

CASE STUDY: Guadiamar  
COUNTRY: Spain  
Partner 19, IRNAS-CSIC

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## Summary of research done and main results in the Guadiamar study site

### Background

The main threat in the Guadiamar valley is soil contamination after a mine spill occurred on April 1998.

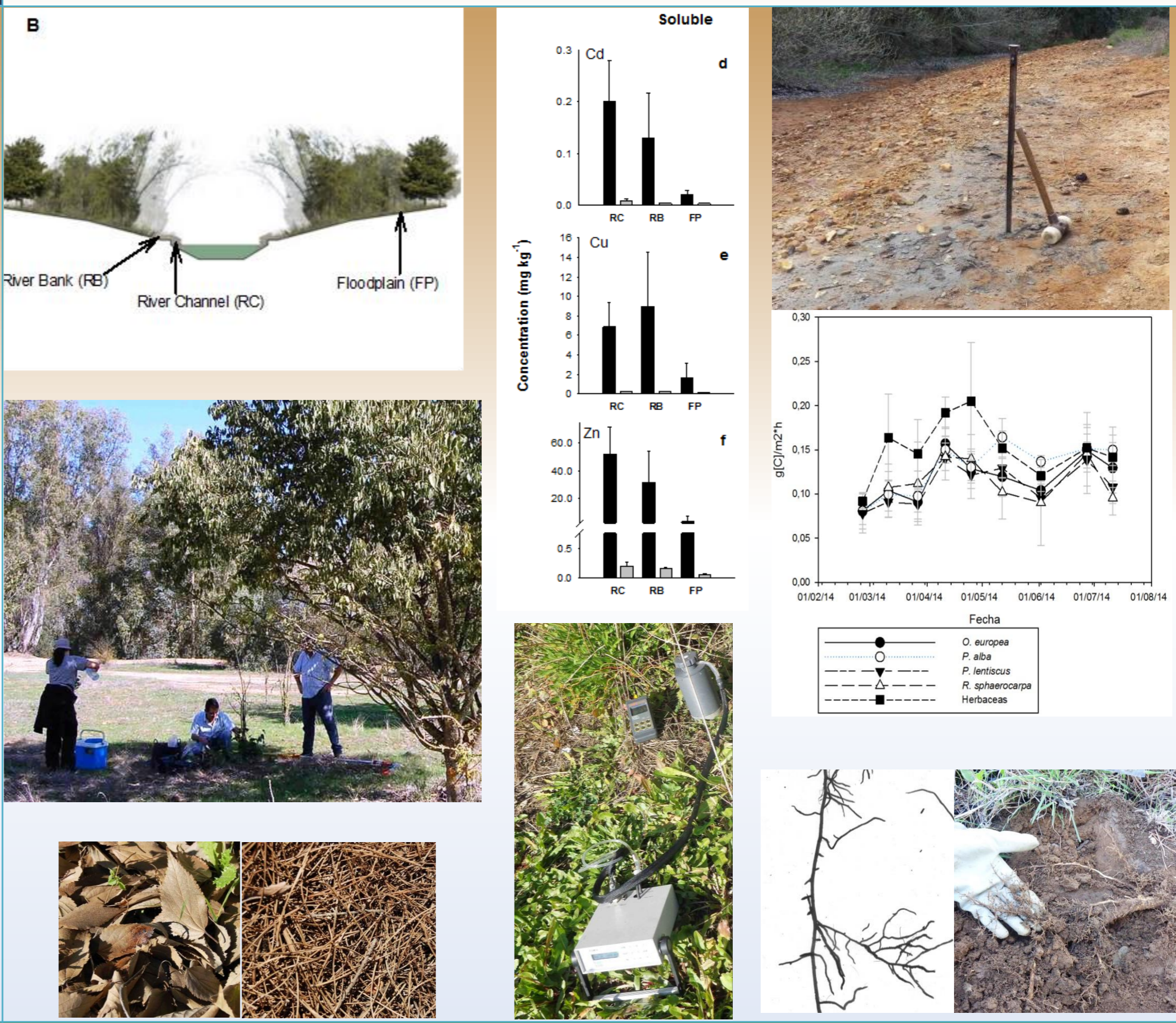


### WP 2. Review report

Contribution to the review reports on soil contamination (Anaya-Romero et al. 2015) and on soil function and ecosystem services (Schwilch et al. 2015).

