Kastamonu Univ., Journal of Forestry Faculty, 2017, 17 (3): 434-449 Research Article
IFS 2016, Special Issue
Doi: 10.17475/kastorman.303603

Benefit assessment of forest protected areas: Case on Küre Mountains National Park

Nihan YENILMEZ ARPA, Neşe ERSÖZ, Zekeriya YILMAZ, Abdulsamet HAÇAT, Mustafa ÖZKAN, Hasan TIRAŞ, S. Serhat ARDA, Zerrin KARAARSLAN

Ministry of Forestry and Water Affairs, General Directorate of Nature Conservation and National Parks, Ankara, TURKEY
*Corresponding author: nihanarpa@gmail.com

Received Date: 20.10.2016 Accepted Date: 09.07.2017

Abstract

Aim of study: Protected areas are well known and crucial instruments to achieve the objectives of biodiversity conservation and millennium development goals and they act an an essential role in the protection of biodiversity while promoting poverty reduction and supporting living conditions at the local level. Generally, these areas offer numerous benefits on behalf of conservation of the values, support the economy and living standards of the people. The objective of the study is to allow understanding the overall benefits of the Kure Mountains National Park, to gather information on the benefits and increase the awareness of local people and site managers to support conservation and benefits of the national park.

Area of study: The assessment was conducted in Küre Mountains National Park and associated buffer zone in the provinces of Bartın and Kastamonu

Material and Methods: There are some innovative ways to assess the benefits of the protected areas. The protected areas benefit assessment tool (Pa-Bat) is one of these which is developed by WWF. Protected Areas Benefit Assessment Tool is applied in Küre Mountains National Park with the participation of stakeholders in the region at various levels for this study.

Main results: The assessment was separately carried out in Bartın and Kastamonu provinces and 22 values/benefits were identified at end of the assessment. The benefits and values of Küre Mountains National Park were identified as biodiversity, management, values related with food and water, cultural and spiritual values, health and recreational values, knowledge and environmental services.

Research highlights: The result of the assessment helped us to collect overall information on the current and potential benefits of Küre Mountains National Park and associated buffer zone of the park.

Keywords: Protected Area, Benefit Assessment, National Park, Küre Mountains

Orman korunan alanlarının yararlarının değerlendirilmesi: Küre Dağları Milli Parkı örneği

Özet

Çalışmanın amacı: Korunan alanlar biyolojik çeşitliliğin korunması ve milenyum kalkınma hedeflerine ulaşmada en önemli araçlardan biridir. Bu alanlar yoksulluğun azaltılmasını sağlayarak yerel düzeyde yaşam koşullarını desteklerken, biyolojik çeşitliliğin korunmasında temel rol oynarlar. Genel olarak bu alanlar değerlerin korunması, ekonomi ve insan yaşam düzeyinin iyileştirilmesi adına çeşitli faydalar sunarlar. Bu kapsamda çalışmanın amacı; Küre Dağları Milli Parkının genel faydalarını anlamak, faydalara yönelik bilgi ve verileri toplamak ve milli parkın sunduğu faydalar ve alanın korunmasını desteklemek icin yöre halkı ve alan yöneticilerinin farkındalığını arttırmaktır.

Çalışma alanı: Bu değerlendirme, Bartın ve Kastamonu il sınırlarında yer alan Küre Dağları Milli Parkı ve parkı çevreleyen tampon zonda yürütülmüştür.

Materyal ve Yöntem: Korunan alanların değerlerinin ortaya çıkarılmasına yönelik çeşitli yollar bulunmaktadır. Bunlardan birisi WWF tarafından geliştirilen Korunan Alanlar Fayda Değerlendirme Aracıdır (KAF-DA). Küre Dağları Milli Parkının fayda ve yararlarının ortaya konmasında çeşitli düzeylerdeki ilgi gruplarının katılımıyla bu araç uygulanmıştır.

Temel Sonuçlar: Değerlendirme, Bartın ve Kastamonu illerinde ayrı ayrı yapılmış ve değerlendirme sonucunda 22 değer/fayda tanımlanmıştır. Küre Dağları Milli Parkının faydaları ve değerleri; biyolojik çeşitlilik, yönetim, gıda ve su ile ilgili değerler, kültürel ve manevi değerler, sağlık ve rekreasyonel değerler, bilgi ve çevresel servisler olarak belirlenmiştir.

Araştırma vurguları: Bu değerlendirme sonuçları, Küre Dağları Milli Parkı ve milli parkı çevreleyen tampon zondaki mevcut ve potansiyel faydaların tamamı üzerine bilgi toplamaya yardımcı olmuştur.

Anahtar kelimeler: Korunan alan, Fayda değerlendirme, Milli park, Küre dağları

Introduction

Biodiversity in Turkey is quite high and the country has the characteristics of a small continent with regard to biodiversity because of its position and covering three different types of bio-climate and three bio-geographical zones, - Euro-Siberian, Mediterranean and Irano-Turanian. Turkey has also various different topographic, geologic and geomorphologic characteristics and soil diversity. Its biodiversity doesn't only depend on the position but also depends on richness of the hydrological values and the differences of altitude. Its rich biodiversity finds the opportunity to live ın the various ecosystems such as mountains, wetlands, steppes, agricultural lands, marine areas, forests, mountains. (Ulusal Biyolojik Çeşitlilik Stratejisi ve Eylem Planı, 2007; Fifth national report of Turkey on UN Convention on Biological Diversity, 2014).

