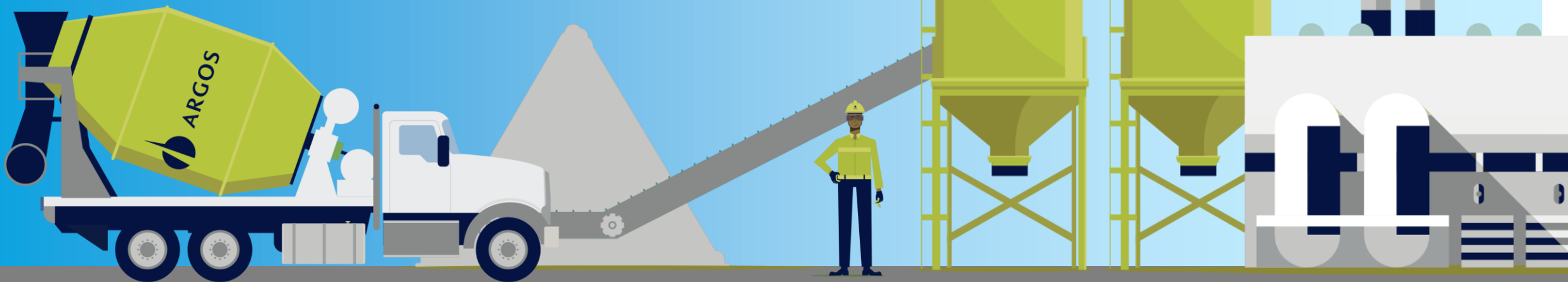


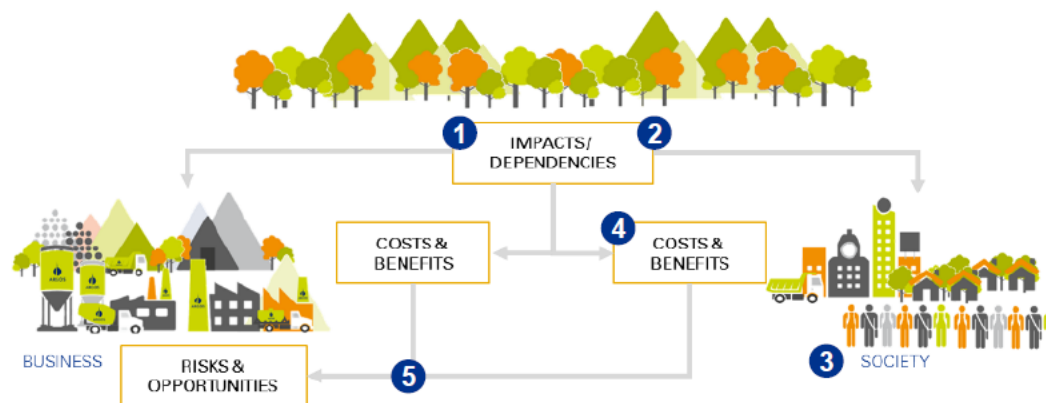
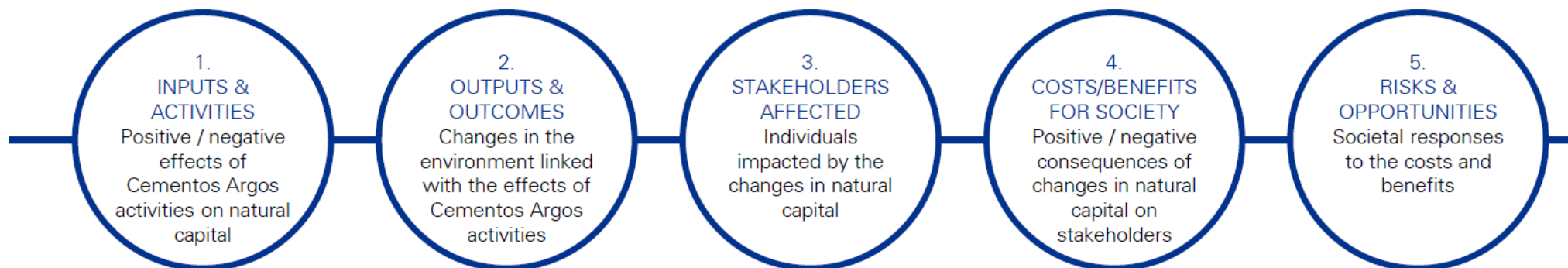
ARGOS' ASSUMPTIONS FOR ENVIRONMENTAL EXTERNALITIES

