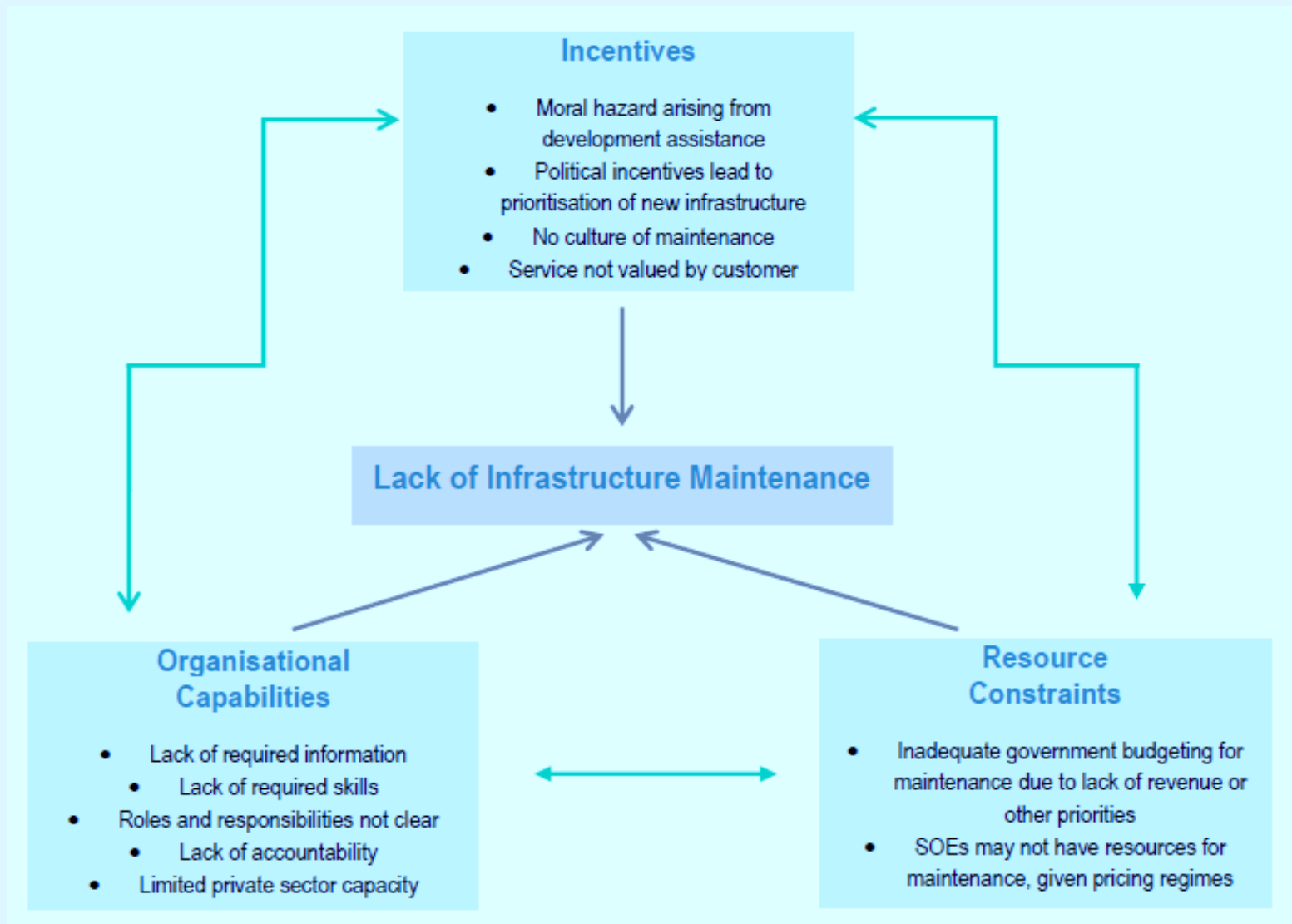


Challenges in the Pacific Islands

- “Poor maintenance limits the capacity of the region’s assets to provide the sustained services for which (they) were designed.”
 - ADB, 2007
- “In the Pacific, governments have often focused on building new infrastructure, rather than investing in sustainable infrastructure operations and maintenance”
 - World Bank, 2006
- “... O&M expenditures have a low priority in government budgets as they are less appealing and visible than new investment projects... Moreover, donors have facilitated ... investment projects while providing little support for recurrent costs ...”
 - IMF, 1991



Reasons for poor maintenance



But what is common?

