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# ECONOMIC BENEFIT USE SERVICES OF THE SERVICE «NATIONAL NATURAL PARKS OF UKRAINE» ON THE FORMATION OF OBJECTS OF THE NATURAL RESERVED FUND

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**Abstract.** *The stages of forming the National Natural Parks (NPP) were investigated. The stages of NPP formation, which are carried out in accordance with environmental and land legislation, were specified. The completion time and the cost of each stage were highlighted.*

*The long process of forming the NPPs, the high cost of preparing technical documentation, bureaucratic obstacles at the stages of project documentation approval prove the ineffectiveness of the current system of forming the NPPs. The ineffectiveness of the today's system of NPP formation is proved by the fact that during the years of Ukraine's independence only 5.72% of the NPPs were formed.*

*Bureaucratic obstacles at the stages of NPP formation lead to wasteful spending of funds from the State Budget of Ukraine, and Soviet methods for their formation lead to the loss of valuable natural territories. As a result, no environmental protection activities are carried out in the NPPs, the share of the state's ecological component decreases and the population's standard of living decreases.*

*An effective modern electronic GIS method for forming the NPP was proposed. Its effectiveness was proved: project and cartographic documentation is elaborated in 100% compliance with the Presidential Decree, the stages of formation are performed almost free of charge and faster by 87.5% in comparison with the existing method.*

*Time and economic indicators, methods of forming the NPP were compared. The advantages of modern electronic GIS method were substantiated.*

**Keywords:** *service of Ukraine's NPPs, stages of NPP formation, Minprirody, State Land Cadastre (SLC), creation plan, management plan, land management plan, Setting-Out Plan, economic indicators, time indicators*

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## **Problem setting.**

The Minprirody declares today's environmental problems: poor quality water, air pollution, land degradation, deforestation, the Chernobyl accident. As known,

the ecological component in the place of residence of a human is one of the key aspects in ensuring their healthy life.

According to the Law of Ukraine "On the Nature Reserve Fund of Ukraine", NRF facilities are part of the ecological

network of our state. The NRF facilities as components of the eco-network are created with the purpose of improving the conditions for forming and remediating the environment, enhancing the natural resources potential of Ukraine, preserving landscape and biodiversity, places of settlement and growth of valuable animal and plant species, genetic stock, routes of animal migration through the boundaries of NRF territories and facilities, as well as other territories which are of special value for the environment protection and are subject to special protection in accordance with the laws and international obligations of Ukraine. That is why the stages of forming the NPPs, as eco-network facilities, are so important for the healthy population of our state.

Experience has proven that the process of forming the NPPs is very difficult, long and expensive, which is the reason for few NPPs in Ukraine to be actually formed. [1,2]

Objective of the paper. To investigate the completion time and economic costs of all stages of forming NPPs by existing methods. To determine the total number of NPPs formed during the independence of Ukraine.

To investigate the completion time of forming NPPs by existing methods and modern electronic GIS methods (Service of Ukraine's NPPs), determine their cost.

To carry out a comparative study of existing method of forming NPPs and modern electronic GIS method. Following the results of the study, to find out an effective method for the formation of Ukraine's NPPs.

### ***Body of the article.***

Creation of an NPP using existing methods is carried out in accordance with applicable environmental and land

legislation. The first stages of the forming the NPP include preparation of a request for NPP creation, its consideration, development of the NPP creation project and its approval by the local government, drafting of the Presidential Decree "On the Establishment of the NPP", the NPP Management Plan is prepared in accordance with the Law of Ukraine "On the Nature Reserve Fund of Ukraine". The NPP Management Plan is performed in accordance with the Order of the Ministry of Ecology and Natural Resources of Ukraine No. 245 "On the Regulations on the Management Plan for the Territory of the National Natural Park"... [3, 4].

Funds for the creation of a new state-financed institution (NPP) are allocated in accordance with the Law of Ukraine "On the State Budget of Ukraine" [5].

The Land Management Plan is prepared and the NPP boundaries are further registered in the SLC in accordance with the Land Code of Ukraine and the Laws of Ukraine "On Land Management", "On State Land Cadastre". From the moment of NPP registration in the SLC, the boundaries of the NPP are set out [6, 7, 8].

