

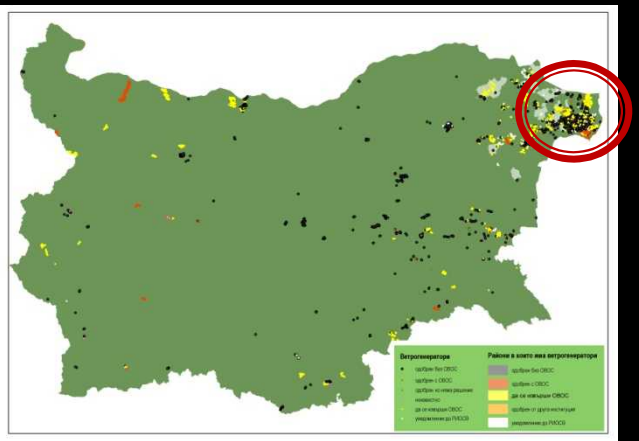

Windfarms in Balchik and Kaliakra – Via Pontica (Bulgaria)

Case file update 2015

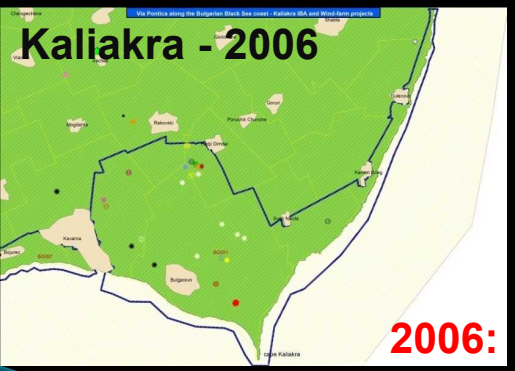
Irina Mateeva

Bulgarian Society for the Protection of Birds

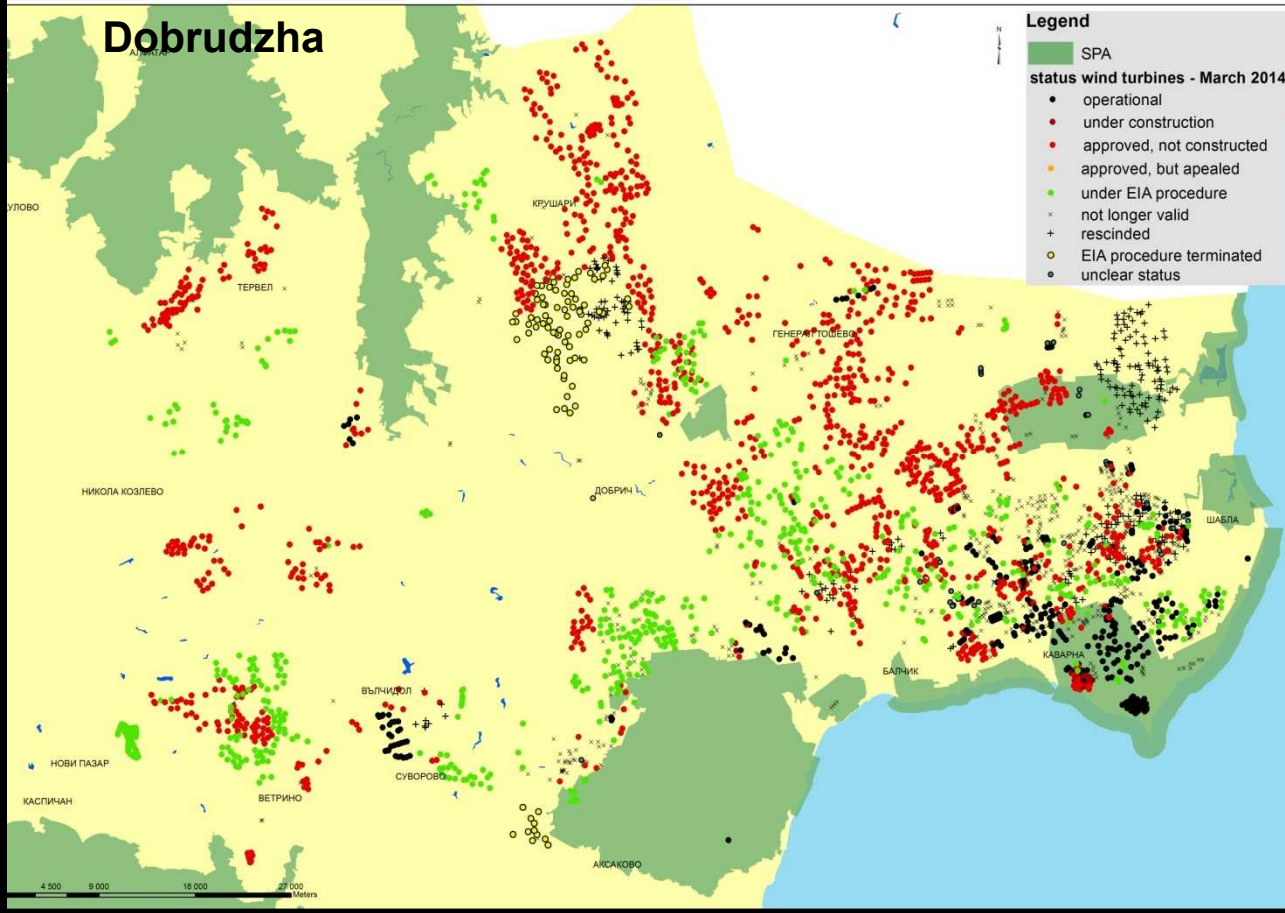
Status of wind farm development in Bulgaria



Over 5800 wind turbines in 2010, of which more than 3100 in Dobrudzha



2006: ~100, of which 10 operational



In Dobrudzha today:

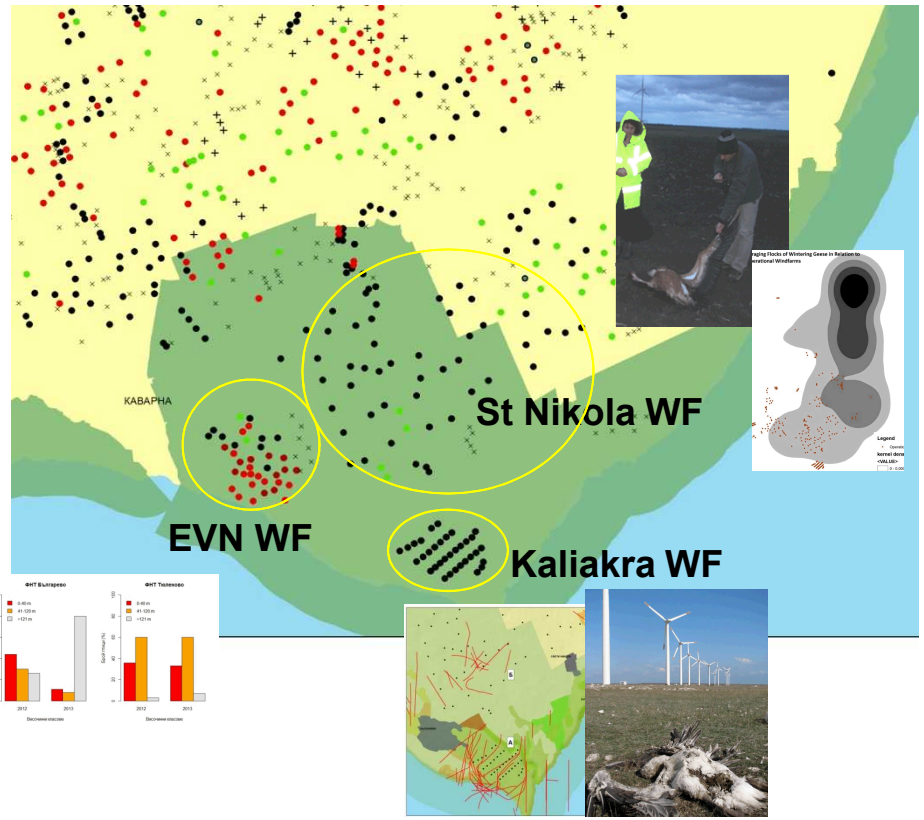
- Operational – 330
- Approved – 1329
- Under procedure – 599
- Temporary stopped by MoEW – 235
- No longer valid – 626
- Unclear status – 31

Status of wind farms in Kaliakra IBA – 2015

EVN Wind farm: Approved in 2005, but the decision came into force in 2008 because of court case procedure. Constructed partially in 2009 and 2011-2012. Construction was stopped by the competent authority in 2009, but because of unknown reasons it was finalised in 2012. Operational since 2012. Radar system for monitoring of birds, but details are not available.

Identified impacts : destruction and deterioration of steppe habitats; barrier effect on flaying wintering geese and raptors.

Subject of court case against Bulgaria in the European Court of Justice C-141/14.



Kaliakra Wind farm: Approved in 2005. Constructed in 2007-2008. Operational since 2009. No mechanism to prevent bird collision. Only one year post-construction monitoring.

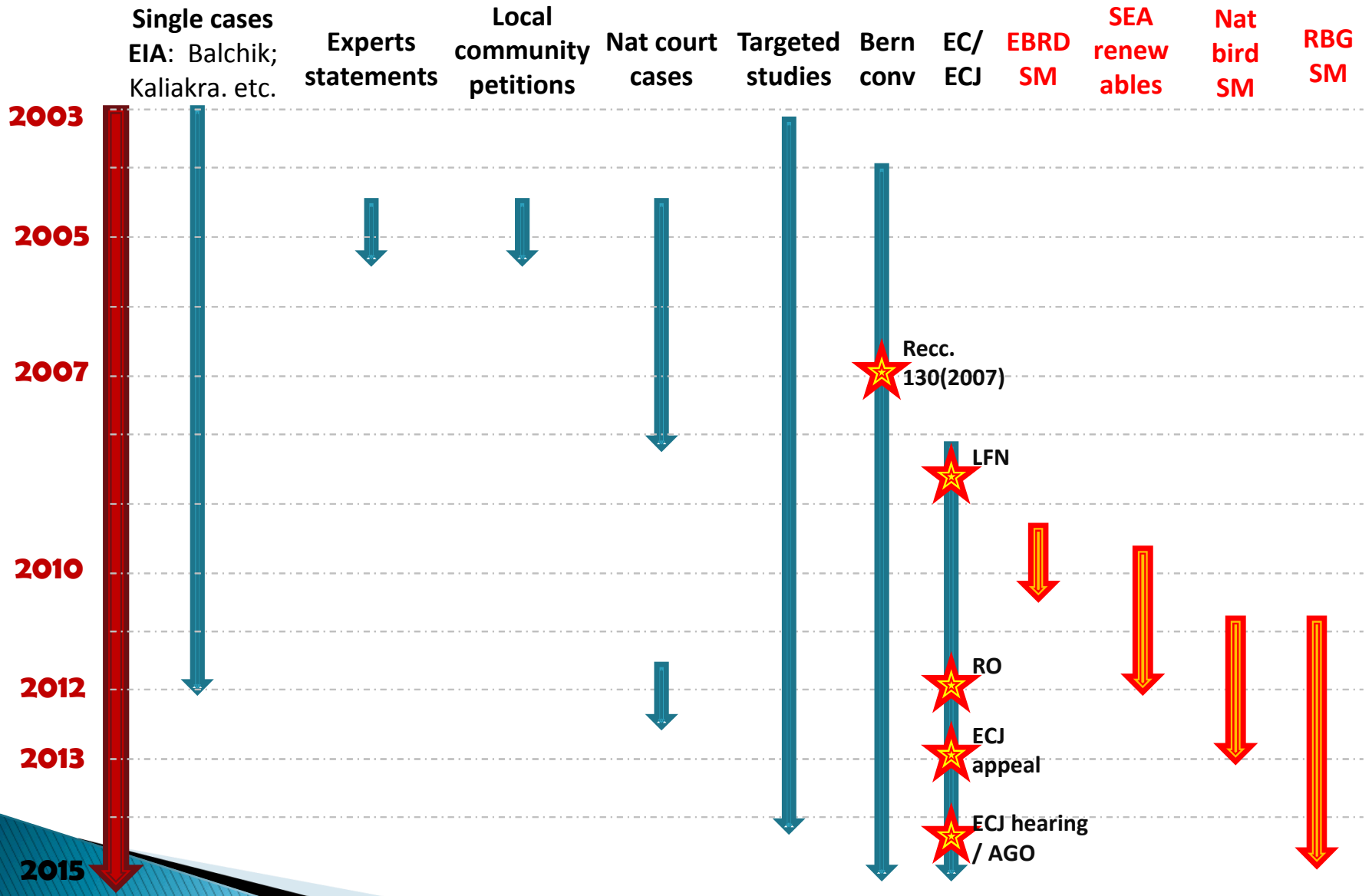
Identified impacts: destruction and deterioration of steppe habitats; documented bird collisions – white pelican, common crane, herring gull, eagle owl; barrier effect on flaying migratory storks and raptors and wintering geese and raptors.

