

The invisible ditch that empties our rivers

Why a century of road engineering could amplify floods, accelerate the drying of the land, and increase its vulnerability to wildfire.

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I saw a culvert collapse in a single night.

This was not an isolated accident. After 35 years in the field, I finally came to see it as a failing system.

For 100 years, a good road had to drain the water.

It was a good answer to the right problem: protecting bearing capacity, freeze-thaw resistance, and structural safety.

**The problem is not the local logic.
The problem is its cumulative effect.**

Ditches become a network.

Thousands of kilometres of ditches, culverts and compacted surfaces can act as a second drainage network superimposed on the watershed.

57%

**of the studied road network acted
as a flow path.**

Some segments drained directly into waterways. Others created new erosion gullies.

Source: forest hydrology research synthesized by Green Roads for Water.

Where a road sits can matter as much as how it is built.

Network close
to streams

+46%

peak flows

Network repositioned
away from streams

<2%

peak flows

Same territory. Two configurations. Two completely different hydrological impacts.

A road can cut off lateral infiltration.

On a slope, water does not flow only at the surface. A road can intercept it, concentrate it and redirect it to a single point: the culvert.

The water removed today will be missing tomorrow.

Some of the water that could have recharged the soil leaves the territory too quickly.

The underground reserve that supports streams, trees and communities becomes more fragile during dry periods.

THE REFERENCE CLIMATE HAS CHANGED

**Too much water too fast.
Then too little water retained.**

More intense rainfall, separated by longer dry periods,
makes rapid drainage increasingly unsuitable.

It is no longer enough to ask:

"Can this road support the expected traffic?"

We must also ask:

"How does it change the watershed?"

**Direct the water.
Do not simply evacuate it.**

**Retain · slow · distribute
infiltrate · filter**

An access infrastructure should no longer simply cross a territory.
It should contribute to its resilience.

What if our roads could serve the territory, instead of simply crossing it?

Engineers, hydrologists, foresters, municipalities: when was the last time a road project was assessed for its effect on the downstream water table?

Full articles: [English](#) · [Français](#) — links in the first comment.

To go further

Full references and links are included in the long article.

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