

# DRAFTING A FINANCIAL PLAN TO MANAGE THE NATURA 2000 NETWORK

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## Abstract

The main objective of the SUN LIFE Project (LIFE13 NAT/IT/000371) was to draft the Management Strategy and the related Financial Plan (FP) for the Umbrian Natura 2000 network (N2K). The paper shows some of the steps to draft the FP. It describes the methodology followed to select: a) the measures/actions to include in the cost evaluation for N2K for the 2007-2013 fund programming, used as a basis to create the passive part of the FP; b) the measures/actions to include in the evaluation of the potential financial resources available for N2K during the 2014-2020 funds programming. European Structural and Investment Funds (ESIFs) managed through regional programmes was considered. The methodology provided an objective indication of which items to include in the draft of the FP.

**Keywords:** protected areas, cost evaluation, financial instruments

## 1. Introduction

Natura 2000 is a network of protected areas in the European Union (EU), established under the Birds Directive (2009/147/EC) and the Habitats Directive (92/43/EC). The aim of N2K is to maintain the favourable conservation status of the habitats and species listed in the Annexes of the Directives. The primary target of the EU Biodiversity Strategy to 2020 (COM(2011) 244 final), adopted after the 10<sup>th</sup> meeting of the Conference of the Parties (COP 10) of the Convention on Biological Diversity (Nagoya, 2010), focuses on the full implementation of N2K. Member States (MSs) have to take concrete actions to guarantee a favourable conservation status of habitats and species, and promote sustainable development in N2K sites, compatible with nature conservation. They have to promote sustainable development in N2K sites by integrating the management of natural resources with economic activities and the social and cultural needs of local populations. Each site needs an appropriate management plan (or at least, a set of conservation measures) related to the level of biodiversity and the intensity of human activities (Cortina and Boggia, 2014). Therefore, management of N2K sites requires appropriate financial resources. National resources should be used, according to the subsidiary principle. However, Article 8 of the Habitat Directive states that it is also possible to use EU funding. In order to fund N2K, many solutions were discussed in a specific Communication of the European Commission (EC) (COM (2004) 431 def.), such as the improvement of the LIFE+ Nature Programme, the establishment of a new, specific, N2K Programme and the use of ordinary financial instruments. This last option was taken into consideration by the EC.

As underlined by the EC (EC, 2016), there are N2K funding opportunities under each of the European Structural and Investment Funds (ESIFs): the European Agricultural Fund for Rural Development (EAFRD), the European Regional Development Fund (ERDF), the European Social Fund (ESF), the Cohesion Fund (CF) and the European Maritime & Fisheries Fund (EMFF).

In this context, the aim of this paper is to present a methodology, developed within the framework of the SUN LIFE project, in order to select not only the measures/actions of regional Programmes (EAFRD, ERDF, ESF) (2007-2013) to include in the costs evaluation for N2K, but also the measures/actions of regional Programmes (EAFRD, ERDF, ESF) (2014-2020), which could potentially finance N2K.

The main objective of the SUN LIFE was to define a Management Strategy for the Umbrian N2K in order to ensure effective, long-lasting management by achieving and ensuring the favourable conservation status of habitats and species. The objective of action C1 in the SUN LIFE was to elaborate the FP for the Umbrian Management Strategy. The first step was to evaluate the costs sustained for N2K during the programming period from 2007-2013, as a basis on which to evaluate the future costs for the network.

As regards costs, the main issue was: which costs for investments, the management, conservation and restoration of sites would be correct to include in the evaluation (specific costs only or also the costs affecting the network in a broader sense, e.g. cycle paths?). As regards financial resources, the question was: how to select the measures/actions for regional Programmes (EAFRD, ERDF, ESF) (2014-2020) to include in the FP of the Umbrian N2K Strategy?

The Umbrian N2K consists of 102 sites covering 130,094 ha or 15.9% of the regional territory. Unlike other Italian regions, the network is managed by the Regional government, which facilitated data collection.