No attempts to be relocated at alternative locations.

St Nikola Wind farm:
Approved in 2007.
Constructed in 2009 – 2010.
Operational since 2010.
Radar system for detecting flocks of birds and stop the wind farms. Annual monitoring on migratory and wintering birds. Reports published, nevertheless that are with unsatisfactory scientific quality.

Identified impacts: large scale displacement of red-breasted goose from its foraging areas in Kaliakra IBA/SPA; documented bird collisions – griffon vulture; barrier effect on flaying migratory storks and wintering geese.

Efforts to avoid risks for birds due windfarms



Evaluation of implementation of Recc. 130(2007)

- ✓ **There is practically not a recommendation of the Bern Convention, from 10 ones, in Recommendation 130 (2007), which is implemented in full and / or timely.**

- ✓ **Generally where government really endeavors to deal with the problem, it achieves progress.**

Measures taken by MoEW by March 2015	Evaluation of the effect
1. Review relevant decisions, at the local, regional and national level; ensure that new plants are not built in the region; EIA reports should be more precise and scientifically sound; independent peer reviewed conclusions;	
Until 2009 no measures are taken. In 2009 a SER of the status and impact of wind farms on biodiversity in Bulgaria is undertaken by the MEE (financed by EBRD). In 2010 SEA of the NAPERS 2010-2020 is elaborated. It is adopted and come into force in 2012. Assessment of the status of development of the windfarms sector at regional level (Dobrudzha region, municipality level) is missing. Since the end of 2009 most of the new big wind farm projects are subject of EIA, but in the most cases these are not complete, punctual, scientifically poor justified. Ex-ante evaluation of the EIA quality by independent is not applied.	**Effect:** the **baseline status** at **the end of 2007: 1761** wind turbines (operational, approved and planned) in Dobrudzha, from which **11** - operational, to the **current status in March 2014**: **2524** (operational, approved and planned) in Dobrudzha, from which **330** - operational; **Conclusion**: Total number of wind turbines in Dobrudzha increased by 140%; number of operational turbines increased by 30 times. **Evaluation:** Very incomplete implementation of this recommendation; significant delay in taking measures, which are sometime improperly or not fully implemented and thus to not achieve the goal set in the recommendation
2. Fully reconsider the development of approved wind farm projects in the Balchik and Kaliakra region situated within or nearby sites designated as important bird areas and special areas of conservation;	
Projects approved by the end of 2007 are not subject of reconsideration! In **mid of 2012** legislation is changed requiring **expiration period of 5 years** for all decisions taken under EIA Act. In **the beginning of 2012** RIEW Varna **approve at least 60 wind turbines without EIA on a base of previously taken decisions for approval** again without EIA. This action is taken by RIEW Varna just 2 months before the change of the legislation to come into force, but institution already knows about the planned law change.	**Effect:** The decisions for a total of 537 wind turbines are announced by RIEW that are with expired validity and they cannot be longer constructed. These represents **25%** of all wind turbines that are approved in Dobrudzha but not constructed yet. In total of 31 wind turbines are with unclear status. Rest of the wind generators, approved before 2009, but not constructed yet, are included in new projects which period of validity is not expired. **Evaluation:** effective, but very delayed measure. The delay of its implementation allows risky projects to be still constructed in Kaliakra and Balchik region.

Evaluation of implementation of Recc. 130(2007)

Measures taken by MoEW by March 2015	Evaluation of the effect
3. Investigate the possibility of relocating the windfarm projects already under construction as well as the single turbines (whose building is possible without EIA) ;	
No measures are undertaken to implement this measure to the projects that were under construction or single-turbine projects approved without EIA in the time when Recommendation is issued. It would be applied to such projects as "Kaliakra" Windfarm with investor INOS1 / Mitsubishi for example, but it is not the case.	**Effect:** negative impacts on birds due to operation of wind farms in Kaliakra region are already documented: birds killed by wind turbines, loss of foraging habitats for the Red-breasted goose, barrier effect, which cause still damaged site integrity. **Evaluation:** non-implementation of this recommendation caused real negative impacts on the biodiversity in the region.
4. Select alternative locations for future and not yet operating turbines based on appropriate data and assessments; key bird areas, potential SPAs, IBAs, intensive bird migration corridors and sites regularly used by large flocks of roosting species must be avoided by windfarm development;	
In 2010 biodiversity sensitivity map to wind farms was elaborated under the framework of SER. It is not used by RIEW during decision making process. In 2012 as part of the SEA of the NAPERS 2010-2020 the regions were defined, where new wind farm projects must not be approved. At the end of 2013 bird sensitivity map in relation to wind farms is published. So far there is no evidence how this map is applied in the decision-making process.	**Effect:** By March 2014 r. there are 2524 wind turbines documented in Dobrudzha, which are operational, approved but not constructed or are under procedure for approval. None of the projects which by the end of 2007 were approved but not constructed or have been just planned ("future"), did not assessed any alternatives by location. **Evaluation**: The measures taken could be effective if applied before 2007 or immediately after publication of the Recommendation 130(2007). Today this measure (bird sensitivity map) is too delayed and nevertheless that since 2013 the Bird sensitivity map exists, it will not contribute to correct damage already done. It may have an effect in the future in long term, including after 2020, when the validity of SEA of NAPERS 2010-2020 expires.

Evaluation of implementation of Recc. 130(2007)

Measures taken by MoEW by March 2015	Evaluation of the effect
5. Assess the impact of the current operating turbines;	
The government did not take any targeted measures. Out of all operational wind farms, monitoring is carried out only at "St Nikola" wind farm (47 out of 330 wind turbines) in order to prevent conflicts. This monitoring is assigned and controlled by the investor. In the framework of a project, financed by LIFE+ programme of the EC, during the period 2011 – 2013 r. BSPB / BirdLife carried out targeted and methodologically justified study on the impacts of the operational wind farms in Coastal Dobrudzha on wintering geese. **!MoEW 2015 report:** "General targeted monitoring of the impact of wind turbines on birds has not been made. … However, it can be said that no evidence of high mortality and behavioral response of birds to a possible barrier effect."	**Effect:** Evidence about negative impacts of the operational wind farms on birds in Coastal Dobrudzha are collected since 2007 to now, even without special measures taken by the Government. However the worrying message from the last governmental report is that the Government still do not accept existence of significant negative impacts and that do not wish to know what is the real situation. **Evaluation:** The lack of targeted actions for implementation of the recommendation prevent the identification of the full scale of the operational wind farms, because most of the assessments are made just by NGOs, and nevertheless that NGOs apply scientific methods, their conclusions are neglected and ignored by the Government.
6. Conduct a Strategic Environmental Assessment (SEA) of Bulgaria's wind energy programme, taking into account possible conflicts of wind energy production within the most intensive bird movements areas, in particular along the Black Sea coast;	
The SEA of the NAPERS 2010-2020 is elaborated and published for public consultations in November 2010, but is officially adopted in August 2012. This delay of more than 1,5 years gave possibility for many wind farm projects to be initiated in Dobrudzha. The SEA set a moratorium for new projects in the geographical region of Dobrudzha, Burgas region, Eastern Rhodopes and around special protection areas until 2020, but this moratorium does not apply for the projects submitted to RIEW before August 2012.	**Effect:** After 2012, no placement of new wind power projects in Dobrudzha. However, EIA procedures are carried out and projects are approved for a large number of wind turbines. Still 599 wind turbines are under EIA procedure. Ddecisions for 235 wind turbines are rescinded, but they could be approved again. Thus the total number of wind turbines in Dobrudzha could reach 2542. **Evaluation:** effective measure, but delayed a lot; postponement of the approval of the SEA of the NAPERS allowed big number of projects to be initiated because of the threat of future restriction. The measure does not solve already arisen problems; The effect is for long time, but not after 2020.

Evaluation of implementation of Recc. 130(2007)

Measures taken by MoEW by March 2015	Evaluation of the effect
7. Establish a strict moratorium on further turbines and windfarm projects in the coastal areas of Bulgaria until EIA and SEA reports mentioned in paragraphs 1 and 6 are completed;	
In 2010 – unsuccessful attempt to set moratorium. However, such temporary moratorium (until 2020) was imposed in 2012 by the decision on strategic environmental assessment of the NAPERS 2010-2020 for some areas in Bulgaria, including almost the entire Black Sea coast.	**Effect:** no effect has been achieved to limit future projects Pending the establishment of Strategic Environmental Assessment. The moratorium imposed by SEA stopped initiating of new projects. **Evaluation:** the effect of the recommendation is not achieved due to non-implementation of the moratorium. The moratorium introduced by the SEA is right but very delayed step. It is effective against future projects, as in force until 2020 or the new National Action Plan for the Development of Renewable Energy Sources.
8. Respect the need to focus on the avoidance of the impacts coming from outside having negative effects on areas of recognised conservation importance;	
Applied EIA procedures do not ensure the implementation of this recommendation. In the period 2010 - 1014 MoEW repeals several decisions for approved wind farms at risk near important bird areas, but not permanently discontinued projects. The concrete case is in Dobrudzha – “General Toshevo” and “Smin” Wind Farms.	**Effect:** suspension, postponement or delay in carrying out risky projects. In their further development depends largely on the stubbornness of the investor. **Evaluation:** a systematic approach is not applied to the implementation of this recommendation

Evaluation of implementation of Recc. 130(2007)

Measures taken by MoEW by March 2015	Evaluation of the effect
9. Take into account the following guidance to improve EIAs for future and not yet operating turbines:	
further research and monitor birds, bats, other fauna, vegetations and key landscape-ecological structures and processes influencing biodiversity;	
Such studies are required to be carried out within the EIA procedures and in most cases, studies indeed take place, but the methods and correctness of their implementation is not controlled; there is no an external evaluation of the quality of the data; many of the studies are superficial; depth studies showing significance of the site for biodiversity in some cases are not incorporated in the EIA or data from such studies are not interpreted correctly. Most studies have been conducted for a period of one year and not sufficiently representative for the purposes of the EIA.	**Effect:** Field studies are carried out at least for one year. Bulky EIA reports, where they the results of studies are discussed; **Evaluation:** There is progress in the implementation of this part of the recommendation, but there is no control over the quality of implementation.
apply collision modelling of cumulative effects of several wind farms or turbines along intensive flyways, followed by the assessment of the suitability of localities using multicriteria-analysis methods;	
Has been implemented only in the development of the SEA and a map of sensitive areas for birds at the national level. In some EIA for wind farms in the interior of Dobrudzha similar to that assessment was administered, but interpretation of the data is questionable.	**Effect:** No effect is documented in terms of placing the individual projects in low risk areas. **Evaluation:** At the project level or at regional level no progress has been made in implementing this recommendation.
develop compulsory procedures to peer review the completeness and quality of biodiversity chapters of EIAs and their conclusions before continuing the administrative and legal processes;	
We are not aware of any measures taken to implement this recommendation. If, however, has developed such binding procedures on paper, they do not apply or are confidential.	**Effect:** quality of EIA reports is still unsatisfactory, although more voluminous and contain more analysis. **Evaluation:** non-implementation of the recommendation leads to a lack of progress in the quality of EIA reports

Evaluation of implementation of Recc. 130(2007)

