Potential of landscape features for implementation of green direct payments in Czech farmed landscape

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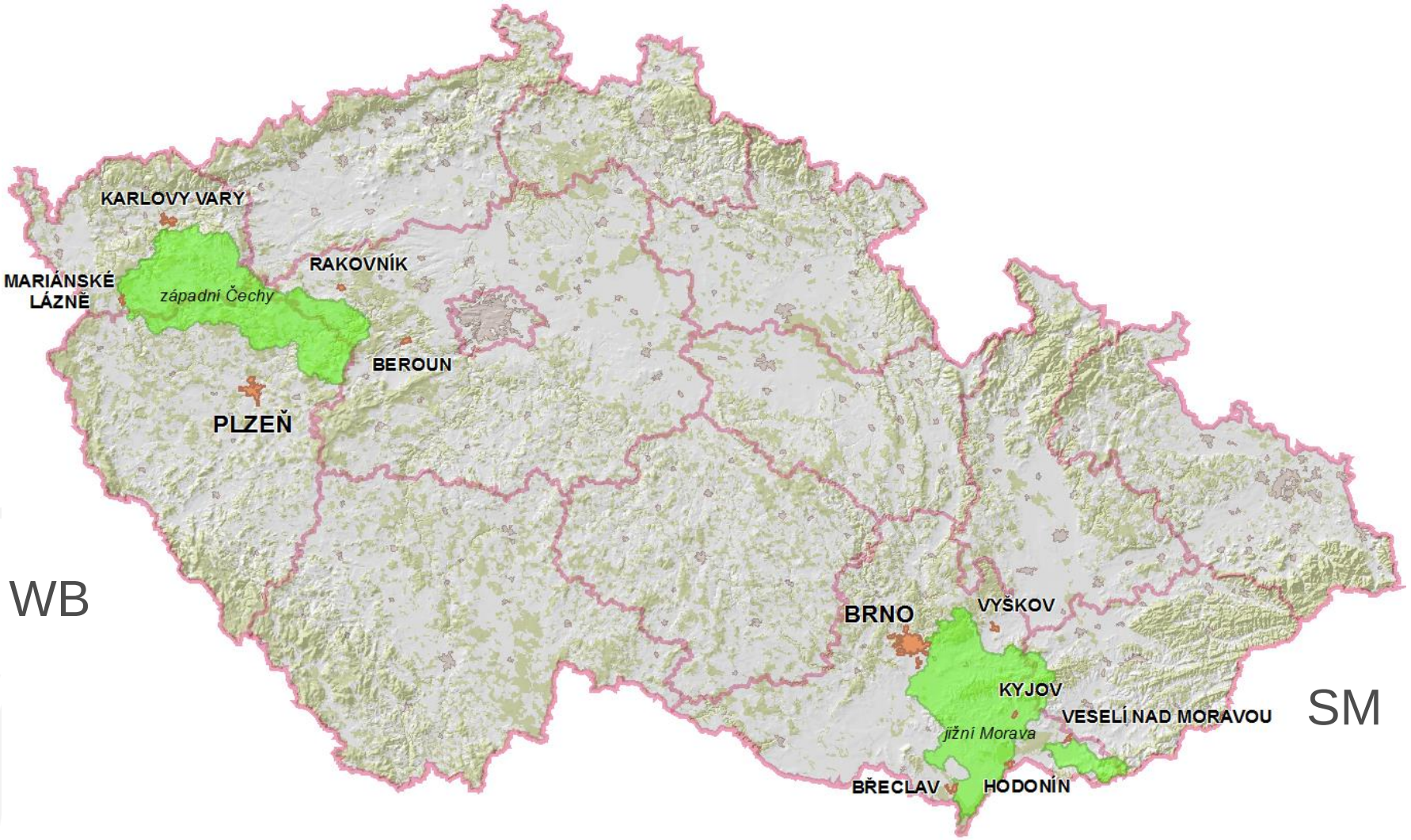
ÚZEI ÚSTAV ZEMĚDĚLSKÉ EKONOMIKY A INFORMACÍ

Purpose of study, localities

- The purpose was to provide a basis for political decisions regarding the setting of greening in the EFAs. The aim was to determine the potential of the EFAs in landscape features, which exist on nature and elements express the potential for future drawings and acceptance like EFAs.

