

## Natural Infrastructure for flood and mass movement risk reduction and prevention

Natural Infrastructure (NI) for flood and mass movement disaster risk reduction and prevention is the combination of efficient, sustainable, complementary and synergistic interventions of green infrastructure (revegetation of trees, shrubs, grasses or a combination of these) and brown infrastructure (soil conservation interventions and stabilization of slopes with local material) along with knowledge management and governance of these natural infrastructures, climate change and risks by local communities in coordination with the different levels of government.

The NI projects involve 04 lines of intervention:

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>1. Green Infrastructure</li> <li>2. Brown Infrastructure</li> </ol> | <ol style="list-style-type: none"> <li>3. Grey Infrastructure</li> <li>4. Knowledge management and governance.                     <ul style="list-style-type: none"> <li>• Awareness raising, training, technical assistance</li> <li>• GIS for monitoring of NI investments</li> </ul> </li> </ol> |
|--|--|

NI projects in ARCC will have the following design and execution modality:



The general implementation approach for any NI project involves:

1. Two parallel execution phases. An initial, smaller-scale, early implementation phase 1, and a later, large-scale implementation phase 2.

Intervention lines	Year 1	Year 2	Year 3	Year 4	Year 5
Execution Phases	Phase 1 / Phase 2	Phase 2	Phase 2	Phase 2	Phase 2
1. Green Infrastructure					
2. Brown Infrastructure					
3. Gray Infrastructure					
4. Knowledge management and governance.					

2. The field of intervention of the NI projects comprises a total of 7 packages. On this opportunity, we will present packages 1, 4, 5, 6 and 7, which are summarized in the following chart:

Packages	Region	Watershed(s)
Package 1 –Tumbes and Zaña	Tumbes, Lambayeque	Tumbes y Zaña
Package 4 – La Libertad	La Libertad	Chicama
Package 5 - Áncash	Áncash	Casma, Huarmey, Lacramarca
Package 6 – Ica	Ica	Matagente,
Package 7 – Lima	Lima	Cañete and Mala

3. The areas of intervention of the NI are concentrated especially in the middle and upper part of the basins, especially in those areas with medium, high or very high risk of mass movement risks; and in the microbasins that originate the greatest flow contributions towards the flood zones in the lower part of the basin.

4. In the green infrastructure, priority is assigned to the use of native species with ecosystemic complementarity among themselves and with the installation environment, which are efficient in the reduction of mass movement hazards, as well as in the reduction of factors that contribute to flooding.

5. Estimated global data for the NI projects:

- a. 51 thousand hectares intervened (reforested, revegetated, protected).
- b. 56 million seedlings to be installed.
- c. Generation of 1.3 million rural workdays.
- d. Public investment of about 900 million soles.

6. NI projects have an added bonus to disaster risk reduction objectives, and those co-benefits can be summarized as follows:

- a. Wildlife habitat regeneration.
- b. Contributes to adaptation to climate change, with the regulation of extreme flows during the rainy season or low water levels in the micro-watersheds intervened, reduces the negative impact of extreme rains (which are expected to occur) on soil erosion.
- c. It contributes to the mitigation of climate change by being an efficient means of capturing and storing CO<sub>2</sub>.
- d. Generates landscaping conditions for sustainable tourism initiatives in the intervened areas for the local communities.
- e. Generates annual income opportunities for local communities through the global carbon market.
- f. Generates annual income opportunities for local communities through the Mechanisms of Remuneration for Ecosystem Services (MERESE) for the service of increasing water supply in the dry season to users in the lower part of the basin.
- g. Contributes to the thermoregulation of extreme temperatures due to climate change in the intervention zones.