## **2. The methodological approach**

Ordinary financial instruments are known to be indirect, when EU funding is assigned via national and/or regional Authorities (e.g.: EAFRD, ERDF, ESF, etc.), or direct, when funding is assigned directly by the Commission and a project proposal is required to access it (e.g.: LIFE+, MED, INTERREG, HORIZON 2020, etc.). The methodology used concerned indirect funding managed via regional Programmes. These funds are dealt with in the guidelines prepared by the EC for the 2007-2013 and 2014-2020 programming (EC, 2005; EC, 2014 (1) and EC, 2014(2)), in order to improve their use to implement N2K. This paper used the indications of those guidelines, which show the key articles for N2K of the basic EC Regulation for each fund (EAFRD, ERDF, ESF etc.). Since the articles of each basic EC Regulation relating to each fund have been implemented via measures/actions within the regional Programmes, the guidelines indirectly indicate the measures/actions to be selected for each Umbrian programme which would prove useful to draft the FP. The guidelines for the 2014-2020 programming provide additional information: they link each article of the basic EC Regulation to one or more "management activities" (M.A.). These are the 25 M.A.s described by the EC in Annex 3 of the Commission Communication on funding N2K (COM (2004) 431 final). The M.A.s include all the possible activities to manage an N2K site. As Table 1 shows, the 25 M.A.s are divided into four categories: site purpose; management planning, habitat management and monitoring; investment costs. In the SUN LIFE, the costs incurred in the past (2007-2013), the potential financial resources that can be used in the future (2014-2020) and the actions identified in the Umbrian Management Strategy, were

included for one or more M.A. As stated, to identify which measure/actions to consider in the cost evaluation, the information of the EC guidelines (2005) were cross-referenced with the Umbrian programmes (2007-2013). Similarly, to identify which measures/actions to consider in the evaluation of financial resources and to have information regarding the fundable M.A.s, indications of the EC guidelines (2014) were cross-referenced with the Umbrian regional programmes (2014-2020). The Commission is interested in knowing not only the priorities and measures to manage N2K, but also the financial resources dedicated to N2K and the biodiversity in each regional programme (ECA, 2017).

**Table 1 List of Natura 2000 management activities**

<b>Categorisation</b>	<b>No.</b>	<b>Type of Activities</b>
Finalisation of sites	1	Administration of site selection process
	2	Scientific studies/inventories for the identification of sites – surveys, inventories, mapping, condition assessment
	3	Preparation of initial information and publicity material
	4	Pilot projects
Management planning	5	Preparation of management plans, strategies and schemes
	6	Establishment of management bodies
	7	Consultation – public meetings, liaison with landowners
	8	Review of management plans, strategies and schemes
	9	Running costs of management bodies (maintenance of buildings and equipment)
	10	Maintenance of facilities for public access to and use of the sites, interpretation works, observatories and kiosks etc.
	11	Staff (conservation/project officers, wardens/rangers, workers)
Ongoing habitat management and monitoring	12	Conservation management measures – maintenance and improvement of habitats' favourable conservation status
	13	Conservation management measures – maintenance and improvement of species' favourable conservation status
	14	Conservation management measures in relation to invasive alien species (IAS)
	15	Implementation of management schemes and agreements with owners and managers of land or water for following certain prescriptions
	16	Provision of services; compensation for rights foregone and loss of income; developing acceptability 'liaison' with neighbours
	17	Monitoring and surveying
	18	Risk management (fire prevention and control, flooding etc)
	19	Surveillance of the sites
	20	Provision of information and publicity material
	21	Training and education
	22	Facilities to encourage visitor use and appreciation of Natura 2000 sites
Investment costs	23	Land purchase, including compensation for development rights
	24	Infrastructure needed for the restoration of habitat or species
	25	Infrastructure for public access, interpretation works, observatories and kiosks, etc

### 3.Results

The results are presented in two sections (a and b): first, we present the ESIF measures/actions, which were considered in the evaluation of the N2K costs for the 2007/2013 Umbrian programming (section a); then, we present ESIF measures/actions for the 2014/2020 Umbrian programming, which were considered to assess potential N2K funding channels. The EMFF were not taken into consideration, as during the 2007-2013 programming period, it was not involved in funding N2K and in the 2014-2020 programming period it is being managed nationally. The CF was included in the 2007-2013 costs analysis. However, it was considered differently in the evaluation of financial resources, as it is being managed nationally in the 2014-2020 programming period.