Measures taken by MoEW by March 2015	Evaluation of the effect
10. Develop guidelines for appropriate planning of the construction of windfarms and/or individual turbines, taking account of the following issues:	
initiate a broad debate on the precautionary principle regarding development projects in relation to sites with outstanding biodiversity values;	
Discussion was held within the framework of the SER in 2010 and during the discussions of the SEA of NAPERS 2010-2020 in the period from 2010 to 2012. The results of these discussions are laid down later in the Bird Sensitivity map and in the Guide on windfarm development and birds, elaborated and published in 2013.	**Effect:** A map of sensitive areas for birds because of the development of wind turbines is created; a moratorium until 2020 for the construction of wind turbines in sensitive areas is placed. Chaotic wind farm development is set under control. **Evaluation:** significant positive effect as the actions arising from the debates led to the limitation of spontaneous and risky for biodiversity development of the wind sector.
take measures for the removal of turbines in case of unacceptable bird collisions where no alternatives exist; this requires the drafting of a set of mitigating and compensatory measures when biodiversity losses occur;	
No such measures are taken; There is no mechanism of regular and objective monitoring of all operating wind turbines, therefore, no sufficient data on the risk of the individual wind turbines; if these do not exist, purely formal similar actions are not necessary to be applied (the principle “no data – no problem – no action” still works);	**Effect:** operating turbines continue to kill birds in Coastal Dobrudzha, without knowing the real scale of the impact. **Evaluation:** The actions of the institution are aimed at undermine the problem of many stages (and the EIA procedure and subsequent control) and, accordingly, the lack of grounds for its solution.
promote capacity building for specific and independent control of the ecological effects of turbines (in terms of experienced staff, equipment, legal base, cooperation with other institutions and NGOs, appropriate procedures, etc),	
Concrete steps for practical implementation of this recommendation are not taken. A guide that gives guidelines and describe best practices and opportunities for further scrutiny is developed; Some NGOs are taking steps to implement such control, but this is not supported by competent authority; Just one wind farm has its own system for monitoring and control, but it is not independent.	**Effect:** lack / difficult control environmental consequences; **Evaluation:** Failure of the recommendation continues to enable risk turbines to operate, and to allow the approval of new wind risk.
to consider and properly investigate the social impacts of windfarms on local population and on the loss of nature and scenery as a significant source of recreation and eco-tourism.	
The government has not taken measures to implement this recommendation.	**Effect:** loss of livelihood opportunities of the small villages as Balgarevo and St. Nikola in Coastal Dobrudzha and probably still unexplored other effects, where there are already operating wind farms **Evaluation:** Te Government ignores the general likelihood of negative social impact and the need to take measures.

EC infringement -> ECJ case *C-141/14*

Conclusions the Opinion of Advocate General (3 September 2015:

VI – Conclusions

164. Je propose dès lors à la Cour de juger de la manière suivante:

….

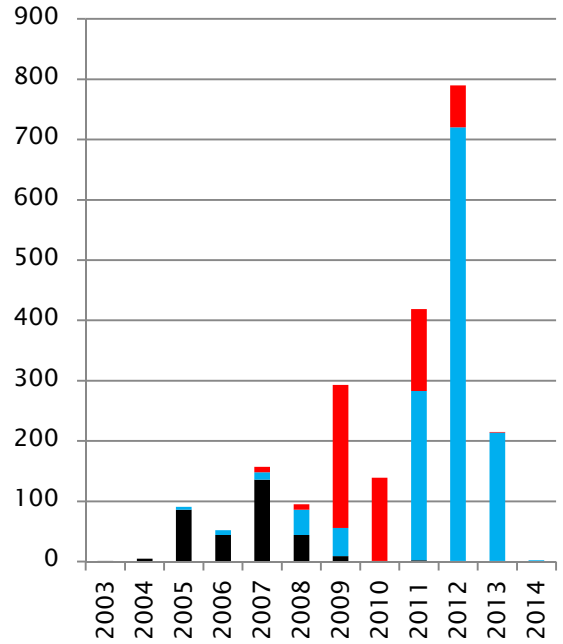
- 2) La République de Bulgarie a enfreint l'article 4, paragraphe 4, de la directive 2009/147/CE en n'adoptant pas les mesures nécessaires afin d'éviter que l'exploitation des projets éoliens «AES Geo Energy» OOD, «Disib» OOD, et «Longman Investment» OOD sur le territoire de la zone importante pour la conservation des oiseaux «Kaliakra», qui n'a pas été classé en zone de protection spéciale alors qu'il aurait dû l'être, ne viennent dégrader les habitats des espèces d'oiseaux à protéger et ne viennent perturber lesdites espèces.
- 3) La République de Bulgarie a enfreint l'article 6, paragraphe 2, de la directive 92/43/CEE concernant la conservation des habitats naturels ainsi que de la faune et de la flore sauvages en n'ayant pas adopté les mesures nécessaires afin d'éviter que l'exploitation des installations éoliennes «Kaliakra Wind Power» AD, «EVN Enertrag Kavarna» OOD et «Vertikal – Petkov & Cie» OOD, ainsi que des installations de la «Thracian Cliffs Golf & Spa Resort» OOD à l'intérieur des ZPS «Kaliakra» et «Belite Skali» ne détériore les habitats des espèces d'oiseaux protégées et ne perturbe ces espèces.
- 4) La République de Bulgarie, en n'ayant pas évalué de manière appropriée l'effet cumulatif des projets «Windtech» OOD, «Brestiom» OOD, «Eco Energy» OOD et «Longman Investment» OOD avec d'autres projets, lors de la vérification de la nécessité de procéder à une évaluation des incidences sur l'environnement, a enfreint l'article 4, paragraphes 2 et 3, et l'annexe III, point 1, sous b), de la directive 2011/92/UE concernant l'évaluation des incidences de certains projets publics et privés sur l'environnement, et, en ayant néanmoins autorisé et laissé réaliser le projet «Longman Investment» OOD, elle a en outre enfreint l'article 2, paragraphe 1, de cette directive.

But:

- She seems to suggest that further monitoring of the projects would be necessary to establish actual level of impacts
- She seems to suggest that with projects consented before accession, that legal certainty should take precedence over nature conservation values when impacts have been reduced as much as possible. However, she then reiterates that until there is more certainty about effect, its hard to specify remedy measures such as turbine removal, or shutdown.

Results after 12 years and role of sensitivity map

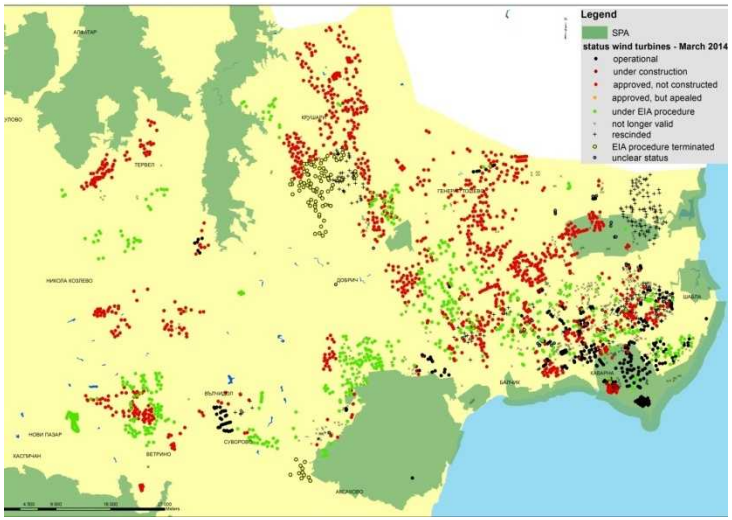
National/ strategic level:

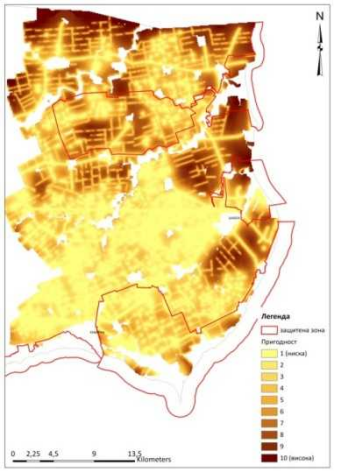


- Improvement and better enforcement of EPA and BPA
- Improvement of Renewable energy act (stricter now)
- SEA of NPDRES set "no-go" areas for new WF by 2020
- Stop of the chaotic development of wind energy sector
- Presence of guidance for wind farm development and sensitivity map owned by Ministry of Environment
- Large proportion of existing (approved, planned) projects still in place => threat is still there;
- Municipality spatial plans in Coastal Dobrudzha are still not updated and do not give guidance for wind farm development on regional level => threat is still there.

In Dobrudzha today:

- Operational – 330
- Approved – 1329
- Under procedure – 599
- Temporary stopped by MoEW – 235
- No longer valid – 626
- Unclear status – 31





Results after 12 years and role of sensitivity map

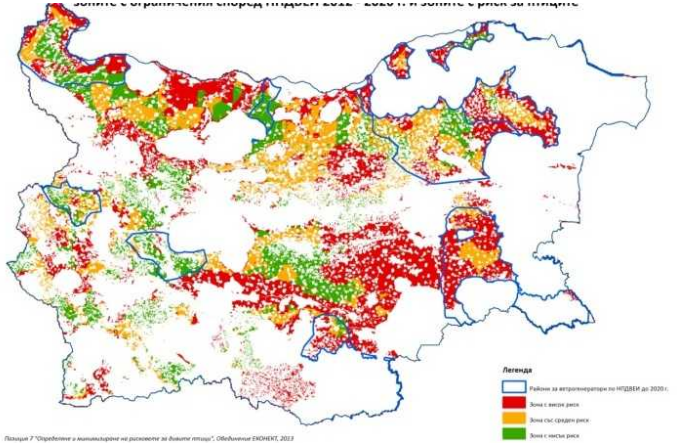
Project level:

- Harmful WF projects in Kaliakra IBA
- ECJ ruling on Kaliakra case is expected soon; Advocate General found the government guilty, but predictions are impossible to date
- Bern Convention still keep Kaliakra Case file open but has no much more instruments to influence the case in a positive way
- Pending national court case on another big WF next to the biggest roosting site of Red-breasted goose – Durankulak Lake

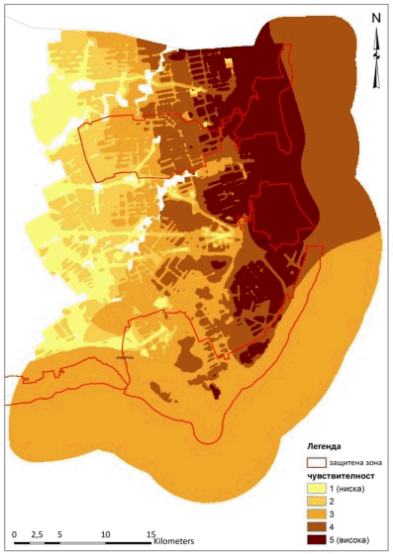
Bulgarian sensitivity maps and wind farms

NATIONAL SCALE:
Zonning map for wind farm development

- 42 migratory species (raptors, pelicans, storks, cranes, corncrake, sand martin, Bee eater)
- Breeding species, included in Annex I of BD
- Wintering water birds



REGIONAL SCALE:
Red-breasted Goose Sensitivity map – Coastal Dobrudzha



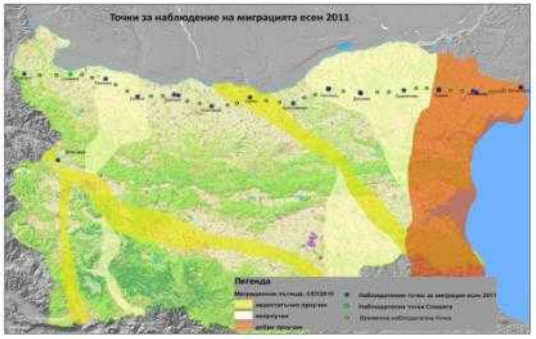
National sensitivity map (Zonning map)

