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| Sector/ TOPIC: Tourism  Components: | | |
| *TITLE: Monitoring scheme for the assessment of the Ecosystem based and Integrated Coastal Zone Management in the “Gulf of corigliano” pilot AREA APPLIED to tourism driver* | | |
| tARGET AREA  “Gulf of Corigliano” as project area defined in Med4EBM project and the Lake Tarsia and Crati river Reserves | | |
| frequency  Usually the collection of data selected for the building of the indicator framework from Regional Agencies for the protection of the Environment and regional administration is implemented annually | | |
| **MONITORING RATIONALE (System Component)** | | During the Ecosystem Context Analysis, tourism was identified as one of systemic factors to determine critical conditions and environmental stress, representing a pitfall constant especially for the most fragile and sensitive areas such as natural areas and marine-coastal areas. If it is true that tourist flows certainly produce wealth, the balance of tourism outputs can be negative if the ecological carrying capacity of an area is exceeded, provided that yes occurs when human pressure is such as to degrade available and unavailable natural resources allow their regeneration. Among the tourism outputs that generate the greatest degradation are: the consumption of the water resource, a worse quality of the marine-coastal waters and of the air, a greater production of waste, land consumption as a result of excessive infrastructure and overbuilding, all conditions capable of fragmenting habitat and compromising the biodiversity of more natural environments. In these contexts of friction between human activities and need for conservation, planning strategies are therefore needed that allow for protect environmental resources, while avoiding losing all those social and economic benefits deriving from the touristic exploitation of those resources.    Figure 1  Main environmental challenges of Mediterranean tourism (STC, 2022).  The considered project area, largely coinciding with the Sibari plain in front of the gulf of Corigliano, is historically stretched out over the sea, in the past thriving in trade with the civilizations of the Sea Eastern Mediterranean, today it is configured as an area with a strong tourist-bathing vocation. Following the approximately 68 km of coast, there are 6 Municipalities facing the sea: Amendolara, Albidona, Trebisacce, Villapiana, Cassano all'Ionio, Corigliano-Rossano. In recent decades, the connotation tourist-bathing area in the area has generated a change in the overall structure of the coastal area, where the built-up areas have significantly increased. To historic residential areas, located away from the coast, tourist villages, resorts and coastal settlements have been added mainly characterized by the phenomenon of second homes. These are very often agglomerations built in an illegal building regime that has generated an urban fabric devoid of centrality e not integrated with the remaining settlement context. The most important examples are Marina di Amendolara, Villapiana Scalo and Villapiana Lido, Marina di Sibari and Lakes of Sibari, il Salice, Marina di Schiavonea, Lido Sant'Angelo and the Zolfara.  The EBM experts of *Amici della Terra* (AdT) have therefore defined a first set of indicators which drafted, directly or indirectly, the extent of the tourist presence in the area and the load exercised on environmental resources. The indicators, selected from the database of indicators Tourism environmental standards of ISPRA, fall within the national and European reference scheme of the DPSIR (Driving forces, Pressure, State, Impact and Response). However, it is necessary to underline how the choice and the number of the proposed indicators has been conditioned by the availability and completeness of the data, which need a further finalization and implementation. |
| **MONITORING GOAL** | | The monitoring plan has an objective that we could define as a scenario, which is to keep the overall impact of the sector with respect to the ecosystem of the project area, that has a hotspot represented by the Natural Reserve. |
| **LABORATORY ANALYSIS NEEDS** | | - |
| **Data Analysis and interpretation protocols** | | The development of the set of indicators described in the following table has the aim of identifying the dynamics of the Tourism driver, allowing the system to analyse, indirectly, the pressures and impacts that this type of economic activity exerts on environmental matrices, mainly the production of solid waste and effluents (and therefore the increase in the need for purification treatments) and the increase in needs in terms of drinking water resources. In addition to this, the system wants to underline the importance of data linked to the quality of bathing water (collected and stored in the DSS - ISP system) and the link that can be identified between these and the increasing tourist pressure. |
