

# DO YOU KNOW PLANTS ARE ECOSYSTEM ENGINEERS FOR SLOPE TREATMENT?



## SOIL BIOENGINEERING FOR SLOPE AND RIVER BANK PROTECTION

### MAINSTREAMING OF BIODIVERSITY CONSERVATION INTO RIVER MANAGEMENT

Soil bioengineering is a term coined to describe the application of vegetation, either parts or whole plants, specifically on low to moderate risk slopes for sustainability and stability of the slope (Coppin & Richards, 1990; Morgan & Rickson, 1992).

#### BENEFITS



Reliable nature-based solution yet very effective.



Vegetation self-regenerates and could adopt and adapt to its environment.



Low costs compared to civil engineering structures.



Introduce and enhance local biodiversity at the site.

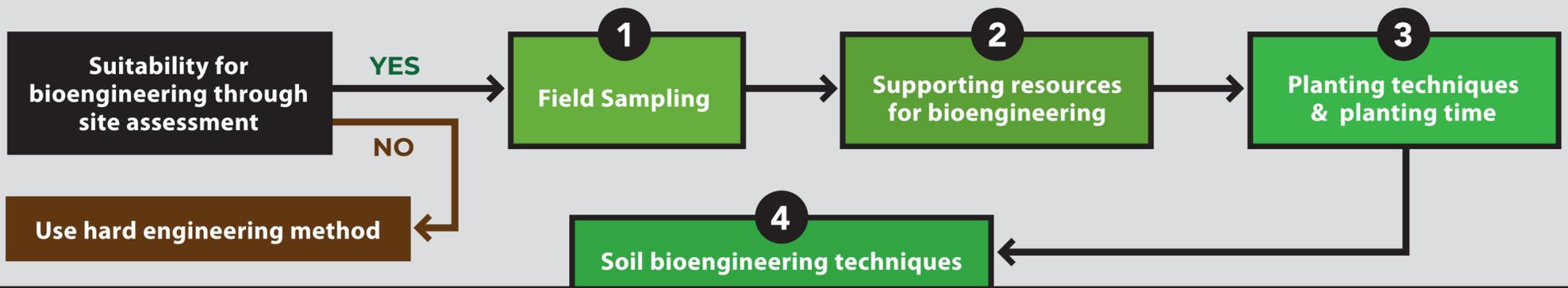


Provide alternative livelihood options for local communities.

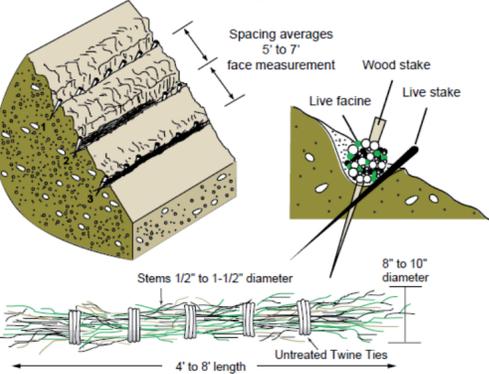


Low maintenance since the local community can be involved in the management and maintenance all the time.

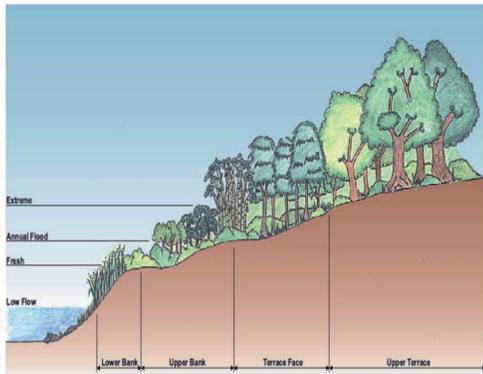
#### GENERAL PROCEDURES



#### Examples of vegetative techniques

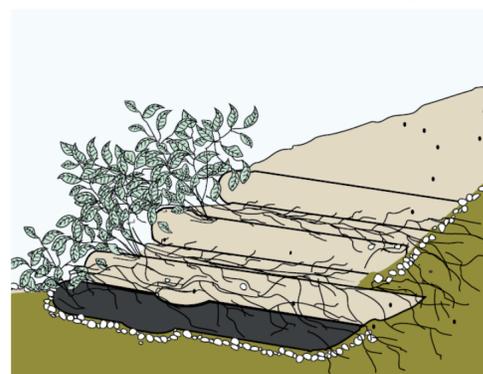


Live Fascine  
(Source of diagram: USDA, 2000)

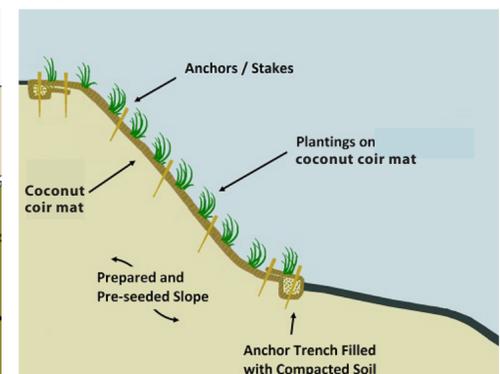


Riparian and riverbank planting  
(Source of diagram: NRE, 2009)

#### Examples of mixed bioengineering techniques



Vegetated geotextile  
(Source of diagram: ICEM, 2017)



Coconut coir mat with plants  
(Source of diagram: climateactiontool.org)

Diagram adapted and improvised from Slope Bioengineering guideline by JKR (2011)



#### SUITABLE PLANTS: SLOPE BIOENGINEERING



*Melastoma malabathricum*



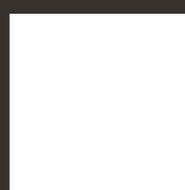
*Dillenia suffruticosa*



*Gigantochloa levis*  
(Bamboo)



*Vetiver zizanioides*



Scan QR code for the list of suitable plants.



Scan QR code to download this e-poster.

#### SUITABLE PLANTS: RIPARIAN & RIVERBANK



*Bambusa vulgaris*



*Ficus racemosa*



*Sterculia parviflora*



*Horsfieldia irya*