LIFE19 NAT/BG/000986 **REFOREST**
Enhancing the restoration, climate resilience and biodiversity value of priority forest habitats within Natura 2000 SCIs
The project is funded by the EU's LIFE programme

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Restoration of Forest Shelterbelt System Damaged by Biotic Factors as a Result of Climate Change

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SHORT HISTORY

Жетва въ с. Дуранларъ Балчишко.
Moissonnage au village Douranlar (arr. de Baltchik).

- Dobrudja is the area in Bulgaria with the smallest annual rainfall, or just 500 $l.m^{-2}.y^{-1}$.
- The amount of precipitation in Dobrudja is near the upper limit of semi-desert (200-400 $l.m^{-2}.y^{-1}$).

This, combined with the strongest winds in Bulgaria, makes Dobrudja an extremely dry place.

- **Field protective belts are extremely important** for the maintaining moisture and fertility.
- **With global warming, maintenance of the grid network of forest belts will become increasingly important and increasingly challenging.**

Field - protective forest belts in Bulgaria now

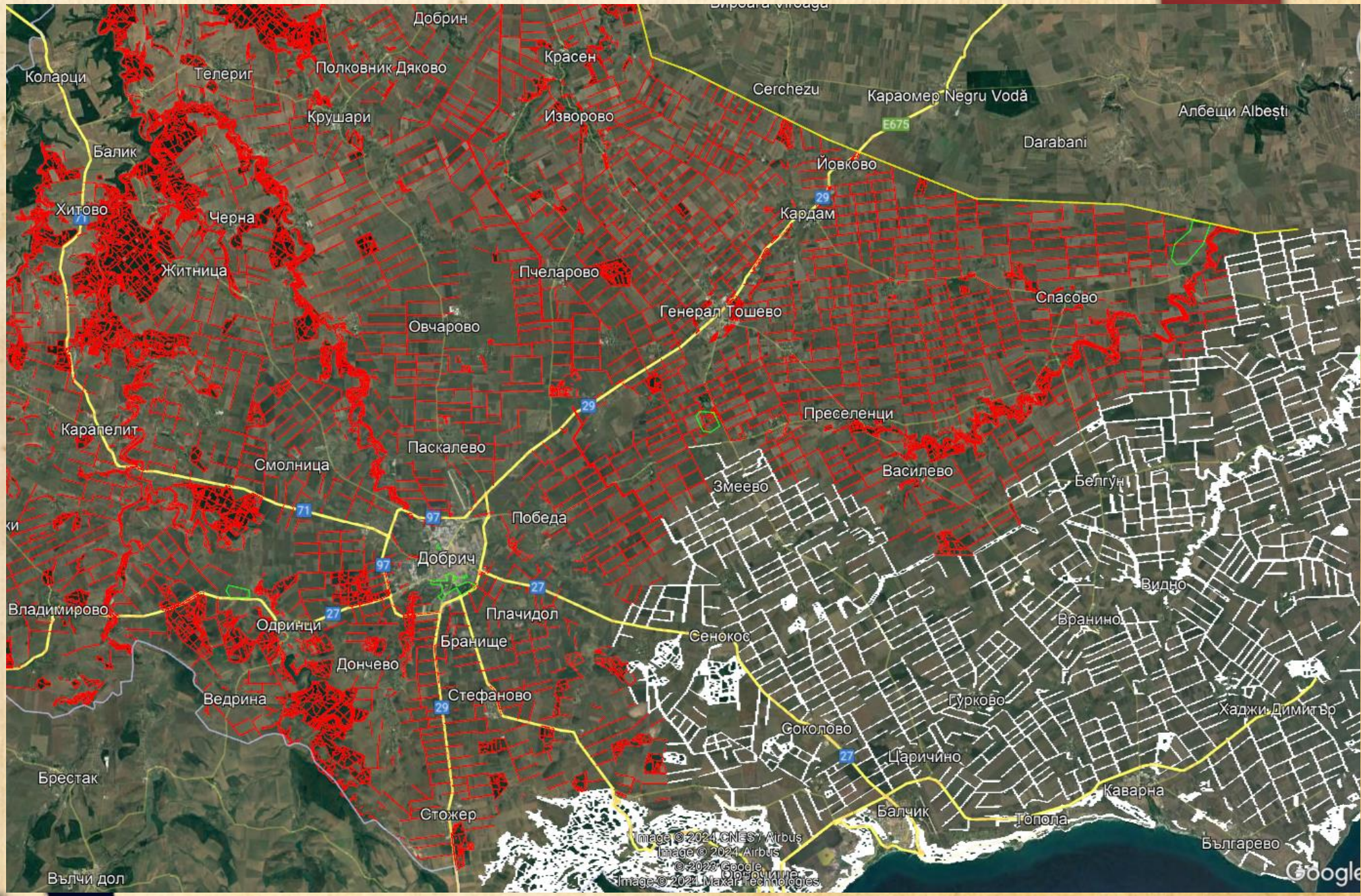
A documentary inventory in 1995 shows that in the 1990s the area of the Dobrudja field-protective forest belts is $65*10^3$ dκa and they are part of the state forest fund.

According to the data of the Northeastern State Enterprise - Shumen, a system of forest belts with an area of 146 312 dka operates on the territory of Dobrich Region, of which 81 097 dka is a state protective belt with a length of about 1000 km and 65 215 dka - field protective belts with length over 4000 km.

The area of existing belts today is only half of the projected and 2/3 of those built in the 1960s. The system of belts (network) is broken.

The definition of "Protective Forest Belts" is regulated by point 24 of the Additional Provisions of the Forestry Act, namely: They are linear forest cultures, created for protection of soils, engineering equipment and urbanized territories for improvement of the micro-climate

Protective Forest Network in Dobrudzha



ECOLOGICAL AND ECONOMIC IMPORTANCE OF THE FPFB SYSTEM

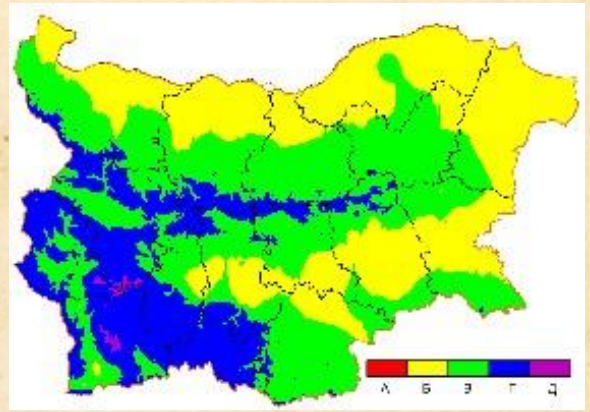
It has been proved that the agricultural areas protected by forest shelterbelts increase harvest by 15-35%; erosion there is stopped; dust particles are decreased, and air pollution is lowered by 2 to 4 times.