| DSS System Diagram & INDICATORS | | |
| **DIAGRAM ELEMENT: Tourist facilities/Production of waste**  **Hydrography and quality of water**   |  |  |  | | --- | --- | --- | | **Indicator** | **Information and data** | **Description** | | Hotels and other facilities | The geographical, territorial and environmental data and information collected by ISPRA (Higher Institute for Environmental Protection and Research) and SNPA (National system for environmental protection) are catalogued and made public and accessible, even in real time, within the National Environmental Information System (SINA) which, with Law 132/2016 has taken on a strategic role for the distribution of territorial-environmental information. Data for economic activities are collected by the Italian National Institute of Statistics (ISTAT). | The indicator shows the number of hotels and other tourist facilities (mainly camping sites and tourist villages). | | Tourist Intensity | As above | The indicator is a ratio between presences and the resident population, it is an indicator that expresses the tourist pressure on a given area. | |  |  |  | | Average tourism stay | As above | The indicator shows the ratio between the number of nights spent (attendance) and the number of customers arriving at the accommodation facility (arrivals) | | Number of *agriturismo* (defined as farm where you can stay on holiday) | As above | It is an indicator of the quality of the tourist offer, understanding agritourism as a form of activity integrated into the territory and respectful of biodiversity and the landscape. It is an indicator that takes into consideration agritourism companies that offer not only accommodation services, but that can include catering, tasting and other activities such as hiking and educational farms | | Impact of tourism on the production of waste | As above | The increase in waste production is one of the most significant impacts on the territory determines over a territory. The indicator is obtained from the difference between the per capita production of  urban waste, calculated with the resident population, and the per capita production of urban waste calculated, instead, with the equivalent population, given by the sum between the resident population and  tourist presences spread over 365 days | | Influence of tourism on drinking water consumption | As above | The indicator helps quantify the water footprint of tourism, i.e. the additional demand of water resources resulting from the increase in demographic pressure on the territory following the presence of tourists. The water withdrawal of drinking water, to which the irrigation volumes of the agricultural activities, takes place especially during the hot season, when tourist pressure is greater. |   [Acque Marino Costiere (Id=152)]   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Indicators attached to component: Acque Marino Costiere (Id=152)** | | | | | | **Name** | **Description** | **DataSource** | **UpdateFrequency** | **Notes** | | Parametri Chimico - Fisici |  |  |  |  | | Water Quality compared on Number of Turists |  |  |  |  | | Qualità delle Acque di Balneazione (EEA) | Classificazione basata su valori di *E. coli* ed Enterococchi | European Environment Agency | Annuale | Per valori di *E. coli* ed Enterococchi secondo Direttiva Ufficiale | | Qualità delle Acque di Balneazione (Portale Acque) | Valori Assoluti di Enterococchi ed *Escherichia coli*. | Portale Acque del Ministero dell'Ambiente | Annuale |  |   [Strutture Ricettive (Id=74)]   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Indicators attached to component: Strutture Ricettive (Id=74)** | | | | | | **Name** | **Description** | **DataSource** | **UpdateFrequency** | **Notes** | | Strutture Ricettive e Posti Letto |  | ISTAT | Annuale |  | | Qualità Acqua Balneazione / Turismo |  |  |  |  | | Arrivi e Presenze |  | ISTAT | Annuale |  | | Intensità Turistica | Indicatore | ISTAT | Annuale |  | | Incidenza Turismo sui Rifiuti | Indicatore | ISTAT e ISPRA | Annuale |  | | Aziende Agrituristiche | Indicatore | ISTAT | Annuale | Da intendere non solo come alloggi, ma come attività che forniscono altri servizi (ristorazione, attività escursionistiche, degustazioni...) | | Incidenza Turismo sui Consumi di Acqua Potabile | Indicatore | ISTAT | Annuale |  | | | |
| Data Collection Procedure | | |
| Staff | The staff involved in the application and maintenance of this monitoring protocol will work on two levels:  1) a local level (located at the Natural Reserves of Tarsia Lake and the Crati River) which will be responsible for verifying, updating and refine the databases also using consolidated relationships with some particularly qualified stakeholders for the collection of databases pertaining to the topic (ARSAC and ARPACAL)  2) a national level of management, updating and maintenance of the DSS - ISP system which will be managed by Amici della Terra - Rome.  The human resources identified for this management model will be Agostino Brusco, Director of Reserves, Manrico Benelli and Matteo Onori for analysis, database management and feeding of DSS - ISP and Donovan Baldassarri for general project management. | |