#### 3.1 Section a

The application of the methodology exposed to the costs sustained for N2K during the 2007-2013 ESIF programming required three steps:

- a) the cross-referencing of the EC (2005) guideline information with the Umbrian ESIF (2007-2013) Programmes to identify the measures/actions involved in the analysis;
- b) the verification of the effective activation of the measures/actions identified with the publication of specific calls by the Regional government of Umbria;
- c) the identification of interventions in favour of N2K in the context of these measures/actions.

Table 1 shows the result of the analyses carried out under the EAFRD, which is the fund which provides most N2K finance. As shown, not all the articles of the basic regulation have been implemented in Umbria: e.g. Measure 224 is not present in the Umbrian RDP, whereas it is specifically implemented in the MSs with a significant share of private forests in N2K (Sarvašová et Al., 2017). Measures 214, 226, 227 and 323 met the requirements set out above. They provided interventions in favour of N2K for 12% (214), 13% (226 and 227) and 100% (323), respectively, of their total budget.

Only one action was selected by applying the same procedure to the Umbrian Regional Operational Programme (ROP)(2007-2013) relating to the ERDF. It was specifically for N2K: Measure 221. No action was selected under the Umbrian ROP ESF (2007-2013).

In order to finance the Umbrian N2K during the 2007-2013 period of programming, in addition to indirect European funds (FEASR for 67% and FESR 13%, CF 6%), the following funds were also used: LIFE projects (10%), Ministerial Funds (1%), Regional Funds of the Regional Wildlife Observatory (3%).

**Table 2 Key articles of Regulation (EU) No.1698/2005 and opportunities for N2K under Umbrian RDP EAFRD (2007-2013)**

List of key articles in the EAFRD Council Regulation (EC) No. 1698/2005 in relation to N2K (a)		Measure of RDP Umbria		
		Axis 1	Axis 2	Axis 3
20(a)(i)	Actions in the field of vocational training and information, including the dissemination of scientific knowledge and innovative practices, aimed at employees in the agricultural, food and forestry sectors	111		
20(a)(v)	Start-up of business advisory services, substitution and assistance for the management of farms, as well as forestry consulting services;	115		
20(b)(ii)	Increasing the economic value of forests	122		
20(b)(iii)	Increasing the added value of agricultural and forestry products	123		
20(b)(vi)	Restoration of agricultural production potential damaged by natural disasters and introduction of appropriate prevention measures;	126		
36(a)(i)	Compensation for farmers in mountain areas		211	
36(a)(ii)	Compensation for farmers in areas with natural handicaps other than mountain areas		212	
36(a)(iii)	Natura 2000 compensation and compensation linked to Directive 2000/60 / EC;		213	
36(a)(iv)	Agri-environment payments		<b>214</b>	
36(a)(vi)	Support for non-productive investments		216-227	
36(b)(i)	Afforestation of agricultural land		221	
36(b)(ii)	First plant of agroforestry systems on agricultural land		222	
36(b)(iii)	Afforestation of non-agricultural land		223	
36(b)(iv)	Natura 2000 allowance		213	
36(b)(v)	Silvo-environmental payments		225	
36(b)(vi)	Reconstitution of forest potential and preventive measures		226	
36(b)(vii)	Support for non-productive investments		216-227	
52(a)(i)	Diversification into non-agricultural activities			331
52(a)(ii)	Support for the creation and development of micro-enterprises with a view to promoting entrepreneurship and strengthening the economic fabric			312
52(a)(iii)	Incentive for tourist activities			313
52(b)(iii)	Protection and requalification of rural heritage			<b>323</b>
52(c)	A training and information measure aimed at economic operators engaged in the sectors covered by Axis 3			331
52(d)	A measure aimed at the animation and the acquisition of skills in view of the elaboration and implementation of local development strategies.			341
57(a)	Drafting of plans for the protection and management of Natura 2000 sites and other places of great natural value		216	
63	Leader			331

(a) The measures which actually envisaged interventions in favour of N2K are highlighted.

### 3.2 Section b

The same methodology above exposed to the costs was used to identify which measures/actions of the 2014-2020 Umbrian regional Programmes can potentially be used to finance N2K and to draft “the matrices of potential funding opportunities”. In this case, the steps were as follows:

- a) the cross-referencing of information of the guidelines (EC, 2014) with the Umbrian ESIF (2014-2020) Programmes, to identify the measures/actions involved in the analysis;
- b) the identification of the amounts available for sub-measures/sub-actions, where possible;
- c) the identification of the M.A.s which can potentially be financed by sub-measures/sub-actions.

