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# Birds and high voltage (HV) overhead lines – Elia's environmental policy

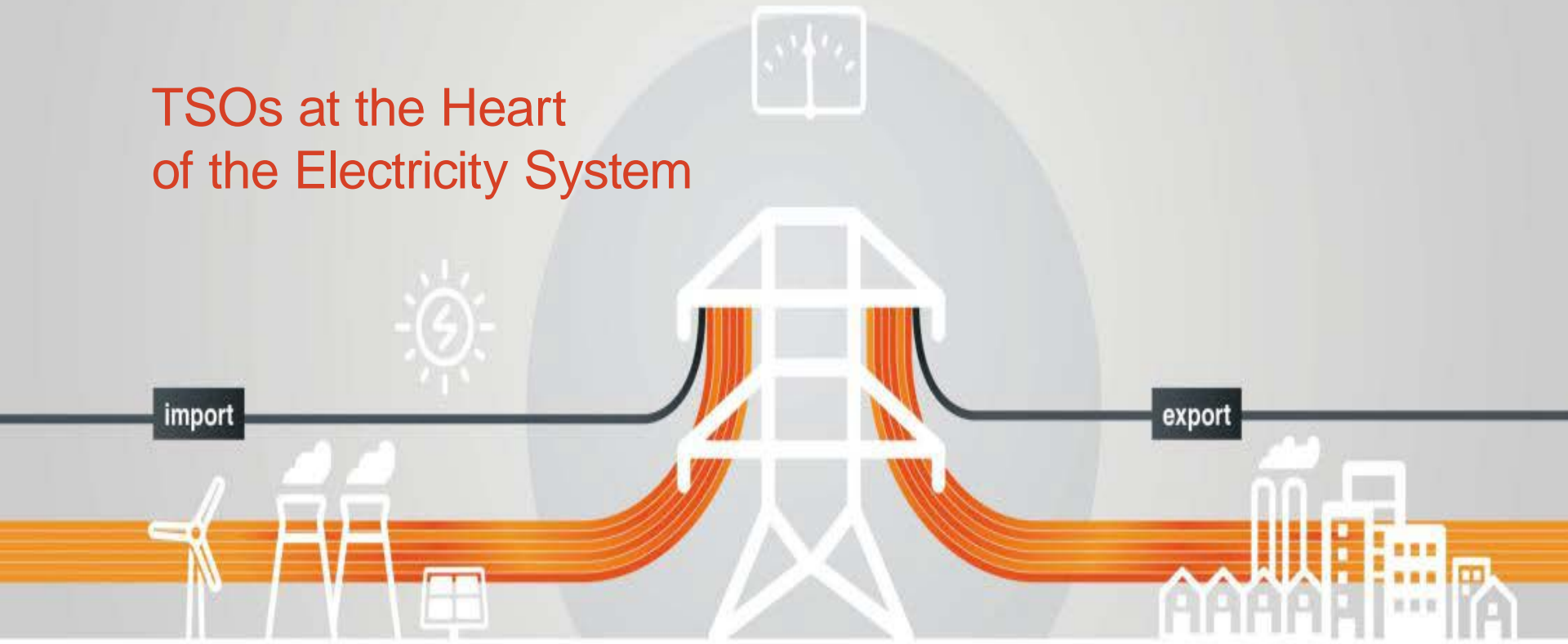
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# TSOs at the Heart of the Electricity System



## Producers

Electricity is produced from conventional and renewable energies.

## Transmission System Operators

Ensure that electricity arrives from the producer to the consumer via the distribution system operators.

## Consumers

Use the electricity fed by the producer into the power transmission grids.

# Facts & Figures 2015: Elia

## Top 5 Player in the EU TSO Business



**11 million**

residents covered



**30,528**

**km<sup>2</sup>**  
covered



**8,432 km**

of overhead lines and cables



**600**

substations



**22,000**

transmission  
towers



**12,696**

**MW**  
maximum load



**1,229**

employees



**23,000**

Interventions on the grid

# Introduction

## **Environmental policy :**

- CSR : protection of nature and biodiversity as good as possible
- Nature legislation : to be respected of course
- Trying to improve acceptance of 5.700 km of HV overhead lines

- 1. Policy marking of HV overhead lines**
2. Policy to avoid working during nesting periods
3. Policy placing of nests
4. Policy keeping birds away of installations

# 1. Policy marking – 1st study 2011 - 2012

Elia, together with NGO's Natagora, AVES, Vogelbescherming Vlaanderen, and Natuurpunt

Based on cartographic information on distribution of species, migration, feeding areas, and information on bird victims near overhead HV lines

Expertise of NGO's

Data treated as facts

Based on a map of the overhead network in Belgium, delivered by Elia

Table 3: Bird with a high (>2%) proportion of power lines victims, data from 2010 and 2011 (Vogelbescherming VL) – see also Annex 2.

