2014 - 2020 Interreg V-A
Italy - Croatia CBC Programme
Call for proposal 2017 Standard+

iDEAL - DEcision support for Adaptation pLan

Priority Axis:Safety and resilience
Specific objective:2.1 - Improve the climate change monitoring and planning of adaptation measures tackling specific effects, in the cooperation area

WP4 SETTING UP OF A DECISION SUPPORT SYSTEM AS SUPPORT TO CLIMATE CHANGE ADAPTATION PLANNING
Activity 4.1 CONSTRUCTION OF THE COMMON AND SHARED EVALUATION FRAMEWORK

A report on selected indicators

FINAL Version
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Coordinator:
PP2 - IUAV UNIVERSITY OF VENICE

Partners involved:
LP - IRENA – Istrian Regional Energy Agency
PP1 - MUNICIPALITY OF PESARO
PP3 - MUNICIPALITY OF MISANO ADRIATICO
PP4 - CITY OF DUBROVNIK DEVELOPMENT AGENCY DURA
PP5 - REGIONAL NATURAL PARK “COASTAL DUNES FROM TORRE CANNE TO TORRE SAN LEONARDO”

1. Introduction

In conjunction with the report 4.1.1 "A report on questionnaires and interviews", in this document are presented the results regarding the indicators analysis. In order to give a general view of the choices made by the stakeholders and the decision makers, there is shown a three-level analysis starting from a global statistic and going in detail for each typology of record. The aim of this section is to connect the single indicator set with the single DSS that will be developed for each target area. This junction will work as a tailored filter to actions and priorities that each Project Partner will adopt to cope with the Climate Change effects in their territory.

2. Objective – The necessity of the Indicators

Establishing which are the effects of climate change in a specific region with a scientific approach is necessary to develop a sound set of objectives, strategies, and actions. The approach consists in defining which are the hazards - approximating them -, in order to build up a scenario model where is known what is threatened and from what. Then comes a double quantitative evaluation, the first regards the hazard itself and its called "impact", the second one regards the territory exposure to the phenomenon and it's defined as "vulnerability". Linking the vulnerable object and the threat, quantitatively, requires the unit of measurement through which to express the equation of this relationship. What can join the impacts and the vulnerability are the indicators. This junction tool can express the different declination in which an impact is related to the vulnerable object. In this sense for the present project, a set of indicators has been selected to represent the actual state of the art of the territories. These indicators mainly come from the project Terre: Territory, energy & Employment.

3. Indicators availability – Project Terre experience

The process of choosing the indicators starts from the project TERritory, eneRgy & Employment. TERRE was a project co-funded from South East Europe Transnational Cooperation Programme, in which were involved 13 partners from 9 countries: Italy, Austria, Hungary, Bulgaria, Slovenia, Romania, Croatia, Bosnia, and Herzegovina and Albania. TERRE intended to experiment and demonstrate that wise & integrated exploitation of endogenous resources to produce renewable energy could be an effective engine for a self- generated and sustainable local development. The target areas were considered under a different point of view, based on PP between public institutions, private operators, and local communities, to get revenues and employment opportunities in less developed or marginal zones, and thus to promote tailored paths of growth and development based on proper use of local resources. To achieve these objectives a complex set of indicators was required. A total of 18 macro-indicators and 59 sub-indicators were deployed and grouped in

aspects, namely: environmental aspects, social aspects, economic aspects, legal, institutional and perceptional aspects. In the diagram below is presented a synthetic view of the indicator system.

Aspects	Description	Macro-Indicator	Sub-Indicator	Description	Unit of measure	Function
A. Environmental aspects	the term "environmental aspects" means all the possible change or impacts which occurs on the environmental components due to the strategies/actions/projects /plants implementation.	**A.1 Soil**	**A.1.2 soil deterioration**	the term "soil deterioration" means the amount of soil that has lost quality i.e. loss of organic matter, decline in soil fertility, decline in structural condition, erosion, adverse changes in salinity, acidity, alkalinity or there are presence of pollution produced by the strategies/actions /projects/plants implementation	hectare	To minimize
			A.1.4 soil rehabilitation	the term "soil rehabilitation" means the soil surface of remediated or regenerated contaminated or derelict land made available for economic or community activities obtained by the strategies /actions/projects/plants implementation	hectare	To maximize
			A.1.5 soil protection	the term “protection” means the set of areas under protection i.e. where any human activities are forbidden in part or completely, which are set up by the strategies/actions /projects/plants implementation	Hectare	To maximize
		A.2 Water	**A.2.1 amount of water used/water flux available**	the term “amount of water used/ water flux available” means the rate of water used in order to implement the strategies/ actions/projects/plants on the water capacity of the water source maximum capacity of exploitation. (i.e. if water to produce hydropower pleas consider the 'QS - Biological minimum'' means a degree to which biologically needed water flow or water level is preserved after the strategies/actions/projects/plants implementation (biological minimum is a very important, even vital water indicator- It is a level or flow of the water which still allows that all basic ecosystem functions and services by these waters carry on ; if water to irrigate biomass energy crops please consider the water balance of the area for irrigation.)	Litre	To minimize
			A.2.2 water pollution	the term “water pollution” means in general the amount of contaminated water by toxic chemicals, pathogens, and physical, biological, morphological or sensory changes produced by the strategies /actions/projects/plants implementation that brings water bodies far from the good environmental status	Litre	To minimize
			A.2.3 water protection	the term “water protection” means the set of water bodies under protection i.e. where it is not possible to carry out human activities, which are set up by the strategies/actions/projects/plants implementation	Number of water bodies	To maximize

			A.2.4 water supply	the term "water supply" means the amount of persons provided with drinking water through drinking water supply network as a consequence of increased drinking water production/transportation capacity built by the strategies/actions/projects/plants implementation	Number of persons	To maximize
			A.2.6 wastewater treatment	the term “wastewater treatment” means number of persons whose wastewater is transported to wastewater treatment plants through wastewater transportation network as a result of increased waste water treatment/transportation capacity built by the strategies/actions/projects/plants implementation	Number of persons	To maximize
		A.3 Air	**A.3.1 Greenhouse gas emissions**	the term "Greenhouse gas emissions" means the amount of greenhouse gases (methane, carbon dioxide, nitrous oxide) contributing to global warming, emitted in the atmosphere after the strategies /actions/projects/plants implementation	Tons	To minimize
			A.3.2 air pollution	the term "air pollution" means the amount of particulate matter (PM10 and PM2.5) in the atmosphere after the strategies /actions/projects/plants implementation	µg/m3	To minimize
			A.3.6 Weather condition (impact)	Weather condition means the degree to which renewable energy investment /project/activity can impact the local (and sometimes regional) weather conditions (i.e. increased fog, humidity, change in sun hours...)	43586	To minimize
		A.4 Landscape	**A.4.1 crops change (loss)**	the term "crops change (loss)" means the change in its original natural function or loss of crops diversity in the area affected by the strategies/actions/projects/plants implementation (i.e. a pasture is turned into an energy source plant, and the land loses its function; a diverse rural landscape turned into homogeneous monofunctional one because of dedicated energy crops)	Number of functions	To minimize
		A.5 Habitat and Biodiversity	**A.5.1 amount of biodiversity**	the term “amount of biodiversity” means the amount of genus, species, habitat, ecosystems and cultural diversity existing in the area affected by the strategies/actions/projects /plants implementation	Number of species, habitat, ecosystems	To maximize
			A.5.2 biodiversity quality	the term "biodiversity quality" means the presence of key or endemic species existing in the area affected by the strategies/actions /projects/plants implementation	Number of species	To maximize
			A.5.5 pest and pathogens	the term “pest and pathogens” means the number of organism that potentially can be pest or pathogens in the area affected by the strategies/actions/projects/plants implementati	Number of organisms	To minimize

			A.5.8 Protected habitat and species	the term "Protected habitat and species" means the amount of protected habitat/areas, geopark/geo-sites and species that might be affected by the strategies/actions/projects /plants implementation	Number of areas	To maximize
			A.5.10 ecological network	the term "ecological network" means the influence on fragmentation of ecological networks (meaning, for example, the breaking up of patches of habitats into several smaller patches, or abrupt interruption of existing ecological corridors) caused by strategies /actions/projects/plants implementation	Number of fragmented network	To minimize
			A.6.1 Energy produced from Renewable sources	the term "renewables" means the amount of renewable energy produced (solar, hydro, wind, geothermal, biomass) by the strategies/actions/projects/plants implemented	Kw/h	To maximize
		A.6 Energy	**A.6.2 RES potential**	the term "renewable energy sources potential" means the rate of renewable energy source potential used by the strategies/actions /projects/plants implemented (i.e. the available row material: hours of solar shining, river flow power, cutting for wooden biomass, hours of wind blowing)	Kw/h	To maximize
			A.6.5 Best available technologies	the term "best available technologies" means the type and of different technologies used to produce energy by the strategies/actions /projects/plants implemented, if they reflect the best available ones	01-mag	To maximize
			A.6.7 Reduction of energy used	the term "reduction of energy used" means the amount of energy saved (fossil and renewable) by the strategies/actions/projects/plants implemented	Kw/h	To maximize
		A.7 waste/residues	**A.7.1 solid waste reused/recycled**	the term "waste reused/recycled" means the amount of waste reused/recycled by the strategies/actions/projects/plants implementation	Tons	To maximize
			A.7.2 solid waste production	the term "waste production" means the amount of waste produced by the strategies /actions/projects/plants implementation	Tons	To minimize
B. Social aspects	the term "social aspects" means all the possible changes or impacts which occurs on the social components due to the strategies/actions/projects/plants	**B.1 Population**	**B.1.1 population segments**	the term "population segments" means the population segments (in numbers) involved by the strategies/actions/projects/plants implementation	Number of persons	To maximize
		B.2 Services	**B.2.1 Level of education**	the term "education" means the population level of education (primary, secondary, tertiary) due to the strategies/actions /projects/plants implementation	Primary – Secondary - Tertiary	To maximize
			B.2.4 new competences and lifelong learning	the term "new competence and lifelong learning" means the number of people who undertake a process of learning by the strategies/actions/projects/plants implementation	Number of persons	To maximize

	implementation		**B.2.5 childrencare/education**	the term "childrencare/education" means the number of users who can use newly built or improved childcare or education facilities due to the strategies/actions/projects/ plants implementation. Users in this context mean the children, pupils, or students, not teachers, parents or other persons who may use the facilities too. It includes new or improved buildings, or new equipment provided by the project	Number of persons	To maximize
			B.2.6 Health service	the term "health service" means the amount of population covered by the health service affected by the strategies/actions/projects/ plants implementation	Number of persons	To maximize
		B.3 Job	**B.3.1 New jobs**	the term "new jobs" means the number of new jobs created (for new workers, unemployed and inactive people) by the strategies/actions /projects/plants implementation.	Number of jobs	To maximize
			B.3.2 Job types	the term "job types" means the types/skill levels of new jobs created by the strategies/actions/projects/plants implementation.	Low – Medium - High	To maximize
		B.4 Poverty	**B.4.1 Poverty rate**	the term "poverty rate" means the number of poor people affected the strategies/actions /projects/plants implementation	Number of persons	To maximize
			B.4.4 Social inclusion	the term "social inclusion" means the process of improving the ability, opportunity, and dignity of people, disadvantaged on the basis of their identity, to take part in society put in place by the strategies/actions/projects/plants implementation	Number of process	To maximize
			B.4.5 Social justice	the term "social justice" means the process of improving the principles of equality and solidarity between people put in place by the strategies/actions/projects/plants implementation	Number of process	To maximize
		B.5 Settlement and Infrastructure	**B.5.1 Improved energy-efficient buildings**	the term "improved energy-efficient buildings" means the number of buildings (private and public) in improved energy class due to by the strategies/actions/projects/plants implementation.	Number of buildings	To maximize
			B.5.2 New energy-efficient buildings	the term "new energy-efficient buildings" means the number of new energy-efficient buildings (private and public) built by the strategies/actions/projects/plants implementation	Number of buildings	To maximize
			B.5.3 Smart grids	the term "smart grids" means the number of energy users connected to smart grids (Electricity network that integrate the actions of energy users by exchanging digital information with the network operator or supplier) due by the strategies/actions/projects/plants implementation	Number of persons (users)	To maximize

			B.5.4 Upgraded infrastructures	the term "upgraded infrastructures" means the length of infrastructures (railway and roads) of which quality or capacity have been improved due by the strategies/actions/projects/plants implementation	Km	To maximize
			B.5.5 New infrastructures	the term "new infrastructures" means the length of completely new infrastructures built by the strategies/actions/projects/plants implementation	Km	To maximize
		B.6 Risk	**B.6.1 Risks for citizens**	the term "risks for citizens" means the level of risk exposure for citizens due to the strategies/actions/projects/plants implementation (any kind of risk: chemical poisoning, explosion, etc)	Low – Medium - High	To minimize
			B.6.3 Risks for ecosystems	the term "risks for ecosystems" means the level risk exposure for ecosystems due to the strategies/actions/projects/plants implementation (any kind of risk: chemical poisoning, explosion, etc)	Low – Medium - High	To minimize
			B.6.4 Local vulnerability risks	the term "local vulnerability risks" means the level of risk exposure for all citizens, workers, ecosystems due to the vulnerability of the area (earthquakes, floods, landslides, etc.) after the strategies/actions/projects/plants implementation (after some protection or prevention measures implementation)	Low – Medium - High	To minimize
C. Economic aspects	the term "economic aspects" means all the possible changements or impacts which occurs on the economic components due to the strategies /actions/projects/plants implementation	**C.1 Costs and benefit**	**C.1.1 Implementation costs**	the term "implementation costs" means the sum of necessary costs in order to build or implement the strategies/actions/projects /plants	Euro	To minimize
			C.1.2 Management costs	the term "management costs" means the sum of necessary costs in order to maintain and manage the strategies/actions/projects/plants implemented	Euro	To minimize
			C.1.4 Revenues	the term "revenues" means the sum of expected revenues by the strategies/actions /projects/plants implementation	Euro	To maximize
			C.1.5 Revenues distribution	the term "revenues distribution" means the expected revenues type of distribution, directly or indirectly to the citizens, generated by the strategies/actions/projects/plants implementation	Direct – Direct/indirect - Indirect	To maximize
		C.2 Financing and Funds	**C.2.1 EU funding**	the term "EU funding" means the amount of European funds available for the strategies/actions/projects/plants implementation	Euro	To maximize
			C.2.2 Governmental funding	the term "governmental or national funding" means the amount of state funds available for the strategies/actions/projects/plants implementation	Euro	To maximize
			C.2.3 Private funding	the term "private funding" means the amount of private funds (PPP) available for the strategies/actions/projects/plants implementation	Euro	To maximize

			C.2.4 Accessibility to funds	the term "accessibility to funds" means the possibility for the strategies/actions/projects /plants to directly access to funds or it needs to be segmented to do this	Low – Medium - High	To maximize
		C.3 Productive investments, Research and Development	**C.3.1 Enterprises supported**	the term "enterprises supported" means the number of enterprises receiving support in any form (financial, consultancy, guidance etc.) by the strategies/actions/projects/plants implementation	Number of enterprises	To maximize
			C.3.2 New enterprises	the term "new enterprises" means the number of new enterprises created receiving support in any form (financial, consultancy, guidance etc.) by the strategies/actions/projects/plants implementation	Number of enterprises	To maximize
			C.3.7 Enterprises and research	the term "enterprises and research" means the number of enterprises that cooperate with research institutions in R&D projects due to the strategies/actions/projects/plants implementation	Number of enterprises	To maximize
D. Legal, institutional and perceptional aspects	the term "legal, institutional and perceptional aspects" means all the possible changements or impacts which occurs on the legal, institutional and people's perception components due to the strategies/actions/projects/plants implementation	**D.1 Legal and institutional**	**D.1.1 Law feasibility**	the term "law feasibility" means the consistency between the existing laws and the strategies/actions/projects/plants implementation	Low – Medium - High	To maximize
			D.1.2 Required permits	the term "required permits" means the number of permits/bureaucratic steps necessary in order to implement the strategies/actions /projects/plants	Number of permits	To minimize
			D.1.3 Procedural time	the term "procedural time" means the time required for administrative procedures before the Strategies/actions/projects/plants worker estimated commissioning date	Days	To minimize
			D.1.5 Life time	the term "life time" means the expected operating time of the strategies/actions/projects/plants in their complete lifecycle	Days	To maximize
		D.2 Partecipation and acceptability	**D.2.2 Consumers involvement**	the term "consumers involvement" means if the energy consumers are involved in in the decision-making process of strategies/actions /projects/plants construction and implementation	Number of persons (consumers)	To maximize
			D.2.3 Population acceptability	the term "population acceptability" means the degree of acceptance by the population of the strategies/actions/projects/plants implemented	Low – Medium - High	To maximize
			D.2.4 Political acceptability	the term "political acceptability" means the degree of acceptance by different political parties of the strategies/actions/projects/plants implemented	Low – Medium - High	To maximize

4. Indicator selection for iDeal

From the indicators presented in the project TERRE, 25 of them were selected to describe the territories and the necessities of each Project Partner. Maintaining the same "aspects" described in the previous chapter, here are reported the unity of measurement and the indicators chosen after the meeting that took place in Ostuni Pesaro on the 6/2018. The evaluation of each indicator was made in relationship with the four tailored impacts selected by each PP. Thus, through the inteviews proposed to the stakeholders and the decisionmakers, a further weighing has been made with the purpose to adjust the DSS. This elaboration will allow the project partner to use their tailored decision support system to analyze the validity - and the performances - of the adaptation measures that they would use to cope with the climate change effects.

Aspect	Indicator	Unit of measurement
A. Environmental	Soil coastal erosion	m2
	Soil drought	m2
	Impermeability ratio	m2
	Flooding area	m2
	Collected rain water	m3/year
	Reused water	m3/year
	Water consumption	m3/year
	Habitat maintenance	m2
	Uhi reduction	c°
	Energy use reduction	%
B. Social	People who will benefit from the actions n. Of people)	n. Of people
	Most vulnerable people who will benefit from the actions	n. Of people
	New job created by the actions	n. Of job
	Km - upgraded infrastructure	km
	New infrastructure	km
C. Economic	Implementation cost	€
	Management cost	€
	Revenues	€
	Revenues distribution	n. Of actors
	Enterprises supported	n. Of enterprises
	New enterprises	n. Of enterprises
	Traditional crops	ton/year
D. Legal, institutional and perceptional	Legal feasibility	low-medium-high
	Required permits	n. Of permits
	Procedural time	days

	Life time	days
	Peple acceptability	low-medium-high
	Political acceptability	low-medium-high

This set of indicators is connected to the set of impacts that each partner has identify. Below are proposed the four group of impacts selected for each of the partner.

Partner	**Impact Importance**			
Irena	Increased competition for water	Increased energy demand for cooling	Coastal flooding	Damage to coastal human infrastructures
Dune	Increased erosion	Increase of drought	Variation in crop yield	Loss of habitat
Dura	Increased erosion	Increased energy demand for cooling	Impact on tourism sector	Impact on trasportantion network
Pesaro	Increased erosion	Increased energy demand for cooling	Impacts on tourism sector	Impacts on energy infrastructure
Misano adriatico	Increased erosion	Increased energy demand for cooling	Impact on tourism sector	Impact on trasportantion network

5. Results

5.1. Dubrovnik

5.1.1. General Selection of the indicators

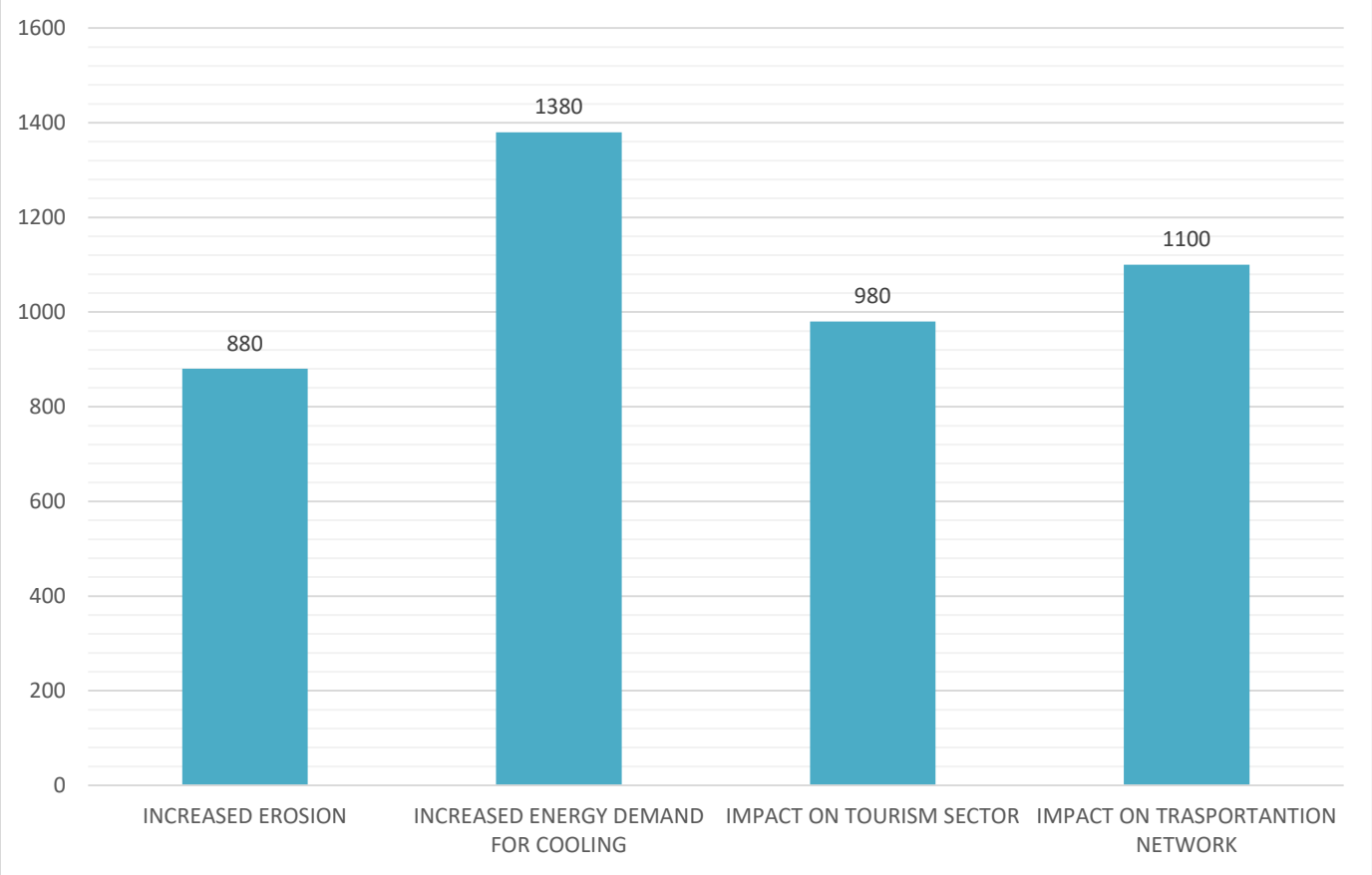


Figure 1

The general impact importance is mostly homogeneous, with on the top “Increased energy demand for cooling” (1380), then “Impact on transportation network” (1100) and “Impact on tourism sector” (980), and finally “Increased erosion” (880).