These economic benefits are evaluative and better known to the general public, but one of the most important benefits of the forest shelterbelt system is that it creates conditions for restoration and maintaining of the region's biodiversity. There are huge territories, where the forest shelterbelts are the only places, suitable for animal habitation and breeding. And it is exceptionally important that these shelterbelts are providing unintermittent corridors, that link most distant forests together. The specific microclimate of the forest shelterbelts, similar to that of a big forest, creates conditions for multifold increase of the plant species diversity.

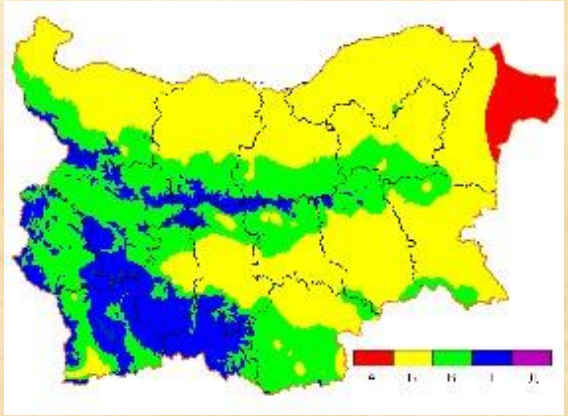
lesser spotted eagle (***Clanga pomarina***) and **Spotted flycatcher** (***Muscicapa striata***) inhabiting FPFB

The photos are by Mihail Iliev, BSPB

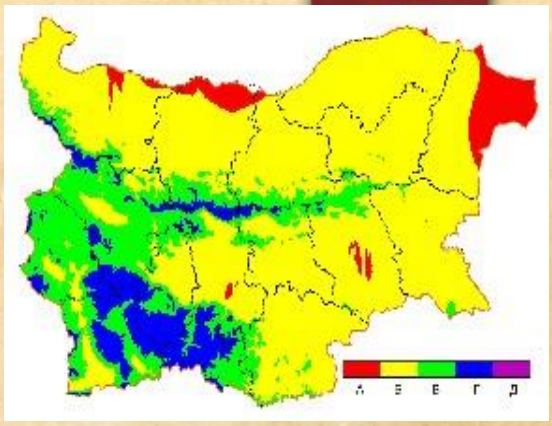
Areas of Vulnerability of Forest Ecosystems in Bulgaria to Global Warming



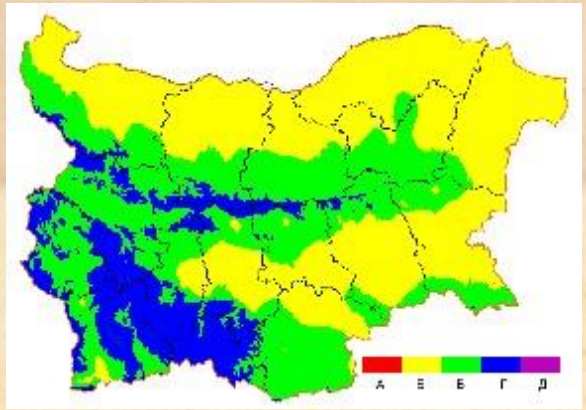
in the modern climate (1961-1990) (a)



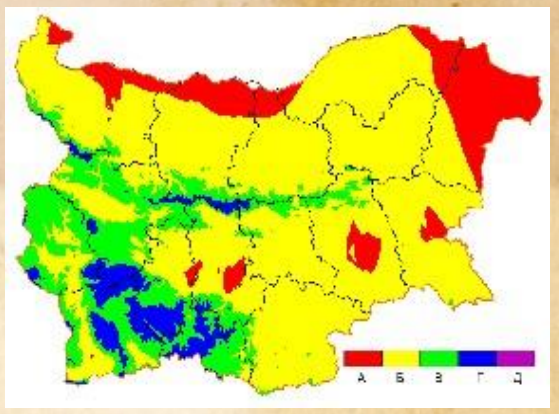
for climate change: 2020 (b - realistic scenario)



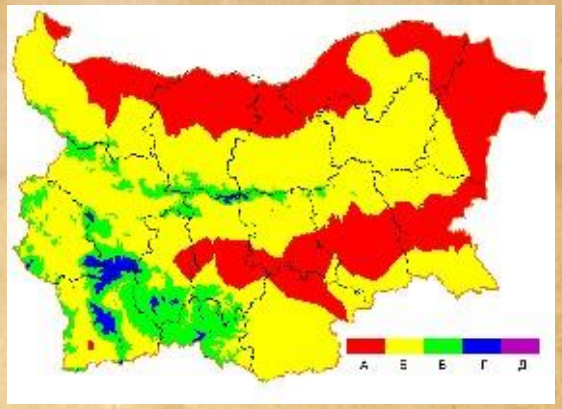
2050 (c - realistic scenario)



2080 (d - optimistic scenario)



2080 (f - realistic scenario)