Table 3 shows a list of key articles in Regulation (EU) 1305/2013 for N2K together with the specific paragraphs of these articles implemented by the Umbrian RDP (EAFRD) 2014-2020 via measures.

**Table 3 Key articles of Regulation (EU) 1305/2013 and opportunities for N2K under Umbrian RDP EAFRD (2014-2020)**

N.	List of key articles in the EAFRD Regulation (EC) No.1305/2013 in relation to N2K (a)	Specific paragraphs of the basic regulation implemented by the RDP Umbria	Umbrian EAFRD RDP 2014-2020
14	Knowledge transfer and information actions		M01
15	Advisory services, farm management and farm relief services		M02
16	Quality schemes for agricultural products and foodstuffs		M03
17	Investments in physical assets	(d) Non-productive investments related to the fulfilment of the agri-climate-environmental objectives pursued by this Regulation, including the conservation of the biodiversity of species and habitats, or the exploitation of the Natura 2000 areas or other high naturalistic value to be defined in the program	M04
18	Restoring agricultural production potential damaged by natural disasters and catastrophic events	a) improve the overall performance and sustainability of the farm	M05
19	Farm and business development	a) business start-up aid for: i) young farmers;	M06
		ii) non-agricultural activities in rural areas iii) the development of small farms;	M06
		b) investments in the creation and development of non-agricultural activities;	M06
20	Basic services and village renewal in rural areas	(c) annual payments or one-off payments to farmers eligible for the small farmers scheme referred to in Title V of Regulation (EU) No 1307/2013 ("the scheme for small farmers") and which permanently cede their farm to another farmer;	M06
		20(1) (a) Drawing up and updating development plans including protection and management plans relating to Natura 2000 sites and other areas of high nature value	M07
		20(1) (d) Investments for the introduction, improvement or expansion of basic services at local level for the rural population, including cultural and recreational activities, and related infrastructure;	M07
		20(1) (e) Investments in recreational infrastructure, tourist information and small scale tourism infrastructure	M07
		20 (1) (f) Studies and investments related to the maintenance, restoration and redevelopment of the cultural and natural heritage of villages, rural landscapes and sites of high natural value, including the socio-economic aspects of these activities, as well as environmental awareness raising actions	M07
		20(1) (g) Investments targeting the relocation of activities and conversion of buildings or other facilities located within or close to rural settlements, with a view to improving the quality of life or increasing the environmental performance of the settlement	M07
21	Investments in the development of forest areas and improvement of forest profitability 21 a and art. 22- Forestation and afforestation	21 (a) Forestation and afforestation	M08
21	Investments in the development of forest areas and improvement of forest profitability 21 b and art. 23 Setting up of agroforestry systems	21 (b) Preparation of agroforestry systems	M08
21	Investments in the development of forest areas and improvement of forest profitability 21 c and art. 24 Prevention and restoration of forests damaged by fires, natural disasters and catastrophic events	- 21 (c) Prevention and restoration of forests damaged by fires, natural disasters and catastrophic events, including plant diseases, parasitic infestations and climatic risks	M08
21	Investments in the development of forest areas and improvement of forest profitability 21 d and art. 25 Investments aimed at increasing the resilience and environmental value of forest ecosystems	21(d) Investments aimed at increasing the resilience, the environmental value and the mitigation potential of forest ecosystems	M08
27	Setting up producer groups and organisations		
28	Agri-environment climate payments		M10
29	Organic farming		M11
30	Natura 2000 and Water Framework Directive payments		M12
31	Payments to areas facing natural or other specific constraints		M13
34	Forest-environmental and climate services and forest conservation		M15
35	Co-operation		M16
36 e 37	Risk management		
42-44	LEADER		M19
51-54	Technical assistance and networking		M20

(a) The table highlights the articles most directly relevant for N2K

After a detailed analysis of the Umbria RDP, table 4 was drawn up to show the financial resources for each measure and priority of the RDP. The priority relevant for NK2 is number 4 and more specifically priority 4a. However, there are also other measures that indirectly contribute to priority 4, such as M07, M08 and M15. In addition to the measures mentioned above, it is necessary to add M19 'LEADER local development support', which can contribute to priority 4 (as well as to all other priorities), and some sub-measures of M16 which, although they do not contribute directly or indirectly to priority 4, integrate perfectly with M08, thus enhancing their effectiveness. The next step was to identify the sub-measures to involve in the analysis. Table 5 shows the M.A.s which can be financed via each sub-measure of the Umbrian RDP (EAFRD) 2014-2020.