Protection of species and natural values within their own ecosystems legally started in 1937 with the Forest Law, nr.3116 and Terestrial Hunting Law, nr.3167. These two laws are the first legislations to conserve the nature and wildlife of Turkey (Kanunlar, Orman Kanunu, 1937; Özer 2012). Forest Law, nr.6831 which was accepted in 1956 mentioned the concept of national park for the first time. Article 25 of Forest law mentioned that rare and unique landscapes to be designated as national parks and managed by the General Directorate of Forestry. It also permitted creation of recreational areas for the public use and outdoor activities. Belgrad Forest Recreational Area was decleared as the first recreational area in 1956 and Yozgat Çamlığı National Park was declared as the first national park in 1958 according to this law. Belgrad Deer Production Station is the first station for the wildlife and it was established in 1958 according to Terrestrial Hunting Law, nr.3167. The studies on national parks, hunting-wildlifes and recreation areas were performed by the General Directorate of Forestry until 1976 (Yücel and Babuş, 2005). Today nature conservation and protected area management studies are carried out by both the government institutions and non-govermental organizations.

The efforts towards the conservation of biodiversity have been continuing in a more systematic way, especially after 1990's with the emergence of concepts such as Important Bird Areas, Important Plant Areas, Important Turtle Nesting Areas, and Key Biodiversity Areas. During the last ten years, the General Directorate of Nature Conservation and National Parks (GDNCNP), the General Directorate of Forestry (GDF), civil society organizations (CSOs) and universities, with some support from the private sector, have been conducting protected area studies in different regions and different ecosystems. In other respects, Ministry of Environment and Urbanization is responsible from the Special Environmental Protected Areas under Barselona Convention. The historical and cultural values are being managed and conserved by Ministry of Culture and Tourism (Yenilmez Arpa 2005a, 2005b).

Turkey has declared approximately 9.6 million ha. land as protected areas. This represents 8% of the country's total territory. Turkey has twelve types of protection categories, varying from National Parks to Seed Stands. Table 1 below provides the list of protected areas in Turkey by type. Figures 1 and 2 also reflect the distribution of protected areas country-wide (URL-1, 2017; URL-2, 2017)

Table 1. List of Protected Areas in Turkey

Ministry of Forestry and Water Affair's Protected Areas	Number	Area (ha)
National Parks (IUCN Category II)	42	845.814
Nature Parks (IUCN Category V)	210	99.473
Natural Reserve (IUCN Category Ia)	30	47.240
Nature Monuments (IUCN Category III)	111	7,142
Wildlife Development Areas (IUCN Category IV)	81	1,193,809
Wetlands (13 of them RAMSAR Site) (IUCN Category IV)	135	3,215,500
Protection Forests (IUCN Category IV)	55	320,450
Gene Conservation Forests (in-situ) (IUCN Category IV)	257	47,977
Seed Stands (in-situ) (IUCN Category IV)	351	47,062
Seed Orchard (ex-situ) (IUCN Category IV)	179	1,413
Subtotal MFWA	1432	5,825,880
Ministry of Environment and Urbanization's Protected Areas	Number	Area (ha)
Special Environmental Protection Areas	16	2,459,116
Natural Sites	1273	1,322,748
Subtotal MEU	1289	3,781,864
TOTAL		9,607,744

Figure 1. Distribution of protected areas in Turkey (Officıal reports, 2016)

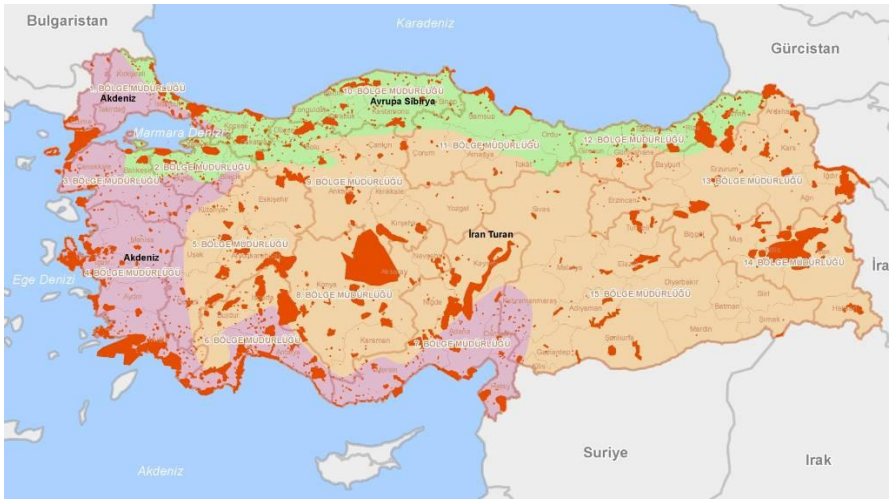

Figure 2. Distribution of protected areas according to the eco-regions in Turkey (Official reports, 2016)

The protected areas mainly designated and managed according to the National Parks Law, nr. 2873, with the primary objective to conserve biodiversity (Nature Reserves, National Parks, Nature Parks and Nature Monuments, corresponding to IUCN management categories I-IV) – cover a mere 1% of the national territory (Officıal reports, 2016).

Wildlife Development Areas which are designated for conservation of the wildlife and their habitats are managed according to the Terrestrial Hunting Law, wetlands, on the other hand, are managed by the both national and international regulations such as by-law on wetlands and RAMSAR Convention. These six conservation categories are being planned and managed by the General Directorate of Nature Conservation and National Parks (GDNCNP). Protection forests, gene conservation forests and forest related seeds stands are managed in accordance with the Forestry Law by the General Directorate of Forestry (GDF). These two General Directorates are the two main authorities responsible to conserve and manage the protected areas in Turkey under the Ministry of Forestry and Water Affairs (MFWA). Beside these two general directorates, Special Environmental Protection Areas and Natural Sites are managed by the General Directorate of Conservation of Natural Assets (GDCNA) under the Ministry of Environment and Urbanization (MEU).

Protected areas are one of the most significant instrument for the protection of biologicaldiversity, natural and cultural values. These areas have vital importance for the life on earth involving the health and welfare of the people as well. Because of their role in focusing on biodiversity conservation, many other outstanding values of the protected areas are being neglected. Besides the biodiversity conservation, the protected areas offer values, ecosystem services and benefits. The social and environmental benefits are provided by the protected areas as well. (Yenilmez-Arpa, 2013).