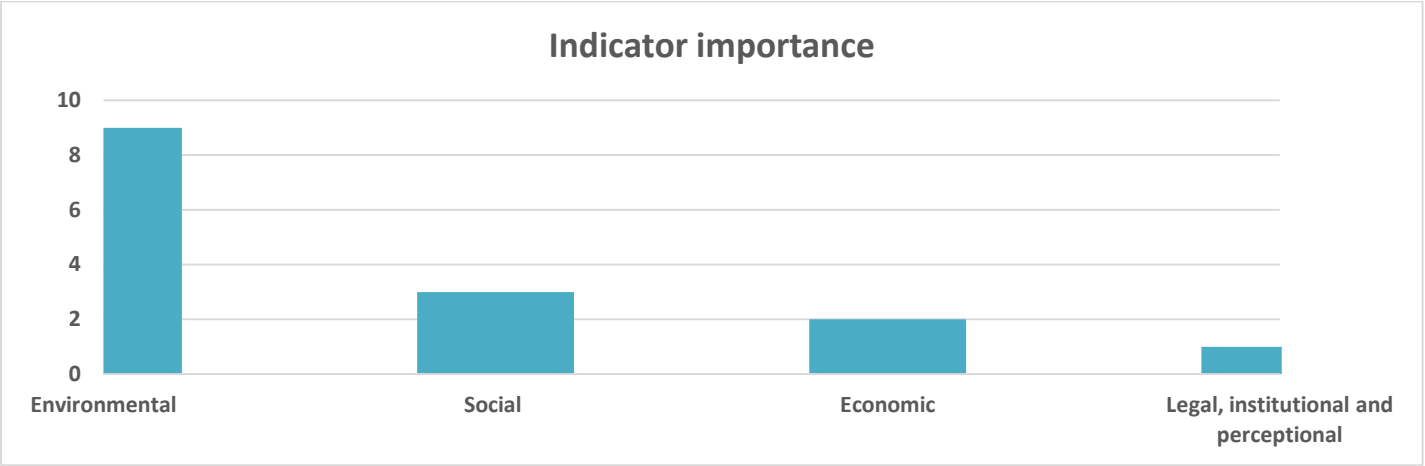


Figure 2

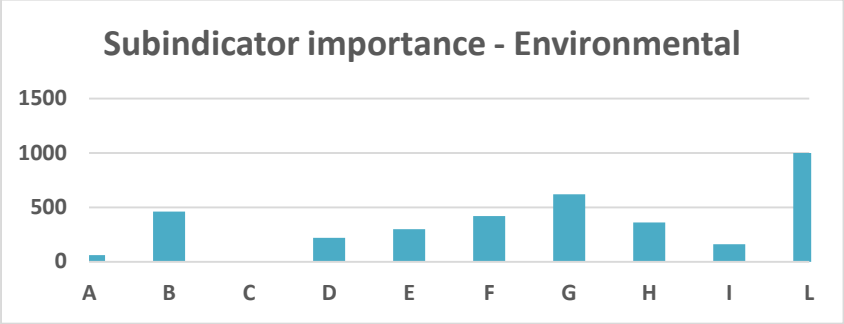


Figure 3

Soil coastal erosion (m2)	**A**
Soil drought (m2)	B
Impermeability ratio (m2)	C
Flooding area (m2)	D
Collected rain water (m3/year) 3	E
Reused water (m3/year) 2	F
Water consumption 1	G
Habitat maintenance (m2)	H
Uhi reduction (c°)	I
Energy use reduction (%)	L

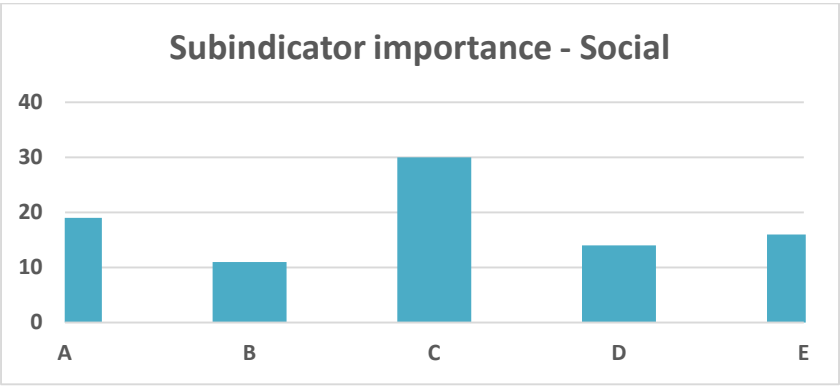
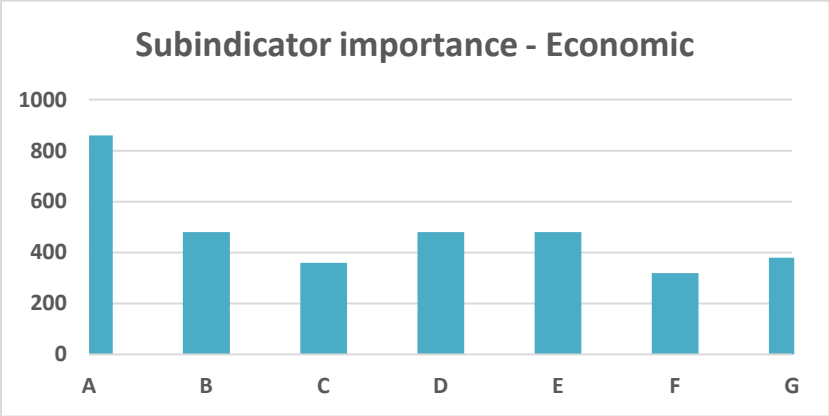


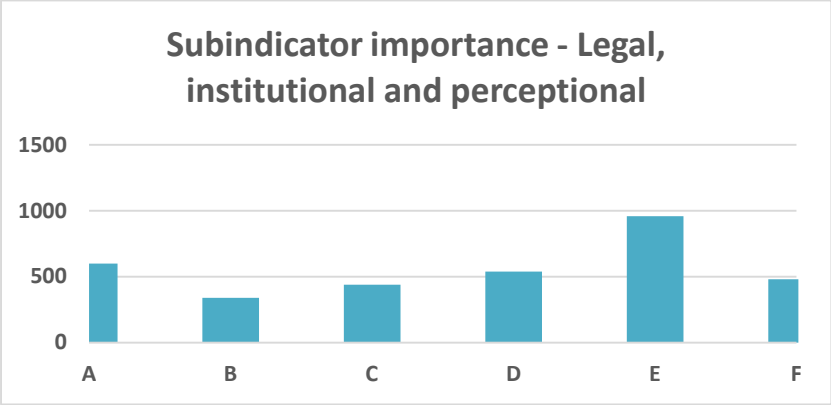
Figure 4

People who will benefit from the actions n. Of people) 1	**A**
Most vulnerable people who will benefit from the actions (n. Of people)	B
New job created by the actions (n. Of job) 2	C
Km - upgraded infrastructure (km)	D
New infrastructure (km) 3	E



Implementation cost (€) 3	**A**
Management cost (€)	B
Revenues (€)	C
Revenues distribution (n. Of actors)	D
Enterprises supported (n. Of enterprises) 1	E
New enterprises (n. Of enterprises) 2	F
Traditional crops (ton/year)	G

Figure 5



Legal feasibility (low-medium-high)	**A**
Required permits (n. Of permits)	B
Procedural time (days) 3	C
Life time (days) 2	D
Peple acceptability (low-medium-high) 1	E
Political acceptability (low-medium-high)	F

Figure 6

5.1.2. Decisionmaker selection

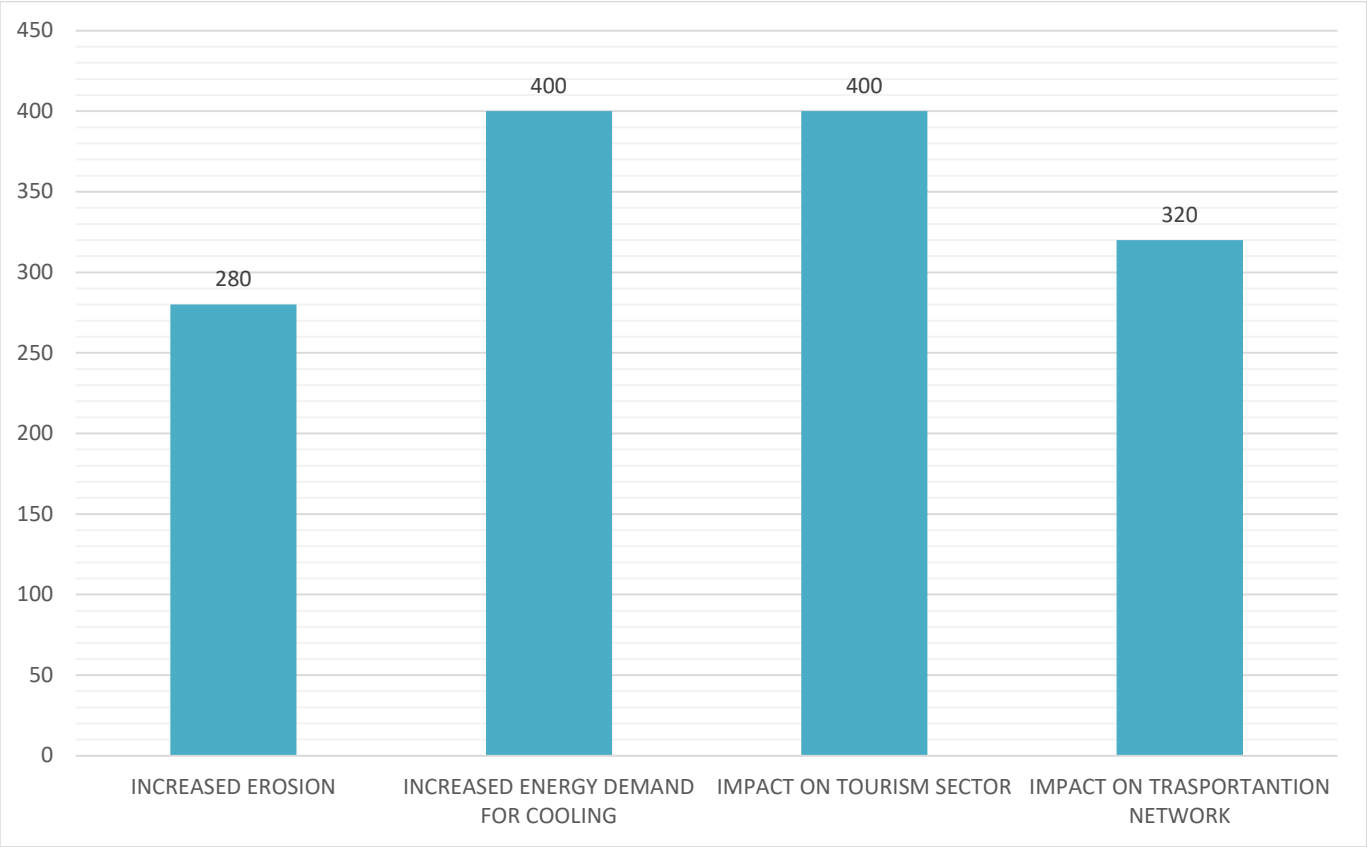


Figura 7

To Dubrovnick's decisionmaker, impact importance is equal for "Impact on tourism sector increased energy demand for cooling" (both 400), then there is "Impact on transportation network" (320) and, finally, "Increased erosion" (280).

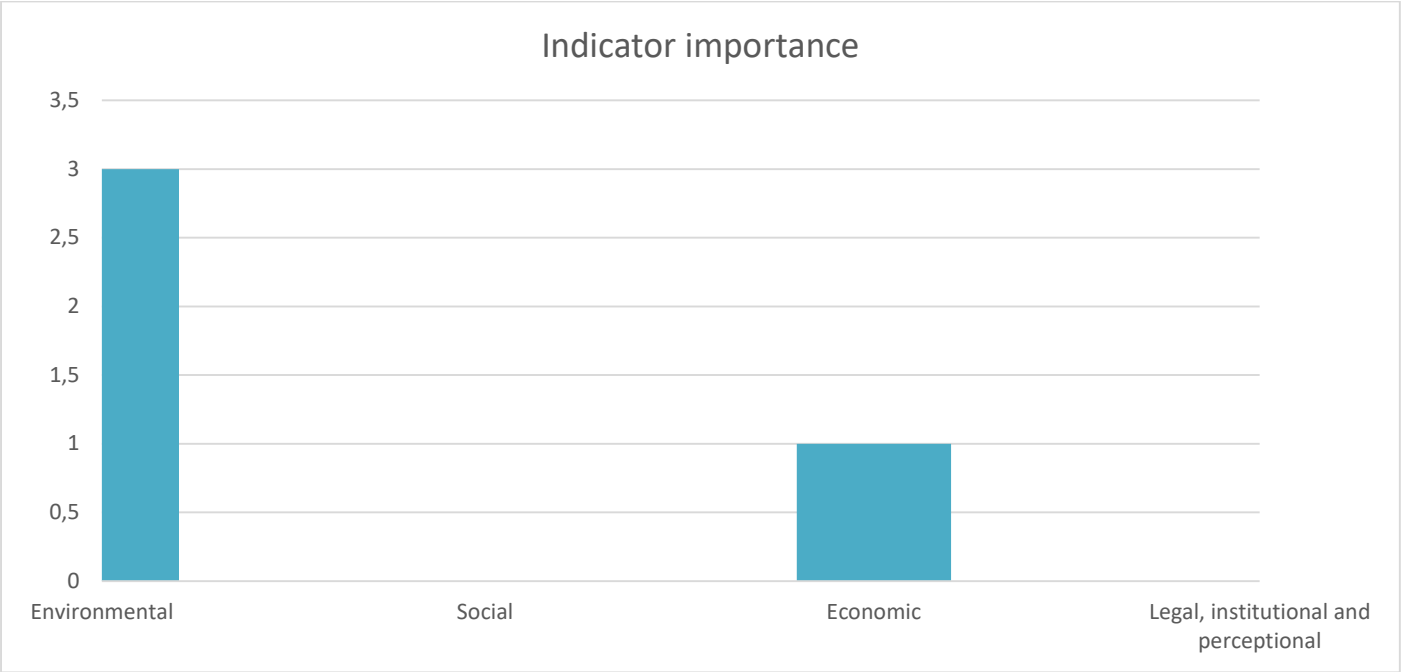


Figure 8

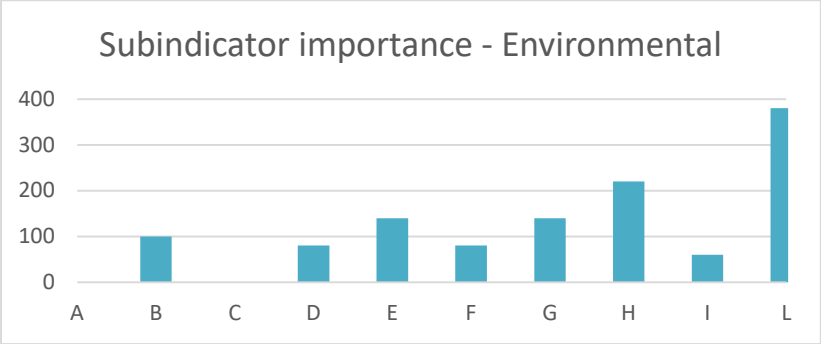


Figure 9

Soil coastal erosion (m2)	**A**
Soil drought (m2)	B
Impermeability ratio (m2)	C
Flooding area (m2)	D
Collected rain water (m3/year) 3	E
Reused water (m3/year) 2	F
Water consumption 1	G
Habitat maintenance (m2)	H
Uhi reduction (c°)	I
Energy use reduction (%)	L

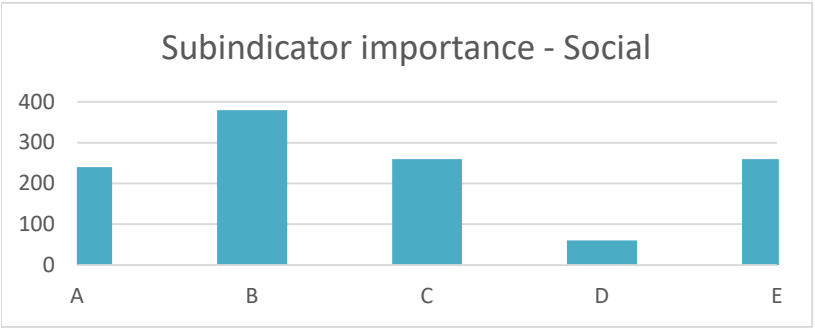
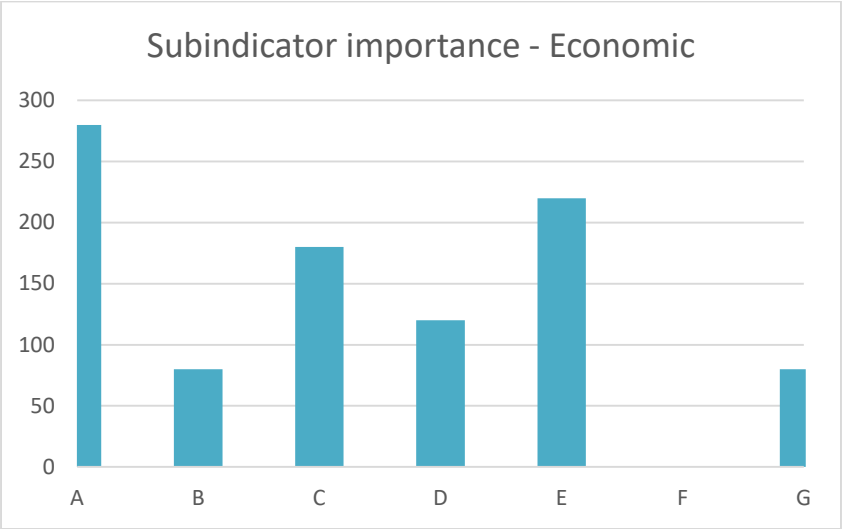


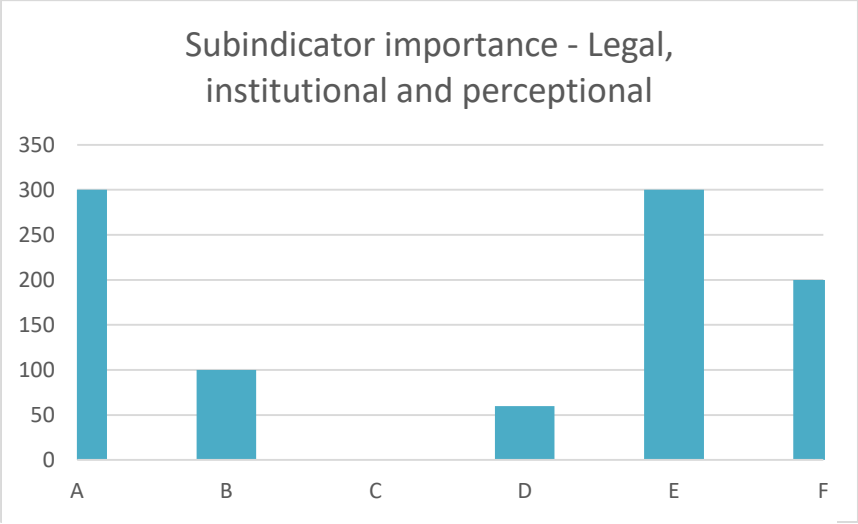
Figure 10

People who will benefit from the actions n. Of people) 1	**A**
Most vulnerable people who will benefit from the actions (n. Of people)	B
New job created by the actions (n. Of job) 2	C
Km - upgraded infrastructure (km)	D
New infrastructure (km) 3	E



Implementation cost (€) 3	**A**
Management cost (€)	B
Revenues (€)	C
Revenues distribution (n. Of actors)	D
Enterprises supported (n. Of enterprises) 1	E
New enterprises (n. Of enterprises) 2	F
Traditional crops (ton/year)	G

Figure 11



Legal feasibility (low-medium-high)	**A**
Required permits (n. Of permits)	B
Procedural time (days) 3	C
Life time (days) 2	D
Peple acceptability (low-medium-high) 1	E
Political acceptability (low-medium-high)	F

Figure 12

5.1.3. Stakeholder selection

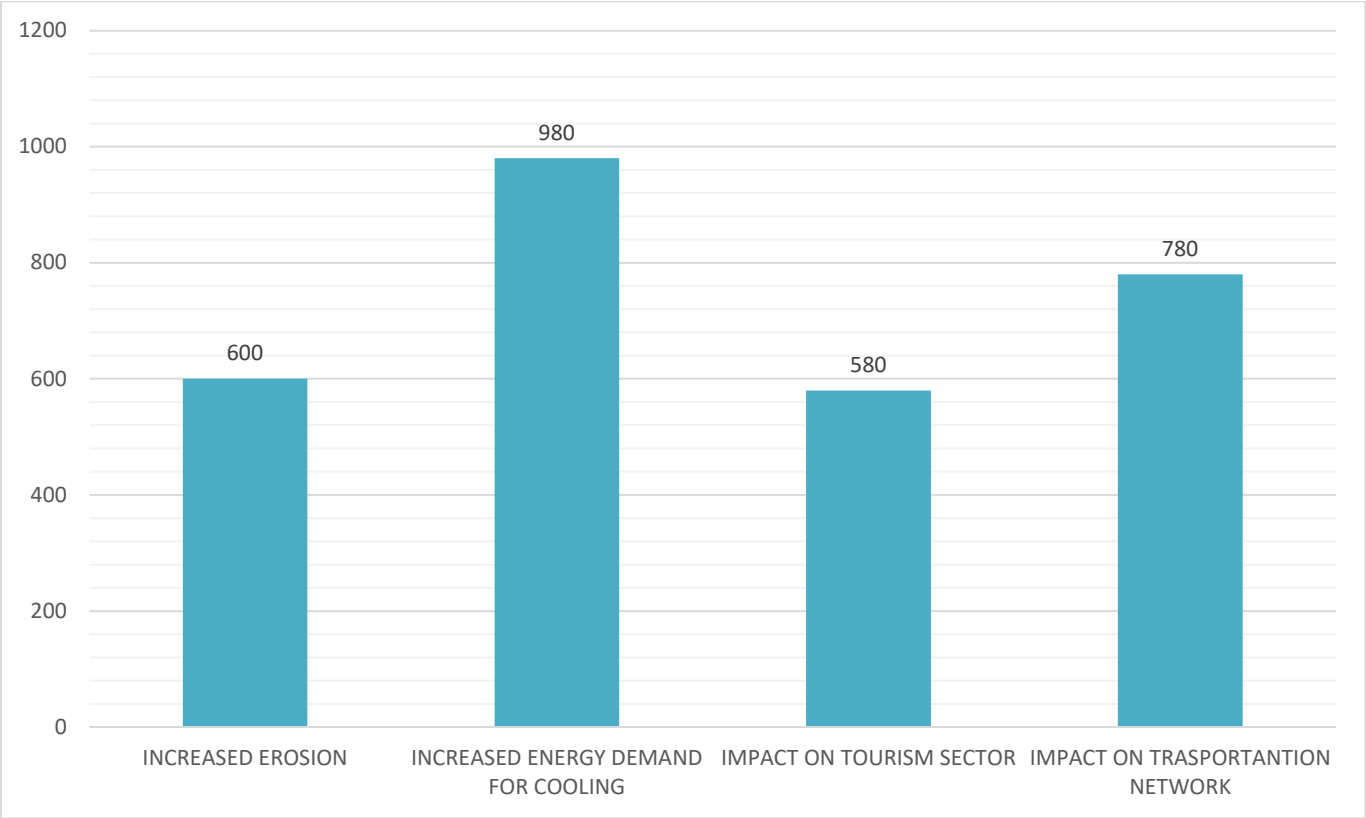


Figura 13

Dubovnick's Stakeholders give less importance in the selection of impact importance to "Impact on tourism sector" (580), then we find "Increased erosion" (600), "Impact on transportation network" (780) and, on the top, "Increased energy demand for cooling" (980).

