

**Box 1** Framework for the most beneficial project for conservation of genetic diversity of forest tree species in riparian ecosystem in Europe

- 1. Mapping the current status & pressures**
  - a. Mapping target riparian areas & main pressures, with historical information and maps when possible, including detailed inventories and GIS across hydrographic networks
  - b. Evaluation of the existing diversity at three levels (ecosystems, species, populations);
  - c. Identify a benchmark of genetic variability and species composition for each category of RV
  - d. Field survey and historical comparison for the identification of target riparian tree species;
  - e. Overview of rare, threatened, vulnerable, and endangered tree species, with an assessment of the degree of endangerment and defining priorities for conservation
  - f. Spatial definition and mapping of the most critically endangered riparian tree species genotypes.
- 2. Specific plans at species level or group of functional species or reserve (territory) for the conservation and sustainable use of the GR including at least:**
  - a. Justification, Objective, State of the art, Actuation lines to get the objective, Activities program, Participants, Period of validity of the plan, Monitoring, Funding, Coordination with other plans and Dissemination).
  - b. Mother trees**
    - i. Selection of mother trees with a broad genetic variability within the group of the most endangered riparian tree species;
    - ii. Seed collection at the level of selected mother trees with higher number of mother trees for species with smaller seeds (i.e. *Populus* spp. and *Salix* spp.);
    - iii. Estimation of mother trees variability applying morpho-phenological and molecular markers
  - c. Progeny tests**
    - i. Establishment and maintaining of progeny tests in a nursery and at the field;
    - ii. Estimation of the variability of different half-sib lines applying morpho-phenological and molecular markers
  - d. Conservation measures**
    - i. Defining *in situ* conservation units for the selected riparian species;
    - ii. Defining *ex situ* conservation measures for the most endangered riparian species;
    - iii. Development of replicable conservation guidelines for managing riparian tree GR
- 3. Funding scheme for achieving the plans**
- 4. Monitoring**
  - a. Establishing a continuous genetic monitoring system to follow the implementation of the guidelines;
  - b. Giving special reference in order to improve the possibility of natural regeneration and to promote *in situ* conservation.
- 5. Knowledge conversion & dissemination outreach**
  - a. Strengthening the capacities of managers for the implementation of the conservation guidelines;
  - b. Promotion of natural values of RE.
- 6. Evaluation**
  - a. Defining evaluation indicators for the implementation of the guidelines after each programming period;
  - b. Redefining conservation measures.