It is essential to conduct assessment of the ecosystem values and benefits in order to understand their importance and necessity for the protection of nature and protected areas. The CBD Strategic Plan for Biodiversity-20 targets 2020. Protected Areas (Aichi Targets) and CBD COP 10 Decisions also highlight the importance of biodiversity values and ecosystem services, and integration into improvement and poverty reduction strategies and planning processes on national and local level (URL-3, 2016).

Still, the ecosystem values are not well accounted for in decisions regarding natural resources. However, the term of ecosystem services offers a substantial opportunity to build a framework to underpin the wise use of biodiversity and other natural resources (Wallae, 2007).

Despite the importance given to ecosystem services for management of protected areas and sustainable development in rural areas, there are still many challenges on evaluation approaches and integration of ecosystem services in planning, management and design.of protected areas For example, the recreation potential of protected areas especially for natural parks is high. However, when the natural structure merges with rather poor planning from holistic planning, it can lead to environmental and social issues that are distorted by everyday planning and have an increasingly negative impact on the ecosystem (Kaya et al., 2009; Çetin et al., 2010; Çetin, 2015a; Çetin and Sevik, 2016; Çetin et al., 2016; Çetin, 2015d; Çetin, 2016b; Çetin, 2016c).

Since the identification and integration of ecosystem services into planning and management processes have not made enough progress, protected areas are particularly harmful, On the other hand there are many progresess and troubles based on the inclusion of ecosystem services in holistic landscape planning and decision-making tools.

Furthermore harmonizing the conservation and use the values sustainability across all sectors of the national-level economy, society and policy-making frameworks is a complex problem. It is serious to have a clear understanding of the connections, impacts and dependencies of human activities on ecosystems (Berghöfer, Brown, Bruner, Emerton, Esen, at. all. 2016)

Ecosystem Service Assessments and Valuations (ESAVs) can help to meet this challenge. Because the ecosystem services have the huge opportunities to impress public minds by transfering the importance of functioning ecosystems to all financial sectors and social groups. At the same time they can also provide convincing (and often much needed) evidence about how society and the economy depend on a diverse array of ecosystem services for their survival, security and growth: for example for income, employment, food, shelter, energy, disaster risk reduction, and healthcare, cultural and spiritual wellbeing. In other words, ESAVs are founded on identifying, articulating and responding to the opportunities associated with nature's benefits and services (Berghöfer, Brown, Bruner, Emerton, Esen, et al. 2016).

Valuations, if done enviable and strongly, can impress diplomacy at the all level in plenty of affirmative forms. It cover promoting planning and the improvement of policies to assuer ecosystem services of value, identifications of risk, compensation for damage to natural capital, and a greater rationale for more holistic and effective ecosystem-based management (Agardy, 2014)

There are various tools to enhance the capability, information and understanding of the range and assesment of benefits and values from the protected areas the all over the world. The economics of ecosystem and biodiversity (TEEB), the millennium ecosystem assesment (MA) and protected areas benefit assesment (PA-BAT) are some of them. TEEB studies on sector-focused analysis and guide valuing of biodiversity and ecosystem services. PA-BAT helps collecting a wide range of data of values and assess current and potential benefits of individual protected areas (Dudley and Stolton 2012; Millennium Ecosystem Assessment, 2005; TEEB, 2010).

Material and Methods

Küre Mountains National Park

Küre Mountains National Park (KMNP) is stay on within the provinces of Kastamonu and Bartın in the Western Black Sea Region and was declared as a national park in July 2000 due to its unique values, old and natural forests and rich biodiversity. KDMP covers 80,000 ha area and has a 37,000 ha core zone with the primary aim to conserve the nature and a buffer zone, which currently has not an official status, a forest with ongoing production operations and rural settlements (Orman koruma alanları yönetimi projesi**,** 2009). The location of Küre Mountains National Park is given in figure 3.

Figure 3. Location and boundry of Küre Mountains National Park

The national park is administered by the National Park Administration of Küre Mountains which responds to the Regional Directorate of Forestry and Water Affairs in Sinop under the General Directorate of Nature Conservation and National Parks of the Ministry of Forestry and Water Affairs, under the National Parks Law, nr.2873.

Küre Mountains is considered to be one of the richest spots in Turkey in respect of canyons and caves, which was one of the main reasons for the establishment and its vicinity as a National Park. The area has a wide variety of vegetation types. Euro-Siberian flora elements are seen in the north, Mediterranean species on the Black Sea area, and Iranian-Turan origin species are dominant in the south. Küre Mountains include one of the best examples of endangered 'humid forest eco-systems under the influence of black sea climate'. KDMP includes a variety of habitats including mixed forests of fir and beech, sea and coastal habitats, grasslands and rocky areas (Orman koruma alanlari yönetimi projesı**,** 2009).

There are nearly no residential areas in the core zone of KDMP. Limited number of people (seasonal) live in the 60 counties in eight districts located around the park. Forestry, agriculture, apiculture, wooden handicrafts, weaving, chestnut growing and eco/agro tourism are the primary income generation activities in the region. While the level of income is lower in Kastamonu section it is slightly higher in Bartın section due to the richness of mining sectore.

The slow development and low population density is offer surviving of its natural and cultural heritage in the region. The local cultures concerned with traditional folk-song, clothing and local dishes are unique in the site. The region is loosing its cultural and social values and tradations such as local-wooden architecture, clothing, handcrafts and local based lifestyle.

Benefit assessment process for Küre Mountains National Park and assessment methodology

There are several assessment tools for the evaluation of values and benefits. The protected areas benefit assesment (PA-BAT) which has been developed by WWF International is used for this study in order to assess the natural values and ecosystem services for Küre Mountains National Park (KMNP).