**Table 4 Financial resources for each measure and priority of the Umbrian RDP EARFD (2014-2020) (000 €)(a)**

EU priority from art. 5 Regulation (EU) 1305/2013		M01	M02	M03	M04	M05	M06	M07	M08	M10	M11	M12	M13	M14	M15	M16	M19	TOTAL
<b>5.1. Promote knowledge transfer and innovation in agriculture and forestry and in rural areas, with particular regard to the following aspects</b>	<b>P1</b>																	
5.1.a stimulate innovation, cooperation and the development of the knowledge base in rural areas	1A																	0
5.1.b reinforcing the links between agriculture, food production and forestry, on the one hand, and research and innovation, on the other, also in order to improve management and environmental performance	1B																	0
5.1.c encourage lifelong learning and vocational training in agriculture and forestry	1C																	0
<b>5.2. Enhance the profitability of farms and the competitiveness of agriculture in all its forms in all regions and promote innovative technologies for farms and sustainable forest management, with particular regard to the following aspects:</b>	<b>P2</b>																	0
5.2.a improve the economic performance of all farms and encourage the restructuring and modernization of farms, in particular to increase market share and market orientation as well as diversification of activities	2A	695	6,790		145,200		8,000		13,400							8,800		182,885
5.2.b encourage the entry of appropriately qualified farmers in the agricultural sector and, in particular, generational change	2B	1,533	2,250				20,000									9,150		32,933
<b>5.3. Promote the organization of the food supply chain, including the processing and marketing of agricultural products, animal welfare and risk management in the agricultural sector, with particular regard to the following aspects</b>	<b>P3</b>																	
5.3.a improve the competitiveness of primary producers by integrating them better in the agri-food chain through quality schemes, creating added value for agricultural products, promoting products in local markets, short supply chains, associations and producer organizations and inter-branch organizations	3A	1,055	1,000	7,200	54,000									15,400		11,950		90,605
5.3.b to support the prevention and management of business risks	3B					17,000										4,550		21,550
<b>5.4. Preserve, restore and enhance ecosystems related to agriculture and forestry, with particular regard to the following aspects</b>	<b>P4</b>																	
5.4.a safeguarding, restoring and improving biodiversity, including in Natura 2000 areas and areas subject to natural constraints or other specific constraints, in high nature value agriculture, as well as the landscape layout of Europe	4A	855	500		4,000					5,500		6,000	63,000					79,855
5.4.b better management of water resources, including the management of fertilizers and pesticides	4B	855	500							124,000	34,100	2,000						161,455
5.4.c prevention of soil erosion and better management of the same;	4C									7,000								7,000
<b>5.5. Encouraging efficient use of resources and the transition to a low carbon and climate resilient economy in the agri-food and forestry sectors, with particular regard to the following aspects</b>	<b>P5</b>																	
5.5.a make the use of water in agriculture more efficient	5A																	0
5.5.b make energy use more efficient in agriculture and in the food industry	5B																	0
5.5.c encourage the procurement and use of renewable energy sources, by-products, waste materials and residues and other non-food raw materials for the purpose of bio-economy	5C	850	850					3,000								7,800		12,500
5.5.d reduce the emissions of greenhouse gases and ammonia produced by agriculture	5D	1,050	600							5,000						1,000		7,650
5.5.e promote conservation and sequestration of carbon in the agricultural and forestry sectors	5E	650	600						67,000					5,000	2,000			75,250
<b>5.6. Work towards social inclusion, poverty reduction and economic development in rural areas, with particular regard to the following aspects</b>	<b>P6</b>																	
5.6.a favor diversification, creation and development of small businesses as well as employment	6A	1,100	70				7,000									9,750		17,920
5.6.b stimulate local development in rural areas	6B	900	70					63,500								8,750	48,600	121,820
5.6.c to promote accessibility, use and quality of information and communication technologies (ICT) in rural areas	6C	757	70					36,556								4,550		41,933
		10,300	13,300	7,200	203,200	17,000	35,000	103,056	80,400	141,500	34,100	8,000	63,000	15,400	5,000	68,300	48,600	853,356