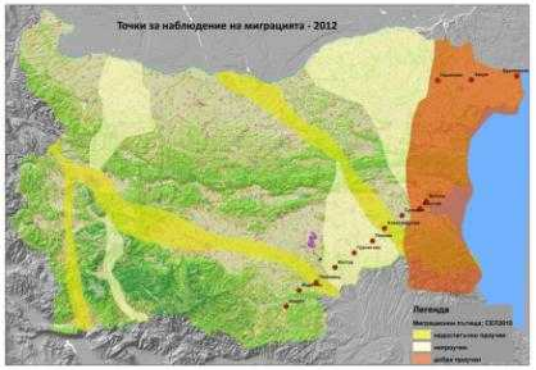
methodology

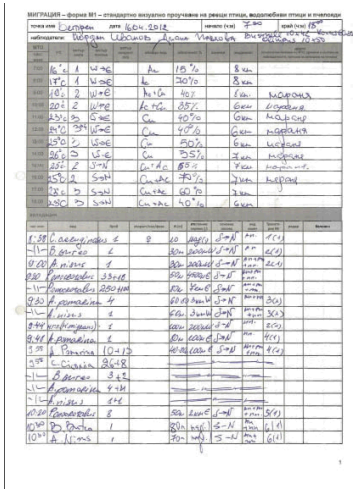
- Targeted field studies of migratory, breeding and wintering birds
- Collection and processing of existing information about birds
- Processing and analysis of ornithological data
- Spatial modeling of the ornithological importance of the country (1km^2 grid)
- Spatial modeling of the risk for birds due to wind farm construction
- Creation of wind potential map and map of the technical capacity for wind farm development
- **Zoning of the country according to the risk for birds taking into account also the technical capacity fir wind farm development**

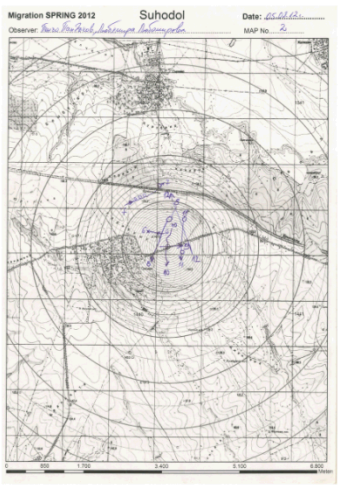
Field studies of birds

- Autumn migration 2011 and 2012
- Spring migration 201
- Wintering birds 2011/2012
- Wintering birds 2012/2013
- Breeding birds 2012

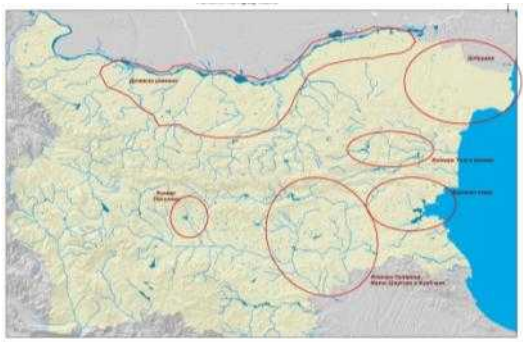


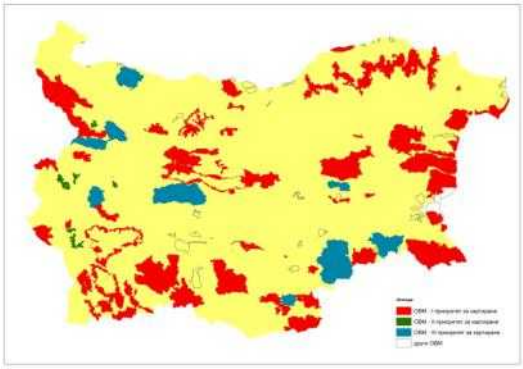




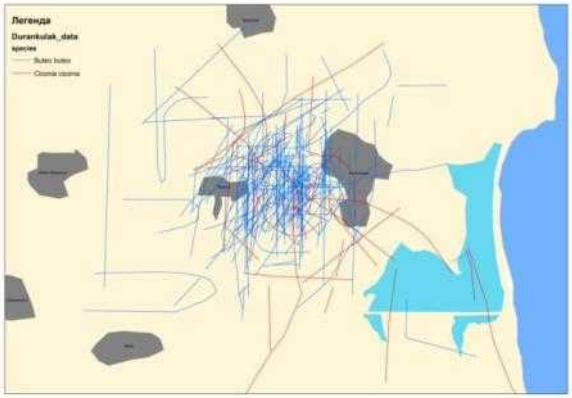


Example for field data forms – migration



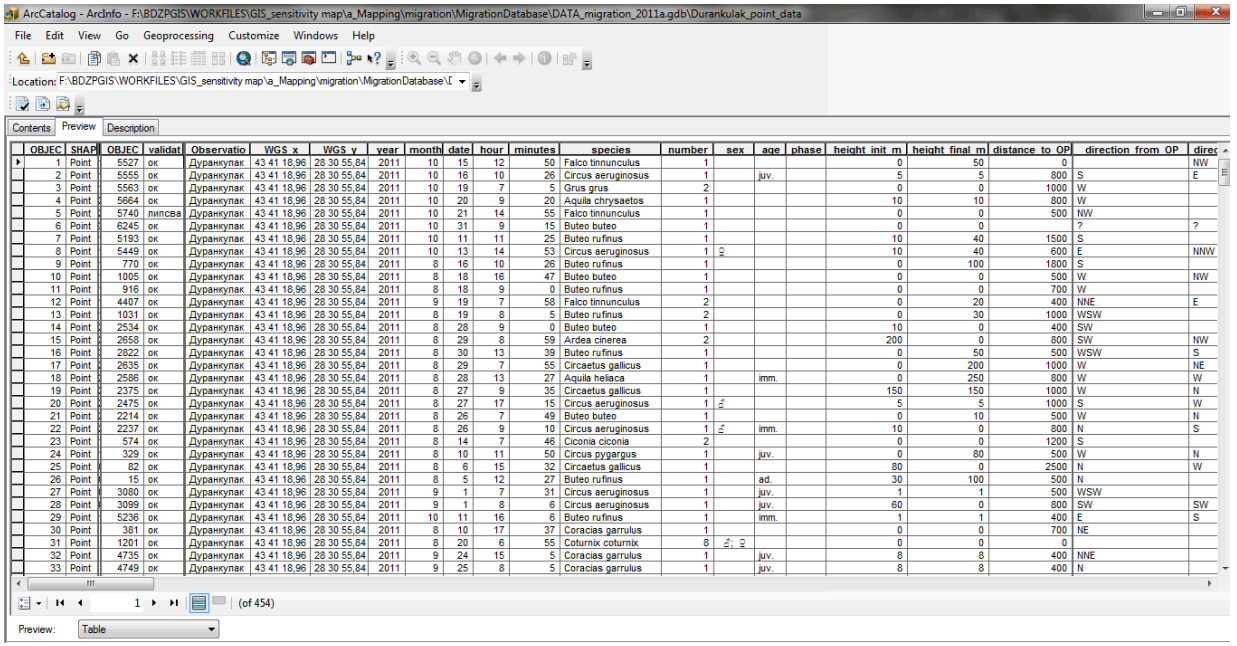


Data processing

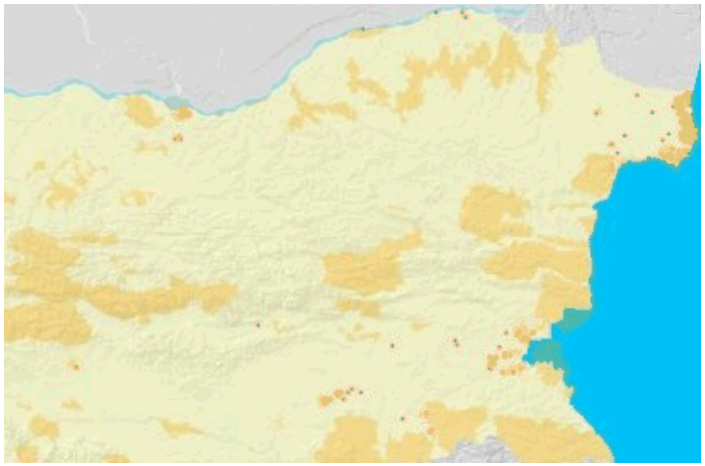


Spatial data – migration

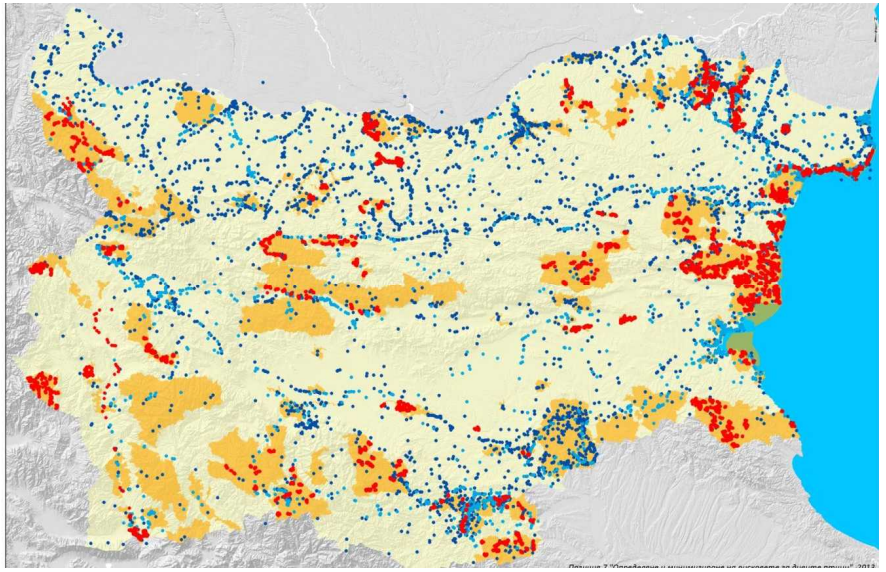
Attributive data



OBJEC	SHAPE	OBJEC	validat	Observatio	WGS_x	WGS_y	year	month	date	hour	minutes	species	number	sex	age	phase	height_init_m	height_final_m	distance_to_OP	direction_from_OP	direc
1	Point	5527	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	10	15	12	50	Falco tinnunculus	1				0	50	0		NW
2	Point	5555	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	10	16	10	26	Circus aeruginosus	1		juv.		5	5	800	S	E
3	Point	5563	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	10	19	7	5	Grus grus	2				0	0	1000	W	
4	Point	5664	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	10	20	9	20	Aquila chrysaetos	1				10	10	800	W	
5	Point	5740	липсва	Дуранкулак	43 41 18,96	28 30 55,84	2011	10	21	14	55	Falco tinnunculus	1				0	0	500	NW	
6	Point	6245	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	10	31	9	15	Buteo buteo	1				0	0		?	?
7	Point	5193	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	10	11	11	25	Buteo rufinus	1				10	40	1500	S	
8	Point	5449	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	10	13	14	53	Circus aeruginosus	1	♀			10	40	600	E	NNW
9	Point	770	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	8	16	10	26	Buteo rufinus	1				0	100	1800	S	
10	Point	1005	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	8	18	16	47	Buteo buteo	1				0	0	500	W	NW
11	Point	916	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	8	18	9	0	Buteo rufinus	1				0	0	700	W	
12	Point	4407	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	9	19	7	58	Falco tinnunculus	2				0	20	400	NNE	E
13	Point	1031	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	8	19	8	5	Buteo rufinus	2				0	30	1000	WSW	
14	Point	2534	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	8	28	9	0	Buteo buteo	1				10	0	400	SW	
15	Point	2658	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	8	29	8	59	Ardea cinerea	2				200	0	800	SW	NW
16	Point	2822	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	8	30	13	39	Buteo rufinus	1				0	50	500	WSW	S
17	Point	2635	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	8	29	7	55	Circaetus gallicus	1				0	200	1000	W	NE
18	Point	2586	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	8	28	13	27	Aquila heliaca	1		imm.		0	250	800	W	W
19	Point	2375	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	8	27	9	35	Circaetus gallicus	1				150	150	1000	W	N
20	Point	2475	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	8	27	17	15	Circus aeruginosus	1	♂			5	5	1000	S	W
21	Point	2214	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	8	26	7	49	Buteo buteo	1				0	10	500	W	N
22	Point	2237	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	8	26	9	10	Circus aeruginosus	1	♂	imm.		10	0	800	N	S
23	Point	574	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	8	14	7	46	Ciconia ciconia	2				0	0	1200	S	
24	Point	329	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	8	10	11	50	Circus pygargus	1		juv.		0	80	500	W	N
25	Point	82	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	8	6	15	32	Circaetus gallicus	1				80	0	2500	N	W
26	Point	15	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	8	5	12	27	Buteo rufinus	1		ad.		30	100	500	N	
27	Point	3080	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	9	1	7	31	Circus aeruginosus	1		juv.		1	1	500	WSW	
28	Point	3099	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	9	1	8	6	Circus aeruginosus	1		juv.		60	0	800	SW	SW
29	Point	5236	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	10	11	16	6	Buteo rufinus	1		imm.		1	1	400	E	S
30	Point	381	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	8	10	17	37	Coracias garrulus	1				0	0	700	NE	
31	Point	1201	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	8	20	6	55	Coturnix coturnix	8	♂; ♀			0	0	0		
32	Point	4735	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	9	24	15	5	Coracias garrulus	1		juv.		8	8	400	NNE	
33	Point	4749	ок	Дуранкулак	43 41 18,96	28 30 55,84	2011	9	25	8	5	Coracias garrulus	1		juv.		8	8	400	N	