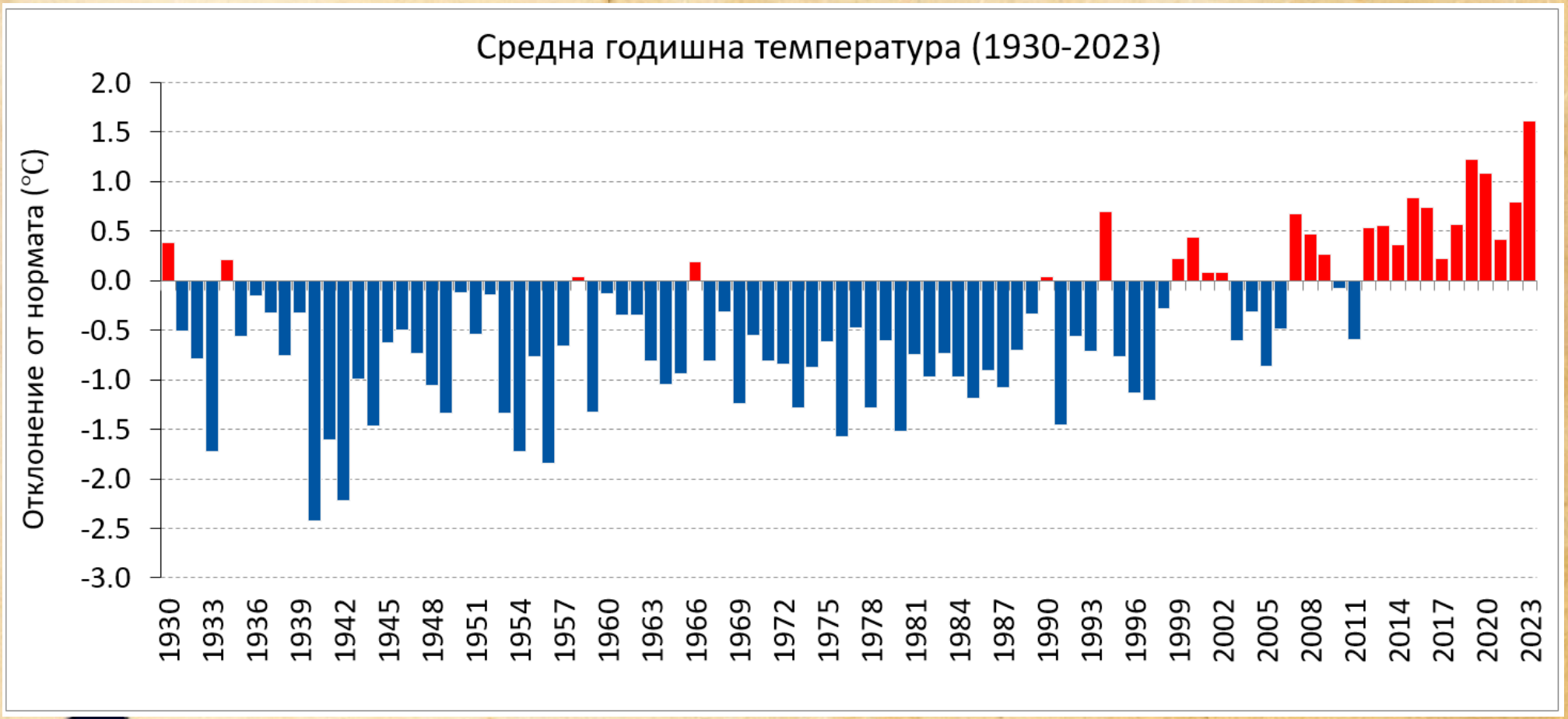


2080 (g - pessimistic scenario)

Zone А - Vulnerability too high, Zone Б - High Vulnerability, Zone В - Average Vulnerability, Zone Г - Low Vulnerability, and Zone Д - Very Low Vulnerability

Mean annual temperature (°C) for the period 1930–2023 as a deviation from the norm

According to data from the NIMH annual bulletin



Drying up FBFB

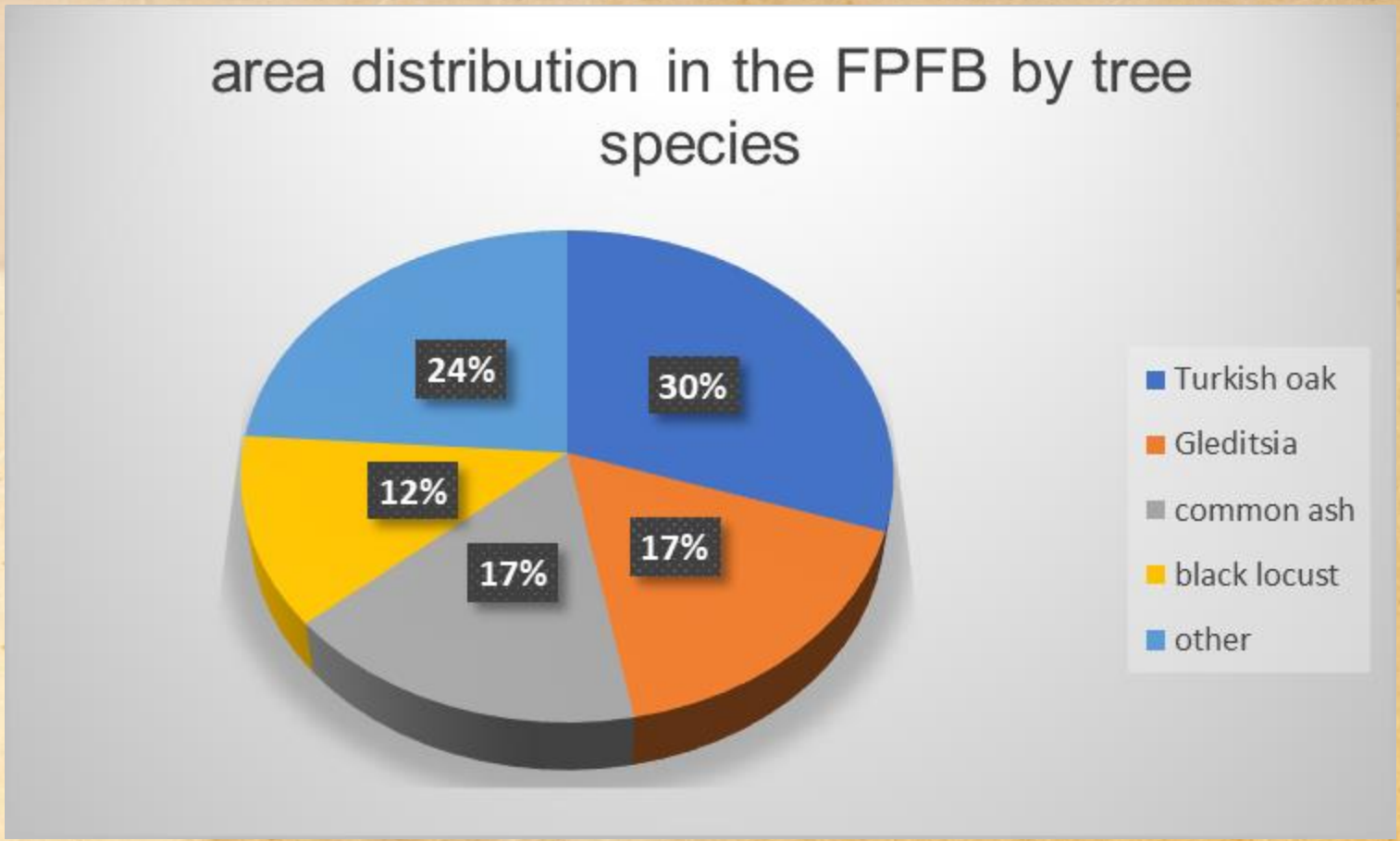
. In recent years, an intensive drying up process has been observed, with some of the main tree species contained in the structure of the belts.