- The study analyzed of landscape features in the pilot area of size 4171km^2.
- The first has area 2 039 km^2 is situated in the **South Moravia** region (SM), *lowland with warmer climate*
  The other has area 2 132 km^2 in the **West Bohemia** region (WB), highlands, *cold to slightly warm climate.*

In terms of classifying the area into LFA, the SM area is 94% out of the LFA and only 6 % is included.
The WB area is 95% within one of the LFA categories and only 5% of the area is not included in the LFA.



WB

SM

Method

Three sets of landscape features came into the analysis:

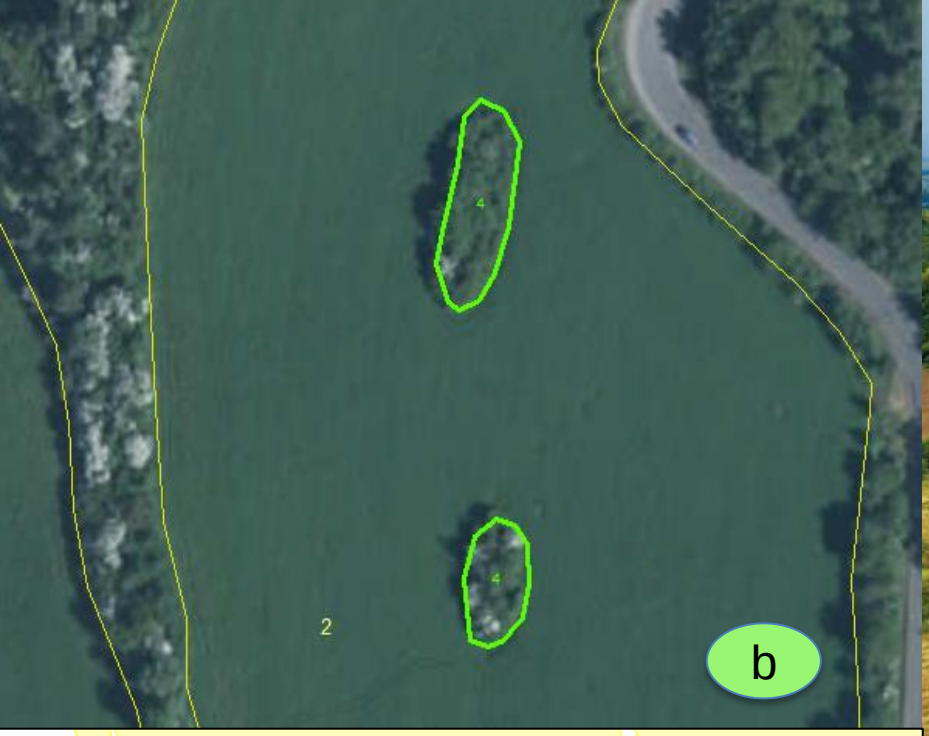
a) Landscape features **registered in LPIS** and plotted according to the methodology of the MoA, *(number 4 244 = 329 ha)*

b) Landscape features **not registered in the LPIS** but are **available to be accepted** following the methodology of the MoA, *(number of new drawing 16 954 = 2 149 ha)*

c) Landscape features not used yet, they are based on natural elements and expressing the potential for future drawings and acceptance for example **buffer zones,** *(number of water buffers 4 688 and 2 929 forest buffers)*

The occurrence of landscape features was assessed using **coefficient of ecological stability (KES).**