PICS have much smaller networks, but they do need:

- user input in planning (governance arrangements)
- dependable financing (road user fees, funds?)
- maintenance requirements visible in planning and donor coordination (strategies and national plans)
- pragmatic approach to include private sector (commercialization, maintenance contracts)
- targeted approaches for outer islands and remote communities (labor based methods)
- climate change adaptation, to the extent affordable



Commercialization – the Samoan approach

- Strong leadership and political will and consultative approach
- Phase 1: 2002:
 - PWD technical activities spun off in three firms
 - staff given options ranging from compensation to joining new firms
 - assured contracts to firms for 3 years
- Phase 2: 2003
 - SAMS asset management system set up
 - new PWD (managing outsourced contracts) absorbed in new ministry of infrastructure
- Phase 3 : 2009
 - autonomous Land Transport Authority created to take over SAMS and managing all contracts.



Funding for roads

Solomon Islands National Transport Fund

- the fund has focused donor and government funding priorities
- maintenance and rehabilitation funding share has increased
- partner funding is increasingly channeled through the NTF
- early results are promising , needs to be evaluated in a few years

Papua New Guinea National Road Fund

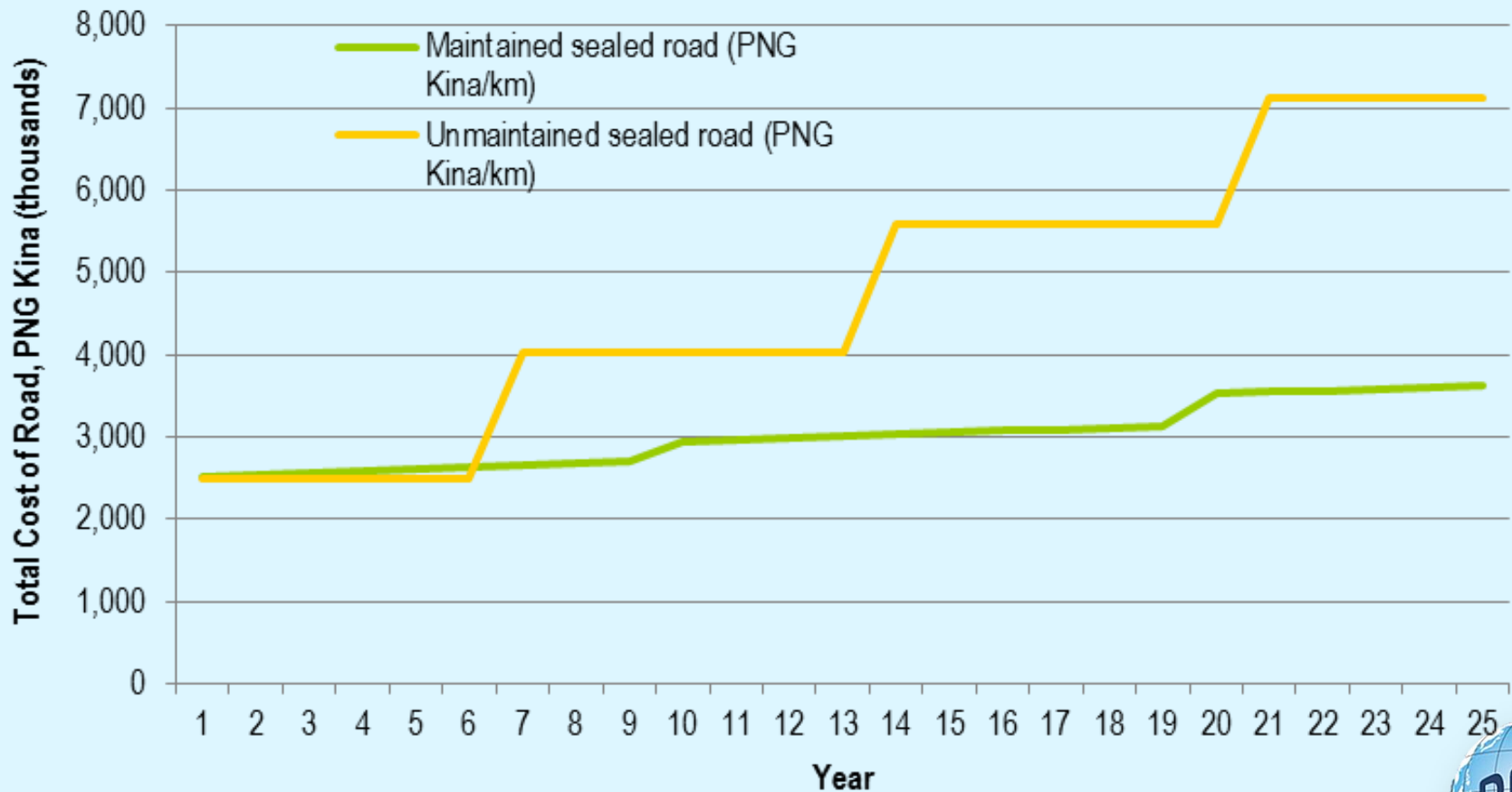
- Road Authority and Road Fund, with independent Board oversight
- NRF has been able to ensure road maintenance funds are not diverted
- has introduced long-term (3-10 yr) maintenance contracts, and incentives such as bonuses and penalties
- but funding is inadequate, and promised levies have not materialized