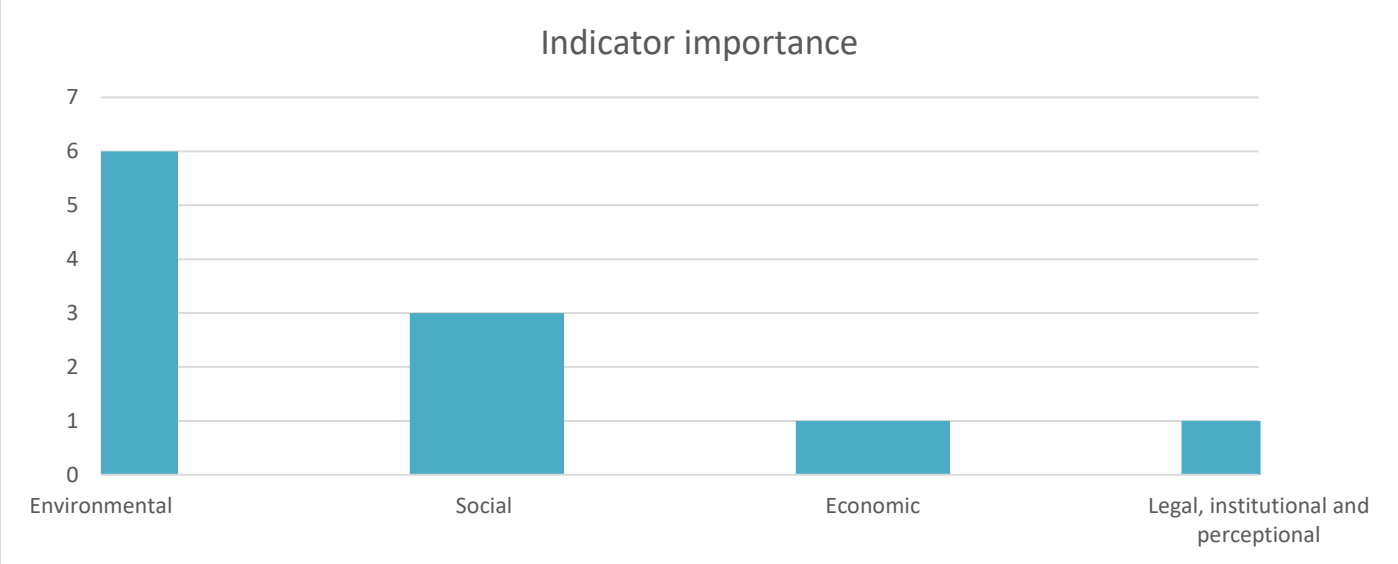


Figure 14

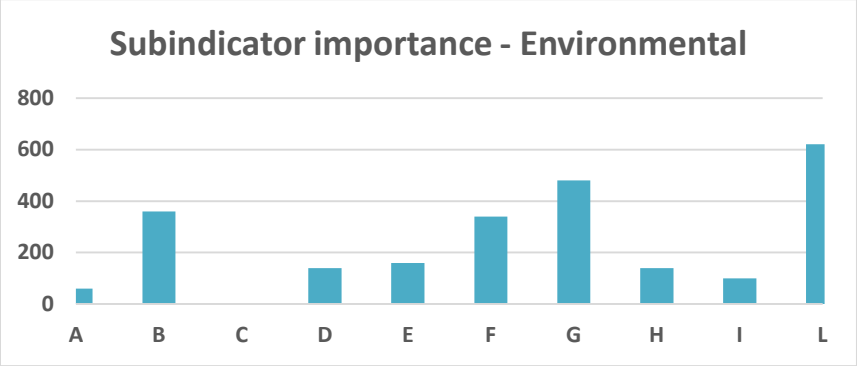


Figure 7

Soil coastal erosion (m2)	**A**
Soil drought (m2)	B
Impermeability ratio (m2)	C
Flooding area (m2)	D
Collected rain water (m3/year) 3	E
Reused water (m3/year) 2	F
Water consumption 1	G
Habitat maintenance (m2)	H
Uhi reduction (c°)	I
Energy use reduction (%)	L

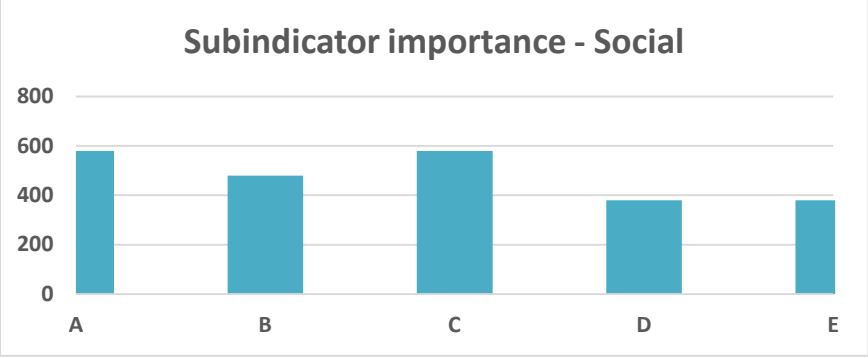
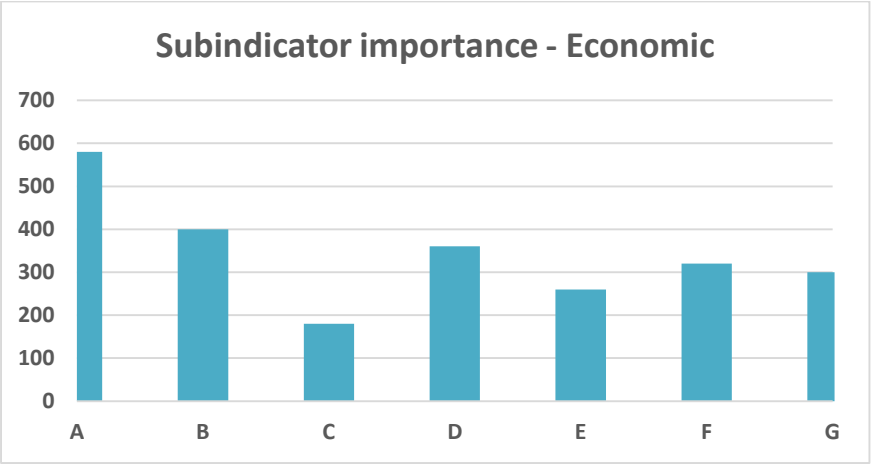


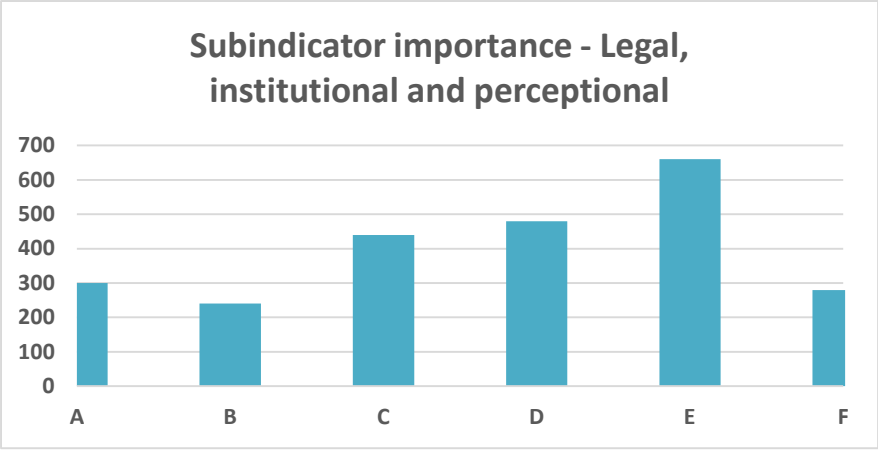
Figure 16

People who will benefit from the actions n. Of people) 1	**A**
Most vulnerable people who will benefit from the actions (n. Of people)	B
New job created by the actions (n. Of job) 2	C
Km - upgraded infrastructure (km)	D
New infrastructure (km) 3	E



Implementation cost (€) 3	**A**
Management cost (€)	B
Revenues (€)	C
Revenues distribution (n. Of actors)	D
Enterprises supported (n. Of enterprises) 1	E
New enterprises (n. Of enterprises) 2	F
Traditional crops (ton/year)	G

Figure 17



Legal feasibility (low-medium-high)	**A**
Required permits (n. Of permits)	B
Procedural time (days) 3	C
Life time (days) 2	D
Peple acceptability (low-medium-high) 1	E
Political acceptability (low-medium-high)	F

Figure 18

5.2. Parco Dune Costiere – Ostuni

5.2.1. General Selection of the indicators

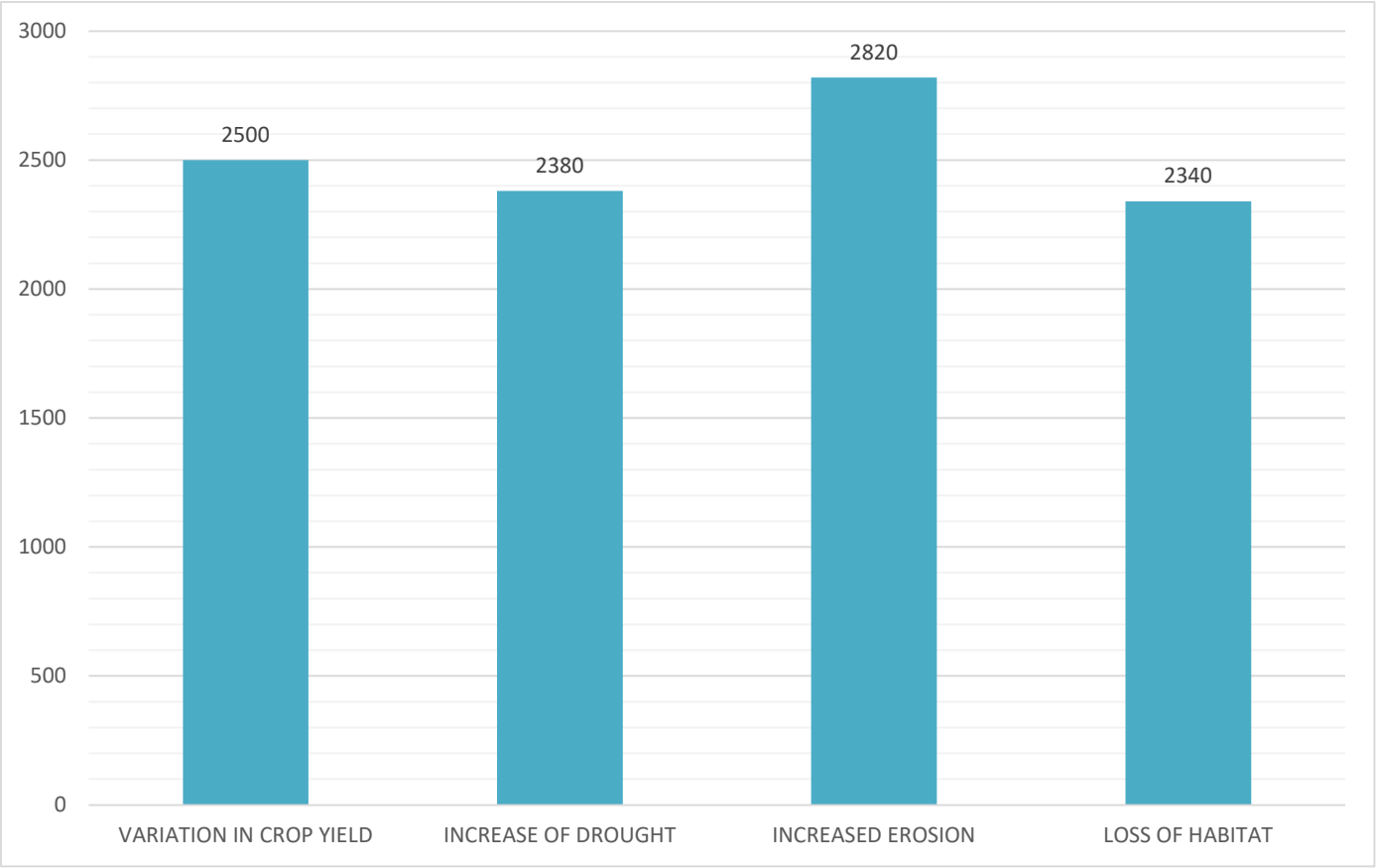


Figura 19

Parco Dune Costiere has a general almost equal response to impact importance: the lower is “Loss of habitat” (2380), then “Increase of drought” (2380), then “Variation in crop yield” (2500) and, on the top, “Increased erosion” (2820).

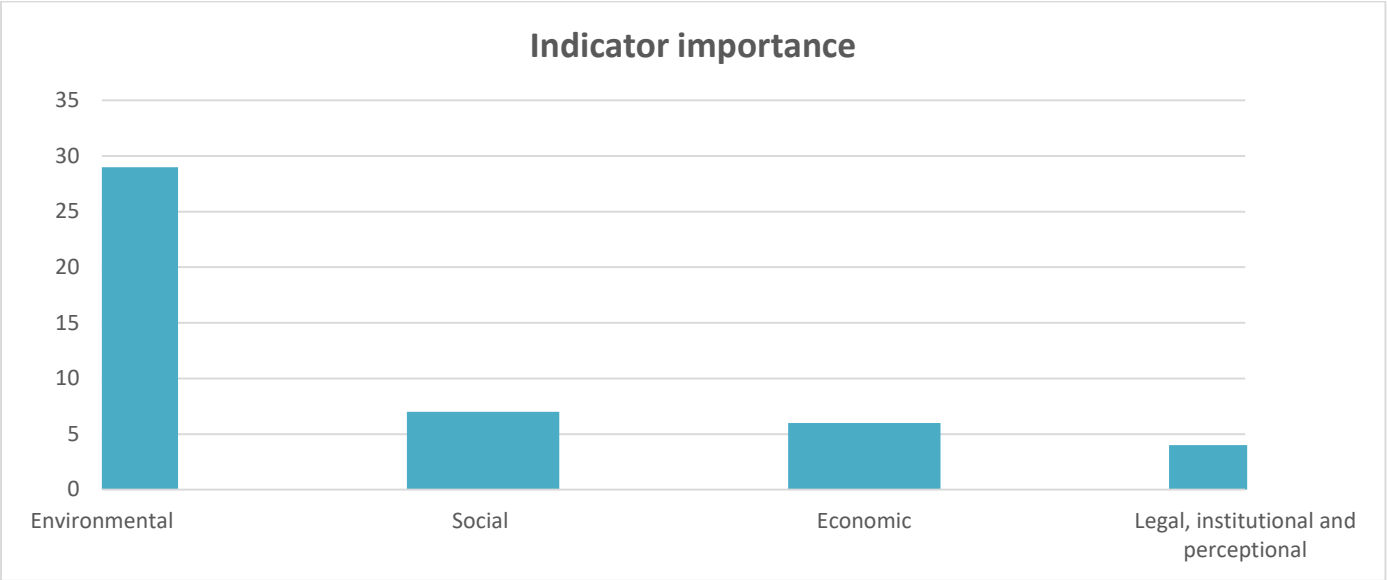


Figure 20

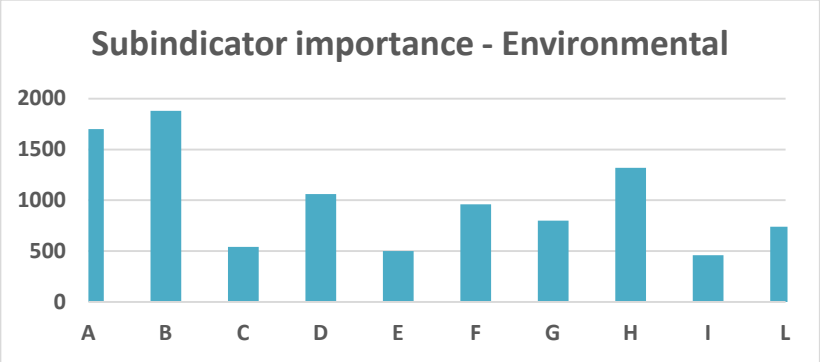


Figure 21

People who will benefit from the actions n. Of people) 1	**A**
Most vulnerable people who will benefit from the actions (n. Of people)	B
New job created by the actions (n. Of job) 2	C
Km - upgraded infrastructure (km)	D
New infrastructure (km) 3	E

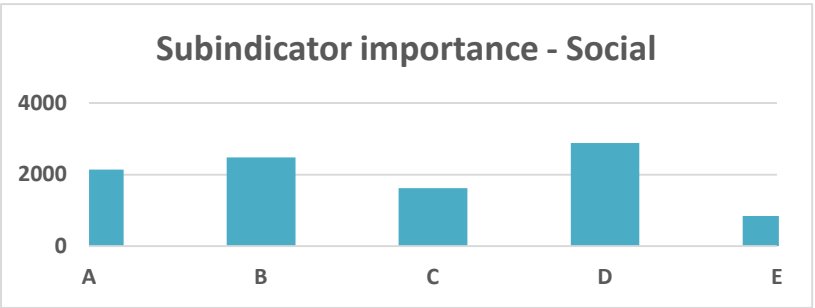
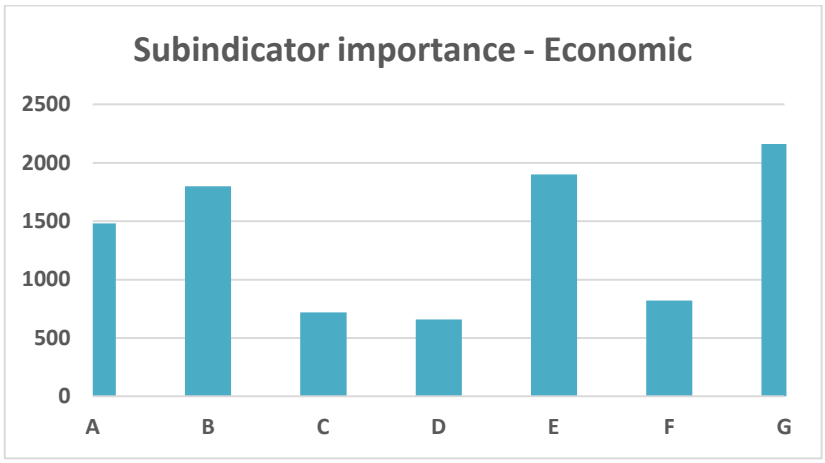


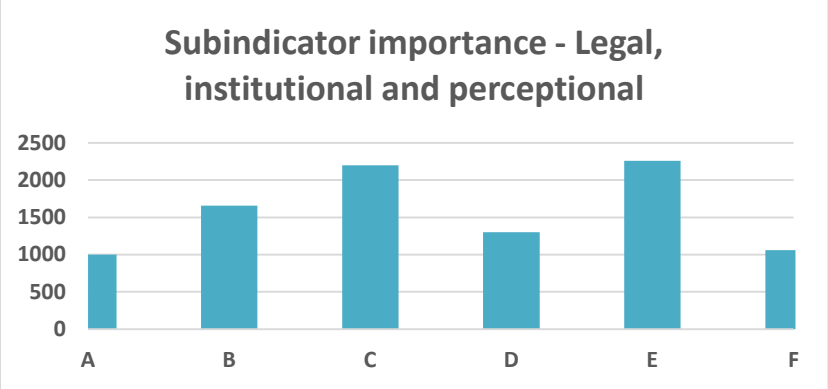
Figure 22

People who will benefit from the actions n. Of people) 1	**A**
Most vulnerable people who will benefit from the actions (n. Of people)	B
New job created by the actions (n. Of job) 2	C
Km - upgraded infrastructure (km)	D
New infrastructure (km) 3	E



Implementation cost (€) 3	**A**
Management cost (€)	B
Revenues (€)	C
Revenues distribution (n. Of actors)	D
Enterprises supported (n. Of enterprises) 1	E
New enterprises (n. Of enterprises) 2	F
Traditional crops (ton/year)	G

Figure 23



Legal feasibility (low-medium-high)	**A**
Required permits (n. Of permits)	B
Procedural time (days) 3	C
Life time (days) 2	D
Peple acceptability (low-medium-high) 1	E
Political acceptability (low-medium-high)	F

Figure 24

5.2.2. Decisionmaker selection

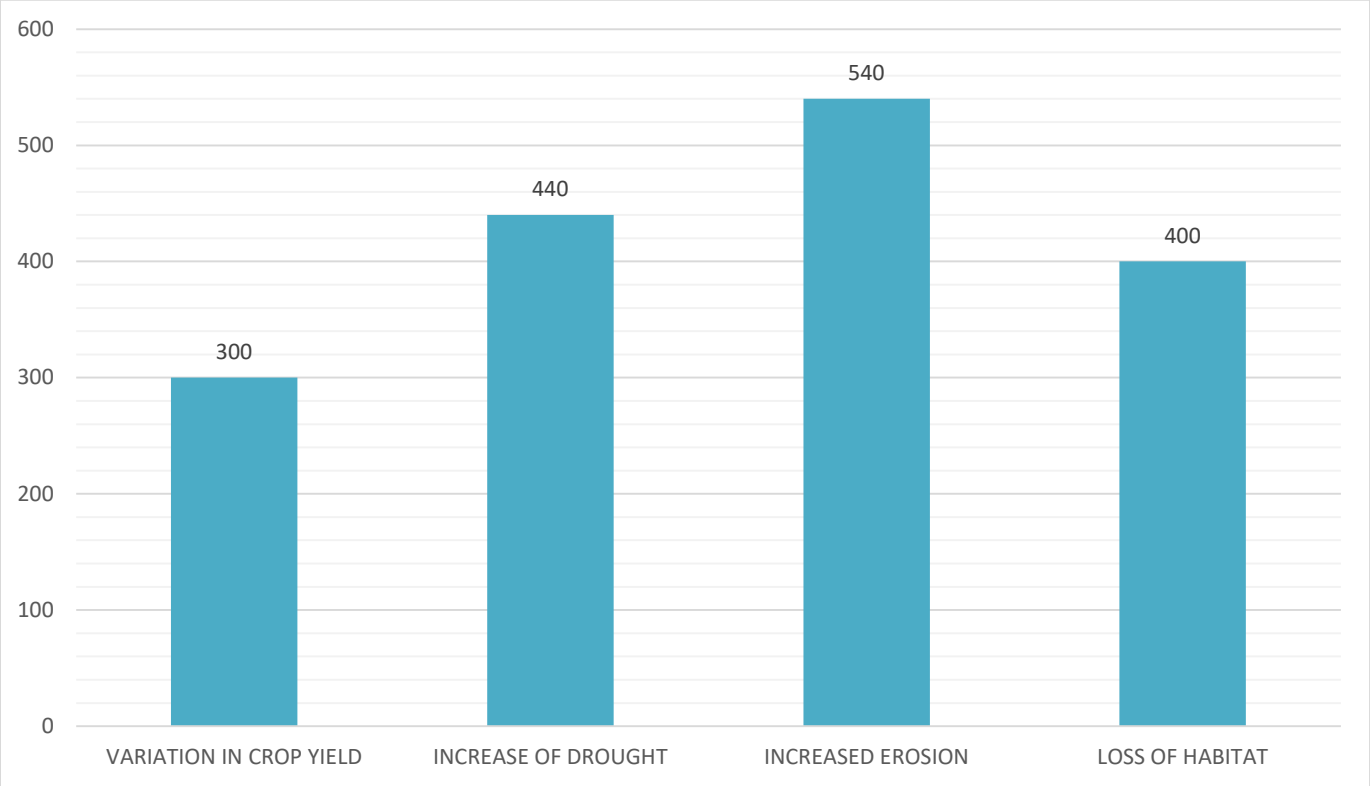


Figure 25

Parco Dune's Decisionmakers give a crescent selection growing from "Variation in crop yield" (300), then "Loss of habitat" (408), then "Increase of drought" (440), and, on the top, "Increased erosion" (540).