The method of calculating KES is based on the CLC and is the ratio of stable and unstable areas in the surveyed area.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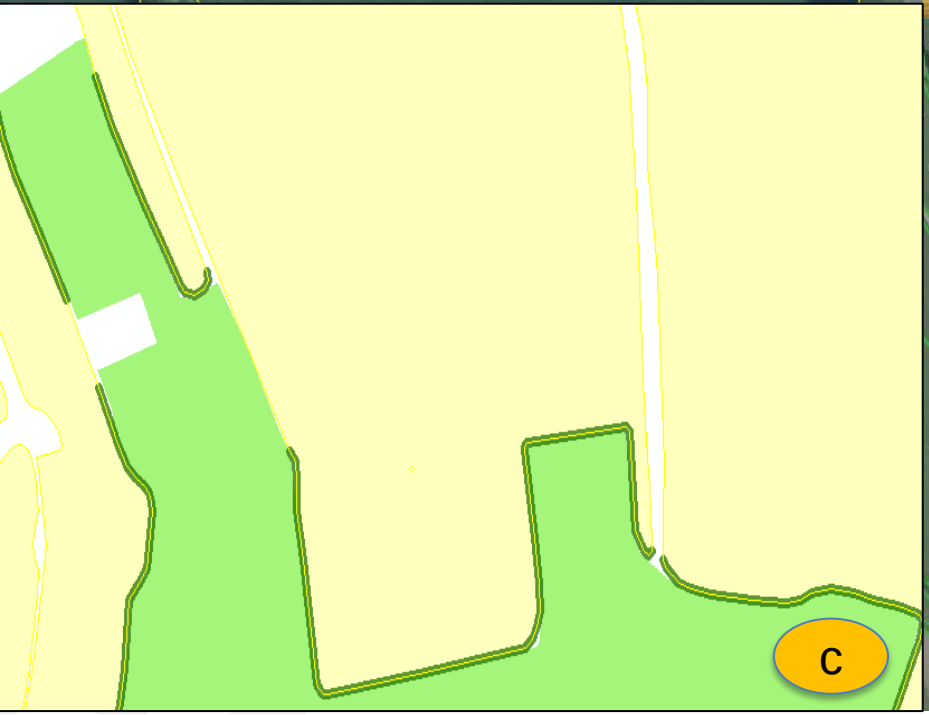
4
2
b


a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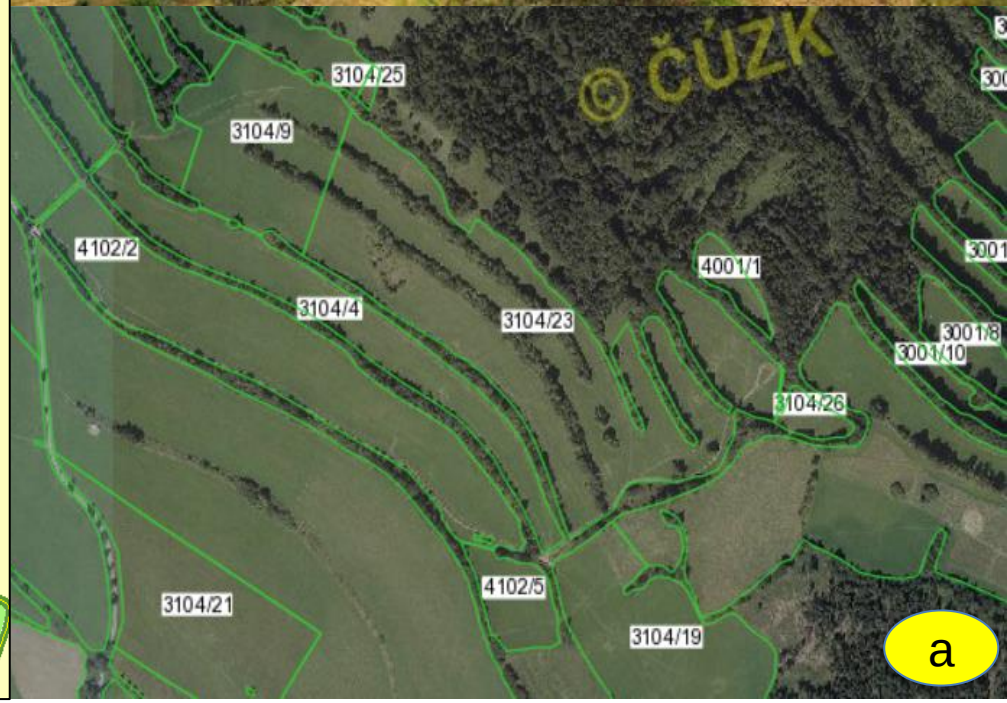
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a