Until 2019 drying up was observed in elms and American ash.

After 2020 mountain ash and field ash trees massively began to dry up.

In 2023 the acacia Field Protective Forest Belts (FPFB) also began to dry up.

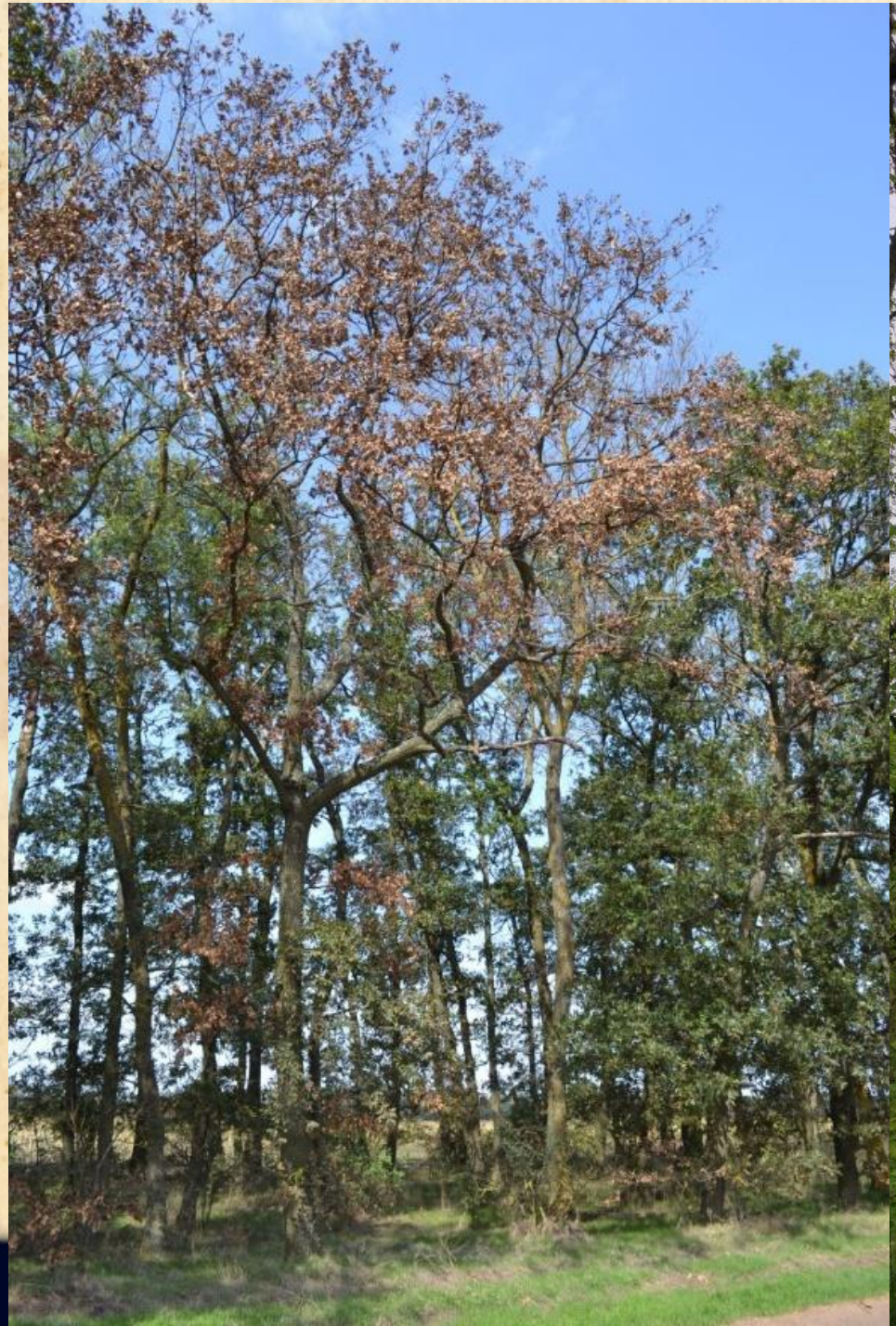
In 2024 a drying up process began to develop on the oaks as well - at the moment, the red oak and Turkish oak are the most affected.