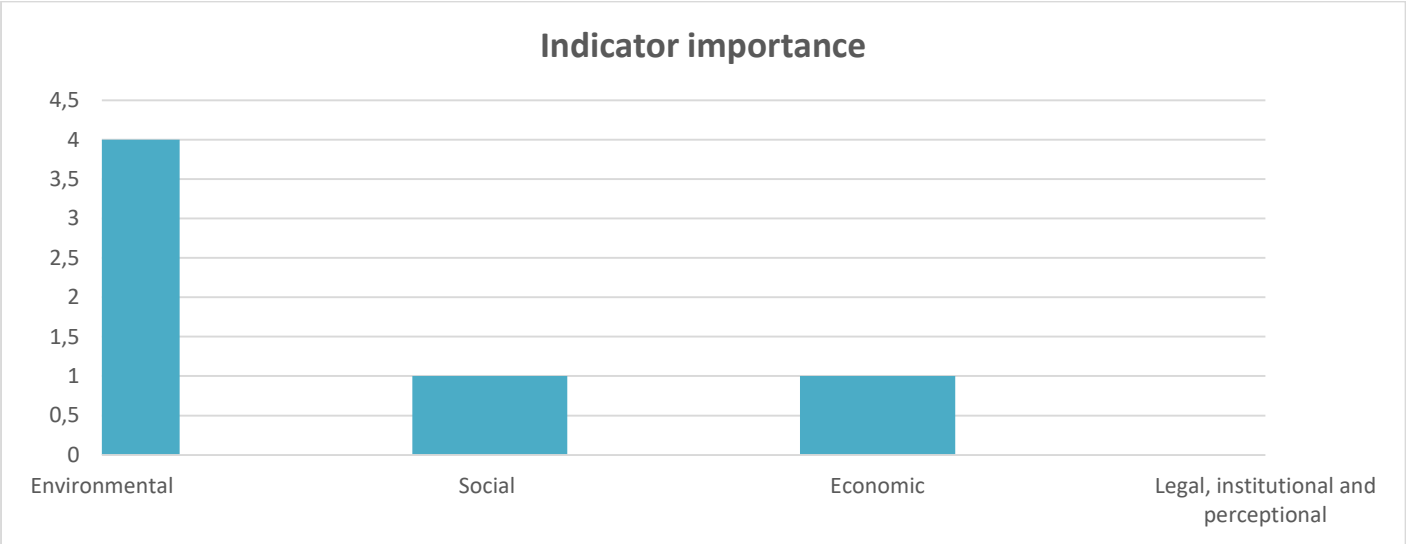
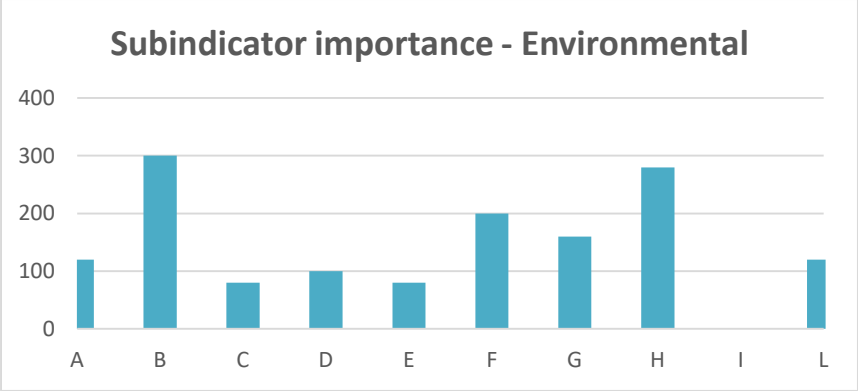
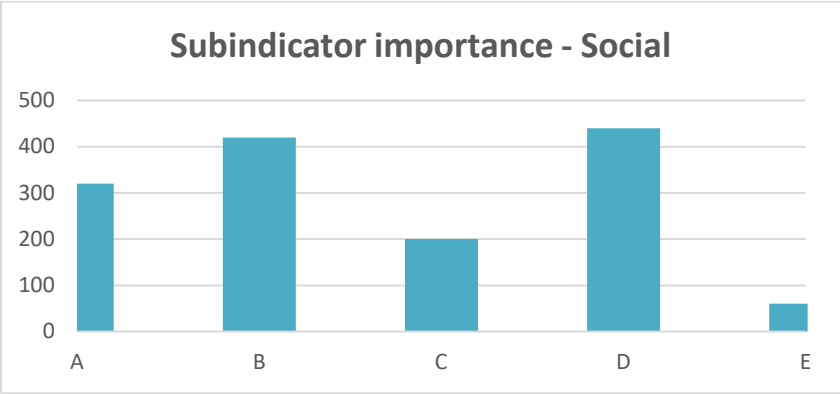


Figure 26



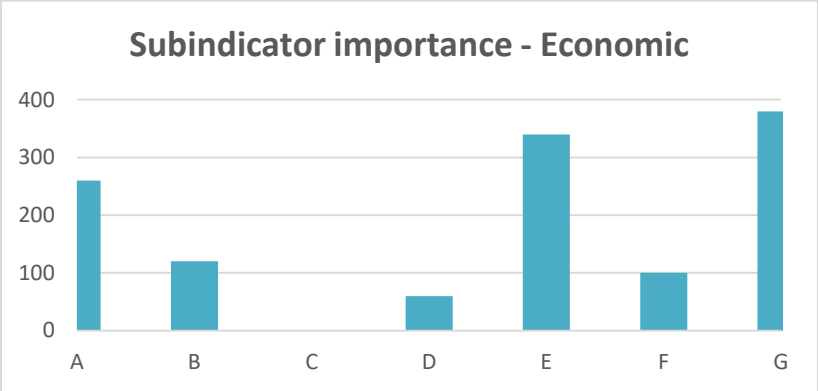
Soil coastal erosion (m2)	**A**
Soil drought (m2)	B
Impermeability ratio (m2)	C
Flooding area (m2)	D
Collected rain water (m3/year) 3	E
Reused water (m3/year) 2	F
Water consumption 1	G
Habitat maintenance (m2)	H
Uhi reduction (c°)	I
Energy use reduction (%)	L

Figure 27



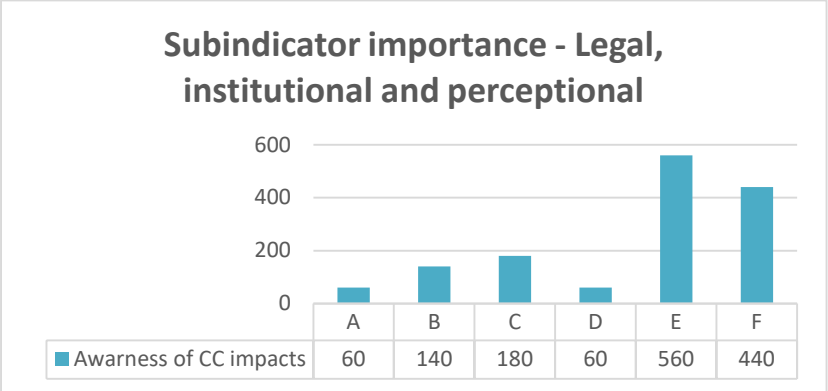
People who will benefit from the actions n. Of people) 1	**A**
Most vulnerable people who will benefit from the actions (n. Of people)	B
New job created by the actions (n. Of job) 2	C
Km - upgraded infrastructure (km)	D
New infrastructure (km) 3	E

Figure 28



Implementation cost (€) 3	**A**
Management cost (€)	B
Revenues (€)	C
Revenues distribution (n. Of actors)	D
Enterprises supported (n. Of enterprises) 1	E
New enterprises (n. Of enterprises) 2	F
Traditional crops (ton/year)	G

Figure 29



Legal feasibility (low-medium-high)	A
Required permits (n. Of permits)	B
Procedural time (days) 3	C
Life time (days) 2	D
Peple acceptability (low-medium-high) 1	E
Political acceptability (low-medium-high)	F

Figure 30

5.2.3. Stakeholder selection

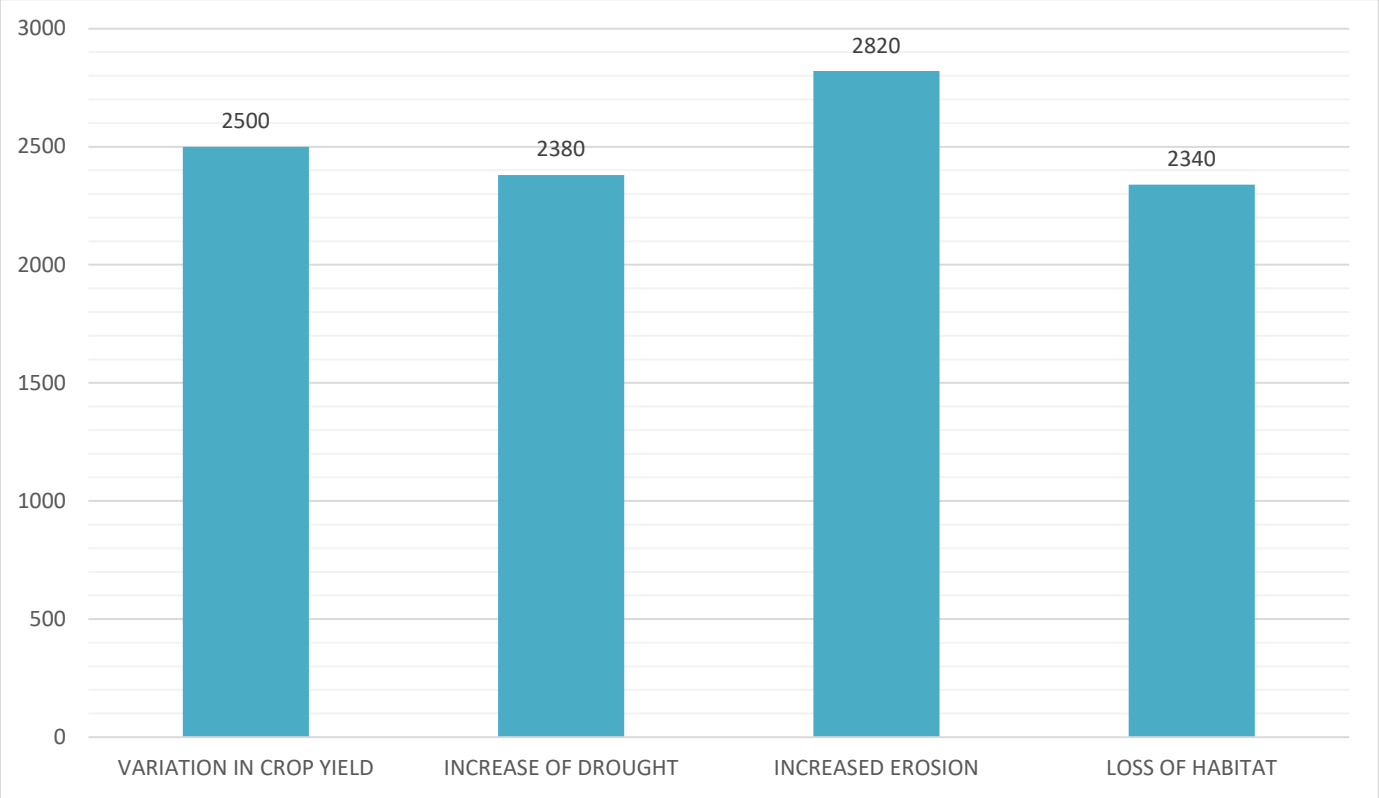


Figure 31

Parco Dune's Stakeholder has a crescent selection from: "Loss of habitat" (2340), almost similar to "Increase of drought" (2380), then "Variation in crop yield" (2500), and, on the top, "Increased erosion" (2820).

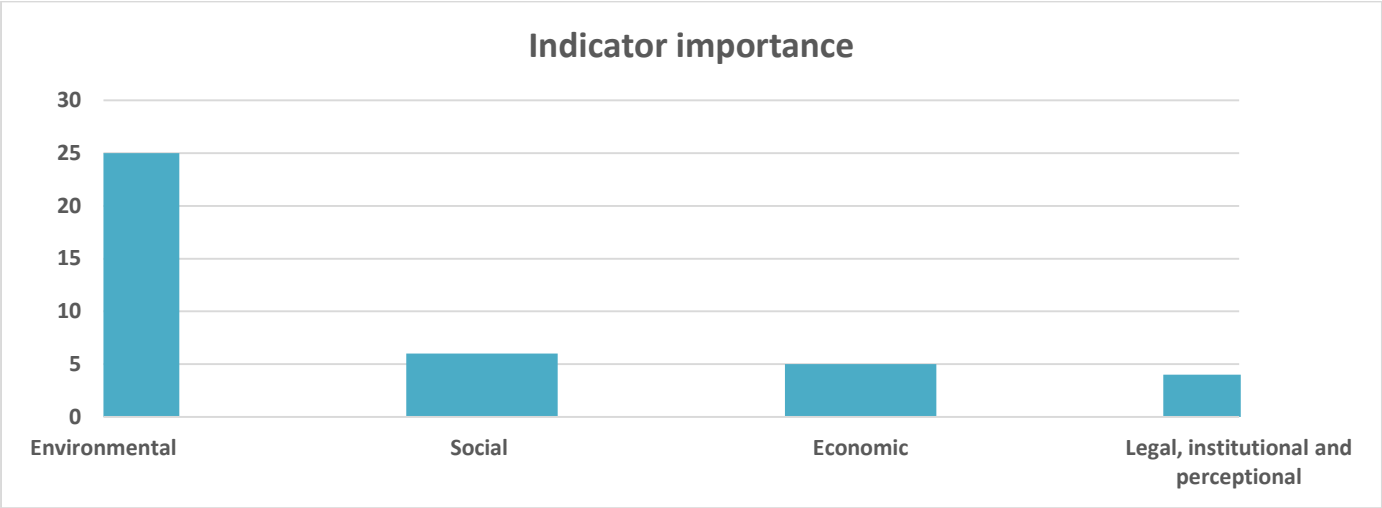
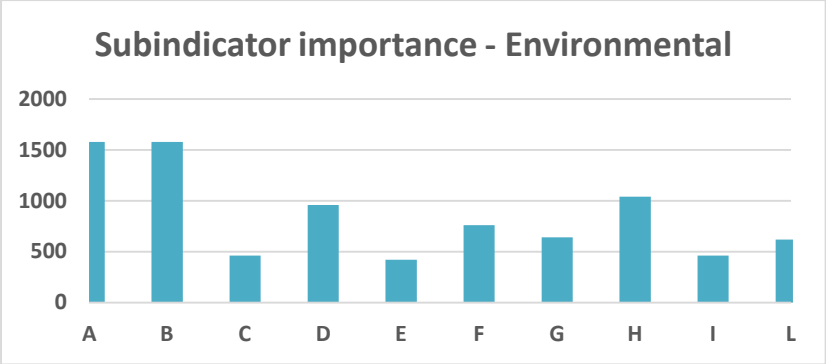
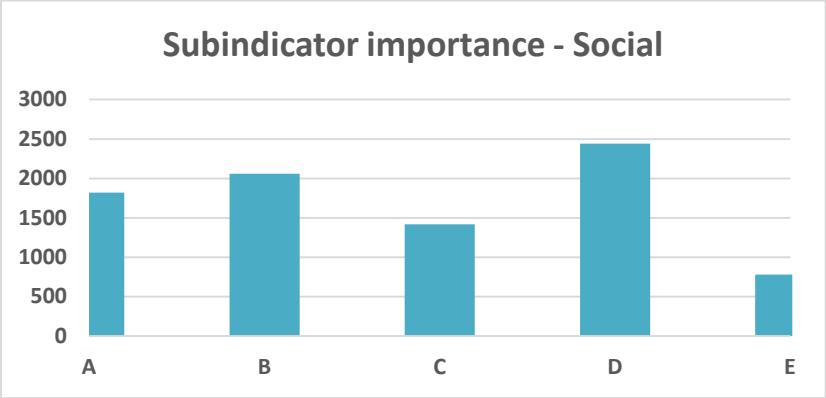


Figure 32



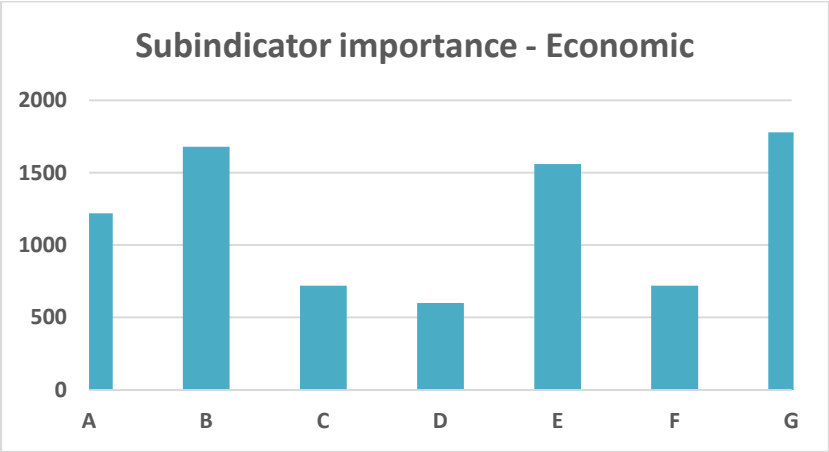
Soil coastal erosion (m2)	**A**
Soil drought (m2)	B
Impermeability ratio (m2)	C
Flooding area (m2)	D
Collected rain water (m3/year) 3	E
Reused water (m3/year) 2	F
Water consumption 1	G
Habitat maintenance (m2)	H
Uhi reduction (c°)	I
Energy use reduction (%)	L

Figure 33



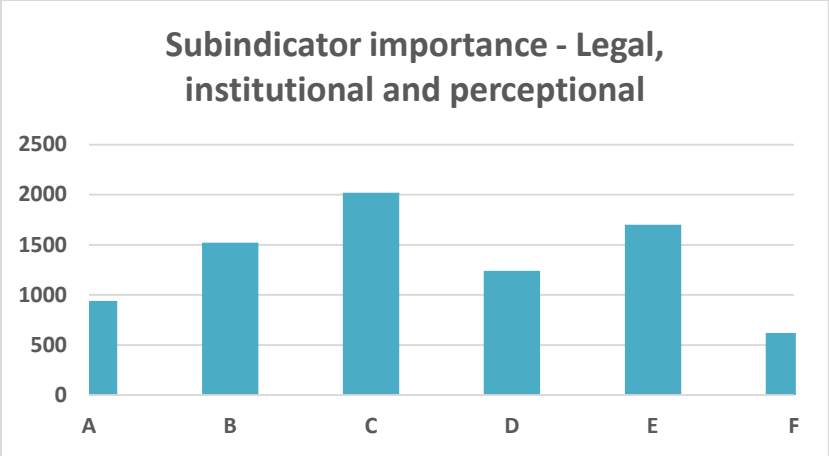
People who will benefit from the actions n. Of people) 1	**A**
Most vulnerable people who will benefit from the actions (n. Of people)	B
New job created by the actions (n. Of job) 2	C
Km - upgraded infrastructure (km)	D
New infrastructure (km) 3	E

Figure 34



Implementation cost (€) 3	A
Management cost (€)	B
Revenues (€)	C
Revenues distribution (n. Of actors)	D
Enterprises supported (n. Of enterprises) 1	E
New enterprises (n. Of enterprises) 2	F
Traditional crops (ton/year)	G

Figure 35



Legal feasibility (low-medium-high)	A
Required permits (n. Of permits)	B
Procedural time (days) 3	C
Life time (days) 2	D
Peple acceptability (low-medium-high) 1	E
Political acceptability (low-medium-high)	F

Figure 36

Figure 8

5.3. Irena

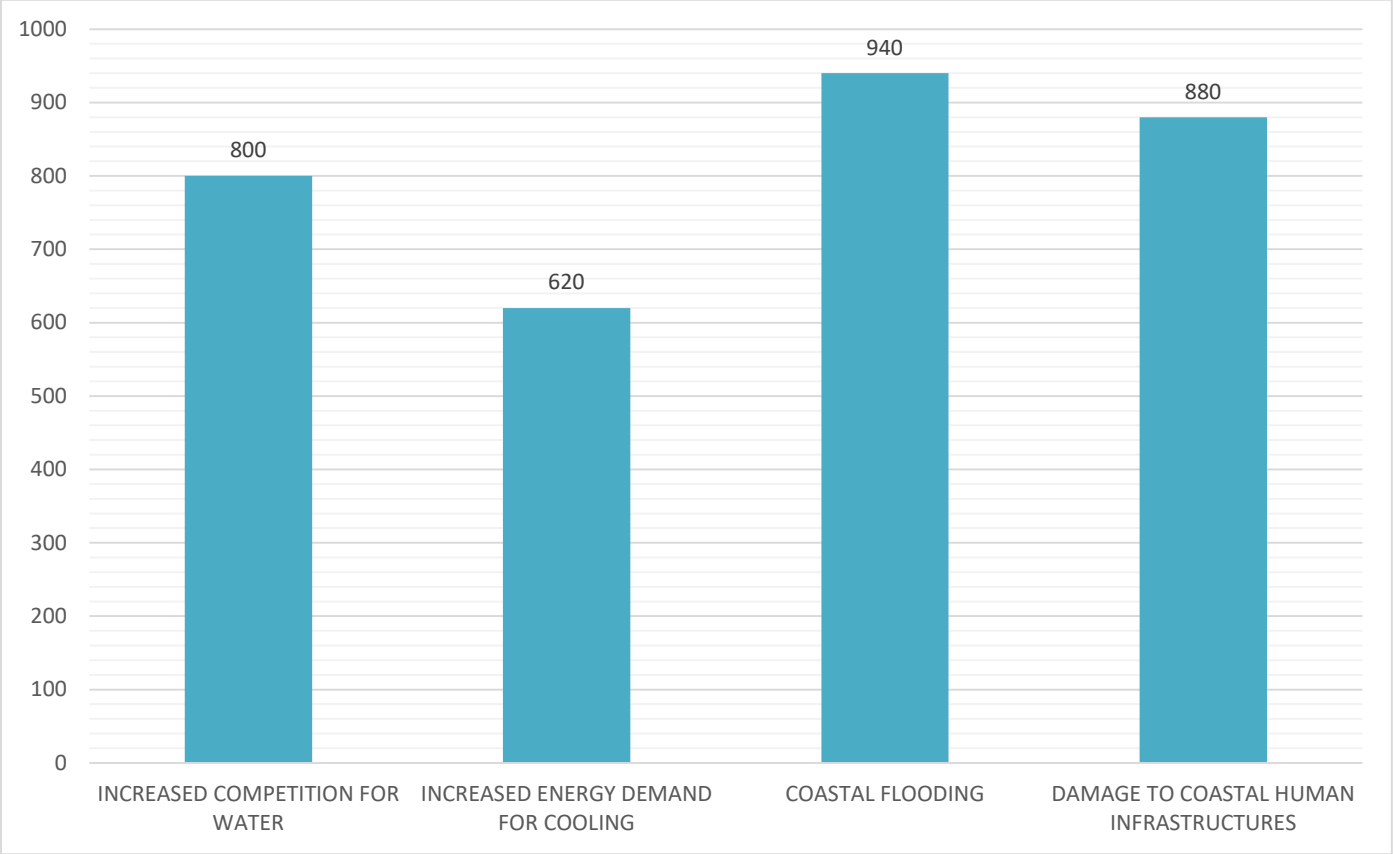


Figure 37

Irena's general selection of the impacts has a crescent selection from "Increased energy demand for cooling" (620), then "Increased competition for water" (800) and "Damage to coastal human infrastructure" (880), and, on the top, "Coastal flooding" (940).

5.3.1. General Selection of the indicators

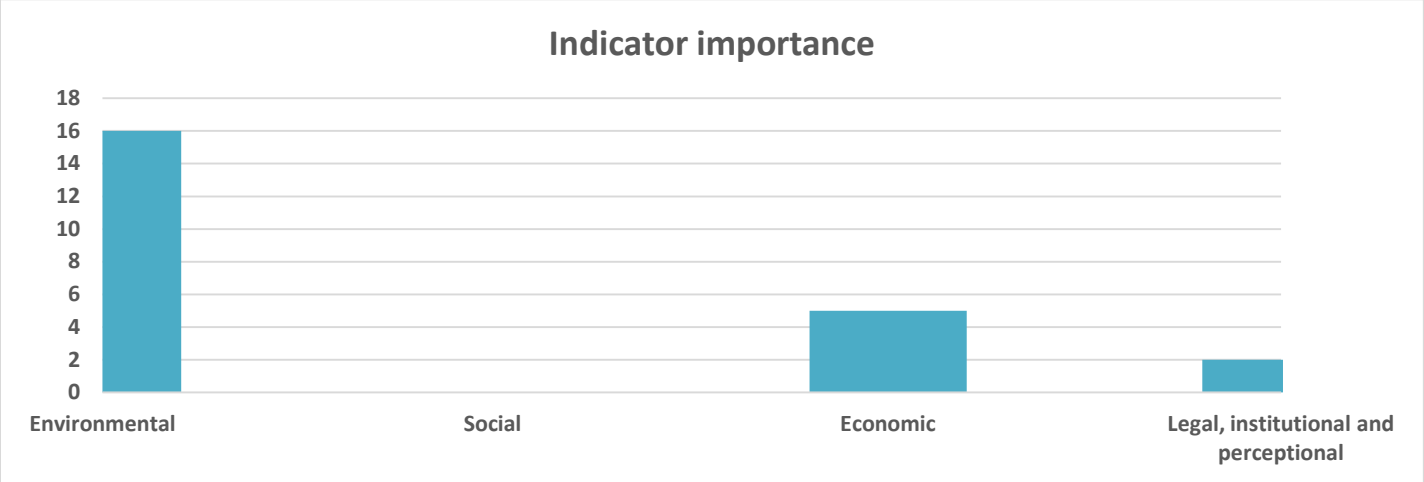


Figure 38

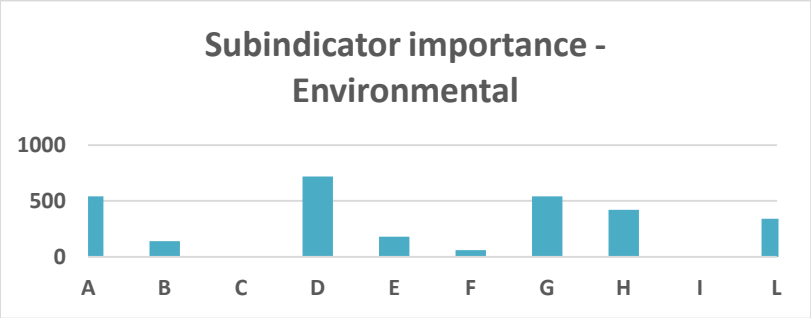


Figure 39

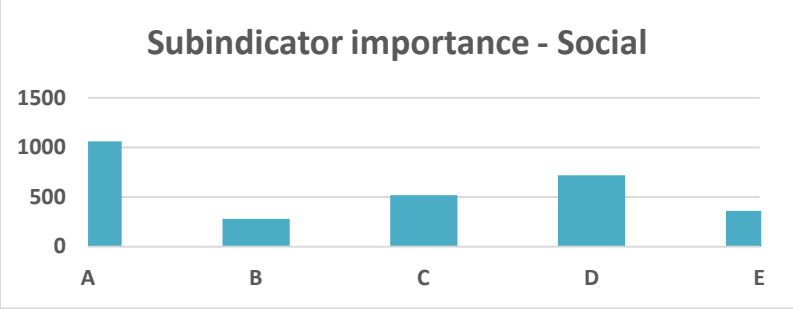
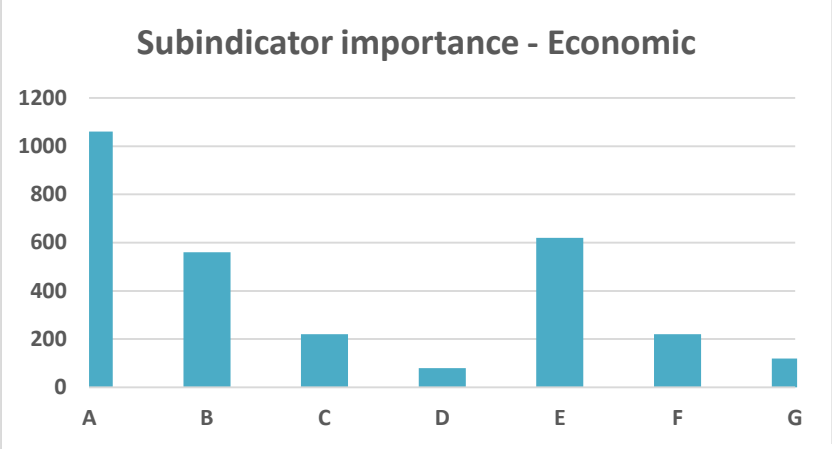