	Landscape feature	Registered in LPIS		The newly plotted no registered but acceptable MoA		The newly plotted and weigh up the pros and cons MoA		Total
		ha	number	ha	number	ha	km	**ha**
1	Field balk	128	701	962	4581			**1090**
2	Terraces	2	31	364	982			**366**
3	Grassy valley	46	51	124	194			**170**
4	Trees in groups and field copses	125	2205	427	5910			**552**
5	Trees in line	22	111	232	561			**254**
6	Isolated trees (soliter)	4	1142	35	4711			**39**
7	Ditches	2	3	0	6			**2**
8	Wetland	0	0	6	7			**6**
9	Buffer strips (along forest edges)					2110	2344	**2110**
10	Buffer strips (along water bodies)					1427	1585	**1427**

0.21% area

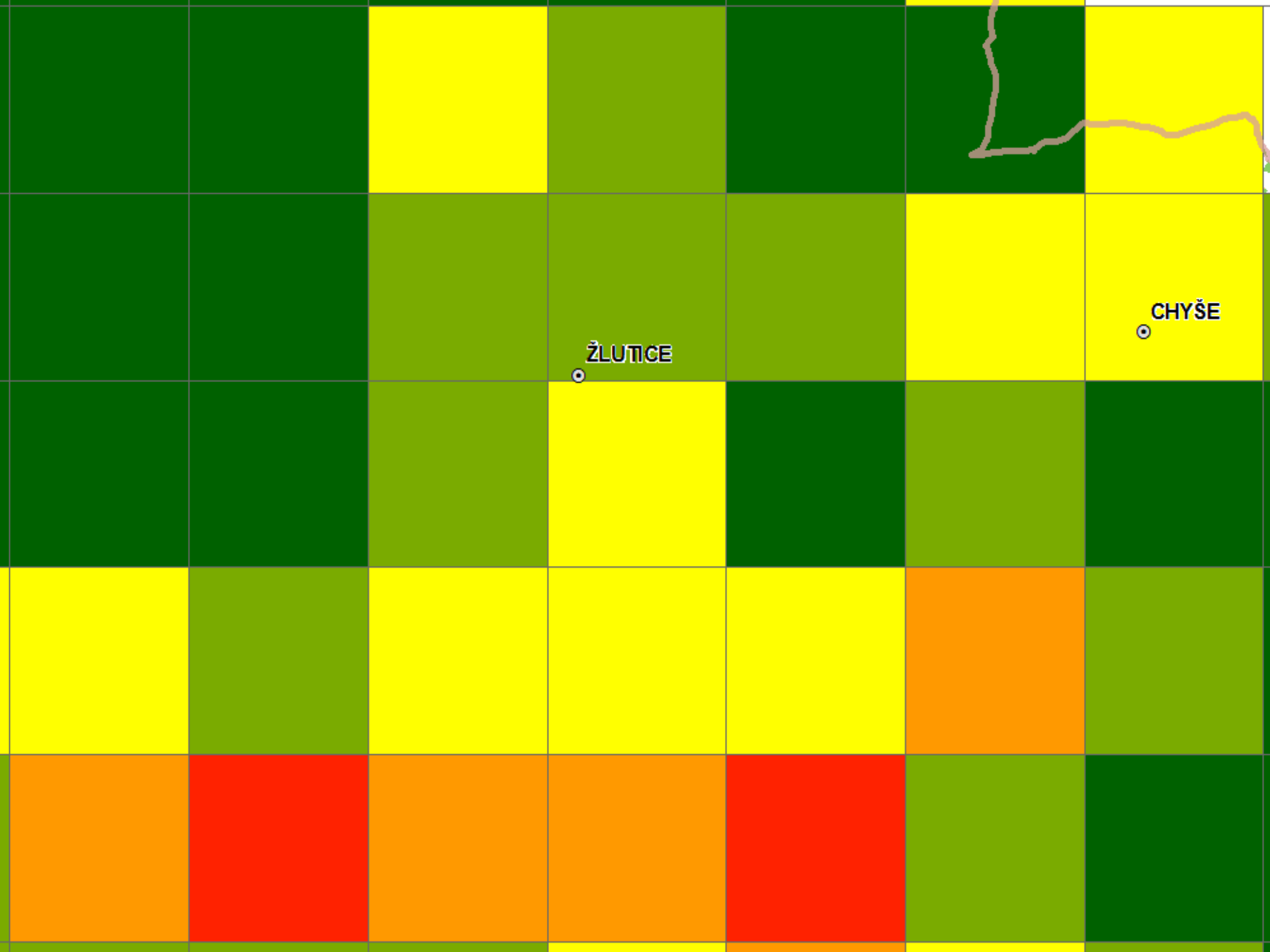
3.9 % area

Territorial analysis in the context of the **coefficient of ecological stability**. KES used this formula:

$$KES = \frac{LP + VP + TTP + Pa + Mpo + Sa + Vi}{OP + AP + Ch} = \frac{\text{Stable ecosystems}}{\text{Unstable ecosystems}}$$

Stable ecosystems	**Unstable ecosystems**
LP – forest	OP – Arable land
VP – water areas and streams	AP – Anthropogenised areas