Ash tree species drying up

Oak tree species drying up

Turkish oak drying up



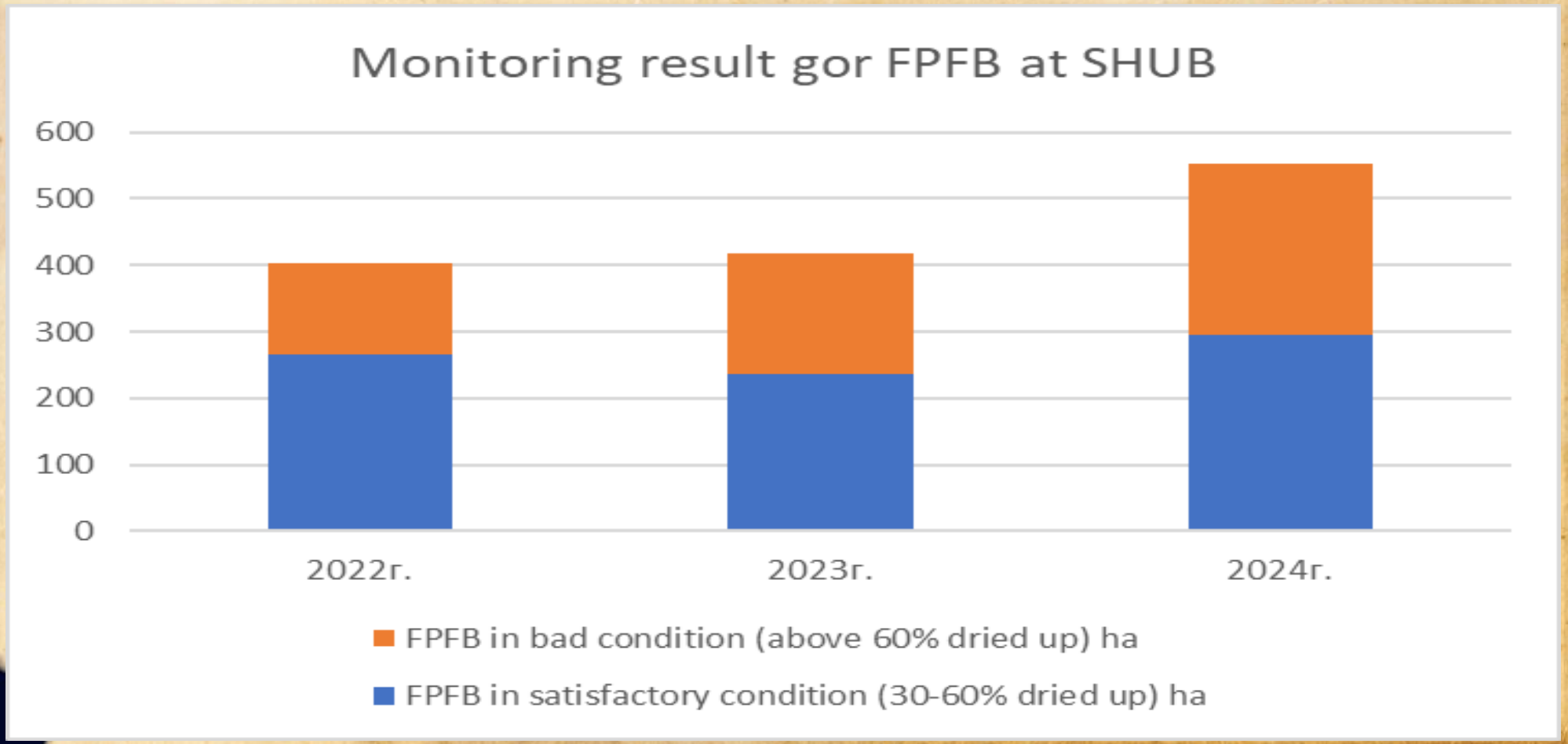
Gleditsia and black locust

Surveys

In recent years, annual monitoring of the PFB is being carried out separately from the forest pathological survey for all forests.

Although the Dobrudzha forestry and hunting units put in every effort and priority is given to work done in drying-up cultures, it is evident that the affected areas are not only not decreasing, but also increasing.

It is difficult to assume that a technical facility such as a PFB is in good condition when it is 25-30% structurally compromised, or in satisfactory condition when it is 50% structurally compromised, but this is what the accepted methodology is.



Reasons for drying up

A large number of studies have been conducted by the Forest Protection Station - Varna, the Institute of Forestry at BAS, Plant Protection unit at the Bulgarian Agency for Food Safety..

A large number of pathogens and pests have been identified, but the main cause leading to a decline in the immunity of trees and plantations is the climate change, expressed mainly in the reduced amount of precipitation during the period of active vegetation and in general; the lack of winter moisture supply and extremely hot summers. Insofar as the drying up processes are not limited to the FPBs constructed in the 1950s, but also occur on young plantations, it should not be assumed that the time has come for the network to be renewed.

Of course, pesticide use in agriculture is also contributing to the process.

Restoration of the Protection Forest Belts

. We have come to the main topic.

As you have seen, the areas of the belts in poor condition are many and increasing. Given their small size and scattered nature, we are facing a huge challenge - their restoration.

The methods and means of restoring PFB do not differ substantially from the methods and means applied for all forest cultures, but there are also quite a few peculiarities.

Natural seed regeneration is impracticable in most cases, the main reason being the lack of undergrowth with most tree species. We have had interesting experiences in the Gleditsia belts where scarification of seeds and a tremendous amount of undergrowth is obtained by surface mulching.

Natural offshoot regeneration is a possible solution, which would postpone part of the problem and allow us to concentrate on PFB where shoot regeneration is also impossible. The problems here are mainly with the operative legislation and its interpretation.

We are now coming to the less environmentally friendly and more expensive method of artificial regeneration through afforestation, which I will deal with in more detail, as this is the main method for now. The technology is as follows:

-100% sanitary/technical felling

-**clearing the area** of branches, bushes and felling residues by mulching

-**complete soil preparation**, including milling with a shredder to a depth of 30-40 cm or uprooting with an excavator and subsequent soil turning. As it is forbidden to leave dykes in the soil preparation, the work is mainly done by milling.

Restoration of the Protection Forest Belts

-**reforestation** - for oaks we prefer the acorn sowing method, as the trees develop a better root system; companions are brought in per sapling at replenishment; for the rest - reforestation with the “Kolesov sword” (a special hand tool) at a minimum of 600 saplings per dka, as per Regulation 4

-**hand cultivation** - an extremely important measure, and the scheme can go up to 4-4-3-2, as Dobrudja is steppe and the grass can reach up to 2m in height.

-**mechanised** cultivation by disking the row spacing.

