

EVALUATING VARIOUS EMISSIONS FROM WORK ON DEVELOPING PARANG MASSIF SKI AREA. CASE STUDY

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Abstract

An important component of tourism development in Parang Mountains area is the economic impact problems, socially and environmentally . Petrosani, being a mono-industrial area, where mining was the main activity of the inhabitants, underwent many transformations in recent years. Restructuring the mining industry, the large number of layoffs has led to rapid increase in unemployment and decline in living standards of the inhabitants of the municipality. In these circumstances, the local authority has identified tourism development as a complementary activity / alternative to the local economy.

Key words: mountain environment, mining, unemployment, evaluation, tourism.

INTRODUCTION

Parangul hikers were always located in the family's most famous mountains in our country. Enjoying the reputation of peaks, lakes and ice bucket its constant Parangul attracted generations of tourists

Parang mountain group comprises mountains of Olt, Jiu and Strei, ie Parang Mountains Mountains Căpățanii, Lotru. Candrel Mountains Șureanu, forming a vast expanse east-west length of about 100 km and a width of 70-80 km north-south, developed the width of the Carpathians . Of this area Parang Mountains occupy the mountainous south-west on the east- west having a length of about 32 km, and from north to south a maximum opening of 33 km . From the administrative point of view they are included in Gorj (south) , Hunedoara (north) and Valcea (east) (fig. 1).



Fig. 1 Parang Mountains

The geologically similar Făgăraşului Parang are; alpine topography is dominated by crystalline rocks, presented either as crystalline schists, amphibole rocks are rocks associated with chlorite be grandioritice .

The first characterized a northern strip in the Parangului Mic - crutches - Mija and a strip south of the main ridge extended in the direction of step Surduc - Grivelor Ciocarliul by subalpine area south of Parângul Mare beyond Papuşa and Curmătura Olteţului. The second concerns the peaks since Stoeniţa - peak Parângul Mare and continue Russian's Coast up to Latoriţa and dreary . In the Molidviş - Cerbu, put a new area of granite gneiss and gneisses , alternating up to the southern foot of mountains with crystalline schists and granite again (eg Gilortului keys)

Outside the sedimentary rock mountains appear: White Rocks - Polatiştea - Spring (west), Novaci - Baia de Fier - Galbenului Keys - Olteţului Keys (southeast) and Pietrele - Cărbunele - Muntinul (north) .

The alpine area is highlighted glacial topography, which manifests itself in the form of glacial cirques and valleys especially on the north slopes (fig. 2).



Fig. 2 Relief glacial - Parang Mountains

EVALUARE

In order to tourism development in this area by HG 1205 of 7 October 2009 approved certification Parang area - Petroşani, Hunedoara County, the tourist resort of national interest.

The explanatory note of this government decision is expected a positive socio-economic impact:

a) the macroeconomic impact

In the medium and long term, the draft bill will create a positive impact in that area Parang - Petrosani will develop in terms of tourism can be promoted as tourist resort of national interest.

b) the impact on business

Positive impact by increasing tourist traffic and also the turnover of tourism investors.

c) social impact

Diversification and quality of tourism services will create a positive social impact.

HCL no. 292/2009 was approved updating the Strategic Plan for Socio-Economic Development 2007-2013 Petroșani. This plan provides strategic direction as: skiing area in Parang tourist area.

It was also developed a project on waste management in the Parang that complement the proposed project for the rehabilitation of existing parts.

Also in this respect will run and another project to develop a network to collect wastewater from the Rusu - Parâng for treatment of their wastewater treatment station Dănuțoni.

Creation of infrastructure for tourism development in the massif Parang will give rise to the development of sources of pollution in the workplace, power generated by the organization and conduct of the work performed during the site works involving deforestation, excavation, pouring concrete, releasing land for all materials and restoring works degraded environments.

Thus we have:

1. Emissions of pollutants in water

Currently Massif Parang water quality is affected by untreated or insufficiently treated wastewater . Each chalet has its own sewage system with septic tanks emptied . The project aims to implement a water supply system and a sewage system .

Household fuel will be designed and constructed to prevent accidental contamination of groundwater with fuel .

Wastewater will be collected and transmitted by the newly created bus station Dănuțoni treatment.

2. Emissions of air pollutants

a) assessing the emissions from the power operations of motor vehicles and machinery operating on site

Specific sources of air pollution such activities are volatile organic compounds - VOCs - namely hydrocarbons, primarily those specific gasoline (heptane) . Emanations of these pollutants in the atmosphere due to losses occur through breathing tanks and loss of work.