During the research, it was found that the technical process of creating an NPP using the existing methods – from filing a request for NPP creation until setting out the boundaries of the NPP – consists of 3 stages: preparation of the NPP management plan, the land management plan, followed by registration the NPP boundaries in the SLC, and the plan for setting out the boundaries of the NPP.

The existing system of NPP formation is due to bureaucratic obstacles. Despite the fact that NPPs are valuable environmental facilities of national importance – the land management plan should be approved by the central ex-

## 1. Economic and time indicators of the stages of NPP formation [9]

№	Name of the stage	Completion time (years)	Cost in UAH...
1	2	3	4
1	NPP Management Plan	2	600 000
2	Land Management Plan	2	2,000 000
3	Setting-Out Plan	-	-
4	Total	4	2,600 000

ecutive body, and the land management documentation should be examined, which delay actual (setting out) formation of the NPP.

The completion time and economic costs of the stages of NPP formation were determined. The results are summarized in Table 1.

In Ukraine, according to the Presidential Decrees, there are 47 NPPs with a total area of 2,444,194.95 ha. As of April 2017, it became known from the letters from the Minpryrody that there are only 4 NPPs in Ukraine containing separate plots registered in the SLC and having cadastral numbers assigned. The total area of those land plots is 12,112.4532 ha, and 9 NPP are registered as prescribed and vested with the right of NPP perpetual use, their total area is 127805.4166 ha. Land plots registered in the SLC as NPP and land plots with state certificates of the right of perpetual use issued in respect of the NPP, are 139,917.9 ha in area and 13 in number, which is 5.72%.

It was found that 2,304,277.05 ha (94.28%) of territories are the NPPs according to the Presidential Decrees, but during the years of Ukraine's independence they were not virtually formed. For 26 years of Ukraine's independence there is no whole complex of land plots registered in the SLC as the NPP, in accordance with the Presidential Decree "On the Establishment of NPP ..." [10].

### *Methods.*

The Service of Ukraine's NPPs is the only GIS map of Ukraine, which contains the boundaries of all NPPs of Ukraine, their functional zones, their areal and quantitative indicators in accordance with the Presidential Decrees. All quantitative and areal indicators are summarized in the diagrams, and the layer "Public Cadastre Map of Ukraine" is also connected to the service. The service contains information about the natural and historical and cultural composition of the NPPs, their recreational facilities.

#### *Using the Service of Ukraine's NPPs at the stages of forming the NPPs.*

*A request for NPP creation, the NPP Creation Project and the Draft of the Presidential Decree "On the Establishment of the NPP".* These stages are carried out in accordance with the environmental regulations, well-established methods for preparing the technical documentation. The text and cartographic parts of these documents should be elaborated in the format of geographic information systems.

#### *Execution of the Presidential Decree "On the Establishment of the NPP..."*

Upon signing of the Decree "On the Establishment of the NPP", the President delegates its execution to the Cabinet of Ministers of Ukraine. In its turn, the Cabinet of Ministers of Ukraine assigns further

stages of its execution to the central executive body that implements the environmental protection policy, the Minpryrody.

The structural unit of the Minpryrody, the Reserve Management and Studies Department should, upon signing the Presidential Decree, enter all information from the Decree into the Service of NPPs.

*Information to be entered in the Service of Ukraine's NPPs:*

- a map-scheme of the NPP boundaries and the functional zones of the NPP;
- a list and areas of state-owned land transfer red to perpetual use of the NPP, including withdrawn from land users;
- a list and areas of state-owned land included in the NPP without transferring to perpetual use;
- a list and areas of rayon councils included in the NPP;
- the date, number of the President's Decree;

Registration of the NPP boundaries and the boundaries of the functional zones in the SLC.

The structural unit of the Minpryrody, the Reserve Management and Studies Department should, upon registration of the boundaries of the NPP and the boundaries of its functional zones in the Service of the Ukraine's NPPs, should file a request regarding the registration of the NPP in the SLC, based on the Service of Ukraine's NPPs to the structural unit of the central executive body that implements the state land relations policy (Derzhheokadastr).