Figure 40

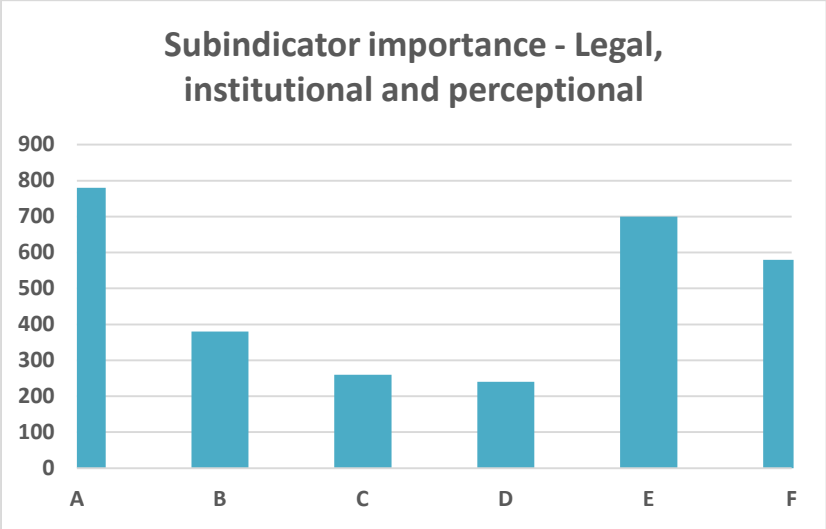
Soil coastal erosion (m2)	**A**
Soil drought (m2)	B
Impermeability ratio (m2)	C
Flooding area (m2)	D
Collected rain water (m3/year) 3	E
Reused water (m3/year) 2	F
Water consumption 1	G
Habitat maintenance (m2)	H
Uhi reduction (c°)	I
Energy use reduction (%)	L

People who will benefit from the actions n. Of people) 1	**A**
Most vulnerable people who will benefit from the actions (n. Of people)	B
New job created by the actions (n. Of job) 2	C
Km - upgraded infrastructure (km)	D
New infrastructure (km) 3	E



Implementation cost (€) 3	**A**
Management cost (€)	B
Revenues (€)	C
Revenues distribution (n. Of actors)	D
Enterprises supported (n. Of enterprises) 1	E
New enterprises (n. Of enterprises) 2	F
Traditional crops (ton/year)	G

Figure 41



Legal feasibility (low-medium-high)	**A**
Required permits (n. Of permits)	B
Procedural time (days) 3	C
Life time (days) 2	D
Peple acceptability (low-medium-high) 1	E
Political acceptability (low-medium-high)	F

Figure 42

5.3.2. Decisionmaker selection

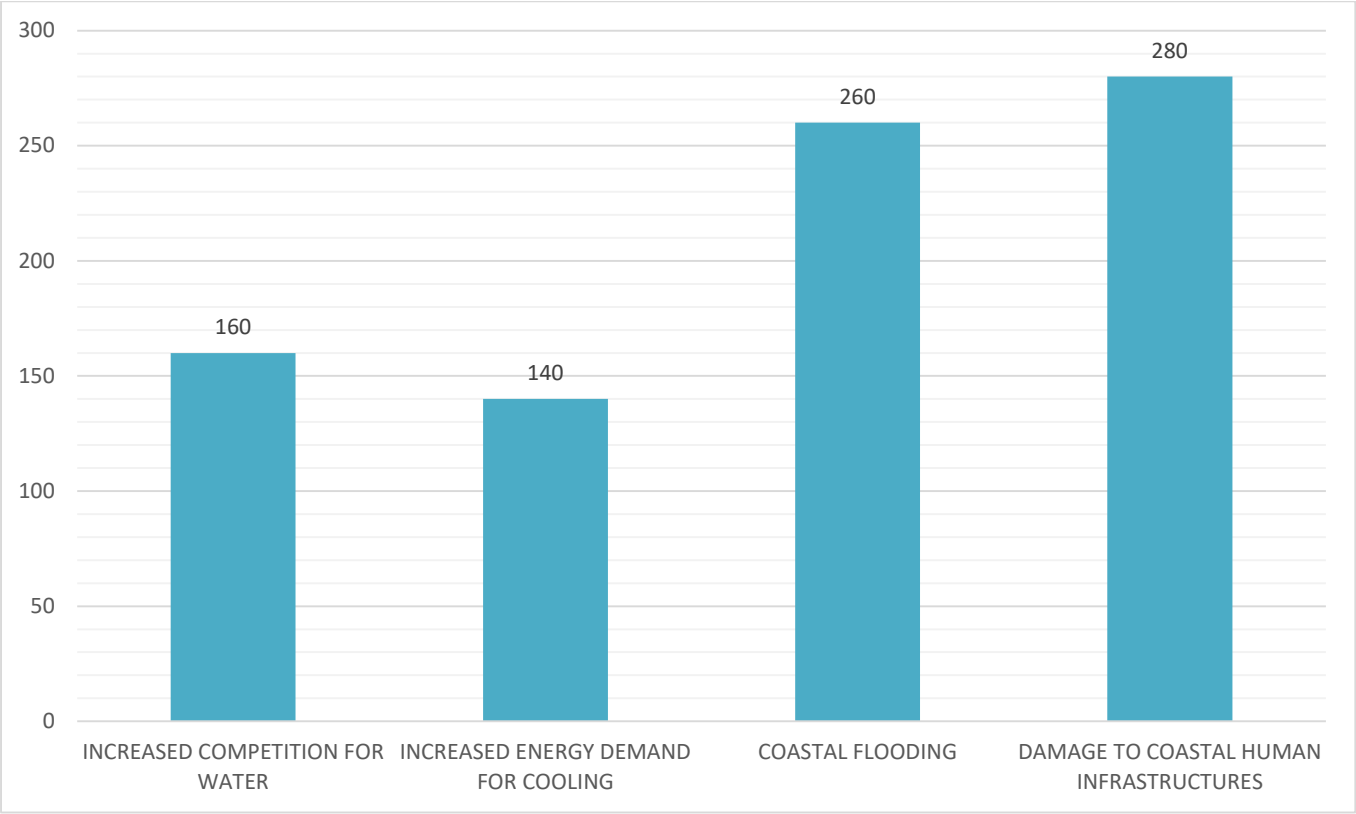


Figure 43

Decisionmaker give a crescent response from: “Increased energy demand for cooling” (140), then “Increased competition for water” (160), then “Coastal flooding” (260), and, on the top, “Damage to coastal human infrastructure” (280).

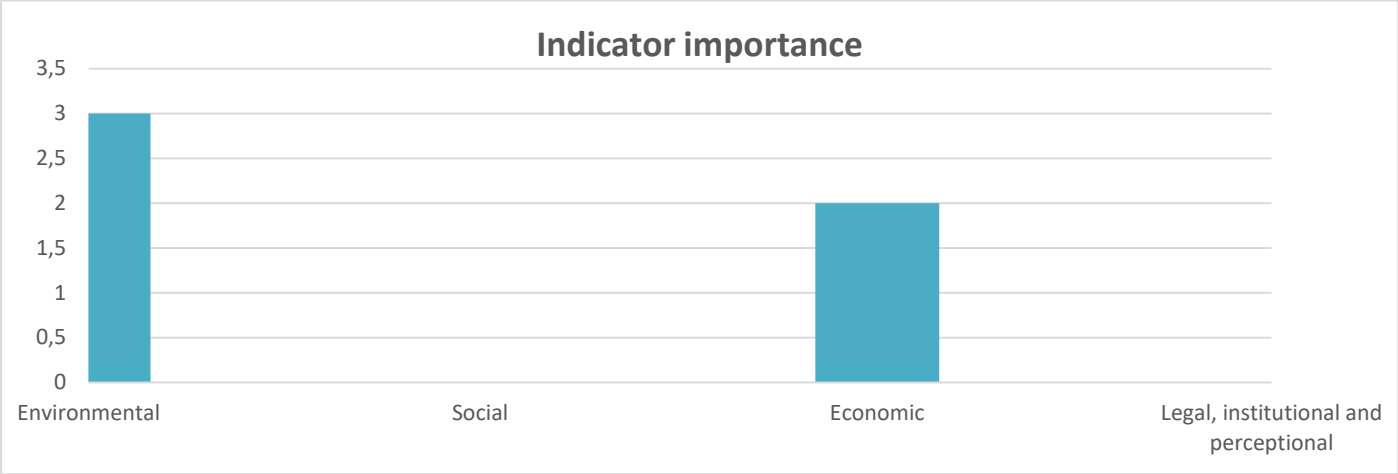


Figure 44

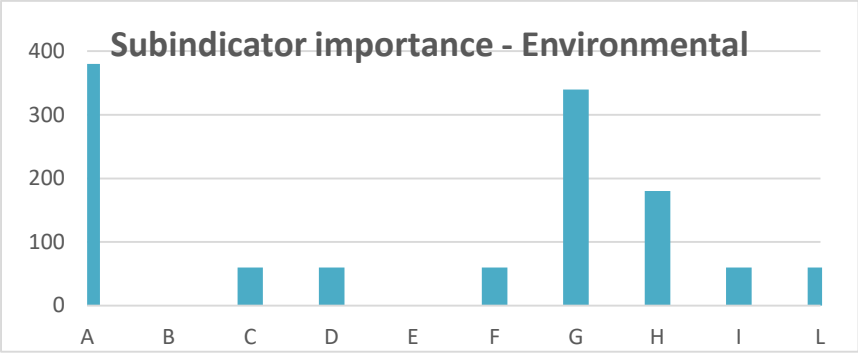


Figure 45

Soil coastal erosion (m2)	**A**
Soil drought (m2)	B
Impermeability ratio (m2)	C
Flooding area (m2)	D
Collected rain water (m3/year) 3	E
Reused water (m3/year) 2	F
Water consumption 1	G
Habitat maintenance (m2)	H
Uhi reduction (c°)	I
Energy use reduction (%)	L

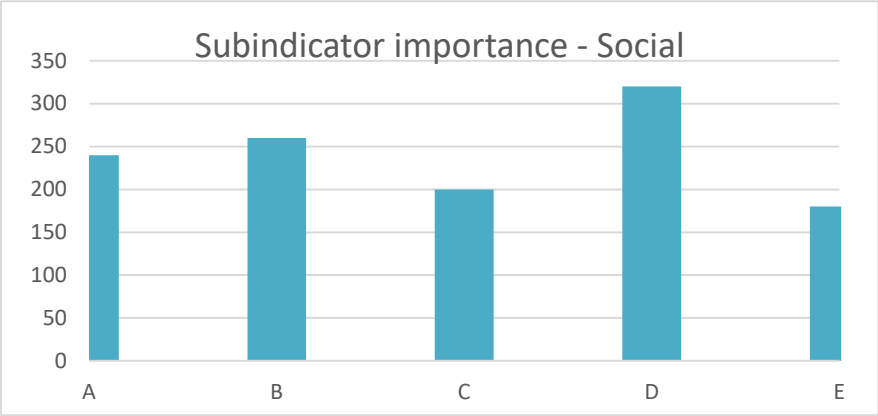
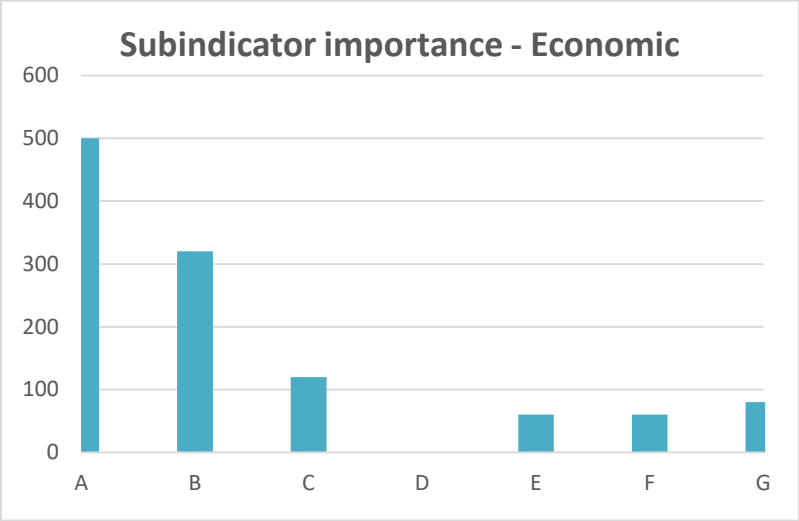


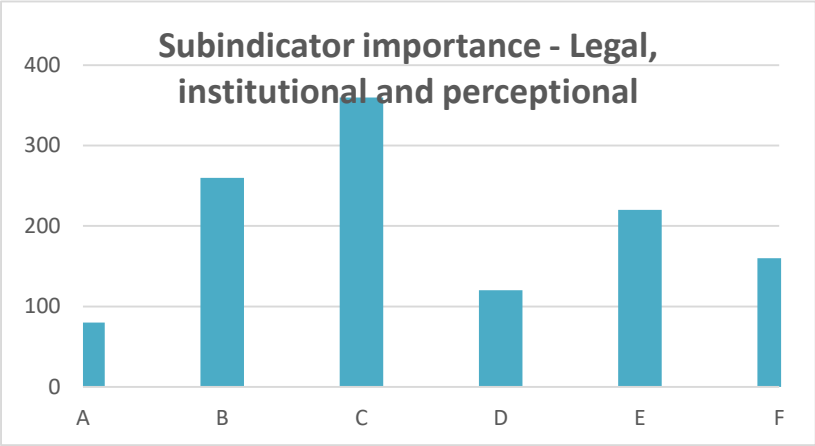
Figure 46

People who will benefit from the actions n. Of people) 1	**A**
Most vulnerable people who will benefit from the actions (n. Of people)	B
New job created by the actions (n. Of job) 2	C
Km - upgraded infrastructure (km)	D
New infrastructure (km) 3	E



Implementation cost (€) 3	**A**
Management cost (€)	B
Revenues (€)	C
Revenues distribution (n. Of actors)	D
Enterprises supported (n. Of enterprises) 1	E
New enterprises (n. Of enterprises) 2	F
Traditional crops (ton/year)	G

Figure 47



Legal feasibility (low-medium-high)	**A**
Required permits (n. Of permits)	B
Procedural time (days) 3	C
Life time (days) 2	D
Peple acceptability (low-medium-high) 1	E
Political acceptability (low-medium-high)	F

Figure 9

5.3.3. Stakeholder selection

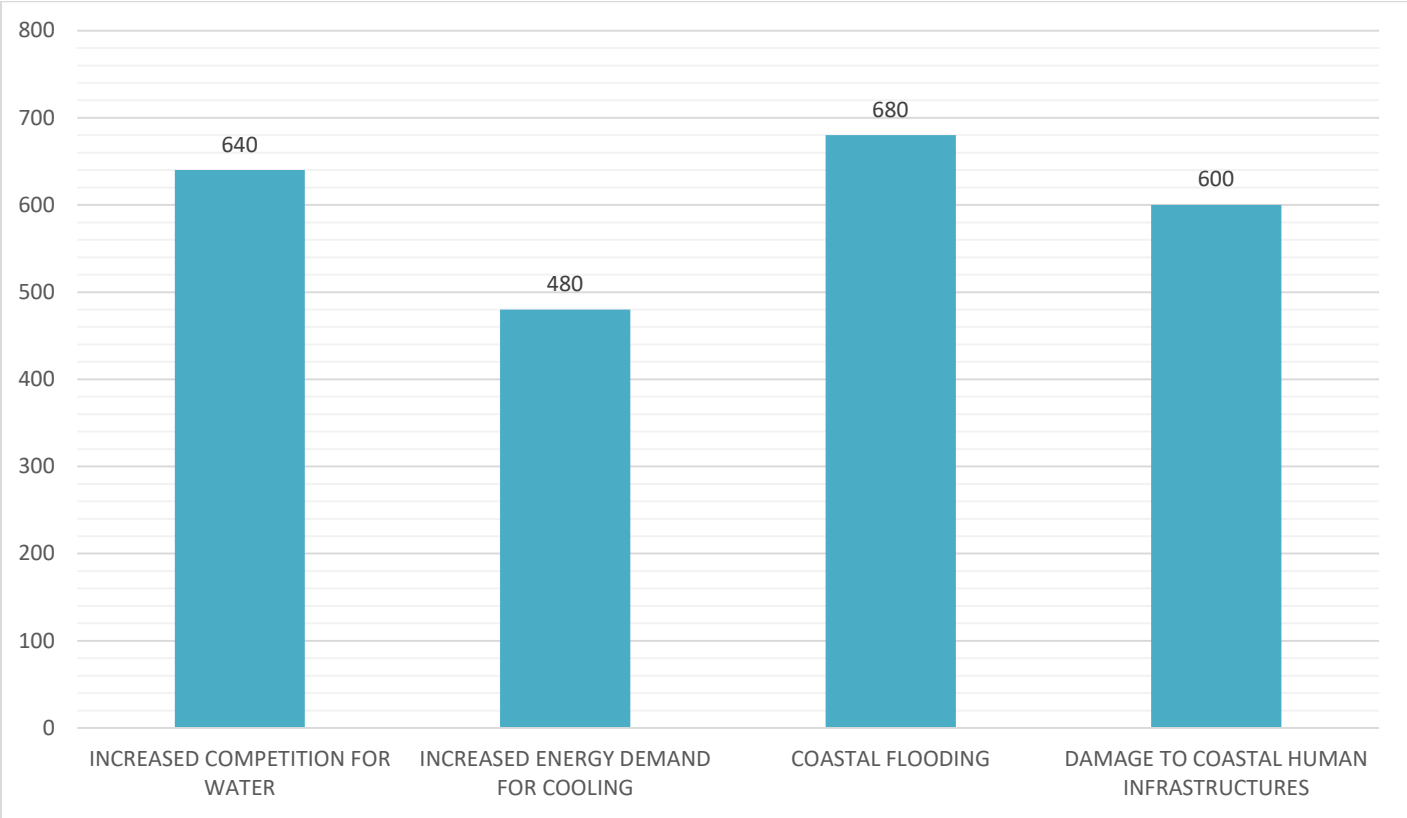


Figure 10

In Irena, Stakeholders's selection grows from "Increased energy demand for cooling" (480), then "Damage to coastal human infrastructure" (600), then similarly "Increased competition for water" (640), and, on the top, "Coastal flooding" (680).

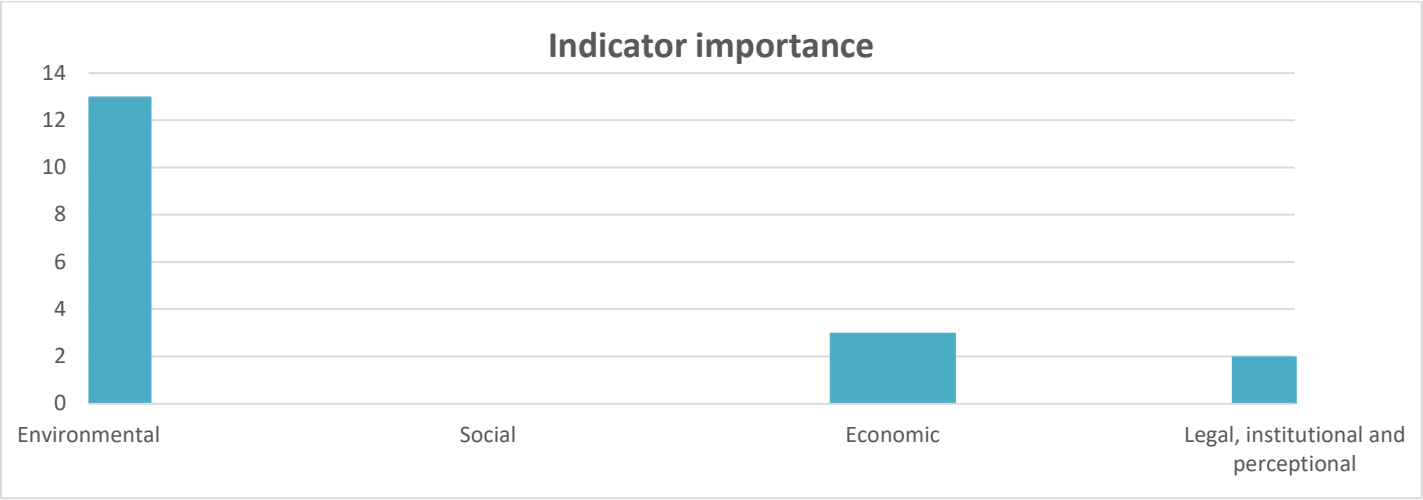


Figure 11

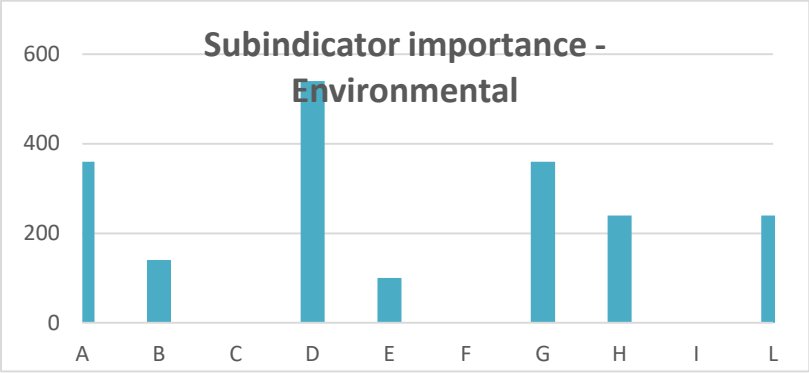


Figure 12

Soil coastal erosion (m2)	**A**
Soil drought (m2)	B
Impermeability ratio (m2)	C
Flooding area (m2)	D
Collected rain water (m3/year) 3	E
Reused water (m3/year) 2	F
Water consumption 1	G
Habitat maintenance (m2)	H
Uhi reduction (c°)	I
Energy use reduction (%)	L

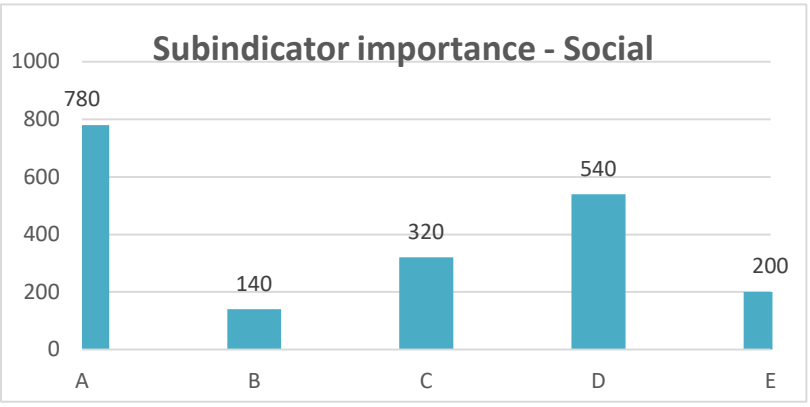
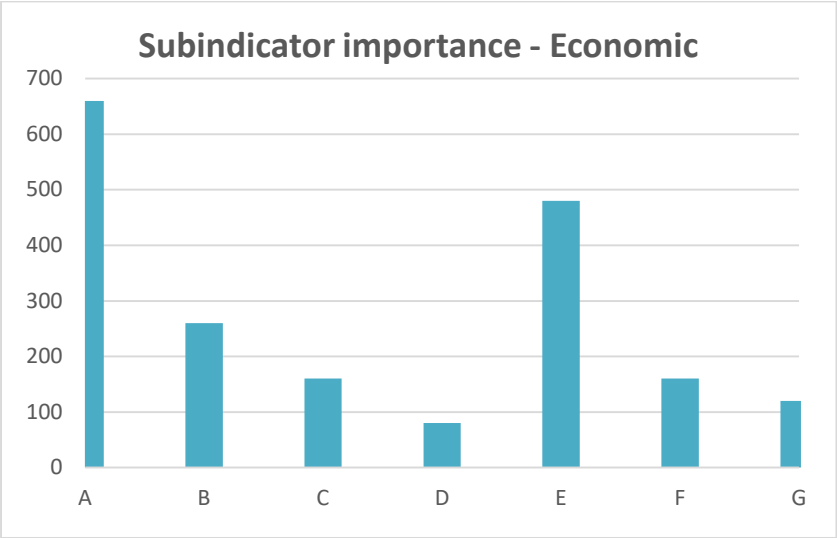