Tonga Road Fund

- Recently established , to be operational by 2016.



Costs of Maintaining a Sealed Section of National Road in PNG



Source: PRIF: Challenging the Build Neglect Rebuild Paradigm, 2013



Labour-based approaches in infrastructure: Some definitions

Approach		Prioritise use of labour	Hand tools only	Optimal use of labour	Maximum use of labour	Use of small-scale equipment only <u>and</u> labour	Typical project labour content (Source: ILO, Iraq, 2005)
Labour-Based Approach (LBA)	Employment-intensive (EI)	X		X			40-80%
	Labour-intensive (LI)	X	X		X		<80%
	Labour-Based and Equipment-Supported/ Appropriate Technology (LBES/LBAT)	X				X	<40%
Equipment-Based (EB)							5-15%

Source: PRIF Review of LBA approaches – to be published



Pros and cons of labour-based maintenance

	Advantages	Disadvantages
Economic	<ul style="list-style-type: none"> • Lower Costs • Income generation: employment of local unskilled labour • Capacity building: employability of workers is enhanced • Private Sector Development: promotes micro-enterprises 	<ul style="list-style-type: none"> • Risk of unfair wages and other predatory practices • Short-term employment with little impact on structural unemployment and lack of skills • Private sector development will require formalization of approach
Social	<ul style="list-style-type: none"> • Empowerment: local communities are empowered and entrepreneurship encouraged • Community: workers can remain in own communities for socio-economic reasons. 	<ul style="list-style-type: none"> • Slow process: will take time to educate and train • Unless employment is sustained, workers may feel abandoned after project.
Engineering & Technical	<ul style="list-style-type: none"> • Best in areas where heavy equipment is not feasible (remote, topography, etc) 	<ul style="list-style-type: none"> • extent of earthworks, availability of local materials etc. may pose limitations. • Longer work period • Quality may be poorer.
Institutional	<ul style="list-style-type: none"> • Labour and contractors can organize relatively easily • Capacity is built, and life-skills are enhanced. 	<ul style="list-style-type: none"> ▪ Administration of several small contracts could be burdensome ▪ Detailed supervision needed.



Labor Based Maintenance: Lessons from Africa, Asia, Latin America

- programme objectives must be clear
- technical appraisals should be thorough
- participation of beneficiary communities and local government in programme design is essential
- the approach must be defined (e.g., use of force account, micro-enterprises, established contractors and community organisations)
- productivity and labour costs must be addressed up-front.



LBA: What has worked - what has not worked?