In order to carry out the productive work of the central executive body (Minpryrody and Derzhheokadastr) in terms of the registration of the NPP boundaries in the SLC, the layer "Service of Ukraine's NPPs" should be connected to the Public Cadastre Map of Ukraine.

Setting out the NPP boundaries and the boundaries of the functional zones.

The Reserve Management and Studies Department (Minpryrody) based on the Service of Ukraine's NPPs should ensure that the boundaries of the NPP and its functional zones are set out. The boundaries following the map-scheme entered into the Service of Ukraine's NPPs were set out using the software package "Trimble Catalyst".

Trimble Catalyst allows you to explore the boundaries of the NPP and the boundaries of its functional zones by reference to an electronic map-scheme (Service of Ukraine's NPPs) accurate to centimeters and to determine the coordinates of the turning points [11].

The completion time for setting out the boundaries of the NPP using Trimble Catalysts determined by the formulas:

$$Ch = \frac{SNPP}{4} \quad (Formula\ 1)$$

where Ch – a number of hours required for setting out the NPP boundaries;

S NPP – the area of the NPP;

4 km/h – the average human speed [12];

$$Cwd = \frac{Ch}{Cwhd} \quad (Formula\ 2)$$

where Cwd – the number of working days;

Ch – number of hours required for setting out the NPP boundaries;

Gwhd – the number of working hours per day – 9 hours.

For example, the completion time for setting out the boundaries of NPP "Holosiivsky" using Trimble Catalyst was calculated in the paper. The area of the park is 4525 ha.

$$Ch = \frac{4525}{4} = 1131 \text{ hours}$$

$$Cwd = \frac{1132}{9} = 126 \text{ working days ( 6 months)}$$

As a result of forming the NPP using modern electronic GIS methods,

## 2. Time and economic indicators of the stages of forming the NPP using modern electronic GIS methods

№	Name of the stage	Completion time	Cost in UAH
1	2	3	4
1	Entering all information from the Decree into the Service of NPPs	10 minutes	Salary of employees of the Minpryrody
2	Registration of the NPP boundaries and the boundaries of the functional zones in the SLC	1 day	Salary of employees of the Derzhheokadastr
3	Setting out the NPP boundaries and the boundaries of the functional zones	≈ 6 months	Salary of employees of the Minpryrody
4	Total	≈ 6 – 7 months	Salary of employees

## 3. Comparative analysis of NNP formation methods

№	Name of the method	General	
		Completion time	Cost in UAH
1	2	3	4
1	Today's methods	4 years	2 600 000
2	Modern electronic GIS methods	6 months	0

the NPP is registered in the SLC, the boundaries are set out accurate to centimeters and in accordance with the Presidential Decree “On the Establishment of the NPP” within 6 months.

Having determined the completion time and economic costs of the stages of NPP formation based on existing methods and modern electronic GIS methods, it is necessary to compare them and determine the most effective method (Table 3).

Based on the results of the comparative study, it appears that the most advantageous method in terms of economy and time is the method of forming the NPP using modern GIS technologies. It was established that the method of NPP formation using GIS technologies would save 2,600 000 UAH, and this work would take less time by 3 years and 6 months. The formation of an NPP using the GIS technology is a fast, cost-effective and productive method.

## Conclusions.

The modern method of NPP formation is multi-stage, in accordance with the current legislation, it consists of 9 stages. Each stage requires a certain amount of time and budget funds. It was established that for the actual (setting out) formation of the NPP only 3 technical stages are necessary. But the bureaucratic system complicates this process by adding 6 more stages.

Experience has proven that the bureaucratic system not only complicates the formation of an NPP, but in most cases also makes it impossible to form an NPP – for the 26 years of independence, only 5.72% of the NPPs have been formed.

The project documentation for most of the future NPPs (NPPs created in accordance with the Presidential Decrees) has been elaborated, but due to bureaucratic obstacles was not approved,

and NPPs are not actually formed. The research showed that an average of a quarter million hryvnias is allocated from the State Budget of Ukraine for preparing the project documentation on the formation of one NPP, the completion time for its implementation is an average of 4 years.

In order to form an NPP effectively, ensuring the whole setting out of the NPP boundaries, the paper proposes using the modern electronic GIS methods for NPP formation. At the same time, during the research, it was found that the modern electronic method for forming the NPP allows to perform this work just in 7 months (on the average) and save a quarter million hryvnias from the State Budget of Ukraine.