Dutch name	Scientific Name	Number of power line victim	Total number of victim	Proportion by power lines
Kleine Zwaan	<i>Cygnus columbianus</i>	1	1	100.0%
Kolgans	<i>Anser albifrons</i>	1	2	50.0%
Tafeleend	<i>Aythya ferina</i>	1	2	50.0%
Regenwulp	<i>Numenius phaeopus</i>	1	3	33.3%
Roerdomp	<i>Botaurus stellaris</i>	2	10	20.0%
Wilde Zwaan	<i>Cygnus cygnus</i>	1	8	12.5%
Houtsnip	<i>Scolopax rusticola</i>	29	241	12.0%
Rietgans	<i>Anser fabalis</i>	1	9	11.1%
Grauwe Gans	<i>Anser anser</i>	5	46	10.9%
Grote Mantelmeeuw	<i>Larus marinus</i>	2	24	8.3%
Havik	<i>Accipiter gentilis</i>	2	26	7.7%
Knobbelzwaan	<i>Cygnus olor</i>	9	153	5.9%
Koekoek	<i>Cuculus canorus</i>	1	17	5.9%
Sperwer	<i>Accipiter nisus</i>	19	412	4.6%
Brandgans	<i>Branta Leucopsis</i>	1	22	4.5%
Torenvalk	<i>Falco tinnunculus</i>	6	140	4.3%

“Reducing bird mortality with high and very high voltage power lines in Belgium”

# 1. Policy marking – 1st study 2011 - 2012

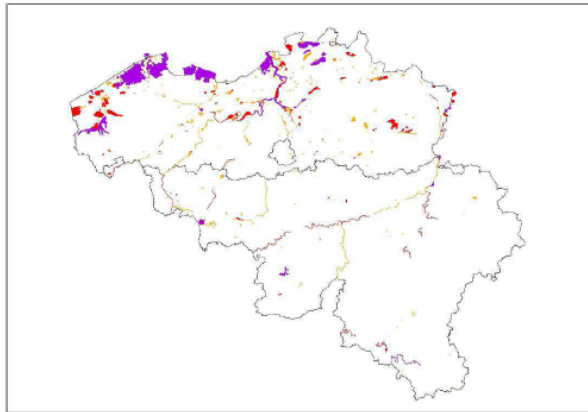


Figure 3 : Critical areas for wintering waterbirds in Belgium (in violet "Very Important Sites", in red "Important sites" and in orange "Fairly Important Sites").

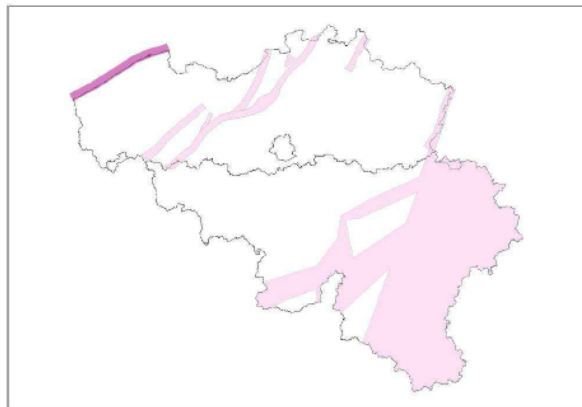


Figure 8 : Proposed migration corridor map for Belgium. In violet, the major corridor of the migrants following the coastline and in pink, major inland migration corridors defined by Everaert et al (2011) and this work.

quantities,  
rareness,  
behaviour,

...