Breathing losses are related to vapor distillation and thermal cycle of day and the losses occurring at work filling and emptying .

Breathing emission characteristic is their great height and depend on ambient temperature and the degree of filling of the reservoir . These emissions are continuous.

Losses by conveying petroleum products (unloading of tanks, leaks , filling tanks and other vehicles) is characterized by low emission height and have a flash.

Depending on storage tanks and oil products average daily volume of circulated station emissions were calculated at 6 -8 m height from the ground.

The storage and handling of petroleum products evaporative losses occur, which can be divided into losses through breathing and loss of work

Loss of breath are caused by vapor expansion and thermal regime of the day and working losses occur when filling or emptying.

In the situations described above occur emissions of volatile organic compounds (VOCs).

VOC emissions can be evaluated case by emission factors set after AP - 42 as follows:

- storage tanks breath $E_a = 0.05 \text{ kg} / 1000 \text{ dmc} / \text{day}$
- losses on filling tanks of motor vehicles $E_c = 1.44 \text{ kg} / 1000 \text{ dmc}$

Said these emissions occur where there is a vapor recirculation system. Losses are reduced when there completely closed circuit.

The mass flow rates of VOCs released into the atmosphere can be established technology categories as follows:

- to fill the reservoirs of vehicles using a tanker of 20 cubic meters (Table 1);
- breating storage tanks is achieved through ventilation ducts, provided separately for each tank ;
- ventilation ducts provided at the end of the flames and stop suction valve;

Table 1

The storage taken in calculating atmospheric emissions

Product	The total volume tanks [mc]	Maximum volume stored 0.8 [mc]	Volume calculation
Diesel	25.00	20.00	20.00

The mass flow of VOCs from respiration tanks at full capacity is determined by the following mathematical relationship :

$$D_a = \frac{V_d \cdot E_a}{24} = \frac{20 \text{ mc} \cdot 0,05 \frac{\text{kg}}{\text{mc} \cdot \text{zi}}}{24} = 0,042 \text{ kg/h}$$

$$D_a' = \frac{D_a}{\delta} = \frac{0,042}{900 \text{ kg/mc}} = 0,064 \cdot 10^{-3} \text{ mc/h}$$

The automotive supply tanks supposedly can feed one vehicle. Peak output from the two pumps will be:

$$D_c = D_p \times N \times E_c$$

$$D_c = 80 \text{ dm}^3/\text{min} \times 1 \times 1.44 \times 10^{-3} \text{ kg/dm}^3 \times 60 \text{ min} = 6,912 \text{ kg/h}$$

$$D_c' = \frac{D_c}{\xi} = \frac{6,912 \text{ kg/h}}{900 \text{ kg/mc}} = 7.68 \times 10^{-3} \text{ mc/h}$$

The two sources of pollution can be considered to act simultaneously just how long the power running operation of vehicle tanks .

In this case the total mass flow rate will be :

$$D_{\text{tmax}} = D_a + D_c = 0.042 + 6.912 = 6.954 \text{ kg/h}$$

Referring to poor air quality can invoke rules limiting the emission rates issued or concentrations.

b) assessing the time of diffusion of pollutants in the space components of the storage tanks

It is assumed that 80% of the fuel tank is filled by diffusion hence the volume of components of pollutants:

$$V_{\text{dif}} = V_r - V_{\text{rd}} \quad V_{\text{rd}} = 80 \% \times 25$$

$$V_{\text{dif}} = 25 - 20 = 5,0 \text{ m}^3$$

The speed of travel of the pollutant in the area of diffusion of the components is considered $VD = 0.2 - 0.3 \text{ m/s}$, as compared to the amount of water in the speed of molecular diffusion conductive system .

Considering that the diffusion path length in the gas space is $S_d = 0.4 \text{ m}$, the diffusion time $d\tau$ will be:

$$\tau_d = \frac{S_d}{V_d} = \frac{0.4}{0.2} = 2s$$

c) assessment of the emission concentrations fuel tank

We recognize that only 90 % of the recovered vapor can condense pump fuel mass, contributing to an increase in the rest of the area of diffusion.

$$M_{\text{cov}} = D_a + D_c = 0,042 + 0,1 \times 6,912 = 0,7332 \text{ kg/h} = 203,7 \text{ mg/s}$$

$$C_{\text{cov}} = \frac{M_{\text{cov}} \times \tau_d}{V_{\text{dm}}} = \frac{203,7 \times 2}{5} = 81,48 \text{ mg/mc}$$

Compare this to the amount allowed by Order 462/93 which is 150 mg / m³, resulting clear leadership.