The PA-BAT purposes to help gather full range data on the updated and incidental benefits of seperate protected areas. This assessment tool was a brand new tool for the benefit assessment for the protected areas when it was first used in Küre Mountains National Park. This tool is first implemented in Küre Mountains NP in the whole world (Orman koruma alanlari yönetimi projesi, 2009)**.**

The PA-BAT was principally developed for managers of the protected area to work in close cooperation with the stakeholders in order to determine the significant values and benefits of the protected areas. The local people can also be second user to identify the values/benefits, NGOs and other volunteer groups who advocate the protected areas can use this tool effectivelyto strengthen communication and public awareness. PA-BAT encourages working with multi-stakeholders for carried out the assessment process. The tool is not only used for assesement, management and public awareness studies but also can be used as a planning tool at the system level (e.g.developing policies for specific resource uses) or as an advocacy tool for supporting the protected areas (Dudley and Stolton, 2008).

As well as describing the range of uses which are permitted by the national park authority it support identification of the indicators and support the monitoring results related with the benefits as a part of their overall assessment of the management effectiveness., It doesn't produce a quantitative information at this stage but when working with stakeholders, it creates a knowledge for a qualitative assessment and can also assist identification of the key areas for more detailed monitoring and assessments to be made in the future,availability of the financial and technical capacity (Dudley and Stolton, 2012).

Whilst the PA-BAT supports evaluation of the legal-based resource use it doesn't promote the assessment of illegal use.

Despite the fact that the tool achieve information on a a large variety of benefits that accumulate in the protected areas; it isn't envisaged to generate a "score" on how well the protected area is presenting in this concern (Dudley and Stolton, 2012).

Althought the PA-BAT was developed to assess permitted benefits gained from the protected areas, it can also be used to assess benefits gained from management of forest, rural landscapes and outdoor activity places. At a global level, the tool was initially implemented through the local workshops conducted in KMNP in Turkey with the participation of local represents who are living around the park, park staff, local level NGOs and representatives of the universities, in March 2009 under the GEF-Forest Management Project.

During the implementation process of PA-BAT, the following steps have been carried out for KMNP and its buffer zone.

- **Preperation step**; Translation of the PA-BAT tables and preperation of the short informative paper for the stakeholders
- **Working with stakeholders**; Workshops (Bartın and Kastamonu); Arranging meeting places and invitation of the participants
- **Filling the PA-BAT sheets and tables**
- **Evaluation of the datasheets**

PA-BAT required large number of participants to perform the assessment such as protected areas staff, local people and all the other stakeholders who are relevant with the protected areas and it offers large organized workshops and meetings in the ideal situation. For this reason, three different group workshops were made in different places during the assessment of the values.

The PA-BAT has two sections,

First Section; Background information datasheet: i.e. name, conservation category under IUCN, location, size, etc, **Second Section: Benefits to protected area stakeholders datasheet**: It includes a datasheet set and obtain main data on; benefits type; importantce for whom; and qualitative data on their importance level, their relationships to the conservation site and importance period during the year t (Dudley and Stolton, 2008).

Filling the Background Information Data Sheet;

Participants of the assessment; the initial line should record the key contact person who guided the assessment study finalized time and the evaluator who completed the assessment. . The participants who involve the filling of the datasheet and who play a role in assessing process should also be attached as an appendix to this datasheet.

- **Basic PA data;** the following several lines record some basic data on the site such as name of the place, extent and location **Ownership and governance;** The PA-BAT is include two multiple-choices boxes to record ownership and governance of the assessed conservation site.
- **Management objective:** This section offers that the two most important conservation objectives for the protected area ; these management and conservation objectives might be, for example, sustain of a specific endangered species or habitat type, or restoration and rehabilitation of degraded landscapes and ecosystems, or maintenance of a specific ecological function such as a migration route.
- **Homeland;** This section covers a basic yes/no question on whether the protected area is currently a homeland for local people – This record is crucial because it will have significant implications on most of the collected data.
- **Peace Park;** It is also simple yes/no question to record if the protected area is part of a cross border protected site or peace park.
- **Well-being:** This section contributes to the evaluators to assess the extent to which the protected area generally contributes to well-being (it may be better to fill this section after completion of the form).
- **Subsistence**: The non-economic benefits that support to well-being such as health, nutrition, clean water and shelter.
- **Economic**: The benefits that provide the direct income, **Cultural and spiritual**: The areas and subjects that are a source of pride for the community and the protected area, such as living culture, spiritual freedom, education

- **Environmental services**: environmental stability and role in the presentation of natural resources.
- **Political**: governance issues and its impact on decision-making processes (Dudley and Stolton 2008).

Filling the Values and their Benefits to Protected Area Stakeholders Data Sheet

This data sheet includes many questions related with the values of the protected area. There are 7 main topics and 24 questions to assess the values;

- Biodiversity values (1 Question)
- Protected area management (1 Q)
- Values related to food (5 Q)
- Values related to water (1 Q)
- Cultural and Spiritual Values (3 Q)
- Health and Recreation Values (2 Q)
- Knowledge (3 Q)
- Environmental Services (6 Q)
- Materials (2 Q) (Dudley and Stolton 2008).

Findings-Results

The protected areas benefit assessment study has been done for Küre Mountains National Park by the Strengthening of Forest Protected Areas Project which was financed by GEF. It is implemented both within the national park (37.000ha) and its buffer zone (80.000 ha).

The assessment has been conducted with the coordination and facilitation of a moderator who has knowledge about the protected areas, nature conservation and benefit assessment.

In total three meetings were held to assess the values and benefits of the protected area around KDMP. Each group meetings represented different groups of stakeholders and thus the range of the assessment was slightly different

✓ **Group 1**: This meeting was well attended mainly by the local people, and in particular by the local *Muhtars* (leaders of the village) in Bartın and held in the morning of 26th March 2009. Some officials from the forestry, tourism and water sections were also present. Because of the number of people participated, the meeting focused on using the simplified PPT version of the PA-BAT and assessed the values (subsistence, economic and potential value) for the local people living inside and adjacent to the protected area. Values related with the wider group of stakeholders were only discussed for the key values.