Environmental management - Biodiversity



APPROACH REVIEW

The impact of Cementos Argos on the environment was analyzed using the approach described in the Natural Capital Protocol:






Representation of the environmental impact value chain

BIODIVERSITY

Extraction operations and facilities of Cementos Argos affect biodiversity, at a level which depends on the type of ecosystem, the surface impacted and the type of activity performed. Cementos Argos acknowledges the value of biodiversity and is committed to prevent, mitigate, correct and compensate its impact through rehabilitation programs. Degradation of fauna and flora affects the quality of life of local communities by altering ecosystem services (e.g. provision of food, flooding regulation, climate mitigation, recreational attractiveness).

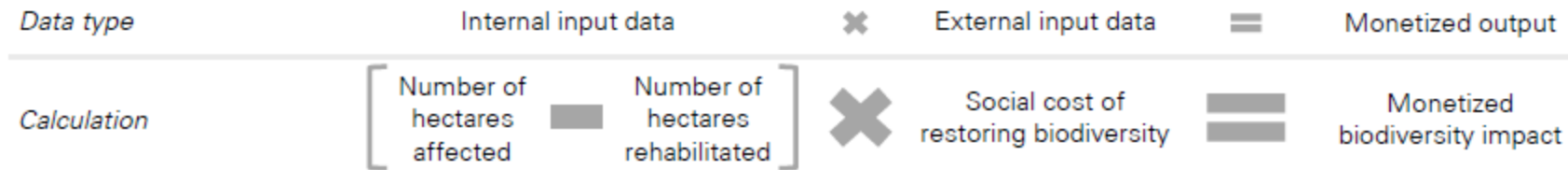


EXAMPLES OF RISKS OF INTERNALIZATION AND OPPORTUNITIES FOR REDUCING IMPACT

<i>Risks</i>	<i>Examples</i>	<i>Opportunities</i>
 Regulations	More restrictive compensation requirements (e.g. offset 1,800ha for 256ha disturbed in Rioclaro) may delay environmental licenses.	Strengthen activities to achieve the biodiversity net positive impact long-term goal.
 Market dynamics	Unable to operate due to alterate ecosystem services (e.g. flooding, food scarcity, etc.)	
 Stakeholder actions	No current conflict with NGOs or communities, but several NGOs are monitoring the activities of Argos (e.g. close to Rioclaro area).	

BIODIVERSITY – MONETIZATION APPROACH

MONETIZATION APPROACH



SCOPE

- Biodiversity affected by former activities (areas liberated) and current active operations (only quarries and cement plants; concrete plants are mainly constructed in 'built' areas).¹
- Areas liberated restored and offset for the Yumbo, Rio Grande and Nare projects (other offset reported in USD).

ASSUMPTIONS & LIMITATIONS

- The impact on biodiversity was calculated using estimated annual benefits from restoration projects in different ecosystems across the world (TEEB, 2009; see table), due to limited availability of local estimations.
- To reflect the diversity of tropical forest ecosystems, the TEEB prices have been adjusted using compensation factors from the compensation manual of the Colombian Ministry of Environment and Sustainable Development.
- In case of uncertainty on the type of ecosystems affected or rehabilitated, a conservative estimation was adopted by selecting the 'worse case scenario' (e.g. degradation of tropical forests, restoration of grasslands)

Ecosystems	Estimated annual benefits from restoration	
Tropical forests	7,000	USD/ha
Other forests	1,620	USD/ha
Woodland/shrubland	1,571	USD/ha
Grasslands	1,010	USD/ha
Inland wetlands	14,200	USD/ha
Lakes/rivers	3,800	USD/ha
Coral reefs	129,200	USD/ha
Coastal	73,900	USD/ha
Mangroves	4,290	USD/ha

TEEB (2009) *The Economics of Ecosystems & Biodiversity – climate issues updates*