CONSERVATION POLICY IN BRIEF

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ROADS FILTER: IDENTIFYING HIGH-RISK ROAD DEVELOPMENT IN THE AMAZON BASIN

Over the past few decades, national and regional Amazonian governments have endorsed the rapid expansion of road construction. This attitude persists today and drives continued road integration plans within the region, for example, the Initiative for the Integration of South American Regional Infrastructure (Iniciativa para la Integración de la Infrestructura Regional Sudamericana: IIRSA). However, road development can bring high environmental costs and may accrue benefits to only a limited number of stakeholders. Within the region, roads have long been linked to deforestation; in the 1990's 80% of all deforestation in the Brazilian Amazon occurred within 100 km of the five major road networks (Alves 2002). Deforestation leads to biodiversity loss, the displacement of indigenous and non-indigenous communities, the spread of disease, as well as global impacts such as increased greenhouse gas emissions and reduced carbon storage.

When do roads' benefits outweigh their costs? Economic feasibility studies can provide the answer, but time and financial limitations mean that many of these studies fail to accurately represent roads' full costs. Further, studies are seldom done comparatively, so governments can't effectively prioritize. In order to determine which road development projects warrant closer, more detailed examination, CSF has developed the Roads Filter Tool. Rather than examining roads one at a time, the Roads Filter compares an array of potential road investments, identifying the projects that merit closer scrutiny due to their associated risks.

We have applied the Roads Filter to 36 road construction and improvement projects across five countries in the Amazon region. The original list was compiled through interviews with conservation experts in each country and contains projects perceived as posing some degree of threat to natural ecosystems. The Roads Filter ranks selected projects depending on their level of economic, environmental, socio-political, and cultural risk (or inversely, the potential to accomplish conservation by changing road plans). The overall risk of each project is assessed through an index built from 17 variables (Table 1).

Table 1. Variables grouped according to category

Economic (ECO)	V1. Investment cost
	V2. Topography (an approximation to maintenance cost)
	V3. Regional Gross Domestic Product (GDP) (municipalities that are crossed by road)
	V4. Population density
	V5. Gross agricultural revenue
Environmental (ENV)	V6. Tree cover
	V7. Presence of wetlands
	V8. Average water balance
	V9. State of ecosystem conservation
	V10. Proximity to conservation areas/indigenous territories
	V11. Length of roads
	V12. Type of investments (new road v. upgrade)
Social (SOC)	V13. Level of opposition to road projects by affected population
	V14. Violation of legal norms
	V15. Existence of external pressure favoring a road project
Cultural (CULT)	V16. Existence of population in voluntary isolation
	V17. Possibility of archaeological damage

In order to combine quantitative and qualitative variables in index form, variables are represented as a numerical value between 1-5, with 1 being the best (least risky) in terms of economic feasibility and low environmental, social and cultural impacts.

Application of the Roads Filter Tool identified the following ten Amazonian roads as those with the highest risks of generating environmental, socio-political, economic, and cultural losses (Table 2). These roads present the greatest opportunities for conservation, in the sense that changing them or redirecting investment will have elevated environmental benefits and minimal – if any – economic cost.

The Filter indicates that these projects warrant more detailed analysis to confirm their real costs and benefits and guide planning and advocacy. For example, results suggest that the Colombian "Transversal de las Américas," which spans part of the Caribbean Road Corridor, presents the greatest risk overall. This project, aside from presenting the worst overall score, has the highest investment/km costs of all the roads analysed and connects only regions with limited economic activity. Despite these shortcomings, the project was declared a strategic priority by the Colombian government to boost exports. Considering only the environmental criteria, the road that poses the highest environmental risk is the one linking Iberia – Itahuanía – Cusco in Peru. The proposed road crosses the buffer zones of the Manu National Park and the Amarakaeri Communal Reserve, as well as other pristine areas.

As with any index, the output of the Roads Filter gives a comparative measure, valid only for the 36 roads examined, but takes an effective step towards highlighting those road infrastructure projects of greatest concern and in need of more thorough analysis. Output from the Roads Filter makes it possible to direct conservation attention to those projects which present the highest risk levels, overall or for categories of interest. Effort should be geared towards achieving more accurate and conclusive in-depth assessments of these projects' economic, environmental, socio-political, and cultural implications.

Application of the tool and follow-up assessments can improve decision-making to favor both conservation and cost-effective accomplishment of transportation infrastructure goals.

The Roads Filter can be accessed online by clicking here.

Table 2. 10 roads with highest combined risks as generated by the Roads Filter

Country	Route	(ECO)	(ENV)	(SOC)	(CULT)	Total
Colombia	Transversal de las Américas	3.89	3.48	2.4	1	3.41
Brazil	BR – 319	3.37	3.82	1.7	1	3.29
Peru	Conneccíon Pucallpa – Cruzeiro do Sul	2.58	3.44	5	3	3.23
Peru	Purus – Iñapari	2.85	3.85	1.6	3	3.18
Colombia	Nuquí – Las Ánimas	3.56	3.48	1.3	1	3.17
Peru	Iberia – Itahuanía – LD Cusco	2.52	4.01	2	3	3.16
Brazil	BR – 156	3.54	3.17	2.7	1	3.16
Bolivia	Chiati – Lurasani	3.84	3.06	1.6	1	3.1
Bolivia	Villa Tunari – San Ignacio de Moxos	2.61	3.73	3.3	1	3.1
Ecuador	Emblase Compensador Coca Codo Sinclair	3.09	3.35	2	3	3.09

NOTES:
1. Conservation Strategy Fund
2. Conservation International

Alves, D.S. (2002) Space-time dynamics of deforestation in Brazilian Amazônia. International Journal of Remote Sensing, 23(14): 2903-

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To obtain the full report, please visit **http://conservation-strategy.org/sites/default/files/field-file/CSF_Filtro_de_carreteras_2011_2.pdf**.

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