TTP – permanent grassland	Ch – hopper
Pa – pastures	
Mo – wetlands	
Sa – orchards	
Vi – vineyards	

grid		
1	KES ≤ 0,1	disturbance of natural structures, basic ecological functions must be intensively and permanently replaced by technical interventions.
2	0,1 < KES ≤ 0,3	basic ecological functions must be systematically replaced by technical interventions.
3	0,3 < KES ≤ 1,0	intensively exploited areas, especially agricultural large-scale production, weakening self-regulation processes in ecosystems
4	1,0 < KES ≤ 3,0	quite balanced landscape.
5	KES > 3	stable balanced landscape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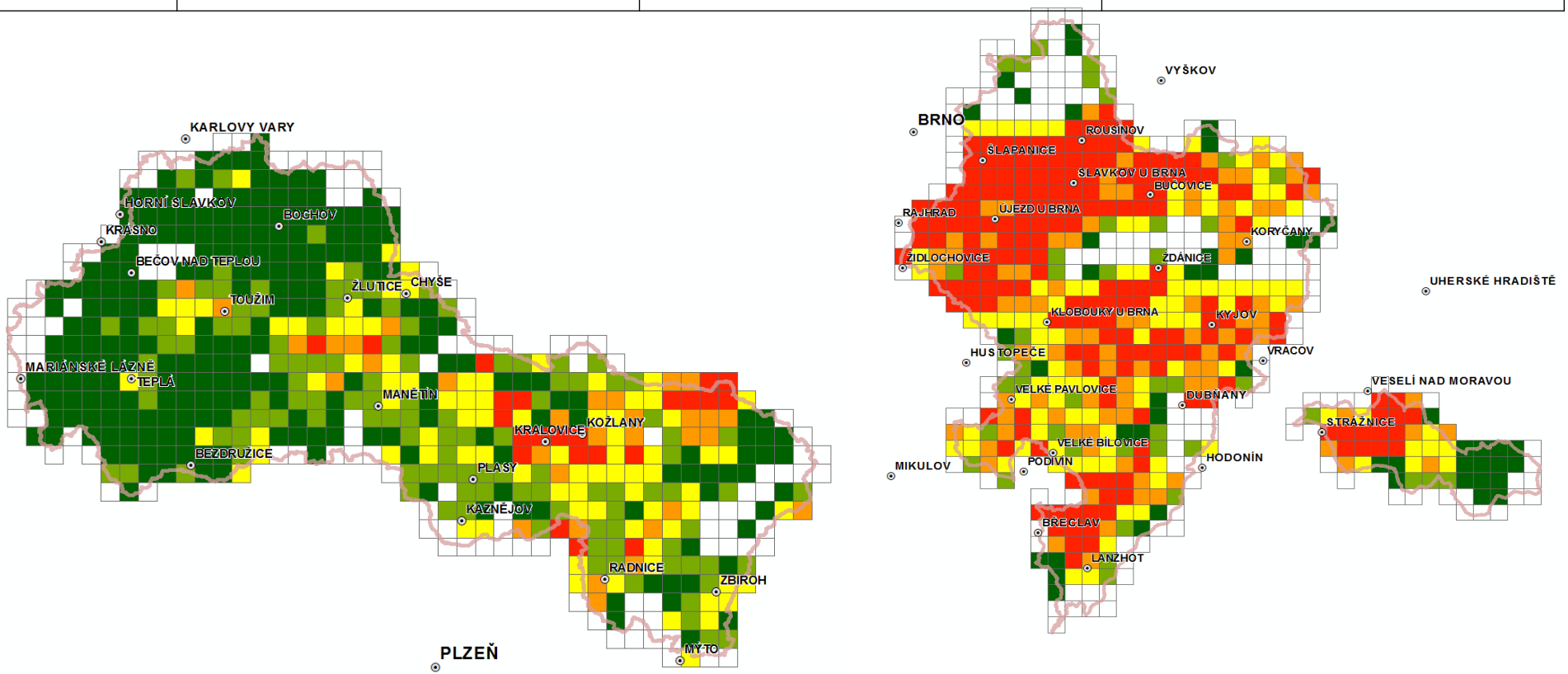
KES in grid 2 x 2 km									
KES	whole area			South Moravia			West Bohemia		
	#	ha	%	#	ha	%	#	ha	%
1	209	83 600	22%	186	74400	40%	23	9200	5%
2	125	50 000	13%	93	37200	20%	32	12800	6%
3	186	74 400	19%	100	40000	21%	86	34400	17%
4	160	64 000	17%	42	16800	9%	118	47200	24%
5	286	114 400	30%	47	18800	10%	239	95600	48%
celkem	966	**386 400**	100%	468	187200	100%	498	199200	100%