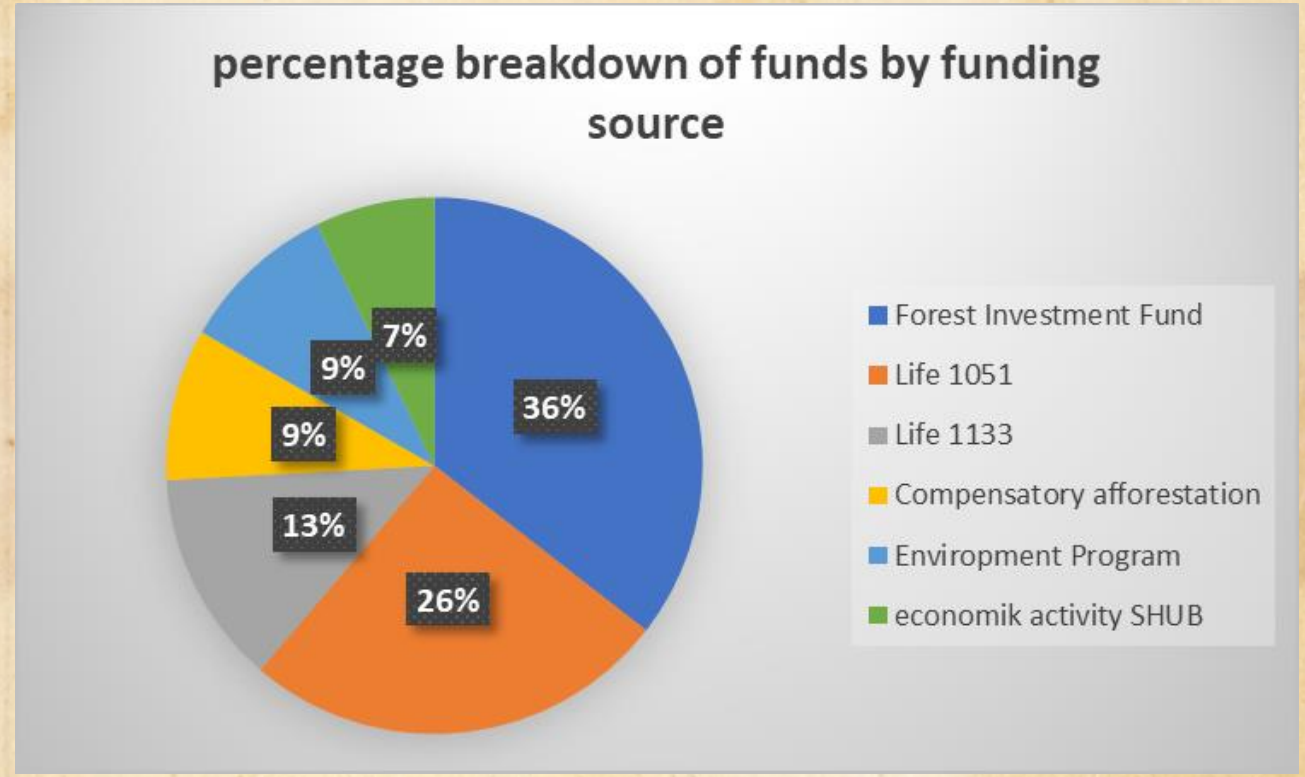
- **replenishment** - with companions with Kolesov's sword

-**lightening of the cultures** by removing unwanted tree or shrub species.

Problems in the management and restoration of the belts

Problems related to the lack of adequate state policy for forest management and, in particular, for the field protection forest belts

Funding. For 2024. For 2024, the State Forest Enterprise Balchik has planned and to a large extent already carried out silvicultural activities for BGN **1 380 453**, financed as shown:



Work is being carried out in 92 plantations, 63 of which are Protection Forest belts. With 256,6 ha of dried-up FPFB and expenses of 41 160 leva/ha, simple arithmetic shows that in the next few years, on condition that the drying-up process has stopped, the amount of money needed solely for the Balchik State Hunting Unit will be **10 561 656** leva.

Under project “LIFE for Eagle’s habitats” LIFE18 NAT/BG/001051 under the European Union’s LIFE program on the territory of the Shumen SIDP, activities were carried out, mainly for the reconstruction of 51 hectares of FPFB (103% of the planned project). Unfortunately, the Project is to close soon, and all activities in the belts will have to be covered by the Forest Investment Fund (FIF) of the North-East State Enterprise. **The poor financial situation of the enterprise as well as the unpredictability of the spending of the FIF funds lead to the impossibility of long-term planning and organisation of activities.**

The process of restoration of a FPFB takes 5-6 years, starting from decision making to the completion of nursing care. It goes through many stages related to planning, documentation, coordination, procedures under the PPA and/or the Procurement Ordinance, also working hand recruitment and provision of transport for workers, tools, planting material. **This whole period requires phased financing.**

Means needed to make / reconstruct 1dka FPFB at prices on 01.01.2024.
The price is formed at manual salary of BGN 933 (EUR 477) per month.

Event	Price BGN/ dka	Number	Value BGN/ha without VAT
tracing the terrain by surveyors	20	1	20
area cleaning with bulldozer / shredder	120	1	120
rooting / milling with shredder	600	1	600
pre-forage soil treatment (double discarding)	20	1	20
marking planting sites and afforestation	450	1	450
replenishing with saplings 20%	96	1	96
value of propagation material, transport and storage	420	1	420
manual cropping scheme 3/3/2/1	206	9	1854
mechanized cultivation (discarding of bumps) 3/3/2/1	14	9	126
thinning without material extraction / clearing	190	1	190
processing the end rows	220	1	220
Total			4116
Total in EUR at a rate of the BNB on 15.08.2024			2105

The concept is that the State Enterprises should bear all the costs of forest management at the expense of the wood harvesting revenues.

The FPFB restoration activities cannot and should not depend on wood harvesting; this will lead to their destruction.

It is evident from the attached table that even in the best case, with the administrative costs, tariff charges, taxes, etc. not taken into consideration, the timber revenue per unit area is more than 4 times less than the costs incurred for reconstruction; the trend is for an increasing proportion of timber to be realised per tonne in a timber processing plant due to the lack of demand among the population, and the revenue there is 6% of the costs.

Summarised report on the income from ash and black locust from FPFB per 1 dka

tree species	solid cubic metres from 1dka	spatial cubic metres from 1 dka	price of 1 spatial cubic metre under price list	costs for harvesting of 1 spatial cubic metre	average weight of 1 solid cubic metre	costs for harvesting of 1 tonne	income in BGN per spatial cubic metre	price per tonne under Contract 118 / 29.05.24 between NESE and Kronospan	costs for loading and transport in BGN per tonne	incomes in BGN per tonne	tonnage from 1 dka	incomes from the timber sale in BGN per dka	Notes
ash tree under price list	10,8	19,3	70	22			48					**926,40**	The average harvested quantity is calculated on the basis of 12 FPFBs, where 100% logging activity was carried out in 2023. The average weight - based on the timber delivered to the plant in 2023.
ash tree at a timpber processing plant	10,8	19,3		22	530	41,5		104	38	24,5	10,229	**250,51**	
black locust under price list	4,49	8,02	61	22			39					**489,22**	The average harvest is calculated on the basis of 53 FPFBs, where 100% logging activity was carried out in 2023. The average weight - based on the timber delivered to the plant in 2023.
black locustat a timber processing plant	4,49	8,02		22	435	50,6		104	38	15,4	3,4887	**53,81**	

FPFB occupy 2 to 3% of the total area of Dobrudzha, where at the same time increase fertility and stop wind erosion of the remaining 97-98%, which are additionally subsidised. As an integral part of Dobrudzha's agroforestry system, subsidies should also be received for the areas occupied by FPFBs, a measure which would solve several problems - financing, cadastral map errors and will motivate the farmers to protect the belts.