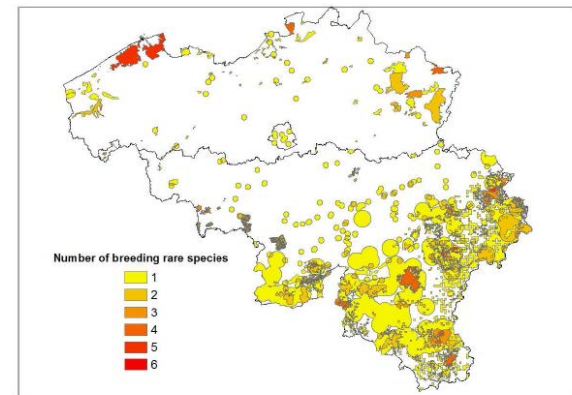


Figure 6 : Sites with sensitive rare breeding species, with an indication of the number of rare breeding species

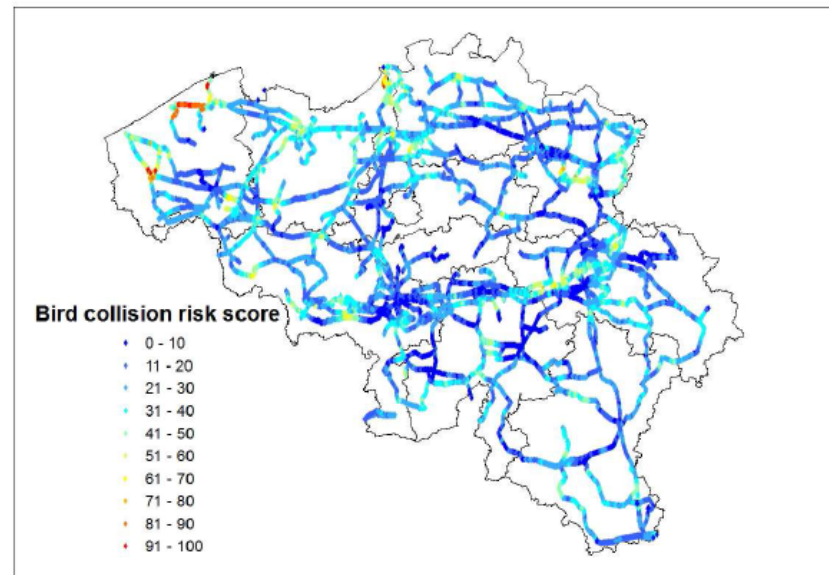


Figure 13 : Map of the current ELLA network of power lines. Pylons are coloured according to their Priority scores. Most of the high priority lines are close to waterbird sites, and the higher risk is clearly located in the Folders area and Uzer valley, but also around Harchies marshes and the lower Meuse valley.

**“Reducing bird mortality with high and very high voltage power lines in Belgium”**

# 1. Policy marking – 1st study 2011 – 2012

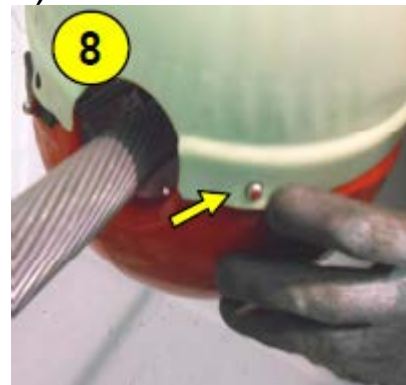
*Table 10 : Frequency distribution of ELIA pylons according to their dangerousness toward birds.*

Priority score class	Number of pylons	% of the grid
0 to 10	3015	13.2%
11 to 20	6608	29.0%
21 to 30	7066	31.0%
31 to 40	3751	16.5%
41 to 50	1567	6.9%
51 to 60	494	2.2%
more than 60	265	1.2 %