a) **Registered** (ha)

whole	Field balks		Terraces		Grassy valley		Trees in groups		Trees in line		Ditches	
	arable	other	arable	other	arable	other	arable	other	arable	other	arable	other
1	28	1	0	0	8	0	2	0	13	0	2	0
2	6	0	0	0	13	0	3	2	2	0	0	0
3	10	4	0	1	8	0	5	5	2	0	0	0
4	7	7	0	0	6	0	7	15	1	1	0	0
5	2	58	0	1	9	1	3	79	0	1	0	0
total	54	71	0	2	44	1	19	101	19	3	2	0
SM	arable	other	arable	other	arable	other	arable	other	arable	other	arable	other
1	26	1	0	0	6	0	2	0	13	0	2	0
2	6	0	0	0	0	0	1	1	2	0	0	0
3	9	1	0	1	2	0	1	1	1	0	0	0
4	2	0	0	0	1	0	0	1	0	0	0	0
5	0	1	0	0	0	0	0	6	0	0	0	0
total	43	3	0	1	9	0	4	8	16	0	2	0
WB	arable	other	arable	other	arable	other	arable	other	arable	other	arable	other
1	1	0	0	0	2	0	1	0	1	0	0	0
2	0	0	0	0	13	0	2	1	0	0	0	0
3	1	4	0	0	6	0	4	4	1	0	0	0
4	6	7	0	0	5	0	7	14	1	1	0	0
5	2	57	0	1	9	1	3	74	0	0	0	0
total	10	68	0	1	35	1	16	93	2	3	0	0

a) **registered**

The landscape features of LPIS for each KES category have the following results:

- WB – field balks are mostly outside arable land
- SM - field balks are more on arable
- WB - grassy valleys are 4 x more common than in the SM
- WB - grids of category 5 have trees in group mostly outside arable land
- Trees in line (alley) occurs more on arable land than elsewhere.
- Ditches, rather zero

b) **not registered in the LPIS** (ha)