### WP 3. State of degradation and conservation of the Guadiamar site

- Contribution to the Report of Case Study descriptions (Tsanis et al. 2015).
- Survey of soil contamination in river banks (Alegre 2014, Domínguez et al. 2015a) and barren spots (Cabrera et al. 2015). The remediation was very effective in the floodplain; however, there is persistent soil contamination of Cd, Zn, As and Pb in different sites of limited accessibility, 16 years after the mine-spill. Environmental monitoring and new remediation measures are recommended (Zingg 2014, Domínguez et al. 2015b)
- Evaluation of soil remediation by afforestation: soil functions under different tree and shrub species (García-Vargas 2014, Domínguez et al. 2015c, 2015d). The phytostabilization of trace elements using native trees and shrubs has been partially successful. Some species, such as white poplar, are more productive and contribute to fix carbon in biomass and soils.



### WP 4 – WP 5. Stakeholder analysis and Workshop

- Contribution to the Report on Stakeholder Analysis (Leventon 2014).
- Report on the First Stakeholder Workshop (Navarro-Fernández et al. 2015).
- The five main technologies/approaches identified to fill WOCAT questionnaires were: sludge removal, addition of soil amendments, revegetation (with native species), environmental education, and building a network of information about the site.

### 1<sup>st</sup> Stakeholder Workshop 19 February 2015

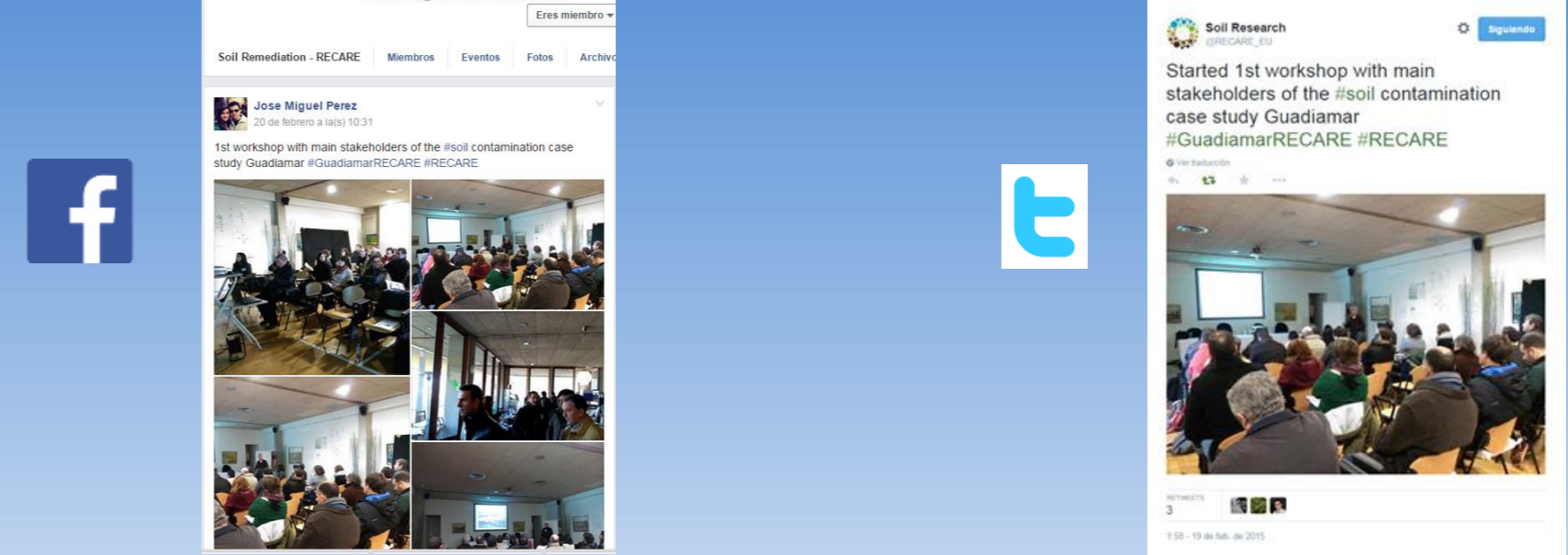


### WP 11. Dissemination and Communication

- Article in Spanish journal about the project and the Guadiamar CS (Marañón & Madejón 2014).
- Info in RECARE website: <http://www.recare-hub.eu/taller1>