Problems, set in the operative regulatory framework

ORDINANCE № 8 from 05.08.2011 for the tree felling

Art. 36 *(amended – SG, issue 72 from 2015; suppl. Issue 84 from 2020, operative from 29.09.2020)*

(1) In the forests, technical fellings are being conducted for…….

(3)Fellings in the FPFBs under Art.1 point 5 are conducted ***only in belts in 'poor' condition,*** *when complete or partial felling of the tree stand is necessary…….*

FPFBs are technical facilities; absurd it is, they to be left unattended and only when they start to deteriorate, to be cut down... Our experience shows that the belts in which clearcuttings are conducted are in much better condition than in those where clearcuttings have not been done.

Along with other changes in recent years, we are now facing an inability to plan and deliver the necessary forestry caring measures.

We have made proposals for regulatory changes and have assurances that they will be implemented; we are also relying on the outcome of the regional FPFB programme currently being developed as Activity C5 of Project Life 1051.

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The General condition of the country.

-- political crisis – 7 Parliamental elections, 6 NESE directors changed within 4 years.

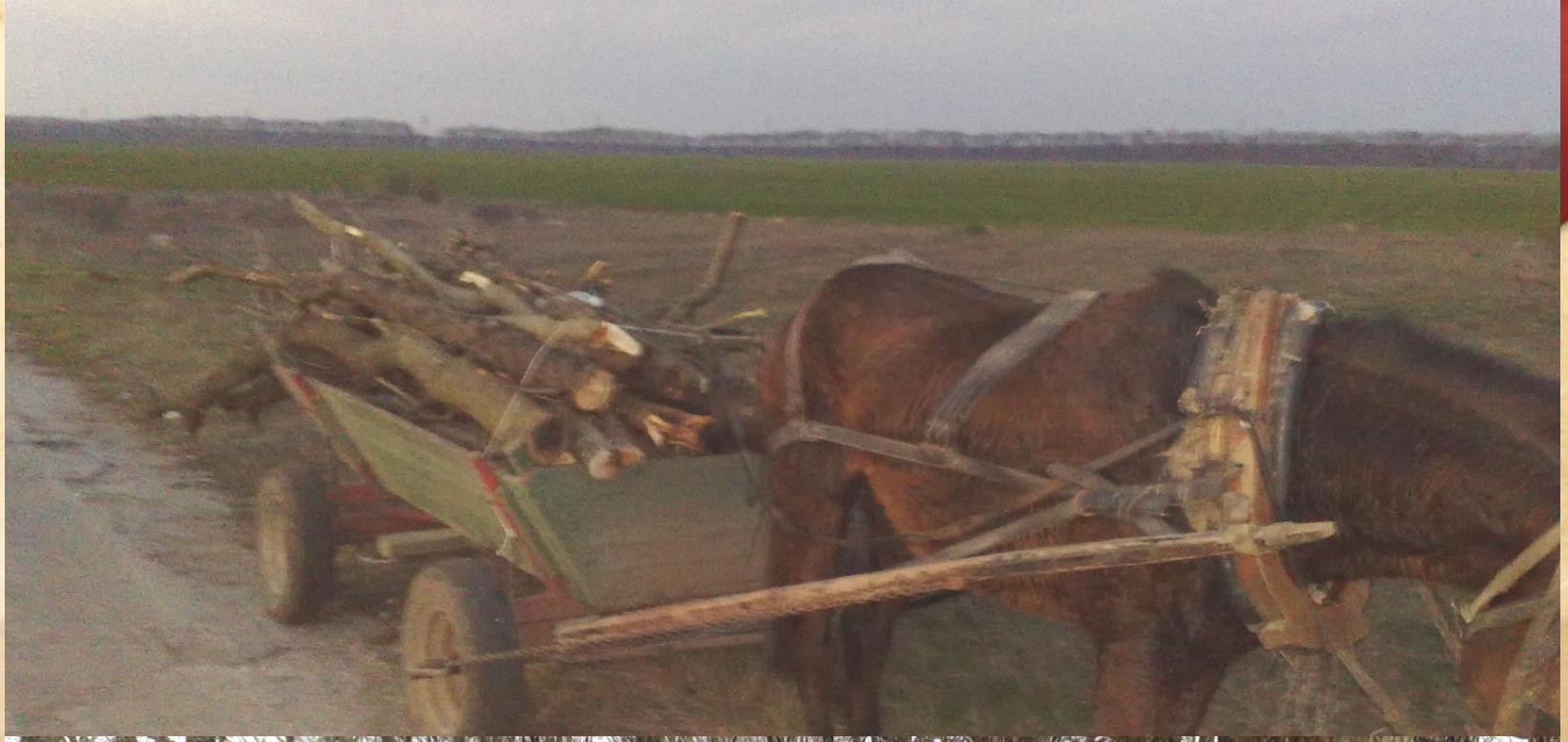
- lack of working labour; depopulation of the villages;

- - lack of specialized equipment, inventory and transport;

- high inflation

FPFB 2695a – in “good” condition; three view perspectives

- - The renters and the owners of agricultural land adjacent to FPFBs often try to expand their fields at the expense of the FPFB
- - The practice of stubble burning
- - The accessibility of the FPFB and their dispersion contributes to increased cases of violations, like illegal logging, grazing, household and construction waste dumpling, etc.
- Problems arising from the fact that the belts are taken for granted and by some farmers - as a hindrance. The general public, the authorities and the users of adjacent farmlands (owners and renters) do not recognise FPFB’s role, effect and importance.