whole	Field balks		terraces		Grassy valley		Trees in groups		Trees in line		Ditches	
	arable	other	arable	other	arable	other	arable	other	arable	other	arable	other
1	170	4	55	11	13	0	24	1	116	0	0	0
2	126	8	46	23	16	0	21	8	54	0	0	0
3	168	54	66	82	13	5	39	24	31	3	0	0
4	74	68	34	33	20	6	34	48	8	5	0	0
5	30	236	5	8	4	45	15	196	5	5	0	0
total	567	371	206	157	66	57	133	278	214	15	0	0
SM	arable	other	arable	other	arable	other	arable	other	arable	other	arable	other
1	160	3	55	11	8	0	19	1	**114**	0	0	0
2	108	5	46	23	3	0	11	4	47	0	0	0
3	119	21	66	82	2	0	10	6	29	2	0	0
4	27	13	34	33	0	0	3	5	6	2	0	0
5	7	39	5	8	1	0	2	42	3	0	0	0
total	421	82	206	157	14	0	45	57	199	4	0	0
WB	arable	other	arable	other	arable	other	arable	other	arable	other	arable	other
1	9	1	0	0	5	0	4	0	2	0	0	0
2	18	3	0	0	13	0	10	5	7	0	0	0
3	49	33	0	0	11	5	29	19	2	1	0	0
4	47	55	0	0	20	6	32	43	3	4	0	0
5	23	198	0	0	3	45	13	154	2	5	0	0
total	145	289	0	0	52	57	88	221	15	11	0	0

b) **not registered in the LPIS**

The landscape features of LPIS for each KES category have the following results:

- WB and SM - field balks have an average significantly larger area on areble land (0.26 ha) than the field balks on other crops (0.16 ha).
- WB – no new terraces
- Solitaire trees are most commonly found in squares in KES category 5 in both areas.(*very small area*!)
- Most trees in lines are located in KES category 1 and SM area. Trees in line is the most important type of elements in the SM.

c) the potential for future drawings

Buffer strips (along water bodys)									
KES	whole area			SM			WB		
	Share of the KES	buffer		Share of the KES	buffer		Share of the KES	buffer	
		km	% km		km	% km		km	% km
1	22%	693	44%	40%	636	52%	5%	57	17%
2	13%	340	22%	20%	270	22%	6%	71	21%
3	19%	341	22%	21%	239	20%	17%	102	30%
4	17%	139	9%	9%	55	4%	24%	83	24%
5	30%	53	3%	10%	25	2%	48%	28	8%
celkem	100%	1566	100%	100%	1225	100%	100%	341	100%

Buffer strips (along forest edges)									
KES	whole area			SM			WB		
	Share of the KES	buffer		Share of the KES	buffer		Share of the KES	buffer	
		km	% km		km	% km		km	% km
1	22%	268	12%	40%	208	25%	5%	60	4%
2	13%	316	14%	20%	198	23%	6%	118	8%
3	19%	743	33%	21%	266	31%	17%	477	33%
4	17%	663	29%	9%	114	13%	24%	549	38%
5	30%	289	13%	10%	61	7%	48%	228	16%
celkem	100%	2279	100%	100%	847	100%	100%	1432	100%

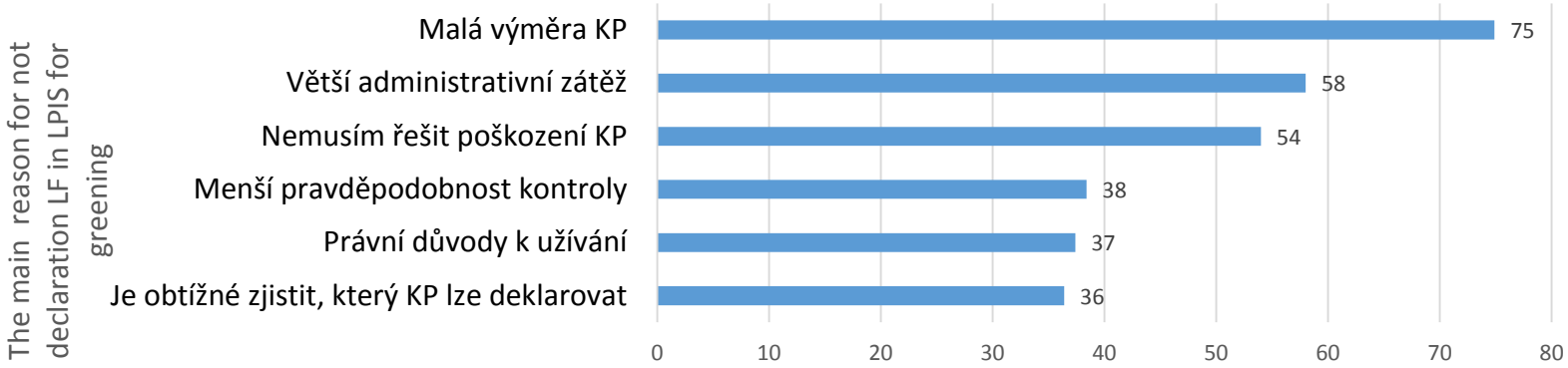
c) **the potential for future** *(drawings)*

