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# From plot to basin erosion in the Sahel: An alternative method to assess siltation risks for small reservoirs in the Volta Basin

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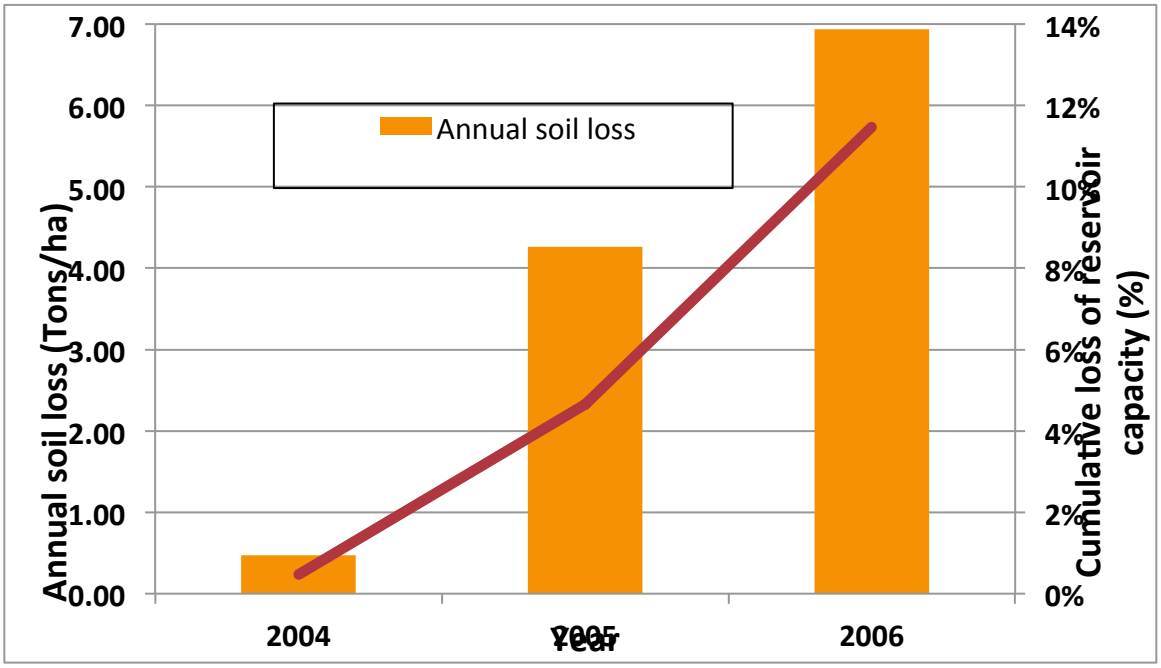
## Key Message

The widespread development of small reservoirs in the Volta basin is vital for socio-economic development of local communities, mainly for Sahelian areas where water resources are scarce. Nevertheless, these small reservoirs are undergoing serious risks of siltation, losing up to 7% of their useful capacity each year.

## Summary

Monitoring siltation processes in small reservoirs in the Sahel, and mainly in the Volta basin, is not frequent because of the high cost of the operation. We used in this study an alternative method to assess risks of siltation of a small reservoir in the Nakanbe basin in Burkina Faso (upper basin of the Volta basin). A small research catchment (37 km²) was monitored during 3 years (2004-2006) and erosion was measured at plot (1 m²) and catchment scale. At the plot scale, the different soil surface characteristics were equipped and their erosional response was measured. The results obtained at local scale were upscaled at the catchment scale based on the proportion of each soil surface types within the catchment. This gross erosion was compared to erosion measures at the catchment outlet and an exportation fraction was determined. This methodology was applied on the watershed of a small

reservoir in the same area and presenting the same soil surface features. This enabled to assess for these three years (2004, 2005 and 2006) the total annual soil loss on the watershed. This annual soil loss represented the potential soil deposit in the small reservoir at the outlet. We found that the reservoir lost up to 7% of its useful capacity per year, compromising the socio-economic activities (fishery, gardening, etc.) of local populations for the coming years.




**THIS FIGURE PRESENTS THE EVOLUTION OF SOIL LOSS BY WATER EROSION ON THE RESERVOIR WATERSHED (418 KM²) FOR THREE YEARS OF STUDY (2004, 2005 AND 2006). SOIL EROSION AND DEGRADATION IS SIGNIFICANTLY INCREASING FROM ONE YEAR TO ANOTHER. THE POTENTIAL ACCUMULATION IN THE RESERVOIR REPRESENTS A LOSS OF CAPACITY OF ABOUT 12% OVER THE THREE YEARS.**