Solomon Islands

- + Successful and effective, particularly inclusion of women through clearly defined processes.
- + National private contractors engaging 100% national communities
- + Partly in response to youth unemployment and fragile post conflict conditions.
- + Extension into labour-based urban services.
- + Participants were able to start small canteens and sell goods

Vanuatu

- Much of roads were beyond normal maintenance, resulting in construction training rather than maintenance
- The basic philosophy of road maintenance was not promoted and introduced, resulting in a non-homogenous approach to road management
- Very limited improvement in financial and planning management skills were achieved



Some closing thoughts

- PICS focus on maintenance has been late, but the picture is changing
- more clarity in budget & expenditure frameworks on the cost of maintenance is needed.
- Investment plans must place as much emphasis on maintaining assets as in new investments
- Importance of donor agreements (e.g. NTP in SI) that keep the focus on maintenance.

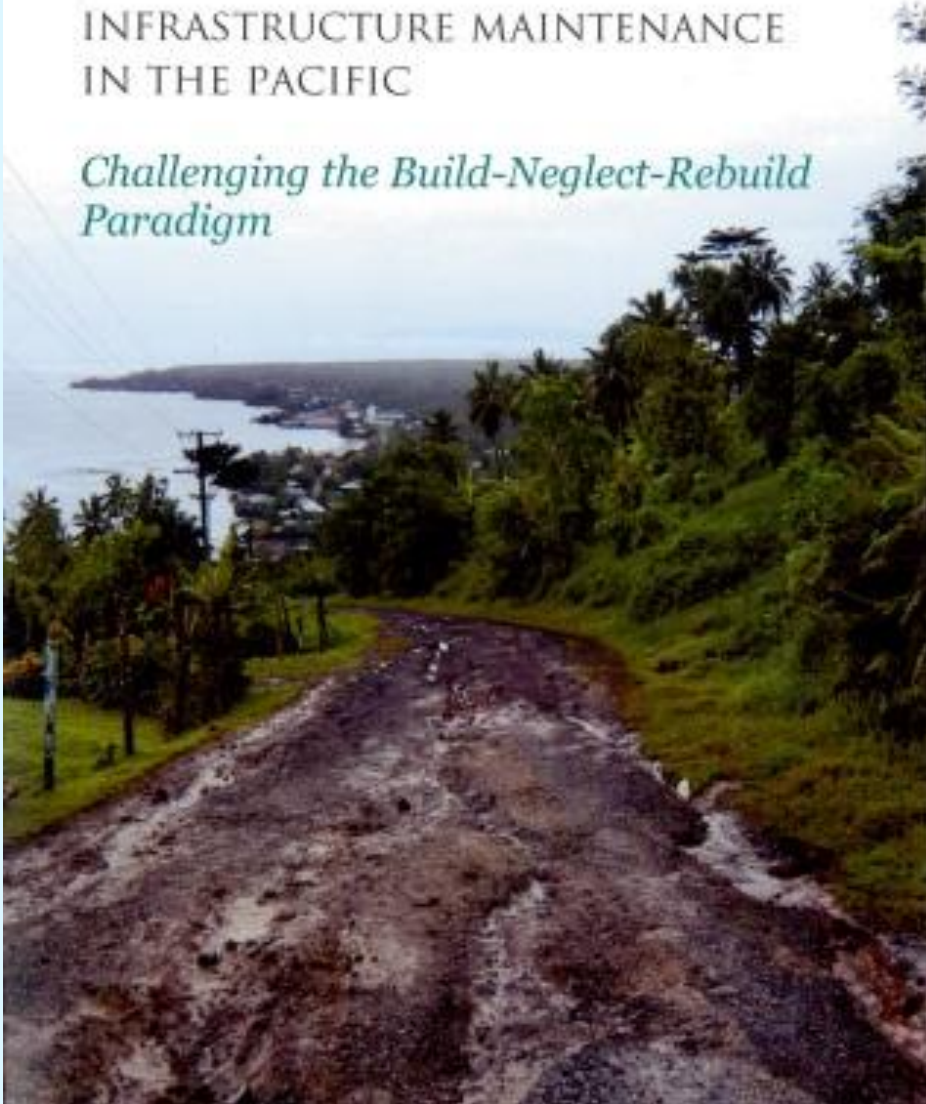




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