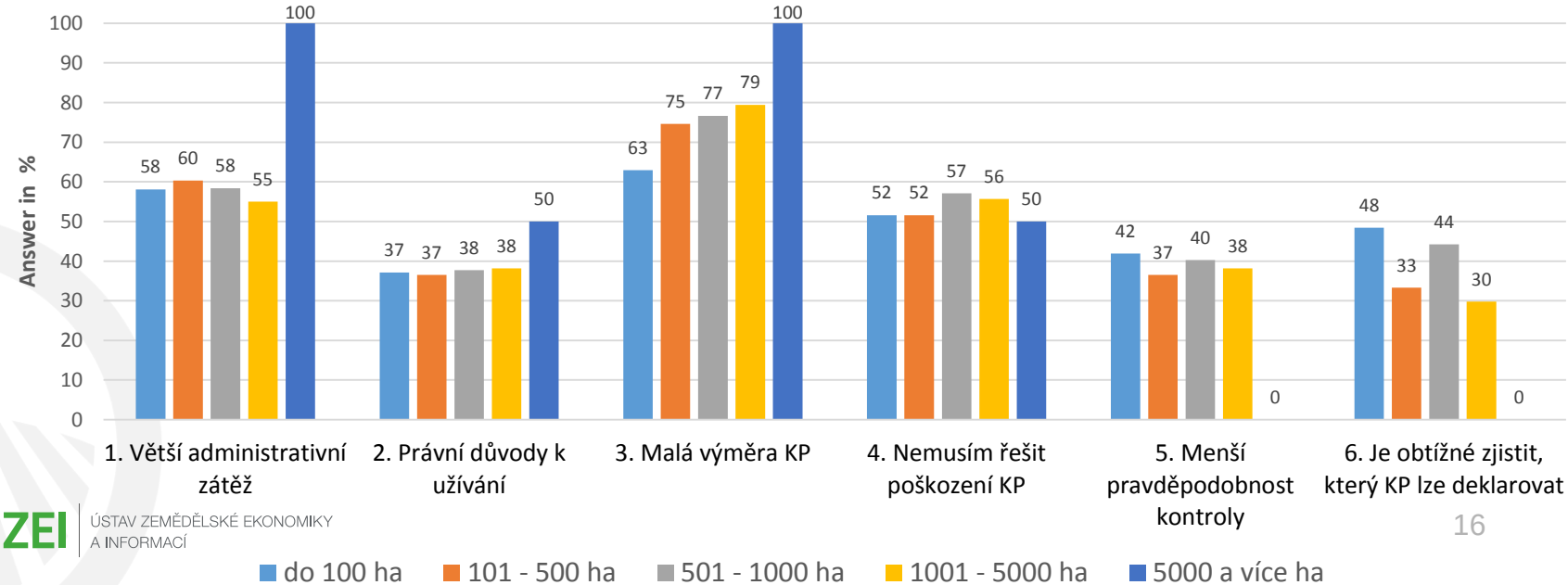
- Buffer strips along water sources and stream have huge potential, especially in KES category 1. In 22% of the area of interest is 44% of all water buffer strips.

- Buffer strips along the forest have the highest potential in the KES category 3 and 4. This trend is more obvious in the WB than in the SM area.

Interview with farmers (500 respondents)

Question: What are the reasons why farmers do not choose landscape features to fill greening on farmland they use?





Conclusion

- LF = biodiversity
- Besides the registration of landscape features we can also deal with the promotion of their creation and support of targeted management. This requires an intensive discussion with the participation of experts and responsible departments (MoA and MoE).
- Education in public goods, environmental and social impact of landscape management are still very needfull and important topics.

Původní plužiny na Holčovicku - významný znak místní krajiny