**Title: Post-fire riparian vegetation management to improve sediment retention**

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**Abstract**

Riparian forests are natural biofilters by trapping sediments generated on the hillslopes before they reach the stream network. Some structural characteristic of the riparian forests, such as buffer width, strata complexity and patch heterogeneity are thus key drivers for the maintenance of water quality in river systems. This thesis aims to investigate the effects of the riparian spatial configurations (changes in width, length, continuity, vertical structure and species zonation) on post-fire sediment retention capacity.

The study area is locate in Alva catchment, a sub-basin of Mondego River, burned by the severe wildfires of 2017. Post-fire sediment yield will be estimated using the Index of Sediment Connectivity (IC) proposed by Borselli et al. 2000. A field campaign was conducted in the Spring of 2019, to estimate the risk of soil erosion in the riparian and surrounding areas, by selecting burned and un-burned (control) sites along a lateral valley gradient. Soil core samples (up to 20 cm depth) were also collected. The percentage of charcoal particles (>2mm) identified in the riparian soil and sediments will be used to calibrated the IC index concerning the riparian sediment retention capacity.

Current riparian spatial configurations will be obtained by visual classification of high-resolution Unmanned Aerial Vehicle (UAV) imagery. Then, we will test different scenarios of riparian width, length, continuity, vertical structure and species zonation (bands of different species) to investigate the effects in sediment retention (% of change).

This theme offers the opportunity of participating on a top-priority environmental issue (post-fire management), and develops simultaneously a sound research question. The study is integrated in an ongoing CEF-project, addressing a real-world example, and thus results will be convert in concrete management actions in order to facilitate the restoration of priority areas.