✓ **Group 2**: The participants of this meeting which was held in the afternoon, participation of of park management (national parks and forestry) and local university departments on26th March in Bartın, The assessment study was carried out by two separate working groups and they completed all the PA-BAT data sheets relevant to the park.

✓ **Group 3**: This public meeting was held in Kastamonu in the morning of 27th March.

Before the assessment of the values and benefits, the background information sheet is completed by the relevant protected area staff. This sheet is given in Table 2.

Table 2. Background Information Data Sheet for KMNP (Orman koruma alanlari yönetimi projesi, 2009)

1. Name, affiliation and contact details for person responsible for completing the PA-BAT (email etc.)			Basak Avcioglu, WWF Turkey Nihan Arpa, Ministry of Environment and Forestry, General Directorate of Nature Conservation and National parks						
2. Date assessment carried out			25th, 26th and 27th March 2009						
3. Nr. of people involved in completing assessment (*please put number involved in the box provided against each group of people listed below*)									
PA staff	4	Forestry staff	13	University	11	NGO	5		
Local community	16	Donors	0	External experts (tourism and water)	7	Other	20		
4. Name of protected area			The Küre Mountains National Park -Küre Dağları Milli Parkı - KDMP						
5. Size of protected area (ha)			KDMP covers 80,000 ha and has a core zone of 37,000 ha						
6. WDPA site code *(these codes can be found on www.unep-wcmc.org/wdpa/)*									
7. Country	Turkey								
8. Location of protected area (province and if possible map reference)						(see map above)			
9. Date of establishment			2000						
10. Ownership details (please mark)		Government *Core and forests in buffer*		Private *Agriculture and settlements buffer*		Community		Other	
11. Governance (please mark)		State *Core and forests in buffer*		Co-managed		Private *Agriculture and settlements buffer*		Community Conserved Area	
12. List the two primary protected area management objectives									
Management objective 1			The conservation of biodiversity and habitats – in particular limestone habitats; i.e. best formation of protected limestone in the world						
Management objective 2			Traditional values						
13. Is the protected area currently a homeland for indigenous or traditional people? (*please mark*)				Yes			No		x
14. Is the protected area a peace park? (*please mark*)				Yes			No		x
15. Number of people living in the park				0					
16. Number of people around the park				20-30,000 people (varying seasonally – increasing in summer) in about 60 rural settlements in eight districts (data for year 2000)					
17. Average national wage per annum				US$5,000					
18. Average local wage per annum				Lowest 400 Euro (data for year 2000) might have increased slightly					
19. Human development index rank									
21. Migration trend (overall increasing or decreasing)				Decreasing					

21. What impact has the protected area had in helping to reduce poverty in local, traditional or indigenous communities in and around the protected area? (*Please mark once only for each column.*)

	Subsistence	**Economic**	**Cultural / spiritual**	**Environment services**	**Political**
Has had a negative impact on well-being					
▪ Does not contribute to well-being				X (P)	
▪ Does not currently contribute to well-being, but has potential to do so			x		
▪ Makes a minor contribution to well-being		x			x
▪ Makes a major contribution to well-being	X (P)				

Among the 24 value assessment sheets in the PA-BAT only two values were not found to be relevant to the park by the managers; fisheries (values sheet 5) and coastal protection (values sheet 19) at end of the group workings and meetings. The assessment of the remaining values were made for both the core and buffer zones of the park; with the exception of hunting (values sheet 3), wild food (values sheet 4), traditional agriculture (values sheet 6), livestock and fodder collection (values sheet 7), non-wood products (values sheet 23) and timber management and removal (values sheet 24), all are only permitted in the buffer zone, so they were only assessed for their benefits in this zone. The list of these values/benefits are given below and in Figure 4.

1. Biodiversity
2. Management jobs
3. Water non-commercial
4. Cultural and historical
5. Sacred natural sites or landscapes
6. Wilderness and iconic value
7. Building knowledge
8. Tourism and recreation
9. Soil stabilization
10. Education
11. Genetic material
12. Medicinal resources
13. Flood prevention
14. Water quality and quantity
15. Pollination
16. Hunting
17. Non-wood forest foods
18. Traditional agriculture
19. Grazing-fodder collection
20. Timber extraction
21. Wild food plants
22. Climate change mitigation

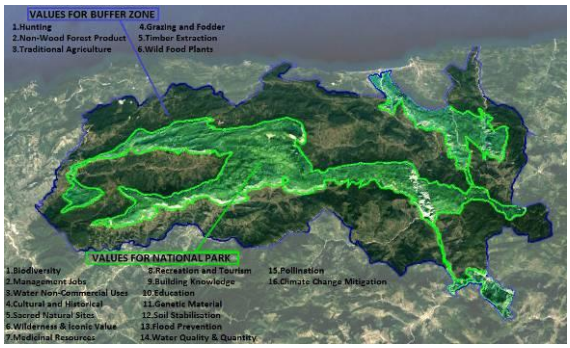

Figure 4. Distribution of the benefits in the national park and its buffer zone

The meeting concentrated on assessing the values for the local people living inside and adjacent to the protected area. Values related with the wider group of stakeholders were only discussed for the key values. The results from the community meeting in Bartın, researchers and forest experts in Bartın and researchers and forest experts in Kastamonu are given in Table 3.