Spatial distribution – winter Red-breasted goose



Spatial data – all observations breeding birds

Modeling

spatial statistics – regression analysis

Sierdsema, H., van Loon, E.E., 2008. Filling the gaps: using count survey data to predict bird density distribution patterns and estimate population sizes. Revista Catalana d'Ornitologia 24

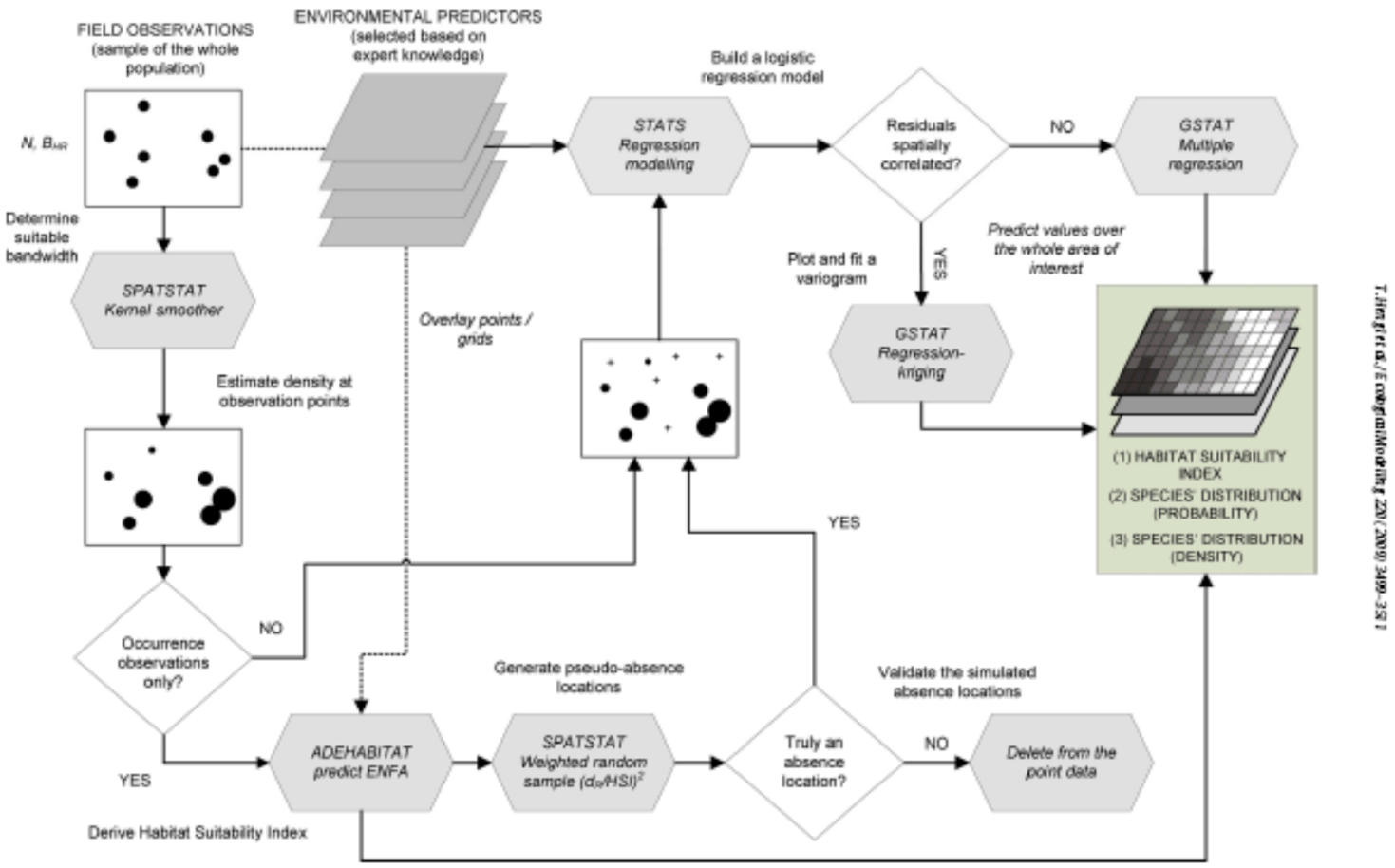
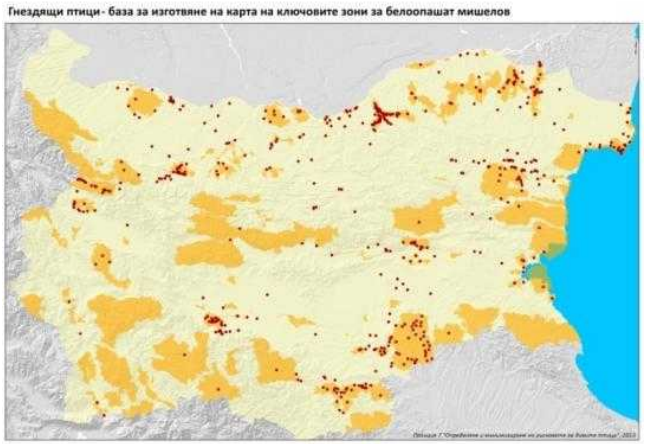


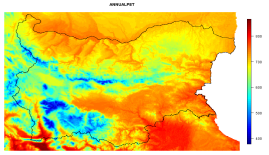
Fig. 6. Data processing steps and related *R* packages used in this paper.

Modeling of species map *Long-legged Buzzard*

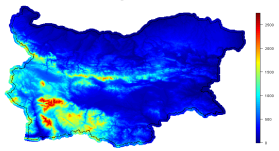


Breeding distribution – observations

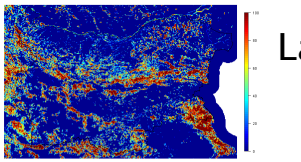
variables



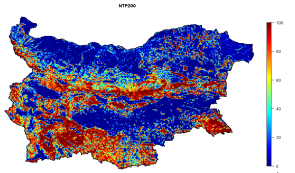
Rain



Relief

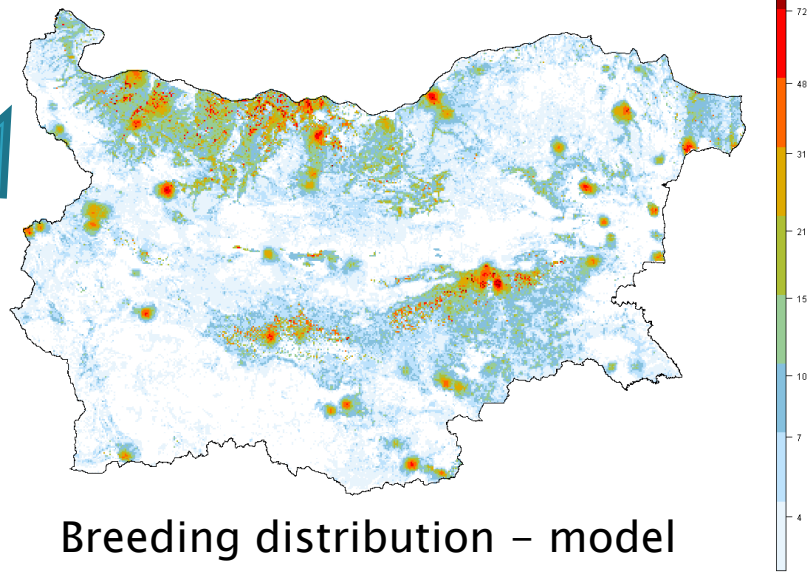


Land cover classes



Land use classes

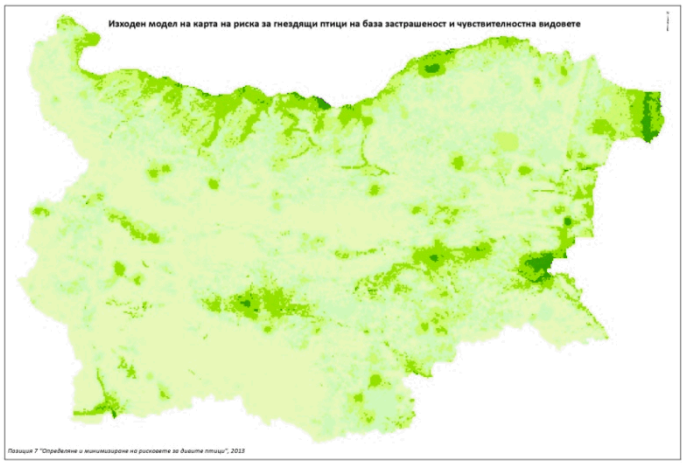
Class	min	max	cumulative best %
1	0	0.5	100
2	0.5	0.75	50
3	0.75	0.9	25
4	0.9	0.95	10
5	0.95	0.99	5
6	0.99	0.999	1
7	0.999	1	0.1



Breeding distribution – model

Bird risk map for group of species

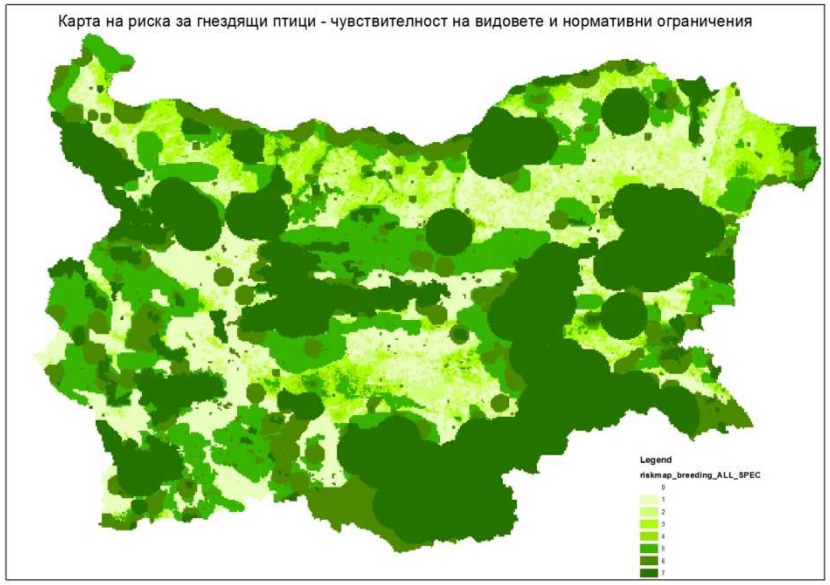
Breeding birds



Risk model breeding birds

Setting buffers around key sites – Imperial eagle

Risk map breeding birds

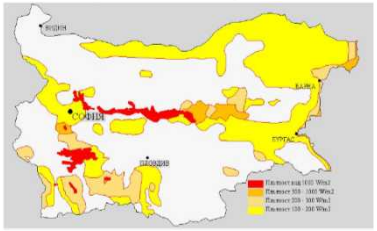


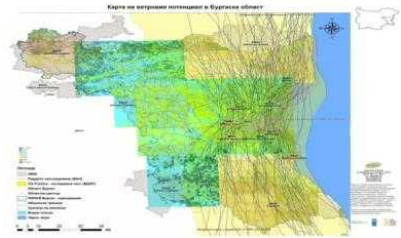
Buffers:

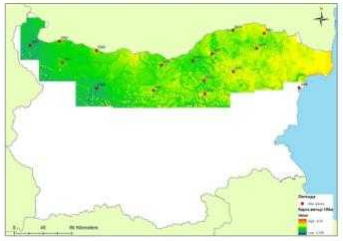
- Griffon vulture – 50 km
- Egyptian vulture – 15 km
- Imperial eagle – 15 km
- Golden eagle – 6 km
- Red-breasted goose – 10 km
- Wetlands – 2 km