Problems with FPFBs incorrectly shown on the cadastral map

Ключови думи

Текущ изглед на картата

Първите 200 резултата

ТЪРСИ

Всички

Поземлен имот 02508.530.103 гр. Балч

Поземлен имот 02508.530.103, област Добрич, община Балчик, гр. Балчик, м. В-СКО ШОСЕ/ЛЯВО ДЯСН, вид собств. Общинска публична, вид територия Земеделска, НТП За селскостопански, горски, ведомствен път, площ 5886 кв. м, стар номер 530103,
Заповед за одобрение на КККР № **300-5-5/04.02.2004 г.** на Изпълнителния директор на АГКК

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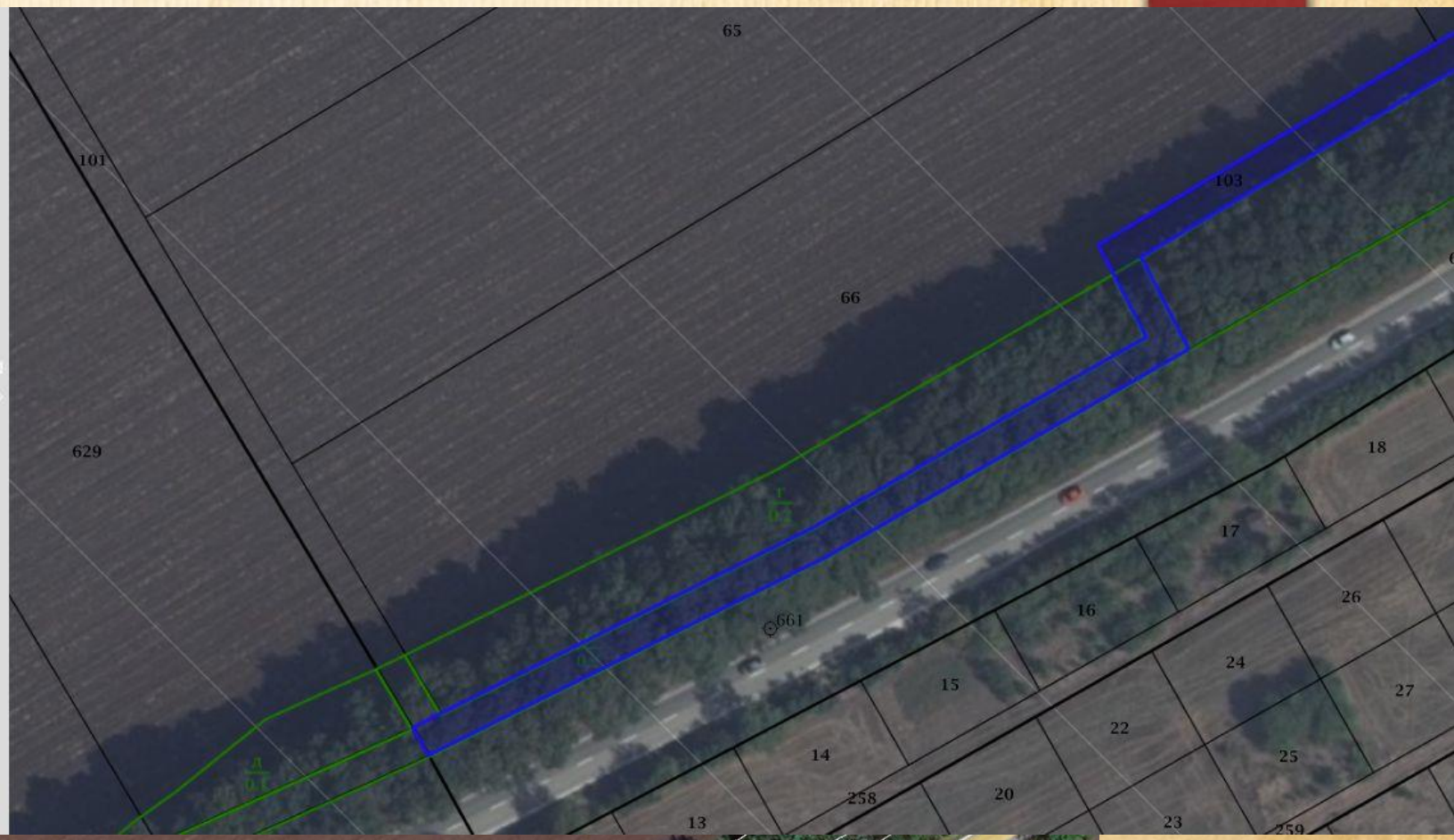

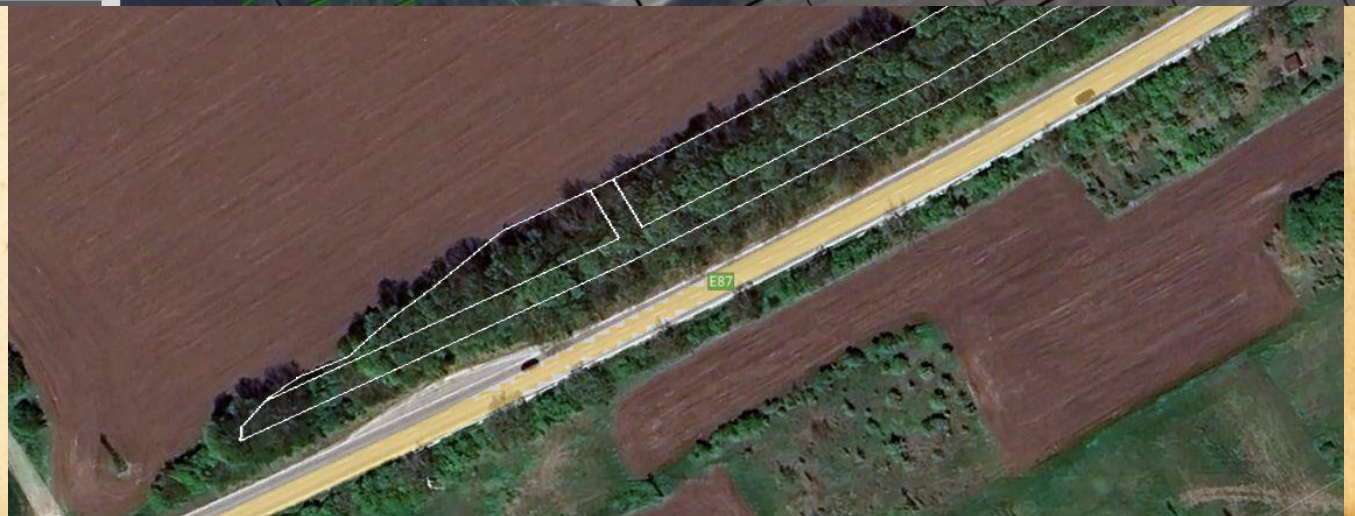

Thank you for your attention!