| Equipment | The monitoring protocol has its own characteristics and specificities which lead us to essentially define two categories of "equipment" necessary for its application:  1 – local and central human resources for the work of collecting, analysing and entering data into the DSS – ISP system  2 – the hardware resources required to develop these operations.  With respect to the first category, the following figures can be identified:  1 local monitoring manager, physically located at the secretariat of the Mediterranean Forum, who will be in charge of managing and consolidating the network of relationships with local stakeholders, processing requests for updated data on the various DBs and organizing them for sending to the headquarters of management of the DSS - ISP.  1 central monitoring manager, physically located at the association's headquarters in Rome, who will be in charge of managing the collection of data sent from remote and providing for initial archiving and organization.  1 central thematic expert, functionally located at the association's headquarters in Rome, who will be in charge of analysing the DBs and data packets received, processing information summaries, highlighting any information gaps. The CTE will functionally collaborate with the central DB expert.  1 central DB expert who will be responsible of organizing the feeding of the DSS - ISP system, working on the construction of functional tables and on the verification and maintenance of the system. The CDBE will work in close coordination with the CTE.  The hardware equipment needed are two PC (a Local mode and a Server mode devices) which have been listed and quoted but can be shared also by other project and activities. | |
| Protocol | Environmental monitoring means the set of surveys that measure determined biological, chemical and physical parameters over time, in order to quantify the impacts of certain activities on the environment.  Specifically, the proposed monitoring protocol, which aims to indirectly highlight the pressure and impacts exerted by tourist activities on environmental matrices, collects, catalogues and organizes mainly economic data which are institutionally collected by the Higher Institute for Environmental Protection and Research (ISPRA) and also by the Italian National Institute of Statistics (ISTAT).  The monitoring system defined within this protocol, therefore, is fundamentally based on institutional governance which defines the monitoring of environmental matrices as defined by the community and national regulatory framework. Indeed, there is a set of rules at EU, national and regional level which identify:  a) the objectives of the monitoring  b) the implementing actors (as institutional mission)  c) the monitoring frequencies  d) the techniques and procedures to be applied for the specific data set.  The institutional subjects who are therefore responsible for monitoring and organizing data with respect to specific environmental matrices, with particular reference to the components that we have highlighted in the set of indicators are those to whom references for the application of this protocol. | |
| Quotations | The resources needed for the application of the defined monitoring protocol can be summarized as follows:   1. human resources to be allocated to the implementation of the local part – contacts with stakeholders for the collection and initial organization of the preliminary data for feeding the DSS – ISP   a1) 1 local monitoring manager x 1 WD x month x 12 month x 350 Eur/WD = total 8400 Eur  b) human resources to be allocated to the implementation of the central part of the monitoring system – reception, feeding of the DSS system – ISP and data analysis  b1) 1 central monitoring manager x 1 WD x month x 12 month x 350 Eur/WD = total 8400 Eur  b2) 1 central thematic expert for the analysis of data collected x 2 WD x month x 12 month x 350 Eur/WD = total 16800 Eur  b3) 1 central DB expert for the feeding process, management and organization of DSS – ISP x 2 WD x month x 12 month x 350 Eur/WD = total 16800 Eur  c) hardware resources for system management  c1) 1 remote pc (Local mode) Eur 2500[[1]](#footnote-1)  c2) 1 central pc (Server mode) Eur 2500  c3) data traffic and energy supply Eur 100 x year  d) Indirect cost (7% of the total direct cost for personnel) Eur 3528 | |
| **References:**  There is an institutional legal framework for the management of the collection and the analysis of environmental and economic data. The proposed protocol will work into this framework.  <https://www.unwto.org/news/tourism-on-track-for-full-recovery-as-new-data-shows-strong-start-to-2023> | | |

1. See hardware note into paragraph on equipment [↑](#footnote-ref-1)