(a) The table highlights the measures and the financial resources relevant for N2K

**Table 5 Sub-measures of the Umbrian RDP (2014-2020) included in the PF, their budget and the fundable M.A.s (a)**

Umbrian EAFRD RDP 2014-2020 measures	Sub-measures	Euro (000)																									
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
M01	1.1	600			X																	X					
	1.2	200			X																	X					
	1.3	55			X																	X					
M02	2.1	470																				X					
	2.3	30																				X					
M04	4.4	4,000											X	X	X		X						X		X		
M07	7.1	8,500			X		X			X																	
M07	7.5	14,000								X													X				X
M07	7.6	18,000											X	X	X												
M08	8.1	16,000											X	X	X												
M08	8.2	1,000											X	X	X												
M08	8.3	24,000											X	X	X					X							
	8.4	1,000											X	X	X					X							
M08	8.5	25,000											X	X	X					X							
	10.1	126,500											X	X	X	X	X										
M10	10.2	3,000											X	X	X	X	X										
	11.1	4,000											X	X		X											
M11	11.2	30,100											X	X		X											
	12.1	5,000											X	X		X	X			X							
M12	12.2	1,000											X	X		X	X			X							
	13.1	40,000											X	X													
M13	13.2	23,000											X	X													
	15.1	2,000											X	X	X	X	X										
M15	15.2	3,000											X	X	X	X	X										
	16.5	1,000											X	X	X												
M16	16.8	1,000											X	X	X												
	M19	19.4	28,000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

(a) The table highlights the sub-measures more relevant for N2K

The same methodology was used for the Umbrian ROP (ERDF) (2014-2020), in order to select the actions to include in the analysis. The first step was to cross-reference the key articles of the ERDF Regulation (EU) 1301/2013 for N2K with the Umbrian programme, (Table 6). In this case, only some paragraphs and letters of Article 5 of Regulation. (EU) 1301/2013 "Investment Priorities" were considered "key" to finance N2K. Furthermore, Article 5.5 was not implemented in the Umbrian Programme, while the guideline identifies Articles 5.5(a) and 5.5(b) as functional for N2K. Table 6 shows that the key highlighted articles in the ERDF Regulation have been implemented in Umbria in a way which is difficult to connect to an Umbrian N2K. In Umbria, the entire Axis VI has been dedicated to "Sustainable Urban Development" which has no relationship whatsoever with N2K (for this reason that part of table was drawn with a dotted line). As in the 2007-2013 Programming, there is only one action dedicated to N2K: Action 5.1.1. This is the only single action included in the FP. The M.A.s, which could be financed using action 5.1.1, are 10, 22, 24 and 25.