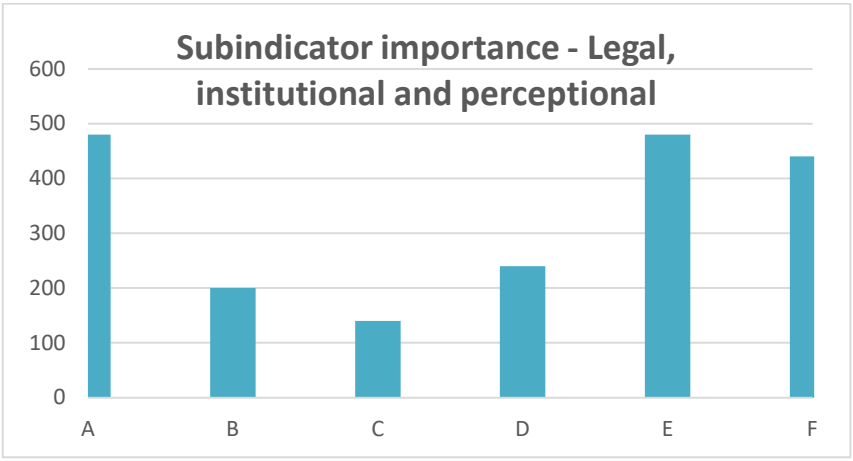
Figure 13

People who will benefit from the actions n. Of people) 1	**A**
Most vulnerable people who will benefit from the actions (n. Of people)	B
New job created by the actions (n. Of job) 2	C
Km - upgraded infrastructure (km)	D
New infrastructure (km) 3	E



Implementation cost (€) 3	**A**
Management cost (€)	B
Revenues (€)	C
Revenues distribution (n. Of actors)	D
Enterprises supported (n. Of enterprises) 1	E
New enterprises (n. Of enterprises) 2	F
Traditional crops (ton/year)	G

Figure 14



Legal feasibility (low-medium-high)	**A**
Required permits (n. Of permits)	B
Procedural time (days) 3	C
Life time (days) 2	D
Peple acceptability (low-medium-high) 1	E
Political acceptability (low-medium-high)	F

Figure 15

5.4. Misano Adriatico

5.4.1. General Selection of the indicators

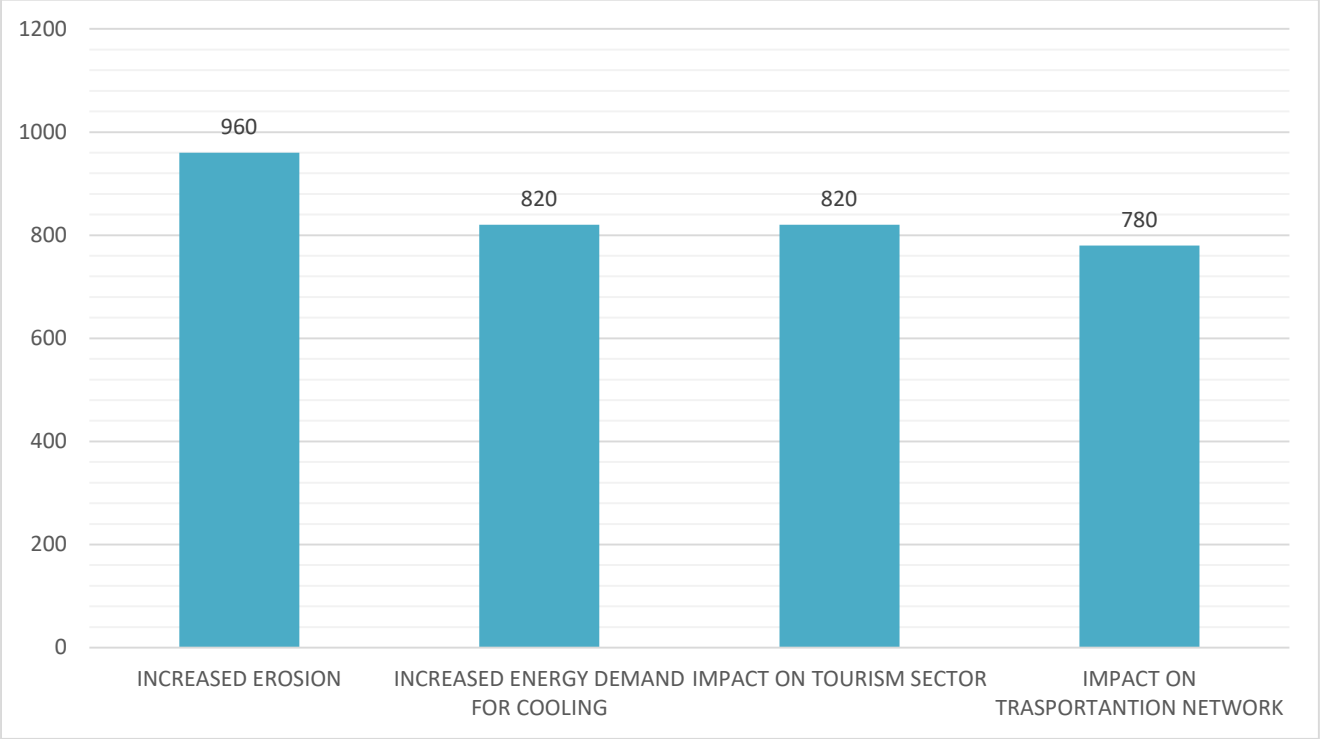


Figure 16

Misano's general selection has a crescent selection from: "Impact on transportation network" (780), then, with the same result, "Increased energy demand for cooling" and "Impact on tourism sector" (820), and, on the top, "Increased erosion" (960).

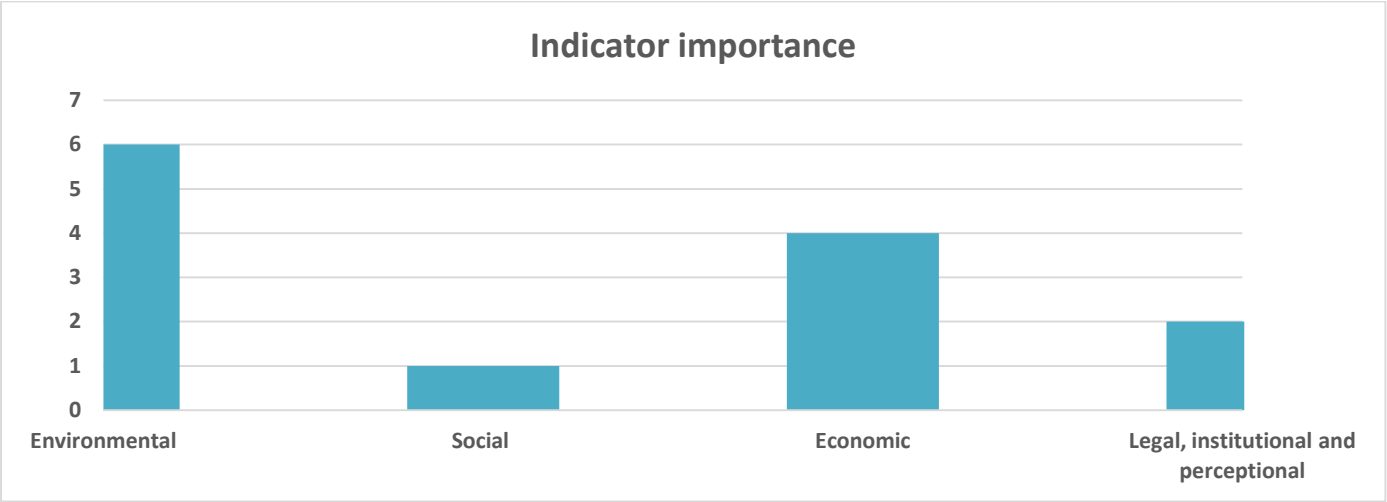


Figure 17

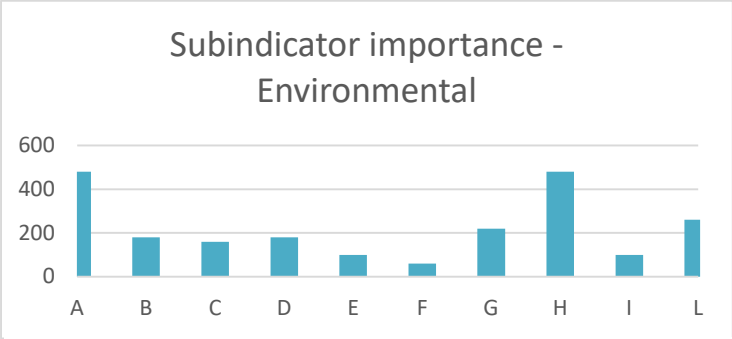


Figura 55

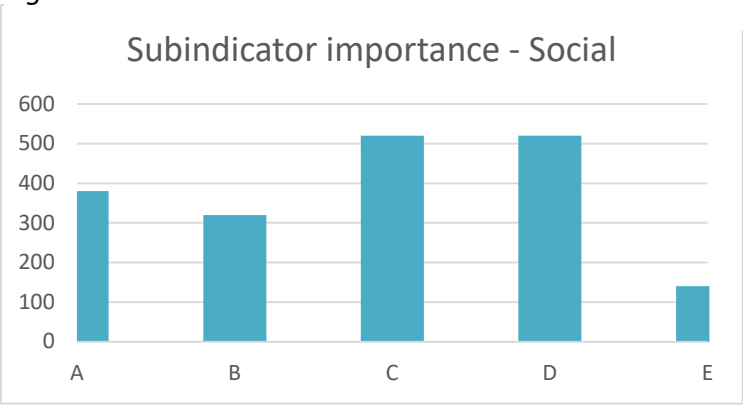
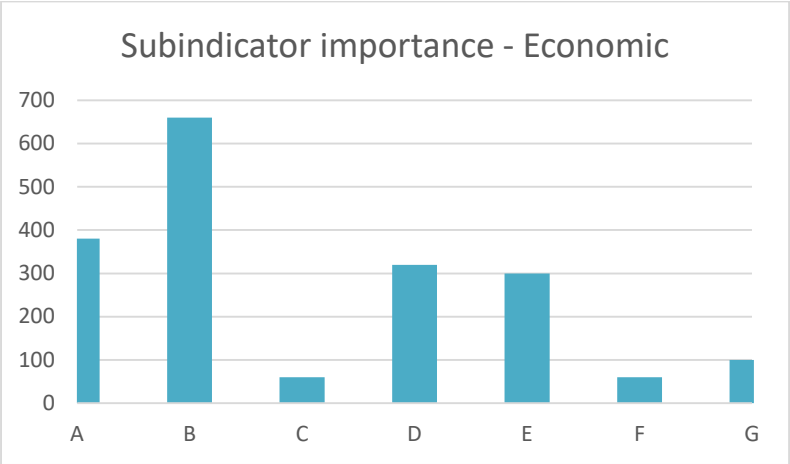


Figure 18

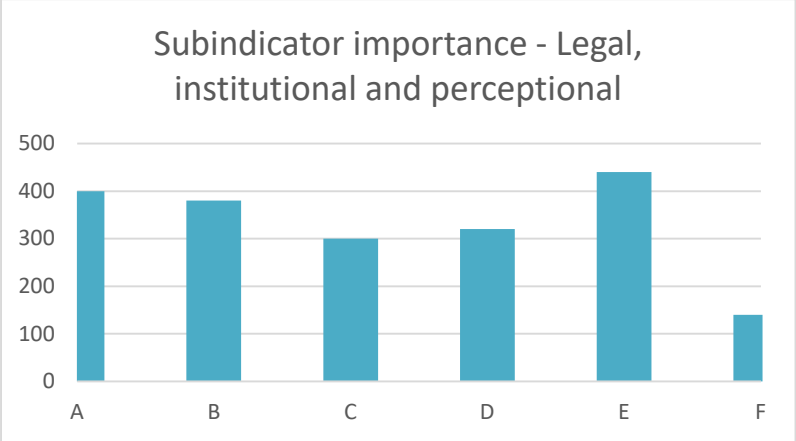
Soil coastal erosion (m2)	**A**
Soil drought (m2)	B
Impermeability ratio (m2)	C
Flooding area (m2)	D
Collected rain water (m3/year) 3	E
Reused water (m3/year) 2	F
Water consumption 1	G
Habitat maintenance (m2)	H
Uhi reduction (c°)	I
Energy use reduction (%)	L

People who will benefit from the actions n. Of people) 1	**A**
Most vulnerable people who will benefit from the actions (n. Of people)	B
New job created by the actions (n. Of job) 2	C
Km - upgraded infrastructure (km)	D
New infrastructure (km) 3	E



Implementation cost (€) 3	**A**
Management cost (€)	B
Revenues (€)	C
Revenues distribution (n. Of actors)	D
Enterprises supported (n. Of enterprises) 1	E
New enterprises (n. Of enterprises) 2	F
Traditional crops (ton/year)	G

Figure 19



Legal feasibility (low-medium-high)	**A**
Required permits (n. Of permits)	B
Procedural time (days) 3	C
Life time (days) 2	D
Peple acceptability (low-medium-high) 1	E
Political acceptability (low-medium-high)	F

Figure 20

5.4.2. Decisionmaker selection

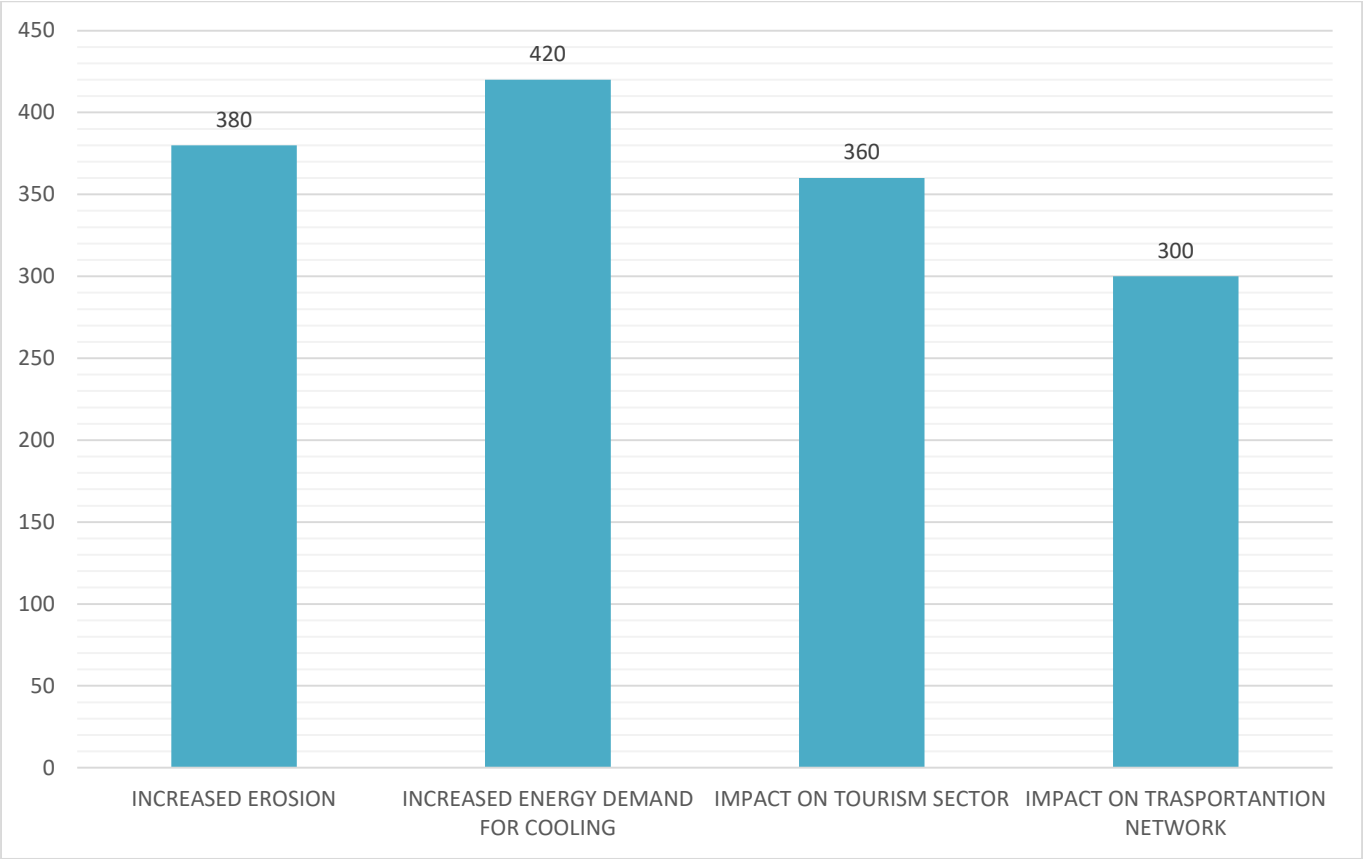


Figure 21

Decisionmakers give a selection crescent from: “Impact on transportation network” (300), then, similarly “Impact on tourism sector” (360) and “Increased erosion” (380) and on the top “Increased energy demand for cooling” (420).

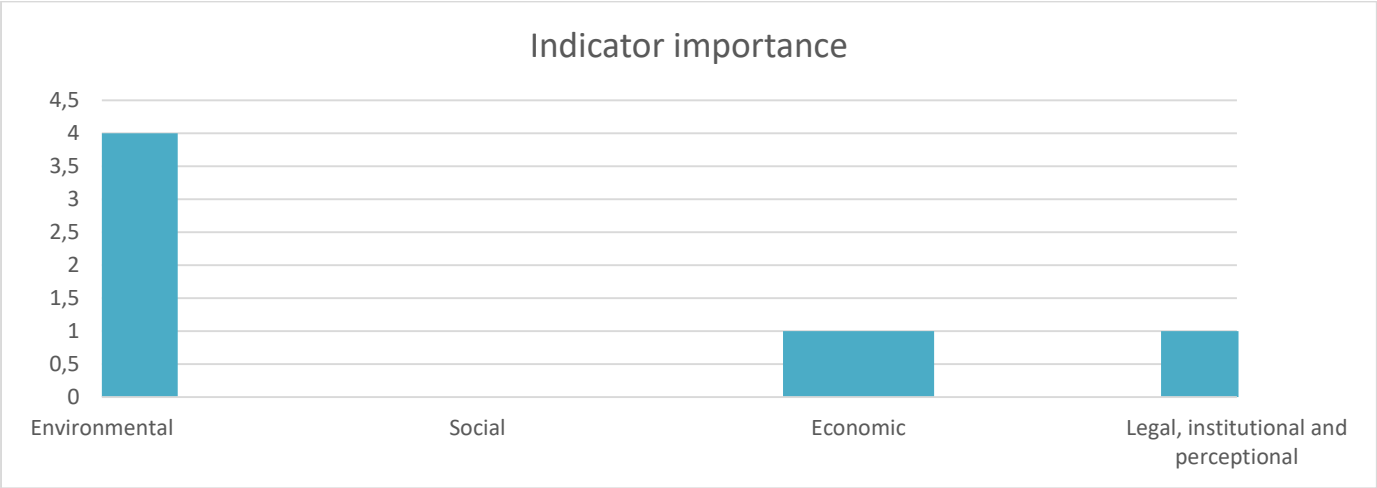
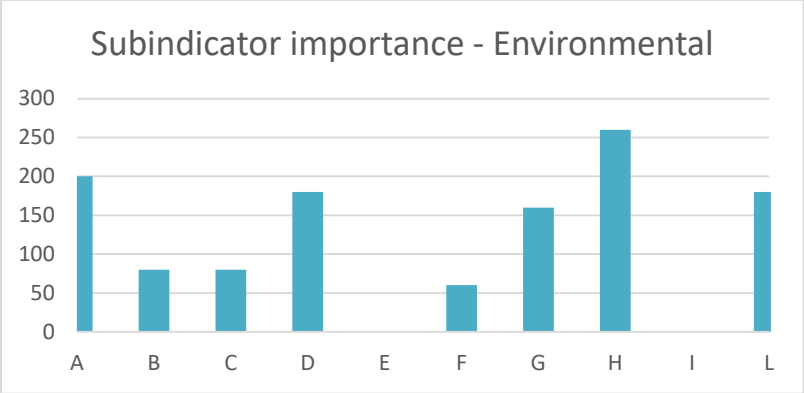
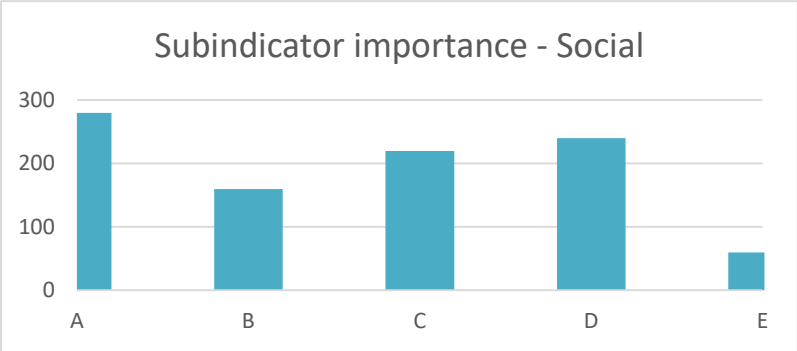


Figure 22



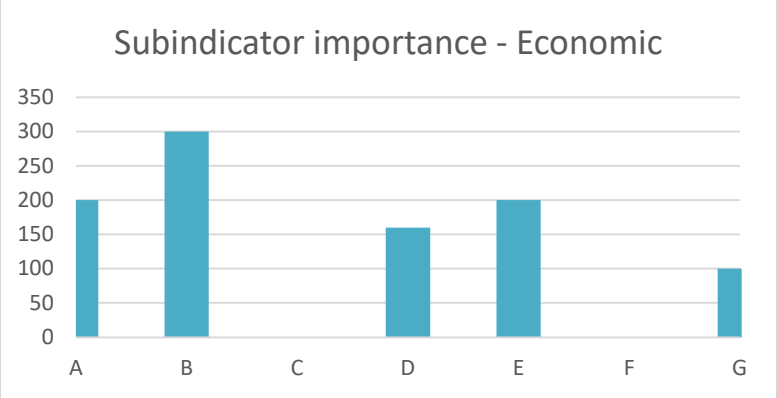
Soil coastal erosion (m2)	**A**
Soil drought (m2)	B
Impermeability ratio (m2)	C
Flooding area (m2)	D
Collected rain water (m3/year) 3	E
Reused water (m3/year) 2	F
Water consumption 1	G
Habitat maintenance (m2)	H
Uhi reduction (c°)	I
Energy use reduction (%)	L

Figure 23



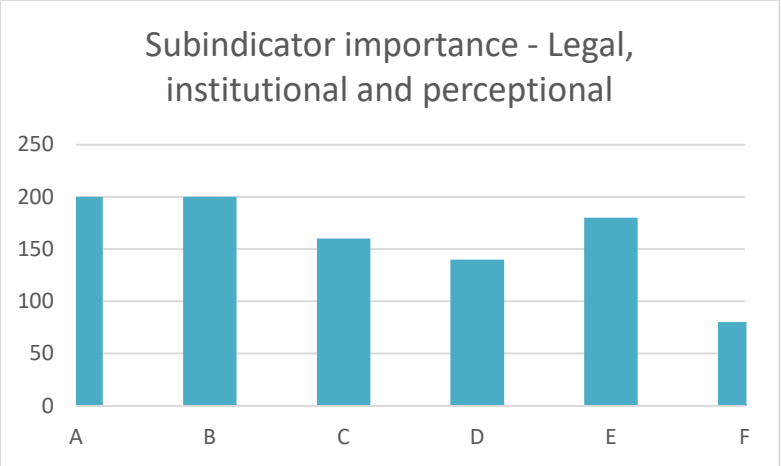
People who will benefit from the actions n. Of people) 1	**A**
Most vulnerable people who will benefit from the actions (n. Of people)	B
New job created by the actions (n. Of job) 2	C
Km - upgraded infrastructure (km)	D
New infrastructure (km) 3	E