Table 3. Results of the values and benefit assessments from the provinces of Bartın and Kastamonu

		Group 1-Local people-Bartın						Group 2- Researchers and forest experts, Bartın						3- local people and management organisations, Kastamonu					
	Values	Local people living in the PA	Local people near the PA	National population	Government	Industry	Global	Local people living in the PA	Local people near the PA	National population	Government	Industry	Global	Local people living in the PA	Local people near the PA	National population	Government	Industry	Global
		Core and Buffer Zone						**Core and Buffer Zone**						**Core and Buffer Zone**					
1	Biodiversity	++	++		++			++$$	++$$	++$$	++$$	++$$	++$$	++P$$	++P	++P	++P$$	++P$$	++P
2	Management jobs	++ P	++ P					++$P	++$P	++$P	++$P			P	P	P		+	
3	Water non-commercial uses							++	++					++P	++P	+			
4	Cultural and historical	++ $	++ $					P	P	P	P			+P$	+P$	$		$	
5	Sacred natural sites	++	++					+						+	+				
6	Wilderness & iconic value	++	++					++	++	++	++		++	+P	++P	+P	+	++	
7	Medicinal resources	++ $	++ $			+ P $		+P$	+P$	+P	+P	+P		+P$	+P$	+P	+P$	+P$	
8	Recreation and tourism	+ P $	+ P $	P				++$$	++$	++$	++$P	++	++$$	++P$$	++P$$	P$	+P	P	P$$
9	Building knowledge	+ P	+ P	+ P		+ P		$	$	++$	++P		++	+$P	+$P	P	++P	++P	
10	Education	+ P $	+ P $					$P	$P	$P	$P		P	+$P	+$P		+	++P	
11	Genetic material	+ $	+ $	+ +		+ +		$$P	$$P	$$P	$$P	$$P	$$P	+$PP	+$PP	+	+P	+P	+P
12	Soil stabilization	++ $$	++ $$		++ $$			++$$P	++$$P	++	++	++		+$P	+$P	+$P	+$P	+$P	+$P
13	Flood prevention	++ $$	++ $$		++ $$			++$$P	++$$P		$$P	P	$$	+$P	+$P	+$P	+$P	+$P	+$P
14	Water quality & quantity	++	++			+		++$P	++$P	++P	++P	++P		++P	++P	+P	+P	P	P
15	Pollination	+ $P	+ $P	+ $P				++$$	++$$					++$P	++$P	+P	P	+P	
16	Climate change mitigation	++	++	++	++	++	++	++P	++P	++P	++P	++P	++P	++P	++P	++P	++P	++P	++P
		Buffer Zone Only						**Buffer Zone Only**						**Buffer Zone Only**					
17	Hunting	+ $ P	+ $ P					+$						+$	+$			+P	+P
18	Non-wood forest product	++ P $	++ P $	+				+$$P	+$$P	+$$P	$P	$P		++$P	++$P	P	+	P	
19	Traditional agriculture	+ $	+ $					++$$						+P$	+P$				
20	Grazing and fodder	++ $	++ $					++						+	+				
21	Timber extraction	++ $$	++ $$	+		+$		++$$	++$$	$$	$$	$$	$$	+$	+$	+$	+$	+$	+$$
22	Wild food plants	+	+			+$		+$						+	+			+$	

Key: + = minor importance (minor value); ++ = major importance (major value); $ = minor economic importance (minor economic value); $$ = major economic importance (major economic value); P = potential importance (pot. value)

22 benefits for the national park are evaluated according to the their importance on economic and value and it is given in Table 4 and in Figure 5

Table 4. Benefit and economic values assessment for KMNP

		Value group 1	Value group 2	Value group 3	$ group 1	$ group 2	$ group 3	Average Value	Average $
1	Water - non-commercial	2	2	2	1	0	0	2.0	0.3
2	Water commercial uses	0	0	0	0	0	0	0.0	0.0
3	Cultural and historical	2	0	1	1	0	1	1.0	0.7
4	Sacred natural sites	2	1	1	0	0	0	1.3	0.0
5	Wilderness & iconic value	2	2	1	0	0	0	1.7	0.0
6	Local medicinal resources	2	0	1	1	0	0	1.0	0.3
7	Pharmaceuticals	0	0	0	0	0	1	0.0	0.3
8	Recreation and tourism	1	2	2	1	2	2	1.7	1.7
9	Building knowledge	1	0	1	0	1	1	0.7	0.7
10	Education	1	1	1	1	1	1	1.0	1.0
11	Genetic material	1	0	1	1	2	1	0.7	1.3
12	Soil stabilization	2	2	1	2	2	1	1.7	1.7
13	Flood prevention	2	2	1	2	2	1	1.7	1.7
14	Water quality & quantity	2	2	2	0	2	0	2.0	0.7
15	Pollination	1	2	2	1	2	1	1.7	1.3
16	Management jobs	0	0	0	0	0	0	0.0	0.0
17	Hunting	1	1	1	1	1	1	1.0	1.0
18	Wild food plants	2	1	2	1	1	1	1.7	1.0
19	Traditional agriculture	1	2	1	1	2	1	1.3	1.3
20	Grazing and fodder	2	2	1	1	0	0	1.7	0.3
21	Timber extraction	2	2	1	2	2	0	1.7	1.3

Key:
benefit
0= no importance
1= minor importance (minor value);
2 = major importance (major value);

0= no economic importance
1= minor economic importance (minor economic value);
2 major economic importance (major economic value);