Wind map and Wind farm capacity map

Source data wind map

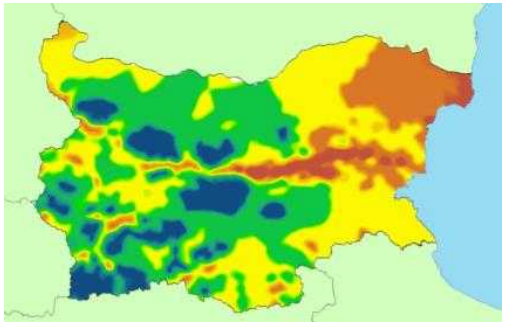




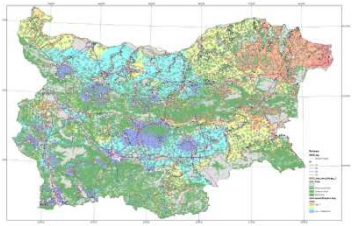


Kriging interpolation

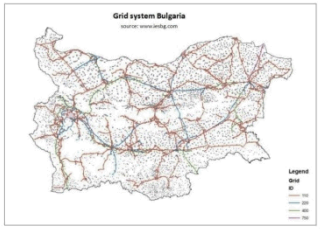
wind map



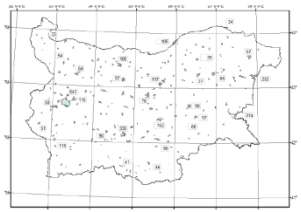
Prohibited by law



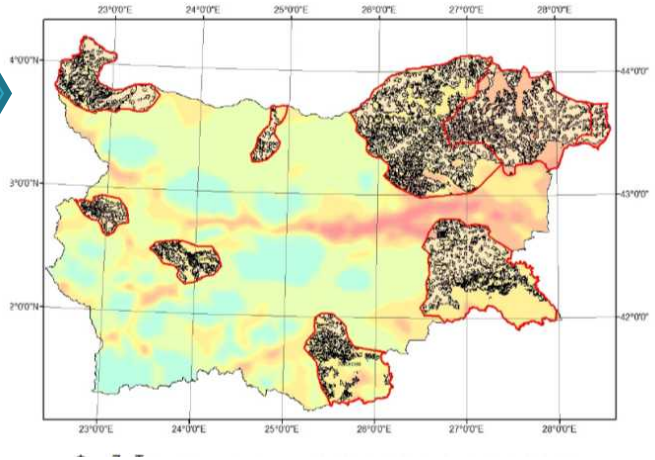
Electricity grid

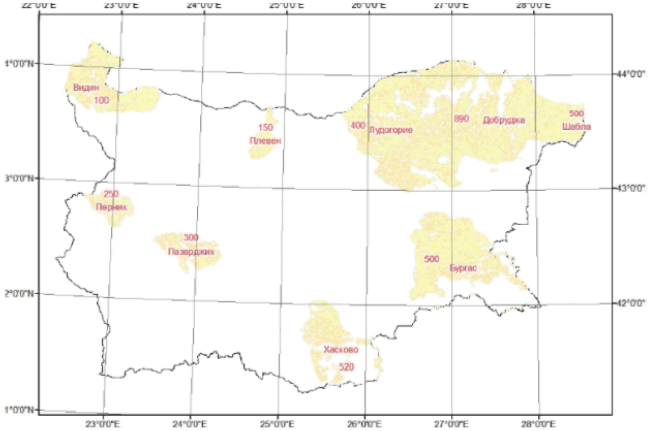


Electricity consumption

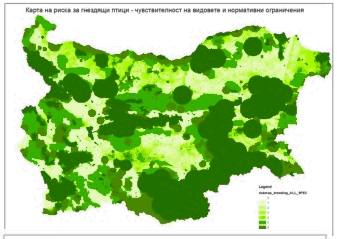


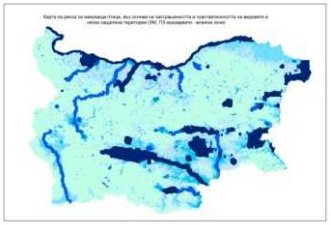
Wind farm capacity map

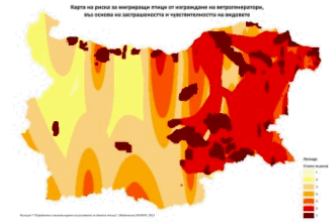




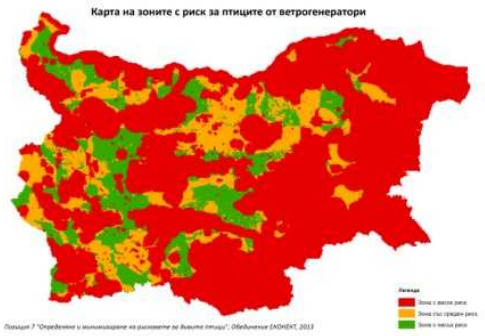
Bird sensitivity map to windfarms and zonning map



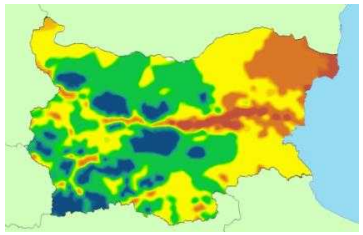




Bird risk maps per season

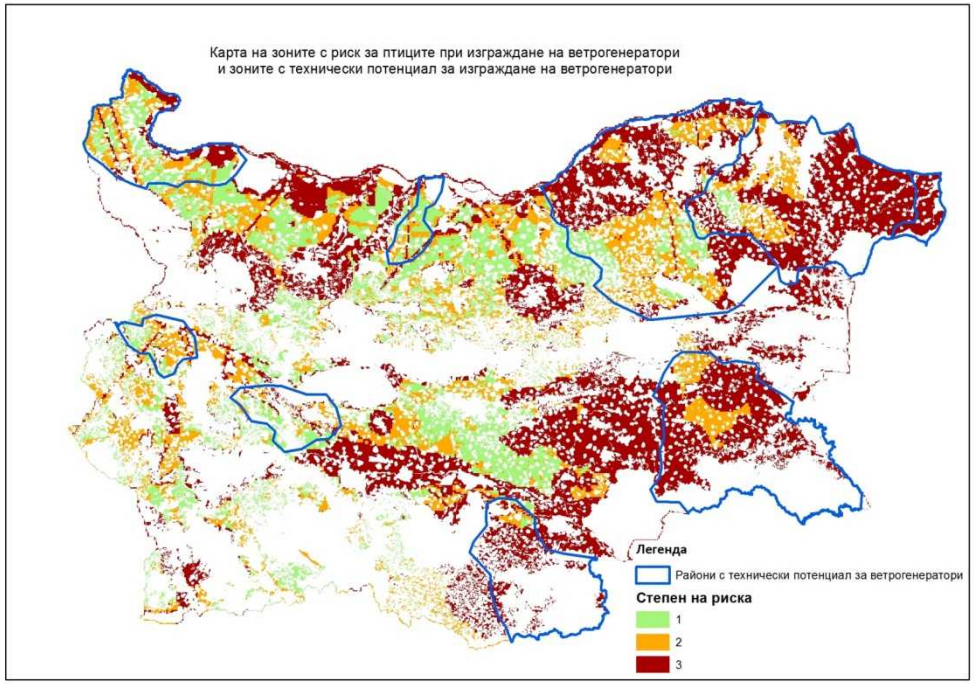


Bird risk map



Wind map

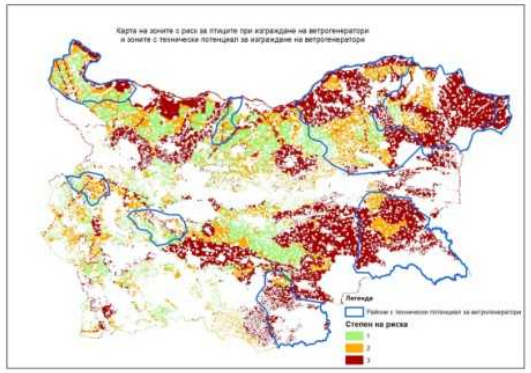
Wind farm capacity map



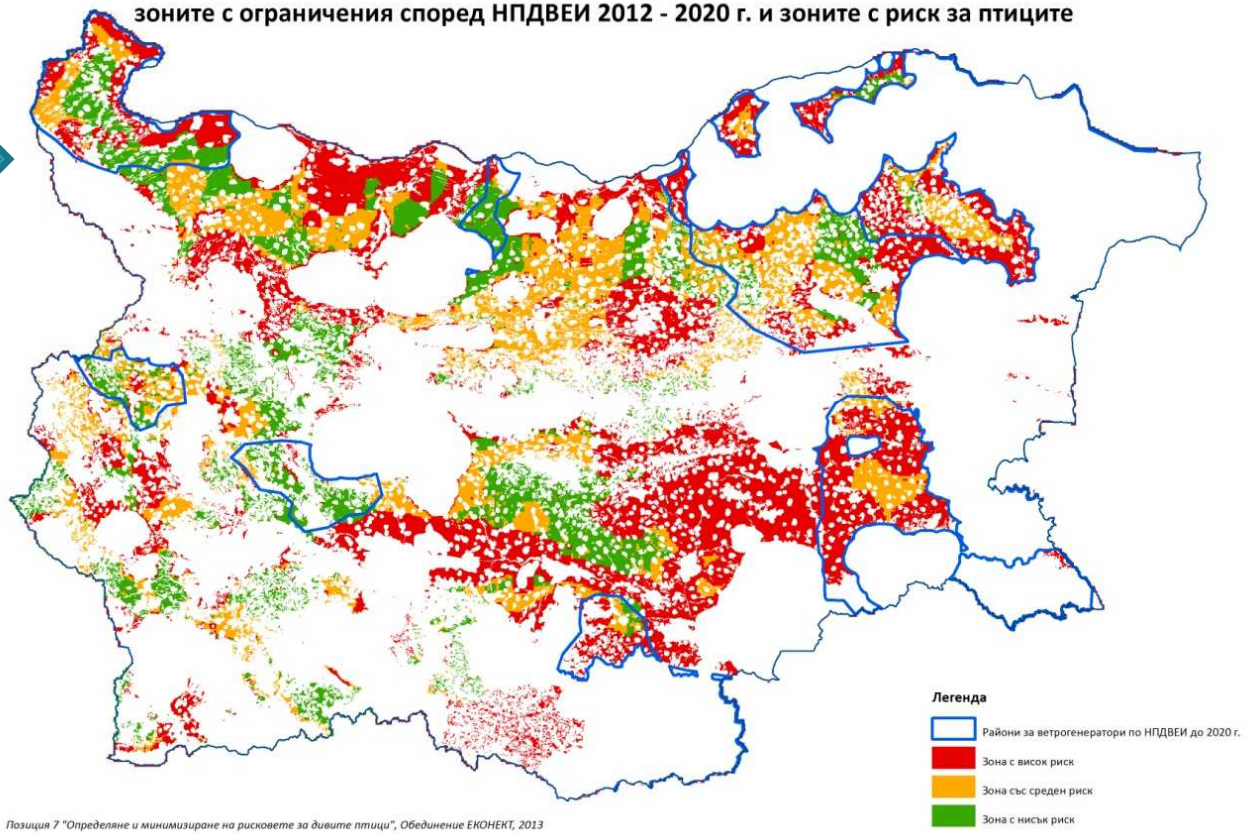
Zonning map for wind farm development

Implementation of SEA of the National Action Plan for Renewable Energy 2010 – 2020

http://natura2000.moew.government.bg/PublicDownloads/Auto/OtherDoc/276299/276299_Birds_120.pdf