Figure 24



Implementation cost (€) 3	**A**
Management cost (€)	B
Revenues (€)	C
Revenues distribution (n. Of actors)	D
Enterprises supported (n. Of enterprises) 1	E
New enterprises (n. Of enterprises) 2	F
Traditional crops (ton/year)	G

Figure 25



Legal feasibility (low-medium-high)	**A**
Required permits (n. Of permits)	B
Procedural time (days) 3	C
Life time (days) 2	D
Peple acceptability (low-medium-high) 1	E
Political acceptability (low-medium-high)	F

Figure 26

5.4.3. Stakeholder selection

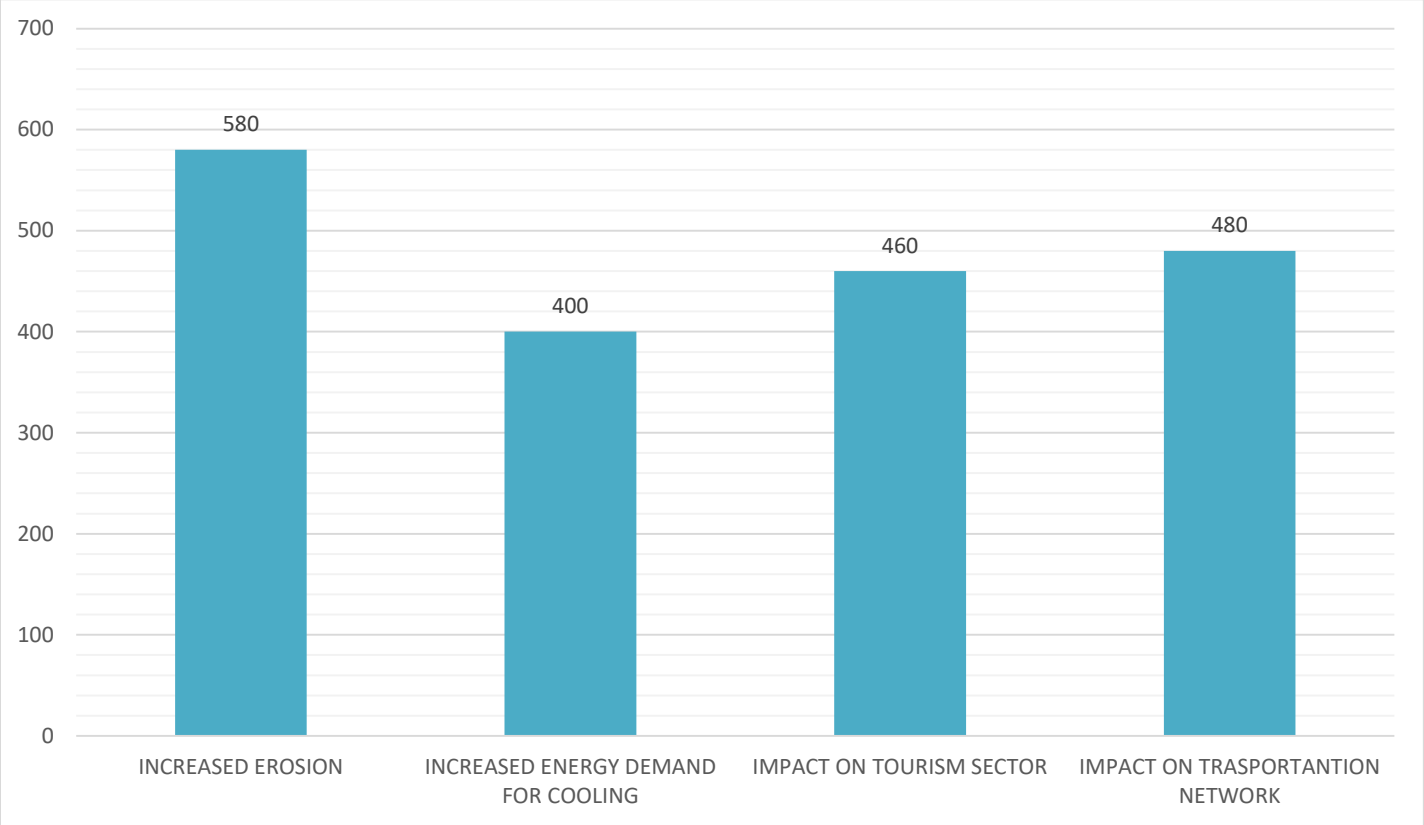


Figura 65

In Misano Adriatico, Stakeholder give a selection crescent from: “Increased energy demand for cooling” (400), then, similarly “Impact on tourism sector” (460) and “Impact on transportation network” (480) and on the top “Increased erosion” (580).

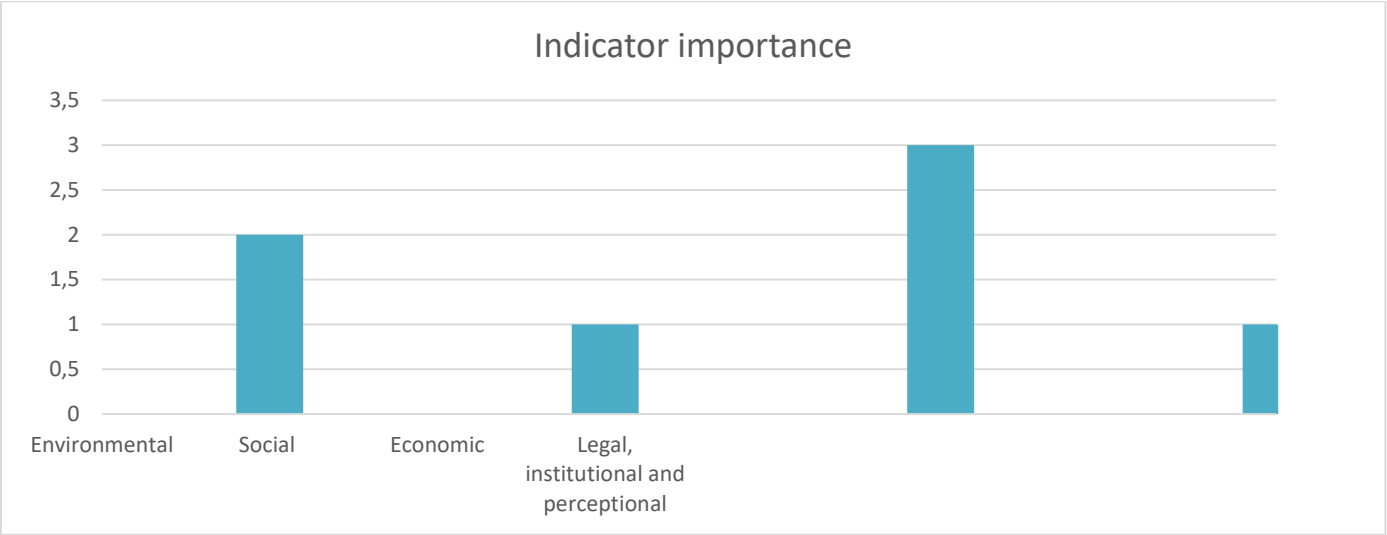


Figure 66

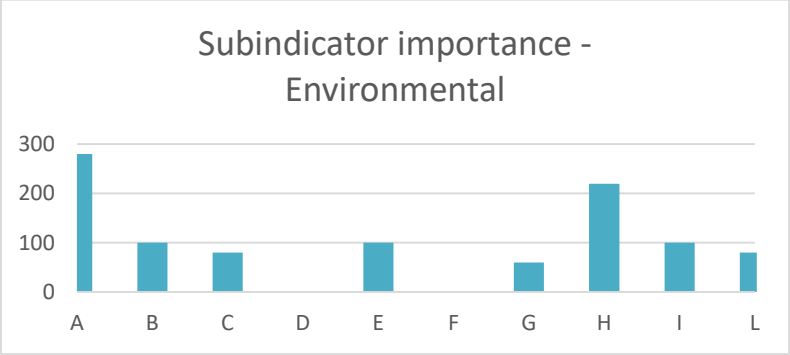


Figure 67

Soil coastal erosion (m2)	**A**
Soil drought (m2)	B
Impermeability ratio (m2)	C
Flooding area (m2)	D
Collected rain water (m3/year) 3	E
Reused water (m3/year) 2	F
Water consumption 1	G
Habitat maintenance (m2)	H
Uhi reduction (c°)	I
Energy use reduction (%)	L

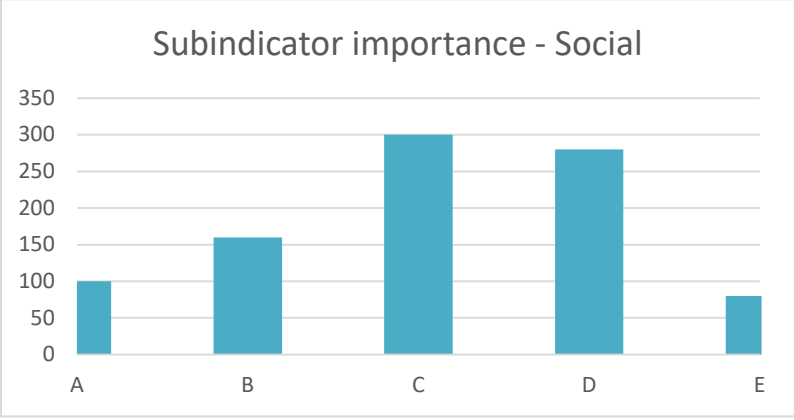
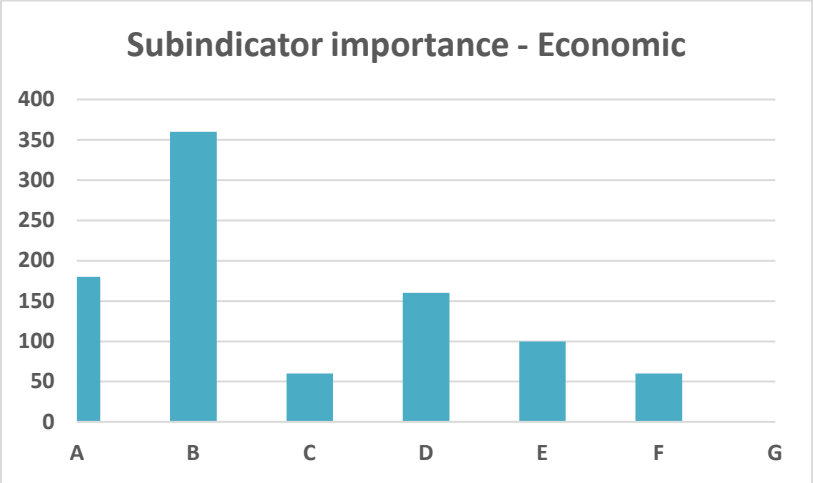


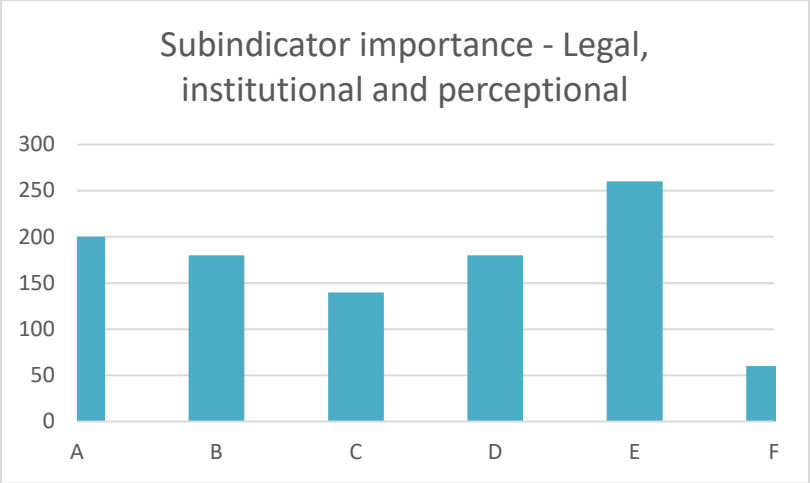
Figure 68

People who will benefit from the actions n. Of people) 1	**A**
Most vulnerable people who will benefit from the actions (n. Of people)	B
New job created by the actions (n. Of job) 2	C
Km - upgraded infrastructure (km)	D
New infrastructure (km) 3	E



Implementation cost (€) 3	**A**
Management cost (€)	B
Revenues (€)	C
Revenues distribution (n. Of actors)	D
Enterprises supported (n. Of enterprises) 1	E
New enterprises (n. Of enterprises) 2	F
Traditional crops (ton/year)	G

Figure 69



Legal feasibility (low-medium-high)	**A**
Required permits (n. Of permits)	B
Procedural time (days) 3	C
Life time (days) 2	D
Peple acceptability (low-medium-high) 1	E
Political acceptability (low-medium-high)	F

Figure 70

5.5. Pesaro

5.5.1. General Selection of the indicators

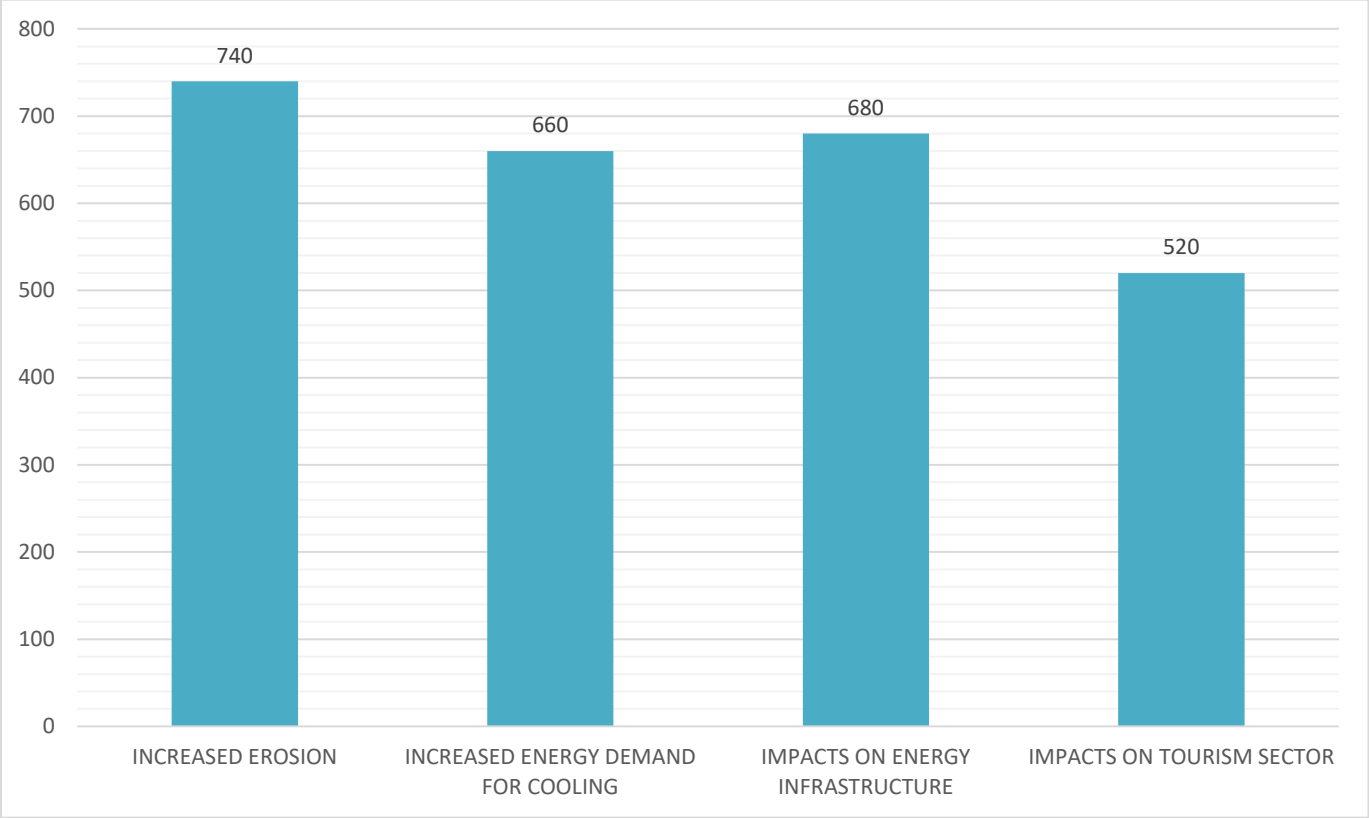


Figure 71

Pesaro's general selection of the indicators points out "Increased erosion" (740) the most important one, then "Impacts on energy infrastructure" (680), "Increased energy demand for cooling" (660) and, lastly,"Impacts on tourism sector" (520).

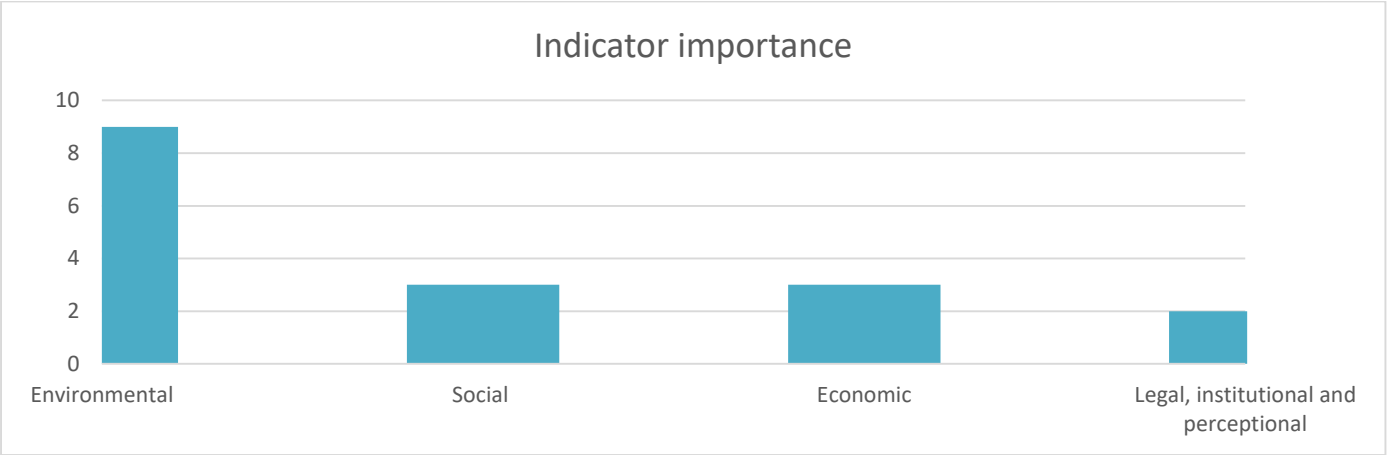
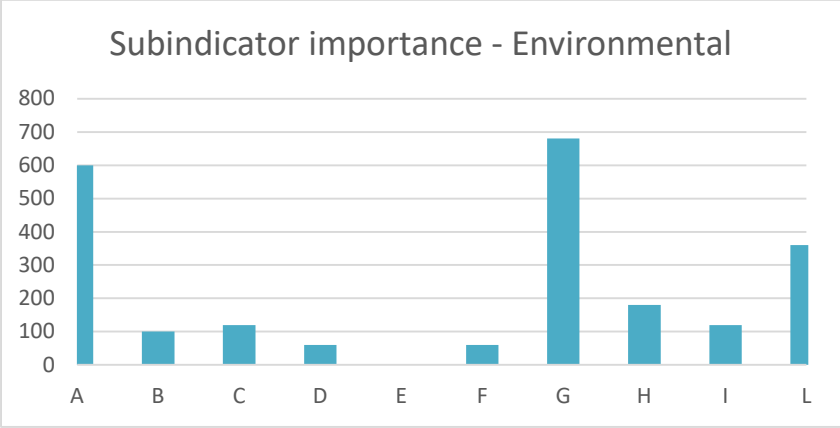
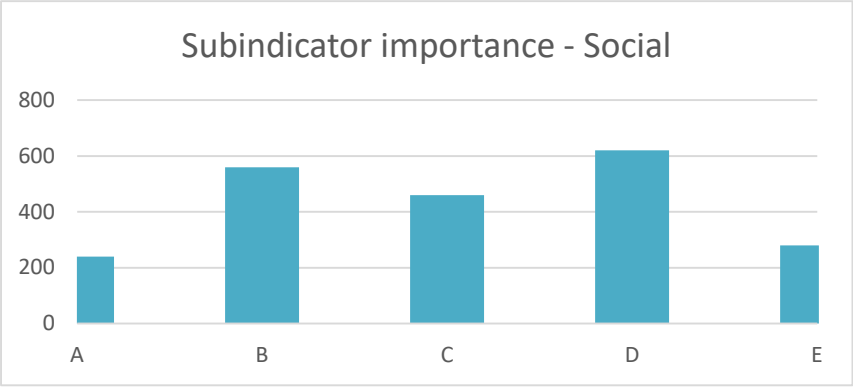


Figure 72



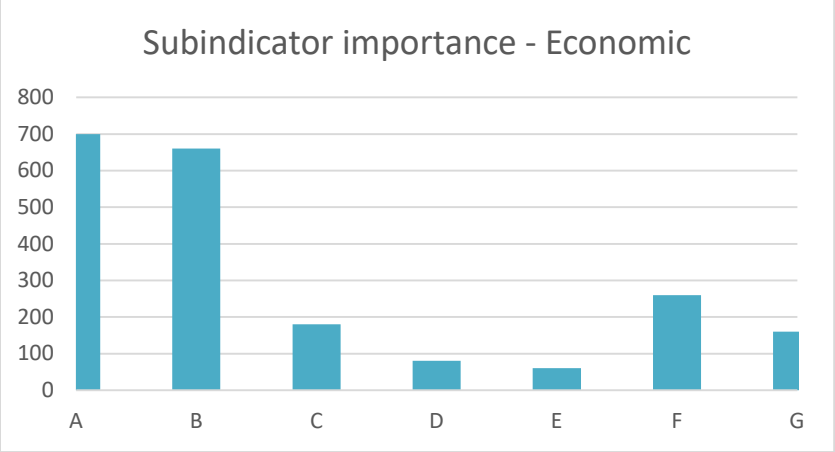
Soil coastal erosion (m2)	**A**
Soil drought (m2)	B
Impermeability ratio (m2)	C
Flooding area (m2)	D
Collected rain water (m3/year) 3	E
Reused water (m3/year) 2	F
Water consumption 1	G
Habitat maintenance (m2)	H
Uhi reduction (c°)	I
Energy use reduction (%)	L

Figure 73



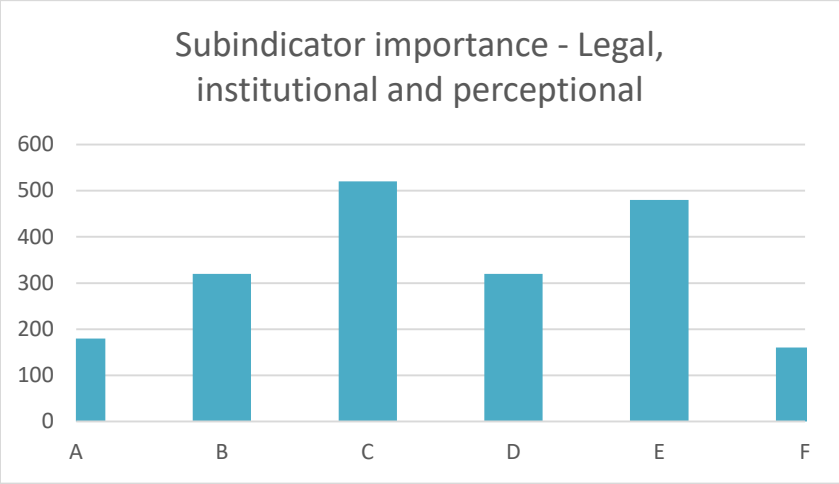
People who will benefit from the actions n. Of people) 1	**A**
Most vulnerable people who will benefit from the actions (n. Of people)	B
New job created by the actions (n. Of job) 2	C
Km - upgraded infrastructure (km)	D
New infrastructure (km) 3	E

Figure 74



Implementation cost (€) 3	**A**
Management cost (€)	B
Revenues (€)	C
Revenues distribution (n. Of actors)	D
Enterprises supported (n. Of enterprises) 1	E
New enterprises (n. Of enterprises) 2	F
Traditional crops (ton/year)	G