**Table 6 Key articles of Regulation (EU) 1301/2013 and opportunities for N2K under the Umbrian ROP ERDF (2014-2020)**

N.	Article	Specific paragraphs of the basic regulation implemented by the Umbrian ROP (ERDF) 2014-2020 (a)	Action of Umbrian ROP (ERDF)2014-2020	AXIS ROP (ERDF)2014-2020	Sector code(b)	Euro
5.1	Strengthening research, technological development and innovation	(b) Promoting business research and innovation investment in innovation and research, developing links and synergies between enterprises, research and development (R&D) centres and higher education including for eco-innovation	1.1.1 Support for the economic valorisation of innovation through experimentation and adoption of innovative solutions in processes, products and organizational formulas, as well as through the financing of the industrialization of research results	AXIS -RESEARCH & INNOVATION	61	8,250,000
			1.2.1 System actions to support the participation of territorial actors in concertation platforms and national networks of technological specialization, such as the National Technological Clusters, and projects financed with other European programs for research and innovation (such as Horizon 2020 ).		63	5,664,240
			1.2.2. Support for the realization of complex research and development projects on a few important thematic areas and the application of technological solutions functional to the implementation of S3 strategies.		60	8,250,000
			1.3.1. Support for the creation and consolidation of innovative, high-intensity knowledge application start-ups and research spin-off initiatives		67	7,749,090
			1.4.1 Support for the generation of innovative solutions to specific problems of social relevance, including through the use of open innovation environments such as Living Labs		74	21,003,872
5.2	Information and communication technologies (ITC)	c) Strengthening ICT applications for e-government, e-learning, e-inclusion and e-health	2.3.1 - Technological solutions for the digitalization and innovation of the internal processes of the various areas of the Public Administration within the framework of the public system of connectivity such as health, tourism, cultural activities and heritage, services to businesses.	AXIS II - GROWTH AND DIGITAL CITIZENSHIP	78	8,137,680
5.3	SME competitiveness	c) Promoting entrepreneurship, in particular by facilitating the economic exploitation of new ideas and fostering the creation of new firms	3.4.1 Aid for investments in machinery, plants and intangible assets and accompanying the reorganization and corporate restructuring processes	AXIS III - COMPETITIVENESS OF SMALL AND MEDIUM-SIZED ENTERPRISES	2	26,000,000
			3.5.1 Support for the start-up and strengthening of entrepreneurial activities that produce socially desirable effects and public goods not produced by the market		3	16,753,600
5.4	Low-carbon economy	(c) Supporting energy efficiency, smart energy management and renewable energy use in public infrastructures and in the housing sector  (e) Promoting low-carbon strategies for all types of territories, in particular for urban areas, including the promotion of sustainable multimodal urban mobility and mitigation-relevant adaptation measures.	4.2.1. - Promotion of eco-efficiency and reduction of primary energy consumption in buildings and public facilities: renovation of individual buildings or complexes of buildings, installation of intelligent remote control systems, regulation, management, monitoring and optimization of energy consumption (smart buildings) and polluting emissions also through the use of technological mixes	AXIS IV - SUSTAINABLE ENERGY	13	7,660,020
			Action 4.4.1 - Renewal of rolling stock		43	4,000,000
5.6	Protecting the environment and promoting resource efficiency	(c) Conserving, protecting, promoting and developing natural and cultural heritage	Action 5.1.1 - Interventions for the protection and enhancement of areas of natural attraction of strategic importance (protected areas in the terrestrial and marine environment, protected landscapes) in order to consolidate and promote development processes	AXIS V - ENVIRONMENT AND CULTURE	85	5,645,830
			Action 5.2.1. - Interventions for the protection, enhancement and networking of cultural, material and immaterial heritage, in areas of strategic importance that consolidate and promote development processes		92	2,355,901
			Action 5.3.1. - Support for the integrated use of cultural and natural resources and promotion of tourist destinations		94	2,500,000
5.2	Information and communication technologies (ITC)	(c) Strengthening ICT applications for e-government, e-learning, e-inclusion and e-health	6.1.1 - Technological solutions for the implementation of interoperable e-Government services, integrated (joined-up services) and designed with citizens and businesses, and integrated solutions for smart cities and communities	AXIS VI - SUSTAINABLE URBAN DEVELOPMENT	78	2,618,170
5.4	Low-carbon economy	(c) Supporting energy efficiency, smart energy management and renewable energy use in public infrastructures and in the housing sector  (e) Promoting low-carbon strategies for all types of territories, in particular for urban areas, including the promotion of sustainable multimodal urban mobility and mitigation-relevant adaptation measures.	Action 6.2.1. - Adoption of technological solutions for the reduction of energy consumption of public lighting networks, promoting installations of automatic regulation systems (brightness sensors, remote control systems and grid remote management)		13	4,000,000
			6.3.1 - Implementation of infrastructures and interchange nodes aimed at increasing collective mobility and eco-compatible distribution of goods and related transport systems		43	4,200,000
5.6	Protecting the environment and promoting resource efficiency	(c) Conserving, protecting, promoting and developing natural and cultural heritage	6.4.1. - Interventions for the protection, enhancement and networking of cultural, material and immaterial heritage, in areas of strategic importance that consolidate and promote development processes		94	2,500,000

(a) The table highlights the paragraphs of the basic regulation more relevant for N2K

(b) Intervention sector code according to the Annex I to the Commission Regulation No. 215/2014

The key articles for N2K of the basic regulation for ESF (2014-2020) (Regulation (EU) 1304/2013), are more numerous than those implemented by the Umbrian ROP. In this case, the guidelines (EC, 2014) only allow the thematic objectives of the Umbrian ROP (ESF) (2014-2020) to be identified (Table 7). The ROP (ESF) (2014-2020) only marginally concerns N2K management; however the investment priorities 8i and 8ii (for management activity 4), 11i (for management activity 17) and 10ii and 10iii (for management activity 21) were included in the PF.