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**ЕКОНОМІЧНІ ПЕРЕВАГИ ВИКОРИСТАННЯ НАУКОВОГО ДОРОбКУ СЕРВІСУ «НАЦІОНАЛЬНІ ПРИРОДНІ ПАРКИ УКРАЇНИ» НА ЕТАПАХ ФОРМУВАННЯ ОБ'ЄКТІВ ПРИРОДНО-ЗАПОВІДНОГО ФОНДУ**  
<https://doi.org/10.31548/zemleustriy2019.01.05>

**Анотація.** Досліджено етапи формування Національних природних парків (НПП). Перелічено етапи формування НПП, які здійснюються відповідно до екологічного та земельного законодавств. Висвітлено терміни виконання та ціну кожного з етапів.

Довгий процес формування НПП, значна вартість розробки технічної документації, бюрократичні перепони на етапах затвердження проектної документації – доводять неефективність існуючої системи формування НПП. Як доказ неефективності сучасної системи формування НПП показано: за роки незалежності України лише 5,72% територій НПП сформовано.

Бюрократичні перепони на етапах формування НПП призводять до марнотратства коштів з Державного бюджету України, а радянські методи їх формування призводять до втрати цінних природних територій. Як наслідок, у ме-

жах НПП не здійснюється природоохоронна діяльність, знижується рівень екологічної складової Держави та знижується рівень життєдіяльності населення.

Запропоновано дієвий сучасний електронний ГІС метод формування НПП. Доведено його ефективність: проектно-картографічна документація розроблюється у 100% відповідності до Указу Президента, етапи формування здійснюються фактично безоплатно та порівняно з існуючим методом швидше на 87,5%.

Здійснено порівняння часових та економічних показників, методів формування НПП. Обґрунтовано переваги сучасного електронного ГІС методу.

**Ключові слова:** сервіс НПП України, етапи формування НПП, Мінприроди, Державний земельний кадастр (ДЗК), проект створення, проект організації, проект землеустрою, проект виносу, економічні показники, часові показники

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**ЭКОНОМИЧЕСКИЕ ПРЕИМУЩЕСТВА ИСПОЛЬЗОВАНИЯ НАУЧНОГО ИНСТРУМЕНТА СЕРВИСА «НАЦИОНАЛЬНЫЕ ПРИРОДНЫЕ ПАРКИ УКРАИНЫ» НА ЭТАПАХ ФОРМИРОВАНИЯ ОБЪЕКТОВ ПРИРОДНО-ЗАПОВЕДНОГО ФОНДА**  
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**Аннотация.** Исследованы этапы формирования НПП. Перечислены этапы формирования НПП, которые осуществляются в соответствии с экологическим и земельным законодательством. Освещены сроки выполнения и цена каждого из этапов.

Долгий процесс формирования НПП, большая стоимость разработки технической документации, бюрократические преграды на этапах утверждения проектной документации доказывают неэффективность существующей системы формирования НПП. В качестве доказательства

неэффективности современной системы формирования НПП показано: за годы независимости Украины только 5,72% территории НПП сформировано.

Бюрократические перегородки на этапах формирования НПП приводят к растрачиванию средств из Государственного бюджета Украины впустую, а советские методы их формирования приводят к потере ценных природных территорий. Как следствие, в границах НПП не совершается природоохранная деятельность, снижается уровень экологической составляющей страны и уровень жизнедеятельности населения.

Предложено действенный современный электронный ГИС метод формирования НПП. Доказана его эффективность:

проектно-картографическая документация разрабатывается в 100% соответствии с Указом Президента, этапы формирования осуществляются фактически бесплатно и, по сравнению с существующим методом, быстрее на 87,5%.

Проведено сравнение временных и экономических показателей, методов формирования НПП. Обоснованы преимущества современного электронного ГИС метода.

**Ключевые слова:** сервис НПП Украина, этапы формирования НПП, Минприроды, Государственный земельный кадастр (ГЗК), проект создания, проект организации, проект землеустройства, проект выноса, экономические показатели, временные показатели