By Order 462/93 are set allowable limits of VOC concentrations and the emission TEPb

d) evaluating emissions from motor vehicles and machinery equipped with the operation of internal combustion engines

Another source of air pollution is the emissions from the combustion of diesel during operation of motor vehicles and machinery. The exhaust gases of diesel engines have the same characteristics as those of gasoline engines. Sulphur dioxide emissions are based on fuel composition , which generally contains 10 times more sulfur than gasoline . Since diesel engines operate more complete combustion and less use combustibili volatile hydrocarbons and CO emissions are relatively low .

e) evaluating emissions from carrying out excavation works , blasting and the resulting material handling

Another potential source of air pollution with particulate matter consists of excavation work and material handling dislocated effected in the redeployment of the parties and the access roads and the work of digging the foundations for the pillars of cable installations.

Basically, the soil in the affected area has a high humidity, which prevents the rise and spread of dust because rainfall totals are more here 1100 -1200 mm a year. Very common are precipitation falling on the peaks and slopes of the hills and mountains exposed to moist air advection and front activities (orographic precipitation). However, in August - September when rainfall may be lower and temperature higher top layer of soil may be dry. In such circumstances it is necessary to splash the material before commencement of exvavații. Also spraying to eliminate discharges of dust is imperative and when conducting blasting work.

3. Emissions of soil pollutants

a) assessment of sources of soil pollution resulting from operations of power motor vehicles and machinery operating on site

Due to the large distance to organizing site (the former preparations Livezeni Petrosani) and the spread of premises on large surfaces , operations fuel and current operations of maintenance (change or supplement oil change parts with high wear and tear) will perform on temporary platforms waterproof , specially designed so as to avoid accidental spills of fuel and oil in the ground. Used oil must be stored in sealed barrels that will be transported to the site organization in town will be filled soon . Do not accept the storage of larger quantities of waste oil in alpine areas , it increases the risk of accidental contamination of soil by hitting overturning or to corrosion .

After the equipment operation is the possibility of accidental leakage of fuel and lubricating and hydraulic oils . To avoid these leaks , we recommend regular inspection and maintenance of equipment and faulty

risk the production of such leaks to be withdrawn garage site organization dn arranged for troubleshooting Petrosani .

In the event of any such spillages will etch emergency and the contaminated soil will be removed from the site as waste.

Indirect soil pollution through atmospheric polluting emissions is insignificant because air pollutants are reduced.

b) evaluation of the sources of soil pollution resulting from carrying out works to skiing, access roads and facilities lift

These works involve the excavation and blasting conduct resulting in the destruc-tion of the topsoil. For reducing and even eliminating these impacts are recommended stripping topsoil layer before work blasting and temporary storage platforms arranged in the immediate vicinity of the sites. If possible, the vegetation layer will be etched in ad-vance as glii , which will be deposited in the immediate vicinity also work points, and will be sprayed with water as necessary to avoid drying vegetation.

During efecturării of quarrying operations and disposal of excess material resulting from work debleiere - backfilling is necessary to select possible large fragments of rocks so that the shredded material to remain on site to form new substrates for soil that It is to be restored . After finishing the redeployment of the slopes will restore topsoil and will call gliile with topsoil as far as possible in the old locations to avoid mixing species. Topsoil recovered in the work of widening access roads will be used also to restore topsoil on slopes vegetal.

It also recommends that the preparation of the piste run on small portions retreating give at high altitudes to low altitudes, to avoid phenomena drainage and washing the material deployed in the event of heavy rainfall, and to reduce the storage time of soil and plant material etched.

CONCLUSIONS

The urban area of the city of Petrosani, analyzed in the area is 19 hectares, is located a large number of huts and houses built as early as the 9th decade of the last century. This area is strong anthropic, vegetation cover and forest vegetation were destroyed large areas. The development, initially uncontrolled, this area of was as the effect of restricting the area of development of large mammals , mainly the bear , boar and deer .

Anthropic factor in landscaped ecosystems, including agro-ecosystems (factor out the loop -back connection) adjustment system performs differently depending on its rela-tionship to the information it handles. Hence they have different roles in the ecosystem certain categories

of anthropogenic component. Specifically, the amount of information equivalent to the quality system organization, at the same time it represents a resource that strengthens the role of anthropogenic ecosystem .

Considering the fact that ecosystems have been affected by human activities in the area since the 9th decade of the last century, the impact on biodiversity, due to the development of this project is considered as insignificant

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