NBS for reconciling natural hazard control and ecological restoration: from research to practice

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Workshop on Implementation of Nature-based Solutions to tackle climate change
Session 3a: research and stakeholder engagement

Marseille (France)
22-24 January 2019
Applications and benefits of ecological engineering

- **Natural hazard mitigation**
- **Ecological restoration of degraded lands**
- **Soil and water depollution**

Ecological engineering at the service of NBS
Soil and water bioengineering as an ecological engineering solution

- Végétaliser les lits des ravines érodées pour réduire les sédiments fins dans les rivières
- Végétaliser les versants du bassin pour réduire et ralentir le ruissellement
- Planter sur les berges pour limiter la vitesse du courant
- Reméandrer le cours d'eau pour le ralentir
- Combiner génie civil et génie végétal au niveau des berges
- Aménager des zones d'expansion des crues pour permettre au cours d'eau de déborder
Examples of soil and water bioengineering structures
Know-how in soil and water bioengineering

Existing guidelines

European Guidelines for Soil and Water bioengineering

Know-how in soil and water bioengineering

Examples of soil and water bioengineering structures

Travaux de génie végétal et d'entretien des zones naturelles
Questions from population, practitioners and stakeholders
Questions from population, practitioners and stakeholders

SFN : Les 6 CRITÈRES

- Solution à un défi de société
- Génie végétal ou protection d’espaces naturels
- Action pour la biodiversité
- Cohérence globale sur le long terme
- Impact positif à toutes les échelles
- Collaboration de tous les acteurs

Tous ces éléments doivent être présents ensemble

Élu qui va gérer le risque d’inondation par les SFN
From practice to research

An innovative use of bioengineering for reconciling ecological restoration and flood control!
From practice to research

1. Natural hazard on degraded land
2. Bioengineering action
3. Ecological restoration process

- Initial stage
- Honnor stage
- Advanced stage

Questions from practitioners to scientists:
- Choosing the species
- Choosing the bioengineering structures
- Designing the bioengineering structures and works
- Reconciling qualitative experience and quantitative engineering
- Anticipating structures' degradation and vegetation development over time

Defining actions at the catchment and landscape scales.
New knowledge for improving know-how in eco- and bio-engineering

Scientific and technical papers and handbooks
From research to practice

Defining sound eco- and bio-engineering techniques providing co-benefits

- Considering a multidisciplinary approach for NBS projects
- Implementing monitoring stages in NBS projects
- Identifying the needs of the professional sector
- Transmitting knowledge and know-how on eco- and bio-engineering
- Establishing new practical guidelines and tools for designing eco- and bio-engineering structures
Conclusion

Ideas for the development of research at the service of NBS

• To enlarge research programs and innovation for the use of NBS
• To increase research highlighting the multi-benefits of NBS
• To develop demonstration sites (as well as experimental sites) of NBS
• To improve the dissemination of research results
• To help interprofessional networks including scientists
Thank you!

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