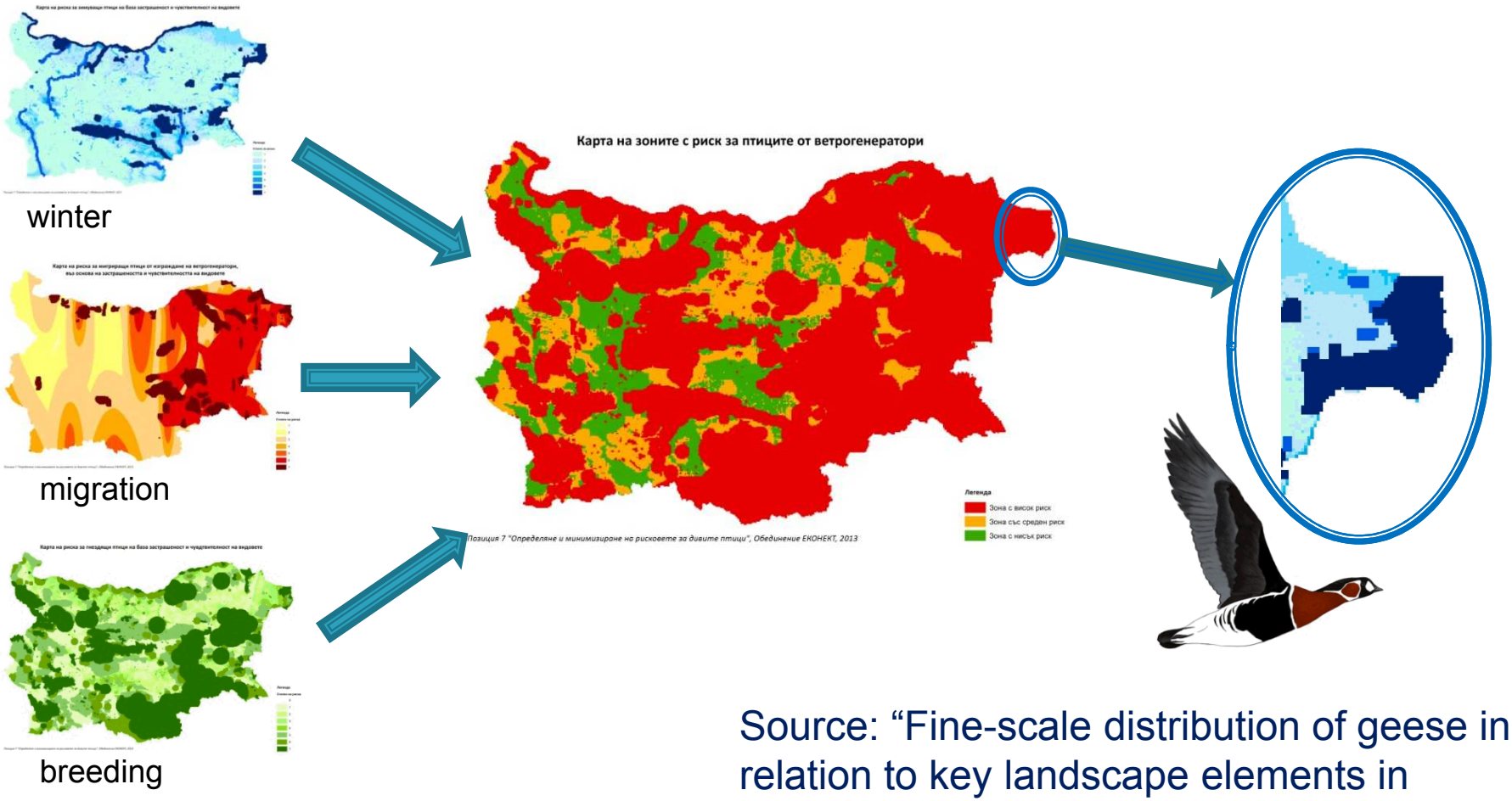
Съпоставка на териториите подходящи за изграждане на ветрогенератори извън зоните с ограничения според НПДВЕИ 2012 - 2020 г. и зоните с риск за птиците



Позиция 7 "Определяне и минимизиране на рисковете за дивите птици", Обединение ЕКОНЕКТ, 2013

Regional level bird sensitivity map – Red-breasted Goose

LIFE09/NAT/BG/00230



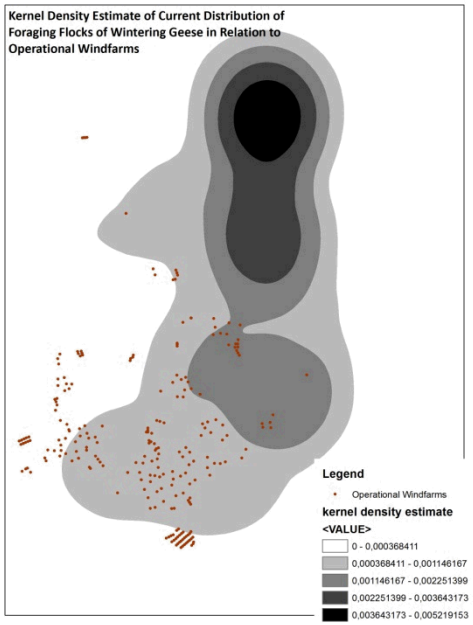
Source: “Fine-scale distribution of geese in relation to key landscape elements in coastal Dobrudzha, Bulgaria”, WWT, 2014
Under project LIFE09/NAT/BG 00230 “Conservation of the Wintering Population of the Globally Threatened Red-breasted Goose (*Branta ruficollis*) in Bulgaria"

Ecology requirements

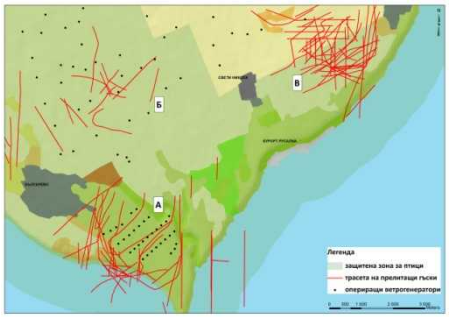
- Roosting – non-frozing wetlands; sea
- Foraing – arable land with winter wheat
- Fresh drinking water
- Daily movements between roosting and feeding areas
- Mixed flocks with other geese species
- Vulnerable to disturbance (avoid man made structures)

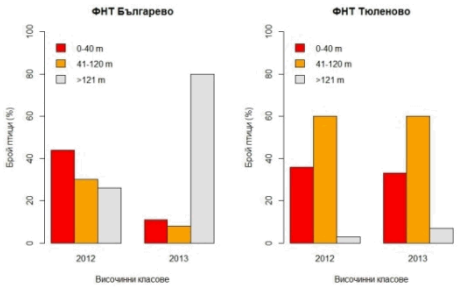
Sensitivity to wind farms

- Collision
- Displacement



- Barrier





RBG sensitivity map – methodology

I. <u>Identification of the important foraging areas</u>

Statistical model on a base “presence- abcense” of geese and following variables:

- Area of fields with winter wheat
- Quality of the crop
- Vicinity of settlements
- Level of visibility
- Impact by roads, power lines, wind turbines

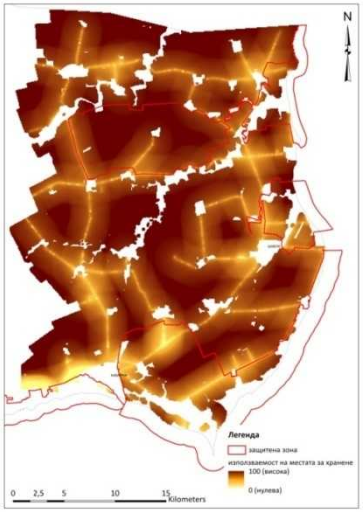
II. <u>Identification of the quality of foraging habitats</u>

Statistical model describing the impact of the following variables:

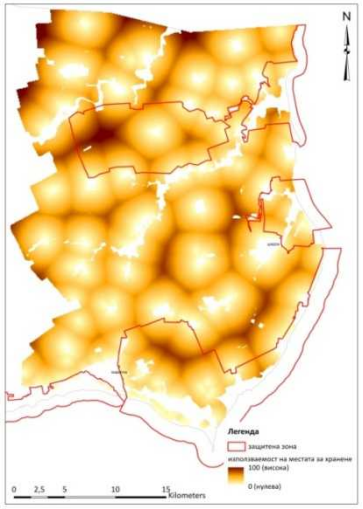
- Wind turbines
- Power lines
- Roads
- Wind protection forest belts
- Settlements