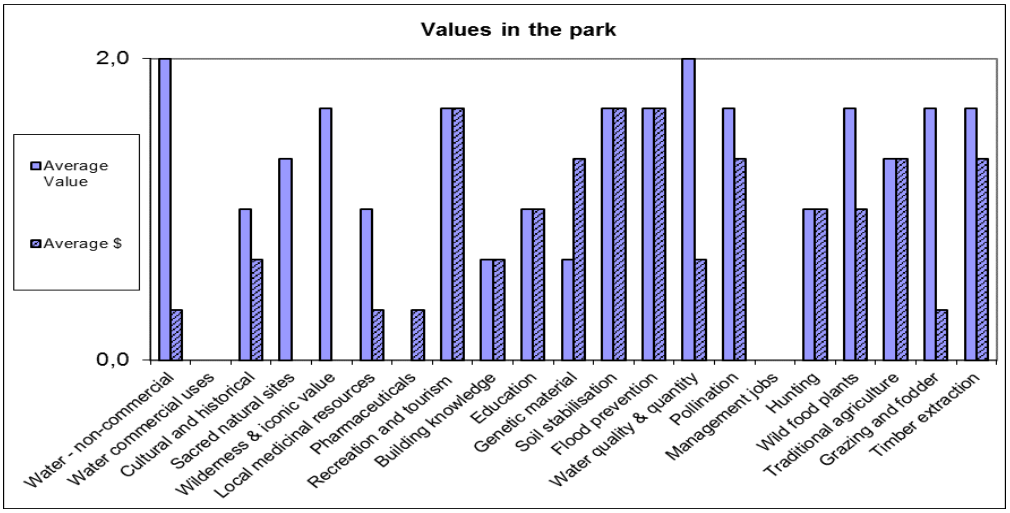

Figure 5. Benefit and values for NP and buffer zone

Conclusion

High value lands under the protection are life-sustaining for the protection of natural resources (biological and geological diversity) and provide wide range of values and benefits such as ecosystem services and related socio-economic values for humanity as well. These areas are ideally placed for conserving landscape diversity with their habitats and support protection of the ecosystem functions (Yenilmez-Arpa, 2011).

Although most of the protected areas are really create to conserve its rich landscape values and diversities, wildlife or its biodiversity, the protected areas are increasingly expected to ensure comprehensive benefits to human society additionally.

Due to its wider benefits to humanity, the protected areas managers and staff would like to increase the awareness on the values and benefits of their protected areas. Because, beside its numerious advantages, the assessment of values and benefits are conducted for advocacy and awareness for the protected areas. It also supports decision-making and management processes. It clarifies understanding of the social impacts and direct mobilizing of the funds.

The study on the assessment of values and benefits in Küre Mountains National Park in Turkey is not only focused on contribution the conservation objectives and protection of the values but also it provided an opportunity to understand its unique values and benefits in order to support alternative income generation for the park and for the local people.

On the other hand, the results of the assessment presented the significant differences in the ideas and perceptions among the land users, researchers and park staff on the protected areas values and benefits. Forexample the local people stressed the main interest of sanctuary and mystic places in the national park, in contrast to scientests assessed these as less significant. Some other benefits such as traditional agriculture, wild food plants, and medicinal herbs were also differently assessed by the different group of stakeholders. Even though the interest of the land user, local inhabitats and land owners were mainly focused on spiritual, social, cultural and economic values of the park, the interest of the visitors and other takeholders concerning with the park could be different.

Reviewing the possibility for increasing local job opportunities inside of the park and associated buffer zone showed that if current local skills in relation to management jobs, create the job opportunityand the development of a capacity building programme which will allow the local people to be recruited for the KDMP jobs may be appropriate.

Monitoring of game species needs to be developed to set baseline populations and monitore the impact of hunting and also quotas and fees for the game hunting tourism need to be set. There are extensive field work and scientific studies on the utilization of non-wood forest products such as wild plants by the local inhabitant for both subsistence and economic value has to be made.

Agricultural production areas in the buffer zone increase agricultural revenues. So, well-organized coordination and partnership among the relevant Ministries on the development of the grazing management plans, habitat rehabilitation, and landscape restoration is essential.

There are important cultural and historical values in the area. The abilities of the local people and the interpretation of these values should be increased to inform other stakeholders in the area about the importance and sensitivity of local culture, cultural and historical values and sacred sites.

The national park has unique wilderness values and iconic values related to the limestone landscape (i.e. waterfalls, caves, canyons etc). These values should also be managed carefully.

Collection of the medicinal resources and wild plants is very common in the area. But the ability of the local residents should be increased to develop alternative usage metdods and introduction of the products concerning with medicinal resources and wild plants. .

Recreation and tourism are the major benefits of the area. Its unique and virgin nature offers high value visitor satisfaction. The traditional lifestyle, local architecture and local culture contribute community-

based rural tourism opportunities. But the tourism should be planing and it support alternative income for the local residents in order to increase their revenue and it support conservation of the protected areaFormal and informal education is an important value for the protected areas. A training and educational programme should be develop for the KMNP.

The legal base documents and implications are are necessary to gain benefits from the genetic resources in KDMP. Research and policy recommendations are required in relation to carbon markets and the calculation of carbon production. Management issues related to soil erosion, flood prevention, water quality and quantity should be included in the management plan.

Bee-keeping activity and production of honey can be improved further to become an economically more significant activity in the area.

The mining activities are prohibited in the national park and restoration activities in former mining areas should be carried out. More forestry staff are needed in the buffer zone of the park to implement the management plan, local cooperatives should be included in the management of the forests (i.e. co-management) and more training is required.

Finally, the results of the assessment showed that, there are many needs and requirements to support the sustainable natural resource management and sustainability of the park resources. There are still some gaps related with the biological diversity research and surveys concerning with their ecological and economical benefits and values. The training and public awareness programs to raise the understanding of biolocical value of KDMP for the local and public is necessary. Management capacity should also need improvement for the effective biodiversity conservation and management efficiency of the national park.