**Table 7 Key articles of Regulation (EU) 1304/2013 and opportunities for N2K under the Umbrian RDP ESF (2014-2020)**

Articles, paragraphs and letters key for NK2 of Regulation (EU) No. 1304/2013 (a)		Axis Umbrian ROP ESF(2014 2020)	Priority Umbrian ROP ESF (2014 2020)
3.1	<i>In accordance with the thematic objectives referred to in the first paragraph of Article 9, points 8, 9, 10 and 11 of Regulation (EU) No 1303/2013, which correspond to letters a), b), c) and d) of this paragraph and in line with its tasks, the ESF supports the following investment priorities:</i>		
	for the thematic objective "Promoting sustainable and quality employment and supporting workers' mobility"	3.1 a	I 8i, 8ii, 8iv, 8v, 8vii
	for the thematic objective "Promoting social inclusion and combating poverty and all discrimination"	3.1 b	II 9i, 9iv
	for the thematic objective "Investing in education, training and vocational training for skills and lifelong learning"	3.1 c	III 10i, 10ii, 10iii
	for the thematic objective "Strengthening the institutional capacity of public authorities and stakeholders and promoting efficient public administration"	3.1 d	IV 11i

(a) The table highlights the priorities more relevant for N2K

#### 4. Conclusion

N2K provides ecosystem services whose benefits was estimated between € 200 and € 300 billion per year (EC, 2013). This justifies that adequate resources are allocated to the network. There is a lack of knowledge regarding the approaches of national and sub-national policy makers to implementing N2K funding (Geitzenauer et al., 2017), so this paper analyzed the Umbrian case.

The applied methodology enabled the items to be included in the evaluation of both costs and financial resources to be selected. The guidelines gave an objective indication of which items to include in the analysis. E.g. M03 of the RDP (2014-2020) concerning quality schemes for agricultural products was excluded, although it appeared to indirectly connect with N2K.

The analysis of the real costs (2007-2013) was used as a basis for future cost appraisal. The cost sustained for N2K during the 2007-2013 programming was evaluated at just under EUR 60 million, equal to EUR 57/hectare, slightly lower than the average of EUR 63/hectare assessed for the EU (Kirchmeir et Al., 2012).

Awareness of how much had been spent on N2K in the past, was useful for predicting future spending, bearing in mind that different conservation strategies might naturally affect the level of costs (Gantioler et Al.).

The analysis of the real cost for N2K incurred in the past can be useful to improve the use of funding in the future and to optimize synergies between instruments of regional programming. The information regarding not only the type of interventions carried out in the past, but also the funds used for each M.A. and the problems encountered, can be useful to evaluate the effectiveness of management and of the interventions financed.

The construction of the matrices of potential funding opportunities (under EAFRD, ERDF and ESF 2014-2020) allowed us to specify which M.A.s could be fulfilled using the financial resources identified. However, we had to consider that the amount of these resources was not specific to N2K, but also concerned all the planned interventions of each measure/action.

Another restriction was that the availability of the financial resources for sub-measure/sub-actions was subject to the opening of specific calls by the Regional government of Umbria. Furthermore, we also had to take into account that the same sub-measure/sub-actions can finance more than one M.A. Financial resources available for N2K are usually very limited and only cover a small proportion of what is needed (Kettunen et al., 2011). This is also true for the Umbrian N2K

An increase in the overall investment devoted to the conservation of biodiversity is highly desirable to help fill the gap between budget needs and availability (European Court of Auditors, 2017). As in other regions, significant policy modifications will also be required in the Region of Umbria, if the identified funding needs of N2K are to be met. A first step could be the use in the Region of Umbria of a larger number of RDP (EAFRD) 2014-2020 measures compared to the past. The analysis carried out identified a range of potential sources of financial resources for N2K, which were used in order to define not only the FP, but also the financial part of the Prioritized Action Frameworks (PAF).

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