Figure 75



Legal feasibility (low-medium-high)	**A**
Required permits (n. Of permits)	B
Procedural time (days) 3	C
Life time (days) 2	D
Peple acceptability (low-medium-high) 1	E
Political acceptability (low-medium-high)	F

Figure 76

5.5.2. Decisionmaker selection

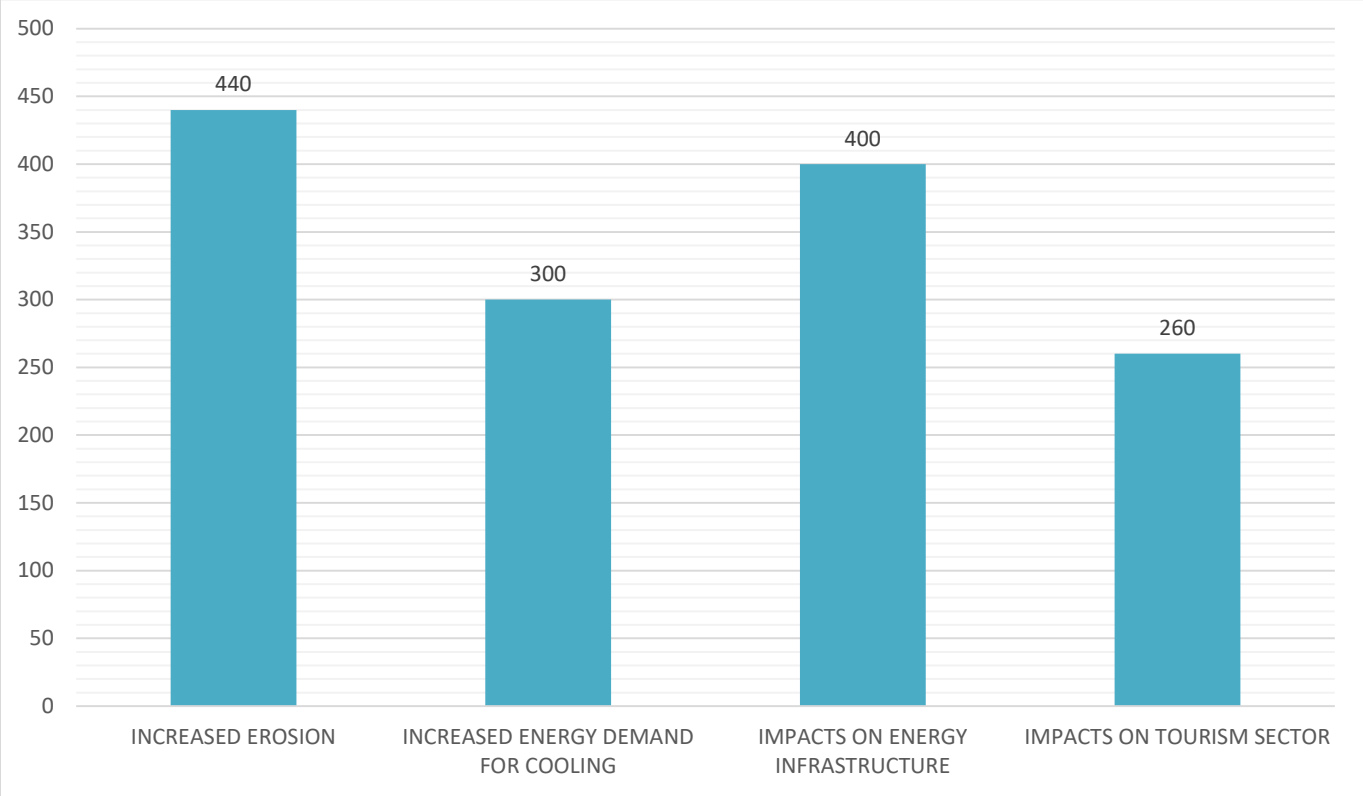


Figure 77

In Pesaro, Decisionmakers points out “Increased erosion” (440) the most important one, then “Impacts on energy infrastructure” (400), “Increased energy demand for cooling” (300) and, lastly,”Impacts on tourism sector” (260).

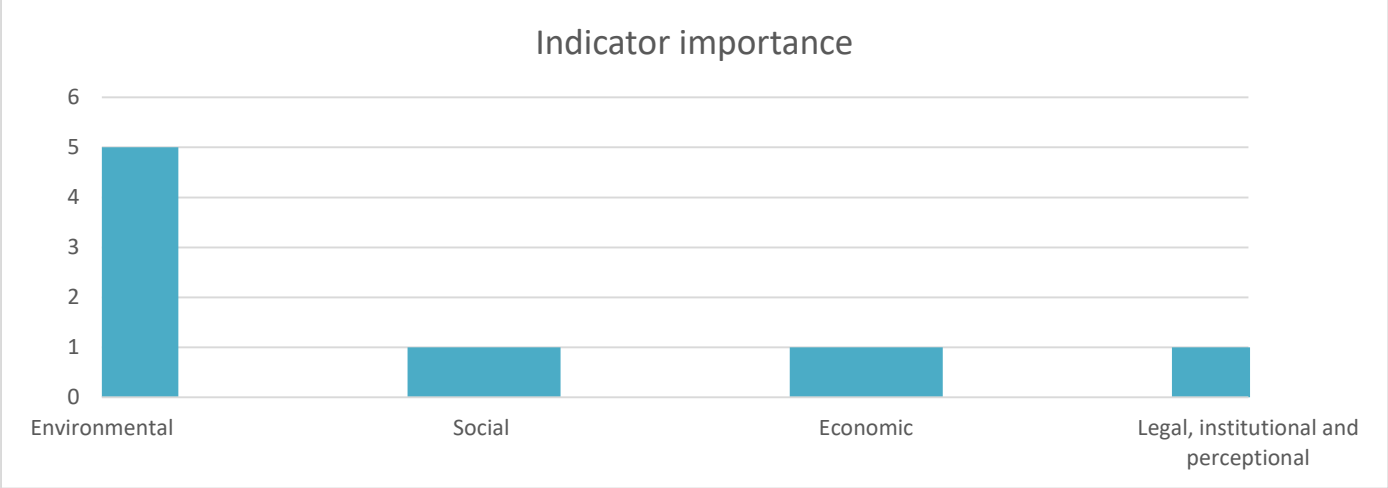


Figure 78

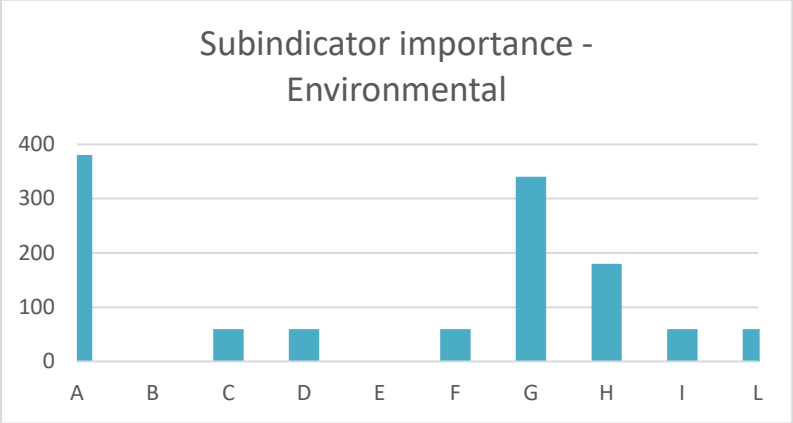


Figure 79

Soil coastal erosion (m2)	**A**
Soil drought (m2)	B
Impermeability ratio (m2)	C
Flooding area (m2)	D
Collected rain water (m3/year) 3	E
Reused water (m3/year) 2	F
Water consumption 1	G
Habitat maintenance (m2)	H
Uhi reduction (c°)	I
Energy use reduction (%)	L

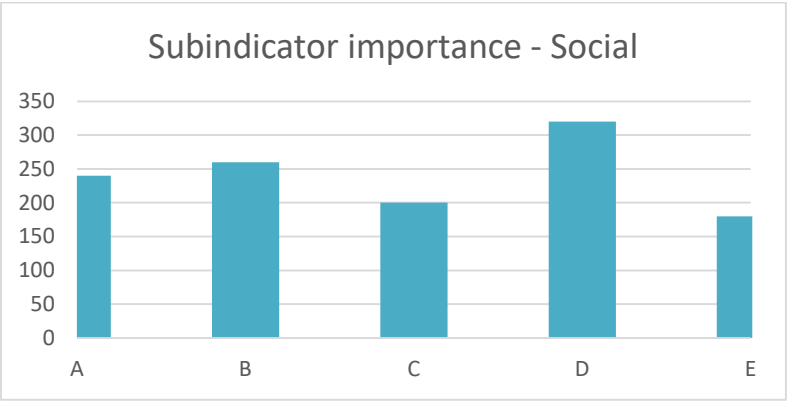
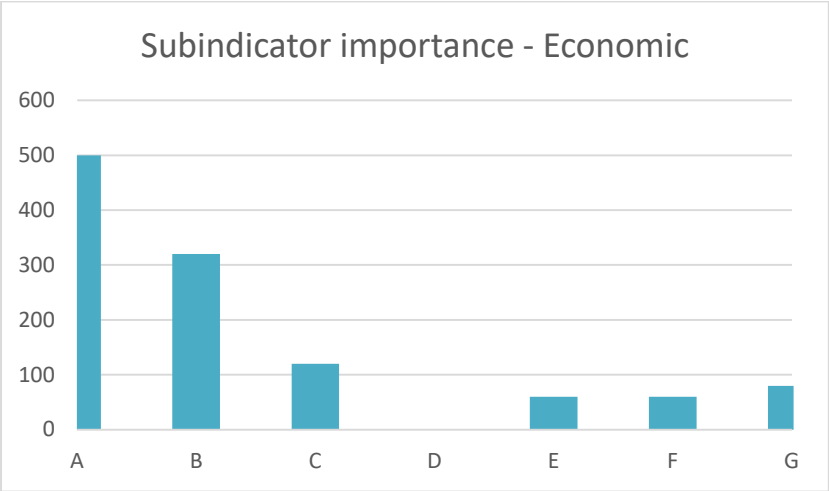


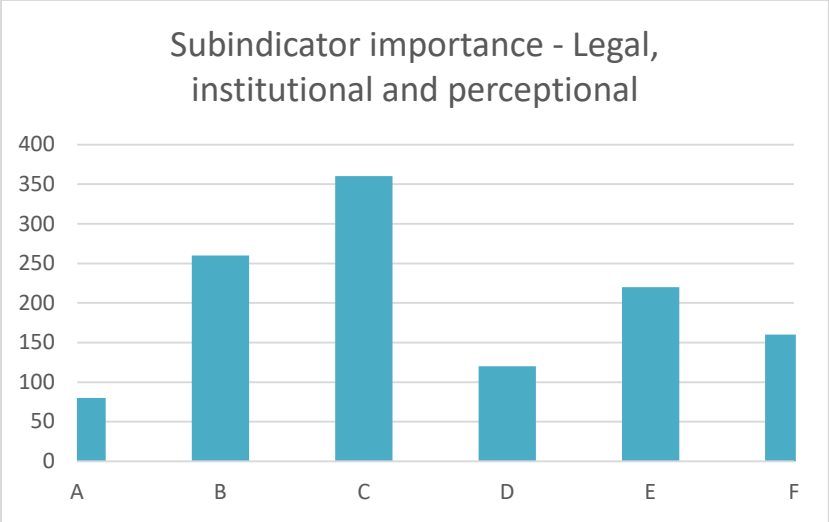
Figure 80

People who will benefit from the actions n. Of people) 1	**A**
Most vulnerable people who will benefit from the actions (n. Of people)	B
New job created by the actions (n. Of job) 2	C
Km - upgraded infrastructure (km)	D
New infrastructure (km) 3	E



Implementation cost (€) 3	**A**
Management cost (€)	B
Revenues (€)	C
Revenues distribution (n. Of actors)	D
Enterprises supported (n. Of enterprises) 1	E
New enterprises (n. Of enterprises) 2	F
Traditional crops (ton/year)	G

Figure 81



Legal feasibility (low-medium-high)	**A**
Required permits (n. Of permits)	B
Procedural time (days) 3	C
Life time (days) 2	D
Peple acceptability (low-medium-high) 1	E
Political acceptability (low-medium-high)	F

Figure 82

5.5.3. Stakeholder selection

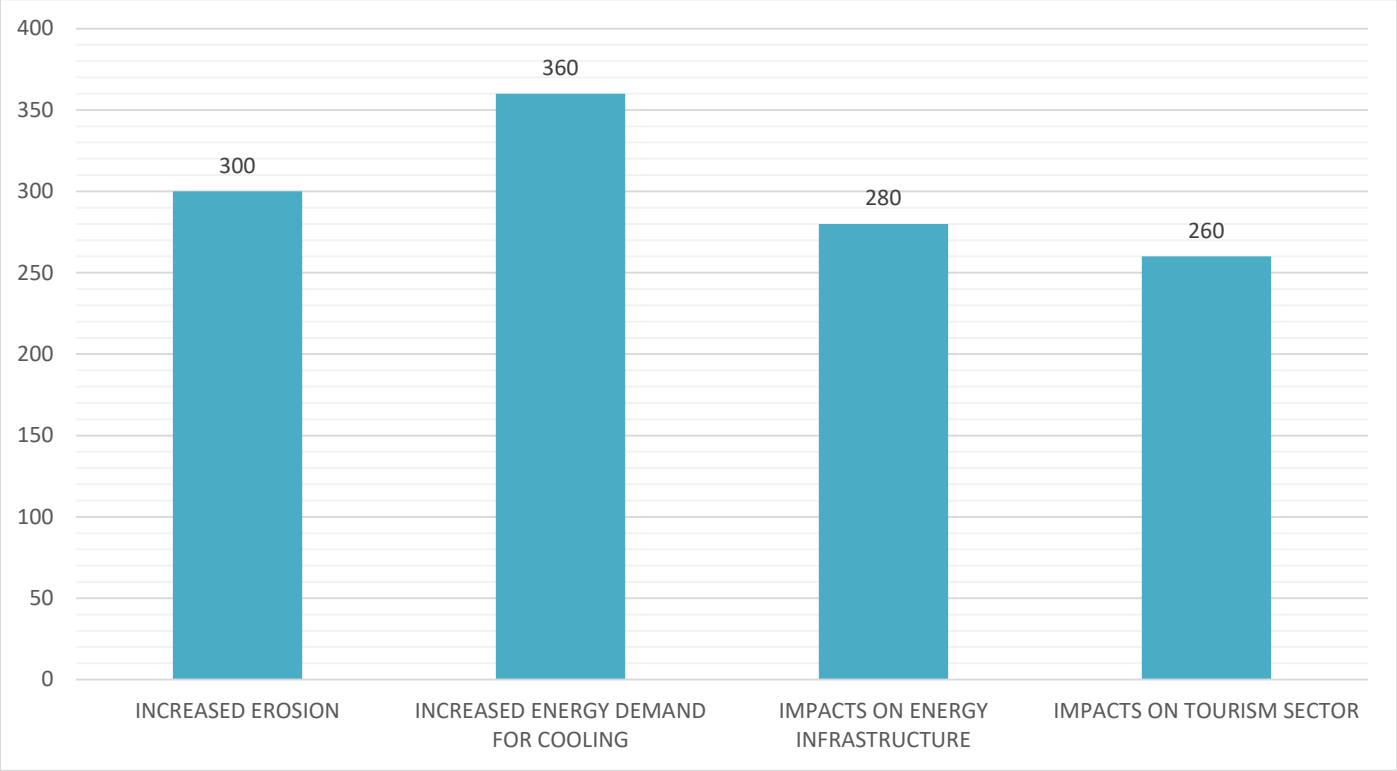


Figure 83

Stakeholders points out “Increased energy demand for cooling” (360) the most important one, then “Increased erosion” (300), “Impacts on energy infrastructure” (280) and, lastly,”Impacts on tourism sector” (260).

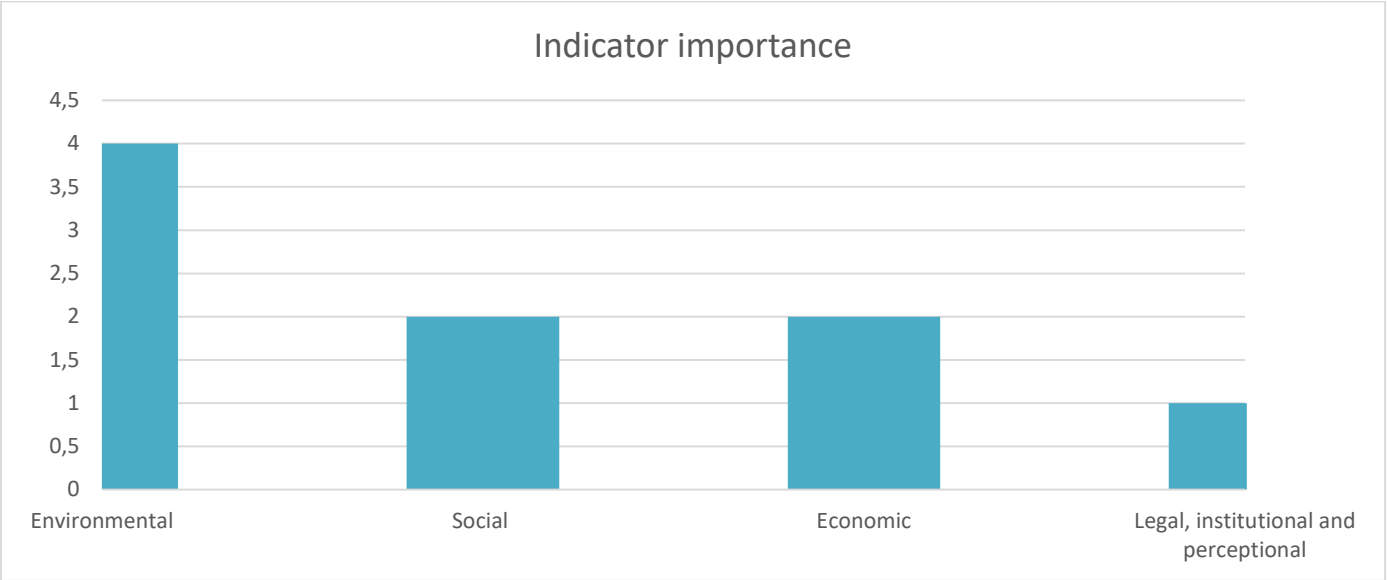


Figure 27

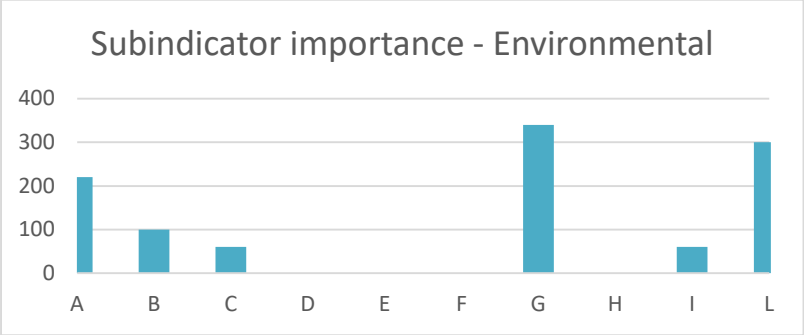


Figure 85

Soil coastal erosion (m2)	**A**
Soil drought (m2)	B
Impermeability ratio (m2)	C
Flooding area (m2)	D
Collected rain water (m3/year) 3	E
Reused water (m3/year) 2	F
Water consumption 1	G
Habitat maintenance (m2)	H
Uhi reduction (c°)	I
Energy use reduction (%)	L

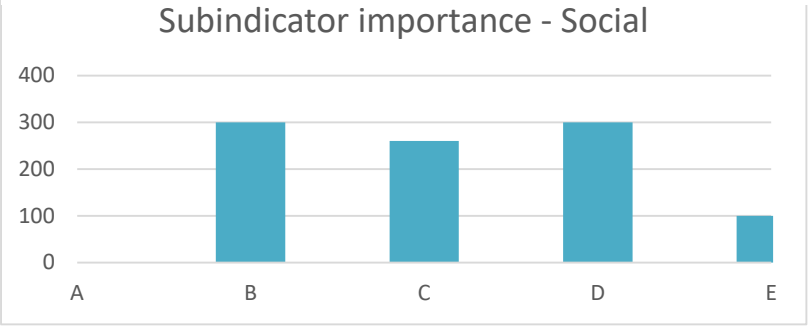
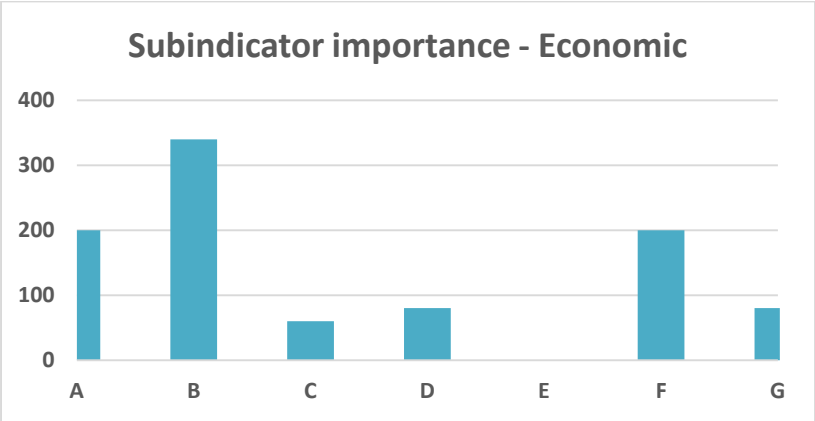


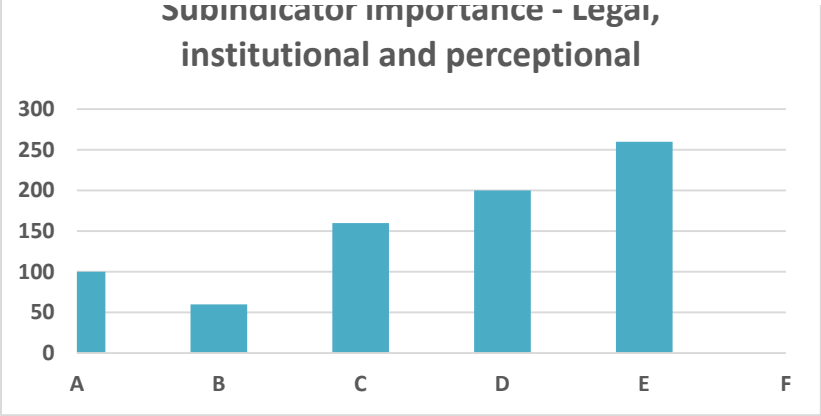
Figure 86

People who will benefit from the actions n. Of people) 1	**A**
Most vulnerable people who will benefit from the actions (n. Of people)	B
New job created by the actions (n. Of job) 2	C
Km - upgraded infrastructure (km)	D
New infrastructure (km) 3	E



Implementation cost (€) 3	A
Management cost (€)	B
Revenues (€)	C
Revenues distribution (n. Of actors)	D
Enterprises supported (n. Of enterprises) 1	E
New enterprises (n. Of enterprises) 2	F
Traditional crops (ton/year)	G

Figura 87



Legal feasibility (low-medium-high)	A
Required permits (n. Of permits)	B
Procedural time (days) 3	C
Life time (days) 2	D
Peple acceptability (low-medium-high) 1	E
Political acceptability (low-medium-high)	F

Figure 88

6. Conclusion

Finally, to conclude this part of the project here are reported some summarized considerations. From the data collected, the elaborations and discussions, it is possible to say that all partners gave decreasing importance to indicators from “Environmental”, then “Social”, then “Economic”, and “Legal, Institutional and Perceptional” (even if Irena gave no answers to “Social”). Misano Adriatico, differently, but always similarly, gives the higher importance to “Environmental”, then “Social”, “Legal, Institutional and Perceptional” and, in the end, “Economic”.

In most of the cases, Decisionmakers and Stakeholders agreed in the definition of the priorities of indicators. This suggests a common perception and knowledge of events in each contest.

These indicators, selected from the project "Terre: Territory, energy & Employment", linked together the impacts and the vulnerability. There are 12 different impacts: this means that 4 of these are shared, as seen also in the table reported on page 10, which also signifies that problems are similar in different cities. However, from the discussion with the PPs, was considered the possibility to add or change part of the indicators selected when all the actions will be defined.

This report helped us to establish which are the effects perceived from decision-makers and stakeholders about climate change in a specific region with a shared approach, in order to develop a sound set of objectives, strategies, and actions.