- Dissemination in Facebook and Twitter



### Publication list

- Alegre JM (2014). *Study of the residual contamination by trace elements in the Guadiamar River Basin after the Aznalcóllar mine spill* (in Spanish). Final Report for the Graduate Degree in Agriculture Engineer, University of Seville.
- Anaya-Romero M, Marañón T, Cabrera F, Madejón E, Madejón P, Murillo JM, Vrinceanu N-O, Siebielec G, Geissen V (2015). Chapter 8. Soil contamination. In: J Stolte (Ed.). *Soil threats and Soil functions in Europe: A Review Report* (under review).
- Cabrera F, Alegre JM, Murillo JM, Marañón T (2015). Physico-chemical characterization of barren soils in the area affected by the Aznalcóllar mine spill (in Spanish). *CONDEGRES*, Bilbao June 23-26, 2015 (submitted).
- Domínguez MT, Alegre JM, Madejón P, Madejón E, Burgos P, Cabrera F, Marañón T, Murillo JM (2015a). River banks and channels as hotspots of soil pollution after large-scale remediation of a river basin. (In preparation to be submitted to *Geoderma*).
- Domínguez MT, Alegre JM, Madejón P, Madejón E, Burgos P, Cabrera F, Marañón T, Murillo JM (2015b). Trace element contamination of different scenarios of the Agrío and Guadiamar basins (Sevilla) (in Spanish). *CONDEGRES*, Bilbao June 23-26, 2015 (submitted).
- Domínguez MT, García-Vargas C, Madejón E, Marañón T (2015c). Plant species influence on soil C after afforestation of Mediterranean degraded soils. *Geophysical Research Abstracts* Vol. 17, EGU2015-12121, 2015. EGU General Assembly 2015 (submitted).
- Domínguez MT, Pérez-Ramos IM, Murillo JM, Marañón T (2015d). Facilitation by shrubs for the afforestation of polluted agricultural soils in semi-arid areas. *Journal of Environmental Management* (submitted).
- García-Vargas C (2014). *Ecological restoration in the Guadiamar Green Corridor: Tree-soil interactions* (in Spanish). Master Thesis, Biodiversity and Conservation Biology Program, University Pablo Olavide, Sevilla, Spain.
- Leventon J (2014). *Stakeholder and Institutional Analysis* (Deliverable 4.1). Chapter 3.15. Case Study 15: Soil contamination in Guadiamar, Spain (pp. 89-92).
- Marañón T, Madejón E (2014). The Guadiamar Green Corridor as case study within the European project RECARE (in Spanish). *Ecosistemas* 23(1):81-82. Doi.: 10.7818/ECOS.2014.23-1.16
- Navarro-Fernández CM, Madejón E, Madejón P, Domínguez MT, Pérez-Álvarez JM, Anaya-Romero M, Marañón T (2015). Report of the First stakeholder workshop: Participatory identification of measures to combat soil threat in Europe, Aznalcázar (Sevilla), 19 February 2015.
- Schwilch G, Bernet L, Claringbould H, Fleskens L, Giannakis E, Leventon J, Marañón T, Mills J, Short C, Stolte J, van Delden H, Verzaandvoort S (2015). Chapter 13. Soil functions and ecosystem services. In: J Stolte (Ed.). *Soil threats and Soil functions in Europe: A Review Report* (under review).
- Zingg F (2014). Evaluate Long-Term Fate of Metal Contamination after Mine Spill; Assessing Contaminant Changes in Soil The Guadiamar Case Study; Southern Spain. MSc Thesis. International Land and Water Management. Wageningen University



The RECARE project is being coordinated by Wageningen University and ALTErra – Wageningen-UR

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RECARE website: [www.recare-project.eu](http://www.recare-project.eu)  
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degradation of soils in Europe  
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