RBG sensitivity map – displacement landscape features

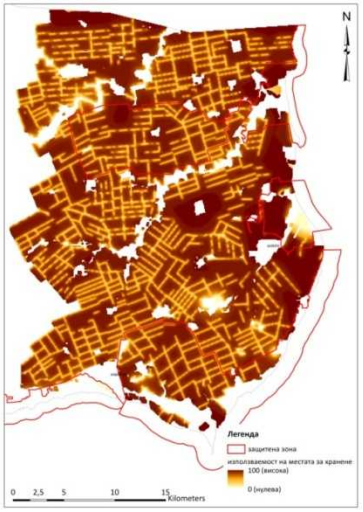
Roads



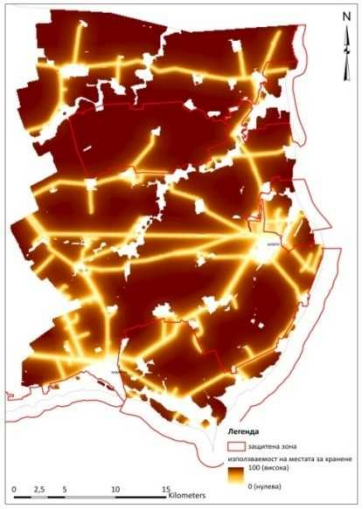
Settlements



Wind protection belts

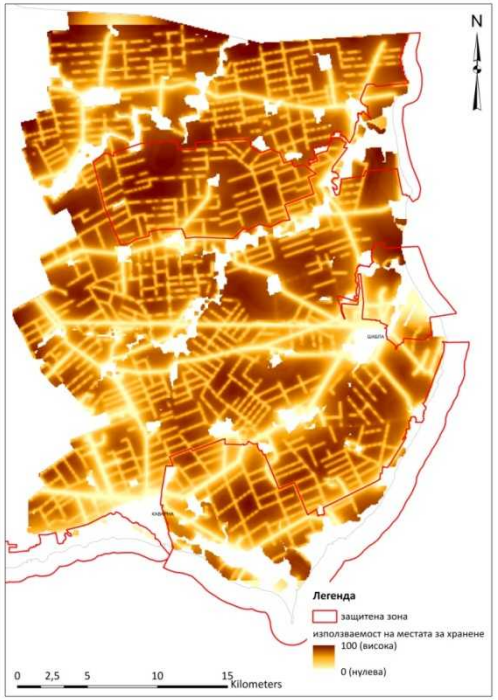


Power lines



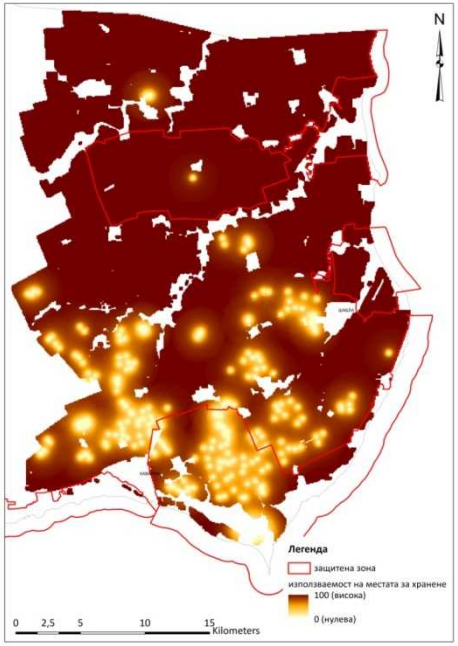
Combined effect

Original situation

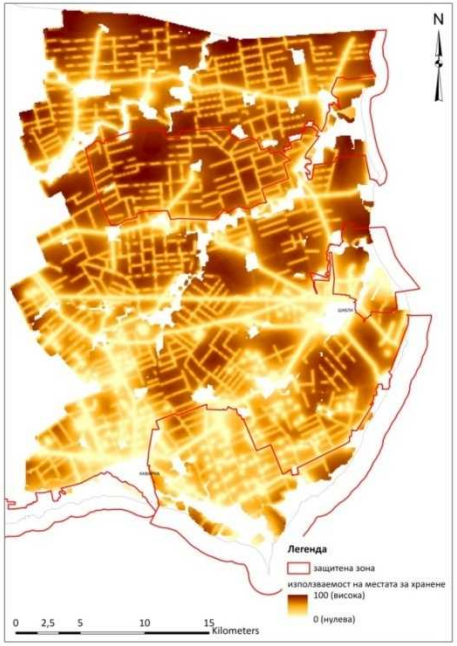


RBG sensitivity map – displacement wind turbines

Present situation



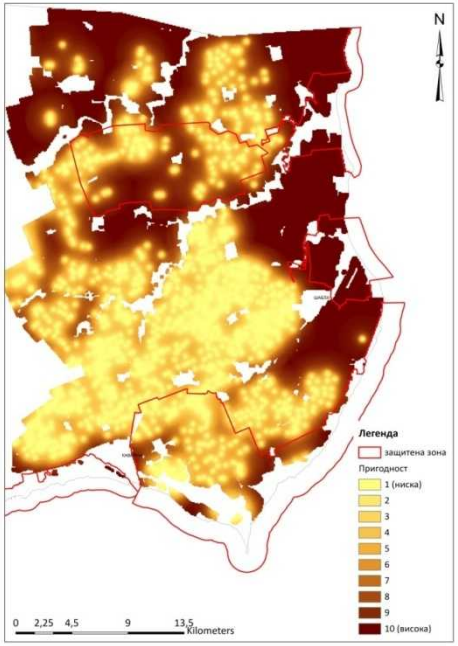
Wind turbines displacement



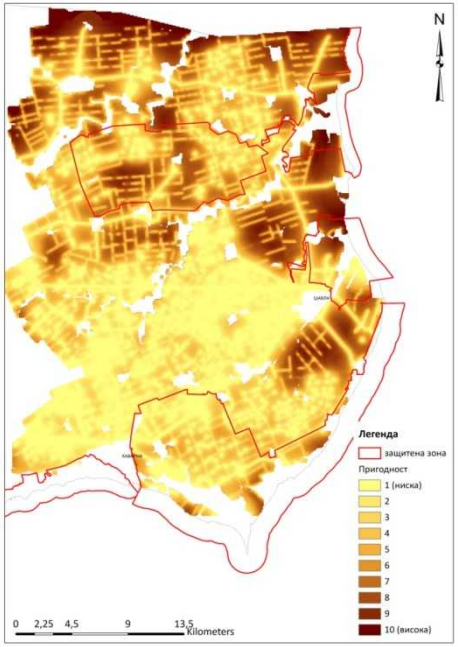
Combined effect

6% of foraging habitats are lost due to wind farm development

Prediction



Wind turbines displacement

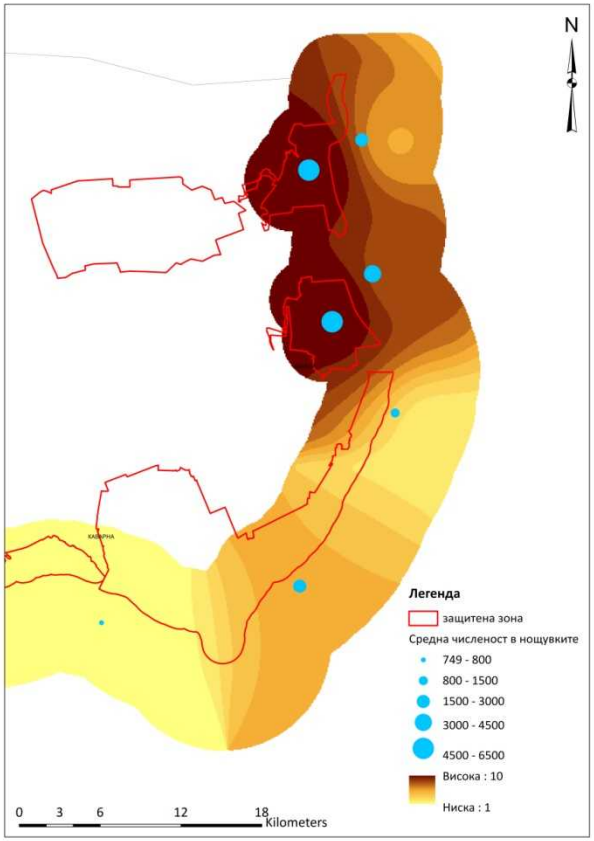


Combined effect

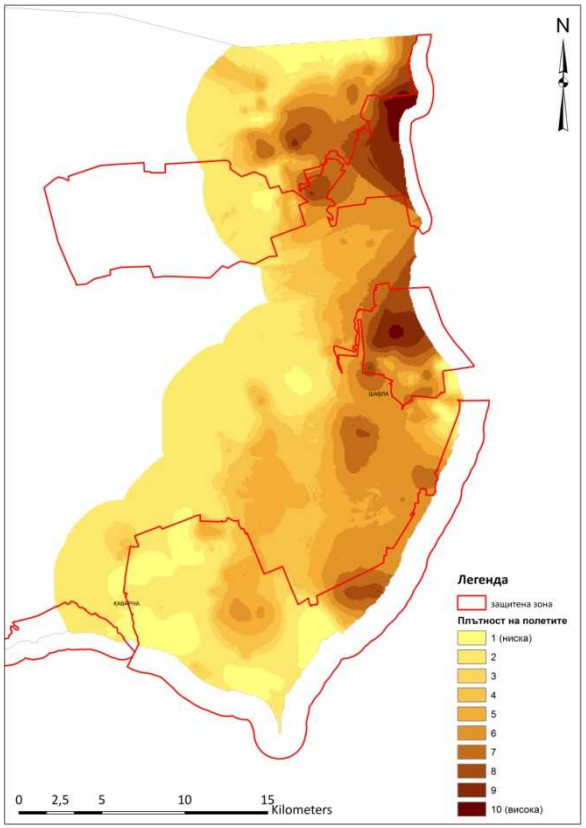
30% of foraging habitats are going to be lost if all approved wind turbines will be constructed

RBG sensitivity map – barrier effect

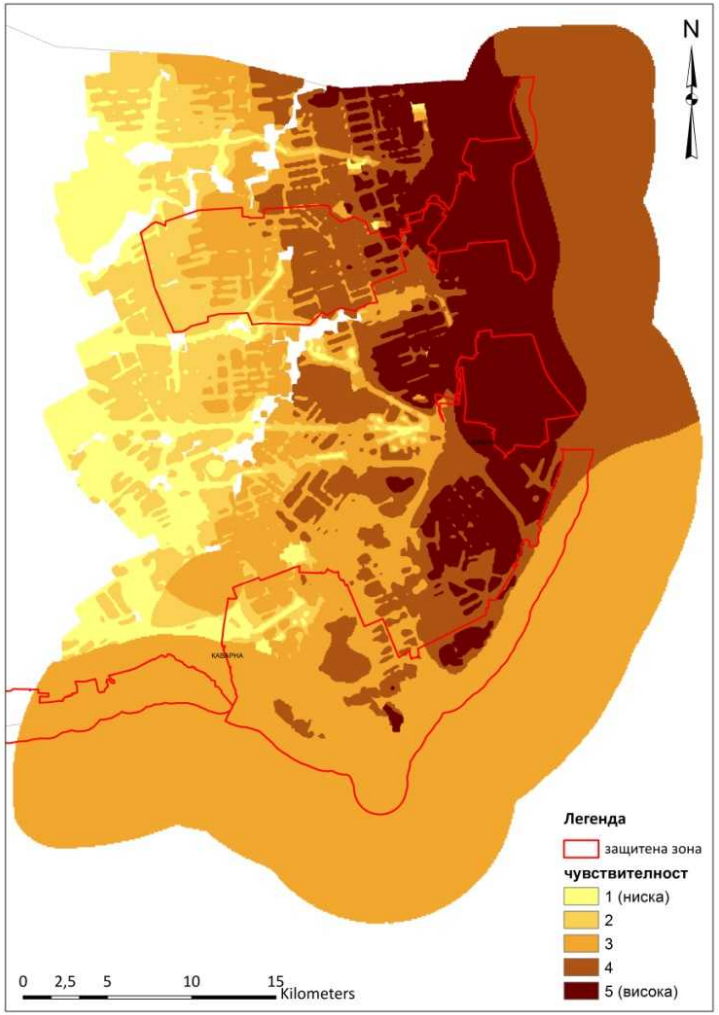
Roosts and movement corridors



Density of flights



RBG sensitivity map



The areas with the highest quality habitats cover less than 50% of Coastal Dobrudzha

Predicted habitat loss due wind farm development is 30%. Further loss could be expected due other kind of developments – e.g. urbanization, change of land use practices - ?%

!

130(2007) -> Suggestions to BG Government

- to report specifically how this recommendation is applied to the following wind farm projects in Dobrudzha: “St Nikola” windfarm and EVN wind farm in Kaliakra IBA/SPA; “Smin” wind farm near Durankulak Lake IBA/SPA; “General Toshevo” wind farm near Chairya IBA/SPA and the wind farms neighboring Shabla Lake Complex IBA/SPA, Balchik IBA/SPA and Suha reka IBA/SPA; evidence needs to be provided as well; provide information what further steps are planned. => p.1, 2, 3, 4
- to elaborate Ex-ante evaluation procedure for the EIA quality; incorporate this procedure in the legislation and start to implement it. => p.1, 8, 9
- to report annually on status of windfarm sector in Dobruudzha in terms of operational, approved and planned wind turbines, as well as on number expired projects (wind turbines) and new submitted project (turbines) . => p.2
- to announce at its public registers all the decisions that are expired, once the competent authority following the legal procedure, document that certain decision is not longer valid. => p.2
- to report how the sensitivity map, published in 2013, is used in practice during decision-making process, providing also information how many projects are relocated from risky areas and which are the good examples. => p.4, 8
- to collect data for assessment on need of further actions to be taken to implement this recommendation after 2020. => p.4, 6, 7
- to report specifically how this recommendation is applied to the following wind farm projects in Dobrudzha: “St Nikola” windfarm, “Kaliakra” windfarm, EVN wind farm and the single wind turibines in Kaliakra IBA/SPA and close to it; operating wind turbines in settlement areas of Seltse, Mogiliste, Shabla, Hrabrovo, Lyahovo; operating single wind turbines in Burgas region along the Black Sea Coast. => p.5

130(2007) -> Suggestions to BG Government

- to conduct / support impact studies for migratory and breeding birds in area of Coastal Dobrudzha in a similar (comparable, detailed) manner as the impact study of wind farms on wintering geese. Report the results of these studies. => p.5
- to report how the restrictions of SEA are applied and if there are cases of non-implementation to explain the reasons. => p.6, 7
- to report annually on the status of projects which are subject of court case and thus it is not clear if these are approved and can be constructed, or are permanently stopped. => p.8
- to strengthen implementation of EIA procedure by making the procedure more transparent, to apply more control on the quality of EIA and to ensure independent EIA report. => p.8, 9
- The competent authority to apply stricter control on the studies carried out for wind farm projects, similar to those applied for elaboration of sensitivity map. It should include providing of methodologies which should be followed; validation of data and reports before they to be used for assessment, as well as possibility for the competent authority to make on-spot control of the studies if finds it necessary. The study reports validated by the competent authorities should be public since the relevant EIA report becomes subject of public consultations. Such control mechanism should be officially elaborated by the government and made public. => p.9
- to report on how this recommendation is implemented for all the wind farms projects, that were subject to approval by the competent authority since the beginning of 2008 => p.9, 10
- to report what further steps are planned to implement the recommendation. => p.9, 10
- to take actions to remove wind farms from the area of Kaliakra IBA/SPA in order to restore the integrity of site and prevent further mortality of migratory, breeding and wintering birds and loss of foraging habitats for wintering Red-breasted goose. => p.10

Suggestions to Bern Convention

- Official opinion of the Bern Convention Standing Committee on the progress and quality of implementation of Recommendation 130 (2007) with further guidance what further efforts needs to be encouraged

- Appropriate proposals for further actions in order to stop continuing pressure on birds and habitats in the area of Kaliakra and Dobrudzha.

- Support Bulgaria to investigate the full scale of impacts on birds in Coastal Dobrudzha region by ensuring independent study and analysis:

  - All the existing raw data collected by the end of 2015 during the monitoring of operational wind farms (St Nikola, Kaliakra, EVN) , including the radar data;

  - Breeding and migratory birds – mortality, displacement and barrier effect (year 2016)


Thank you!