**“Black lines” :**  
**3,4 %, or**  
**about**  
**200 km of**  
**5.700 km**

## Proposed solutions :

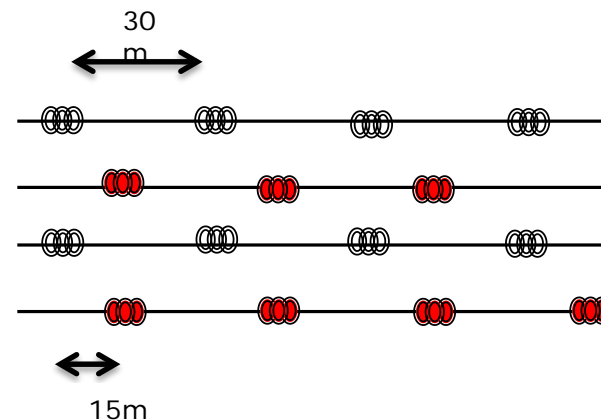
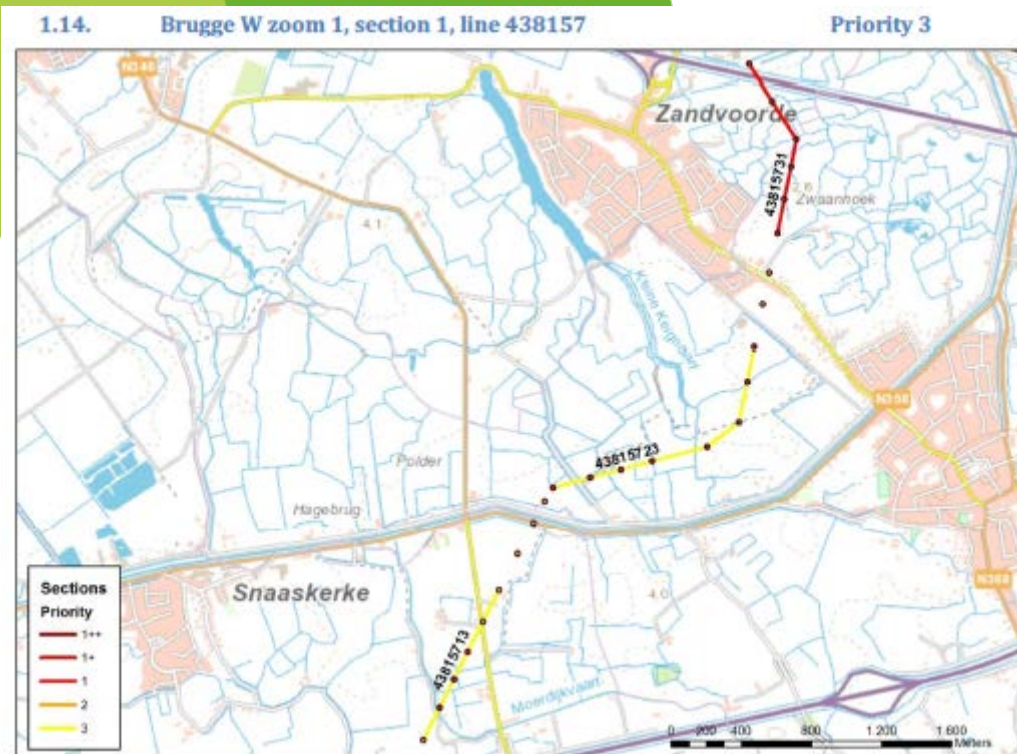
- Undergrounding the net
- Eliminating top earth wires (are thinnest)
- Habitat management (“move the birds”)
- Marking of wires :
  - balls,
  - curls,
  - “Firefly”
  - “Bird flaps”





# 1. Policy marking – 2nd study 2014 - 2015

Studying by bird experts, 135 concerned net parts (species, behaviour, ...)



Consultancy on where and how to mark (what wires, what colour, distance, ...)



# 1. Policy marking – general principles

**No legal obligation**

**Marking for commercial reasons : to be paid by demander**

**Marking only when line is out of duty (for a work or a project)**

**Safety prevails (personnel has to work on these wires)**

**No marking if too steep or too dangerous (too high)**

**Important difference in price :**

in project (the wires have to be placed) : 7 à 13 k€/ km

in work (on existing wires) : 30 à 35 k€/ km

**Aviation balls and distance keepers also function as markers**

# 1. Internal policy of marking – how ?

## **New overhead line :**

- Use 2012 study
- Ask for bird expert consultancy

## **Existing overhead line in project (change of wires) :**

- Use 2015 study and bird expert consultancy if necessary (update ?)
- Often imposition by authorizing administration

## **Existing overhead line with no project**

- Use 2015 study
- Imply planned works of next year
- Foresee budget !
- Planned to take about 10 years to mark all “black lines”

**Update of cartographic information and follow-up of know-how in population, migration, behaviour, ... (external expertise)**



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Thank you!

Questions welcome



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