References

Agardy (2014). The value of ecosystem services valuations, http://www.ecosystemmarketplace.com

Berghöfer A, C Brown, A Bruner, L Emerton, E Esen, D Geneletti, M Kosmus, R Kumar, M Lehmann, F Leon Morales, E Nkonja, T Pistorius, J Rode, R Slootweg, U Tröger, H Wittmer, S Wunder, H van Zyl. (2016). Increasing the Policy Impact of Ecosystem Service Assessments and Valuations - Insights from Practice. Helmholtz-Zentrum für Umweltforschung (UFZ) GmbH, Leipzig, and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

Çetin, M., Topay, M., Kaya L.G., Yılmaz, B. (2010). Efficiency of bioclimatic comfort in landscape planning process: case of Kutahya. *Turkish Journal of Forestry*, 1 (1), 83-95

Çetin, M. (2015a). Consideration of permeable pavement in landscape architecture. *Journal of Environmental Protection and Ecology* 16 (1), 385-392

Çetin, M. (2015b). Using GIS analysis to assess urban green space in terms of accessibility: case study in Kutahya. *International Journal of Sustainable Development & World Ecology* 22 (5), 420-424

Çetin, M. (2015c). Evaluation of the sustainable tourism potential of a protected area for landscape planning: a case study of the ancient city of Pompeipolis in Kastamonu. *International Journal of Sustainable Development & World Ecology* 22 (6), 490-495

Çetin, M. (2015d). Determining the bioclimatic comfort in Kastamonu City, *Environmental monitoring and assessment* 187 (10), 640

Çetin, M. (2016a). Changes in the amount of chlorophyll in some plants of landscape studies. *Kastamonu Üniversitesi Orman Fakültesi Dergisi*, 16 (1), 239-245

Çetin, M. (2016b). Determination of bioclimatic comfort areas in landscape planning: A case study of Cide Coastline. *Turkish Journal of Agriculture-Food Science and Technology* 4 (9), 800-804

Çetin, M. (2016c). Sustainability of urban coastal area management: A case study on Cide. *Journal of Sustainable Forestry* 35 (7), 527-541

Çetin, M., Sevik, H. (2016). Evaluating the recreation potential of Ilgaz Mountain

National Park in Turkey. *Environmental Monitoring and Assessment* 188 (1), 52

Çetin, M., Adiguzel, F., Kaya, O., Sahap, A. (2016). Mapping of bioclimatic comfort for potential planning using GIS in Aydin. *Environment, Development and Sustainability*, 1-15, doi:10.1007/s10668-016-9885-5

Dudley and Stolton (2008). The protected areas benefits assessment tool, a methodology, Published February 2008. WWF – World Wide Fund for Nature,

Dudley and Stolton (2012). The protected areas benefits assessment tool a methodology, revised version October 2012. WWF – World Wide Fund for Nature,

Fifth national report of Turkey on UN Convention on Biological Diversity (2014). Republic of TURKEY, Ministry of Forestry and Water Affairs, Ankara

GmbH, Eschborn, (2016). Increasing the Policy Impact of Ecosystem Service Assessments and Valuations, Insights from Practice, Germany. 30pp. www.aboutvalues.net,

Kanunlar, Orman Kanunu, (1937). T.C. Resmi Gazete, Kanun No: 3116, Sayı; 3537; Kabul Tarihi; 8/2/1937,

Kaya, L.G., Cetin, M., Doygun, H. (2009). A holistic approach in analyzing the landscape potential: Porsuk Dam Lake and its environs, Turkey. *Fresenius Environmental Bulletin* 18 (8), 1525-153

Millennium Ecosystem Assessment, (2005). *Ecosystems and Human Well-being: Synthesis*. A report of the millennium ecosystem assessment. Island Press, Washington, DC.

Orman Koruma Alanları Yonetimi Projesi, Orman koruma alanlar yönetimi kapsamında korunan alanların yararlarının değerlendirilmesi (KA-FDA) (2009). Küre Dağları Milli Parkı Örneği. Taslak Rapor Bartın-Kastamonu

Ofical reports (2016). Orman ve Su İşleri Bakanlığı Doğa Koruma ve Milli Parklar Genel Müdürlüğü, 2016 Ankara

Özer M. (2012). Genel ve Devlet avlaklarının tesisi, tescili, işletilmesi ve yönetilmesine ilişkin esas ve usuller, *TMMOB Orman Mühendisleri Odası Mesleki Mensupluğuna Hazırlanma Eğitimi Ders Notları*, Ankara

TEEB (2010) The Economics of Ecosystems and Biodiversity: Mainstreaming the Economics of Nature: A synthesis of the approach, conclusions and recommendations of TEEB.

The national biological diversity strategy and action plan (2007), Republic of Turkey. Ministry of Environment and Forestry, General Directorate of Nature Conservation and National Parks, Department of Nature Conservation, National Focal Point of Convention on Biological *Diversity. ANKARA*

URL-1. (2017, May 26). [Ministry of Forestry and Water Affairs, General Directorate of Nature Conservation and National Parks] www.ormansu.gov.tr

URL-2. (2017, 26 May). [Ministry of Environment and Urbanization, General Directorate for Protection of Natural Assets] www.cevresehircilik.org.tr

URL-3. (2006) 26 May 2017, [Convention on Biodiversity) www.cbd.org

Wallace, K.J. (2007). Classfication of ecosystem services; problem and solutions, Biological Conservation, Volume 139, Issues 3-4 October 2007, Pages 235-246.

Yenilmez Arpa, N. (2005a). Studies on nature conservation in the world and in turkey and situation assessment of protected areas in Turkey, 1st. Council of Environment and Forestry, ANTALYA

Yenilmez Arpa, N. (2005b). Available strategic documents, policies, principles and targets to be reached regarding protected areas in Turkey, 1st. Council of Environment and Forestry, ANTALYA

Yenilmez Arpa, N. (2011). Evaluation of the participation for determination, planning and management process of protected areas of Turkey: Sultan Sazlığı National Park, PhD. Thesis. 18 May 2011 ANKARA

Yenilmez Arpa, N. (2013). Evaluation of the benefits of the protected areas and ecosystems services case studies of Yıdız Mountains and Küre Mountains National Park. Water and Biodiversity Symposium-2013, MUĞLA

Yücel and Babuş (2005). The history of nature conservation and developments of nature conservation in Turkey. Çukurova University, the Faculty of Agriculture, Landscape Architecture Department. Adana, *Doğu Akdeniz Ormancılık Araştırma Müdürlüğü, Doa Dergisi* (Journal of DOA), Sayı: 11 Sayfa: 151 - 175 Yıl: 2005