



# Overview of sources of pollution to the Vistula Lagoon

MANTRA-EAST Vistula Lagoon Workshop

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# Pollution sources

- **Diffuse sources**

- Agriculture
- Forests
- Precipitation
- Linear sources

- **Point sources**

- WWTPs
- Industries
- Sewage collectors
- **Rural homesteads**



# Pollution point sources

- **DIRECT:**

- 4 Polish WWTPs
- Sewage collector in Kaliningrad
- Rivers entering the Lagoon

- **INDIRECT:**

- All WWTPs located in the catchment (discharging to the rivers) – **point s.**
- Homesteads – **diffuse**
- Farms – **diffuse**

# DIRECT Point sources in the Vistula Lagoon catchment

- Russian part

- Sewage collector

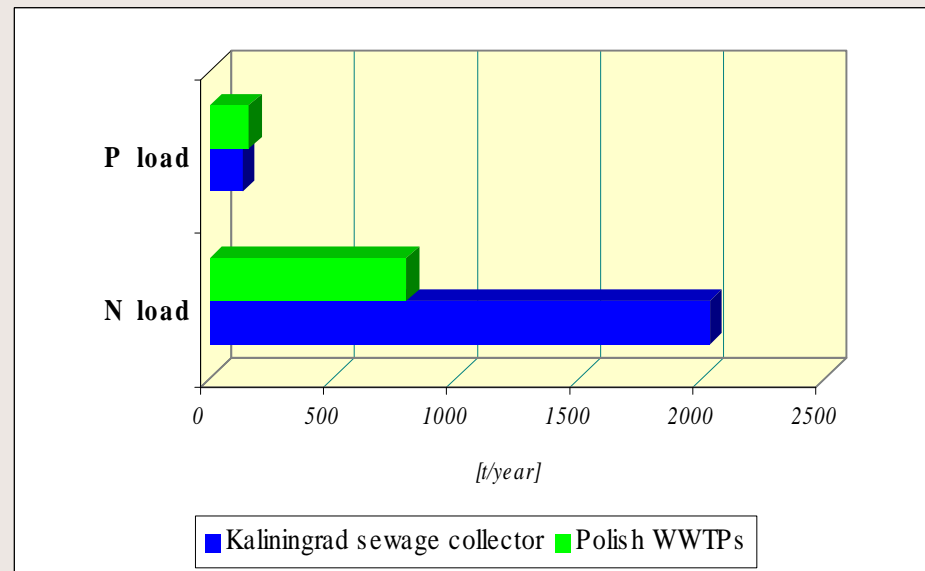
- Polish part:

- WWTP in Tolkmicko

- WWTP in Elblag

- WWTP in Krynica Morska

- WWTP in Piaski



# Rivers entering the Vistula Lagoon

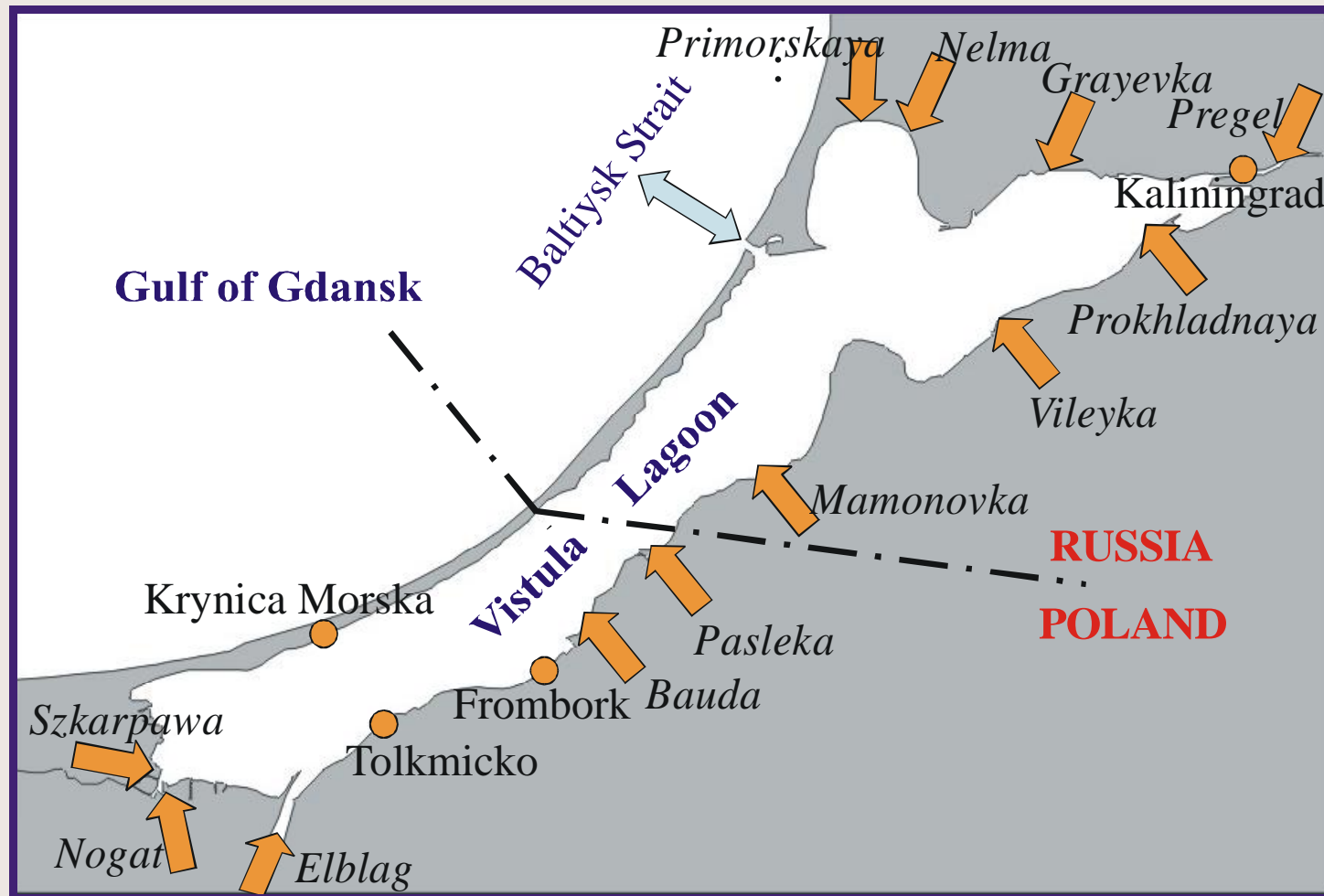
- **Russian**

- Pregel
- Prokhlodnaya
- Mamonowka
- Primorskaya
- Graevka
- Nelma
- Vileyka
- Primcanal

- **Polish**

- Pasleka
- Elbląg
- Nogat
- Bauda
- Szkarpawa
- Narusa
- Olszanka, Grabianka, Stradanka, Suchacz, Kamionka, Dabrowka, Cieplicowka, Wisla Krolewiecka

# DIRECT POLLUTION SOURCES





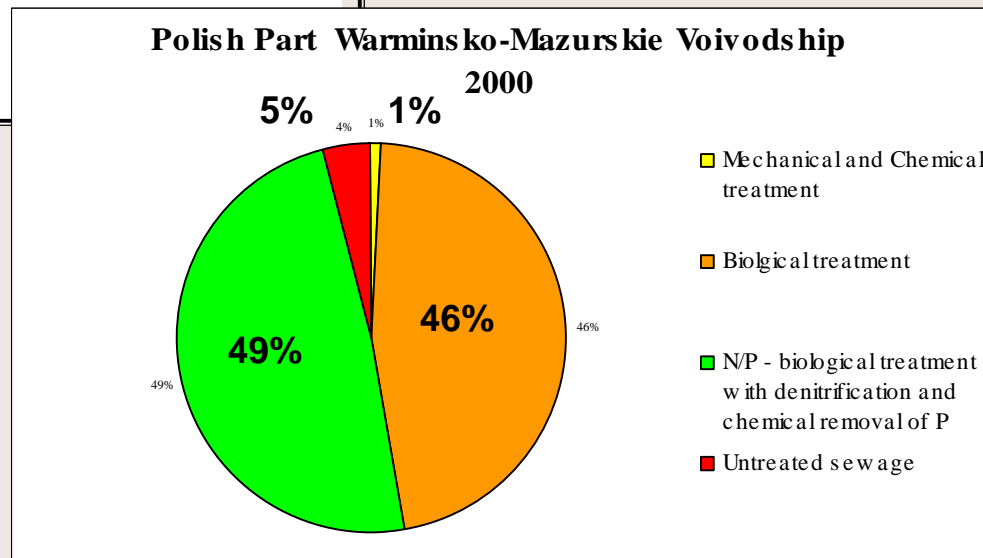
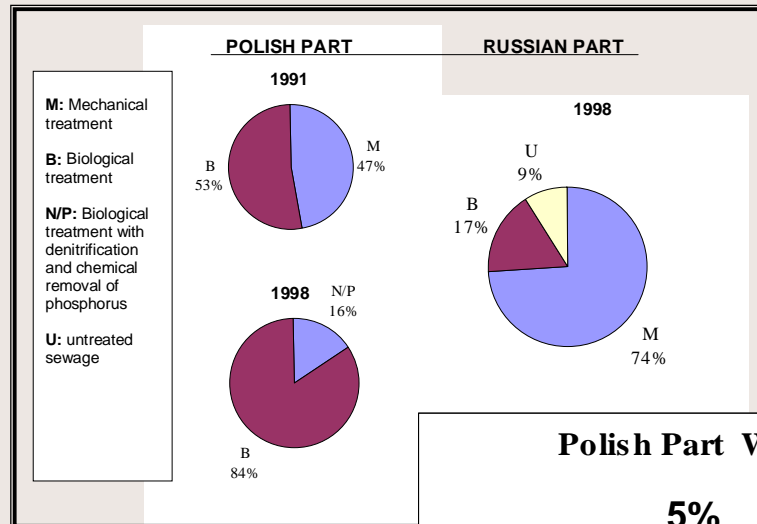
# INDIRECT Point sources in the Vistula Lagoon catchment

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**Total number** of WWTPs and other 'indirect'  
point sources in the Polish part of the  
catchment - **74**

of which WWTPs - **48**

# Waste water treatment





# INDIRECT DIFFUSE POLLUTION SOURCES

Nutrients loading of the river catchment depends on:

- ∅ **Soil type**
- ∅ **Land use structure**
- ∅ **Agricultural activity in the region**
- ∅ **Climat conditions**

# INDIRECT DIFFUSE POLLUTION SOURCES

Land use	km <sup>2</sup>	% of total area
Total area of region	6547,00	100.00
Arable land	4196.63	64.1
Forests	1198.10	18.3
Inland waters	543.40	8.3
Uncultivated natural areas	150.58	2.3
Urban areas and infrastructure	392.82	6.0

**LAND USE**

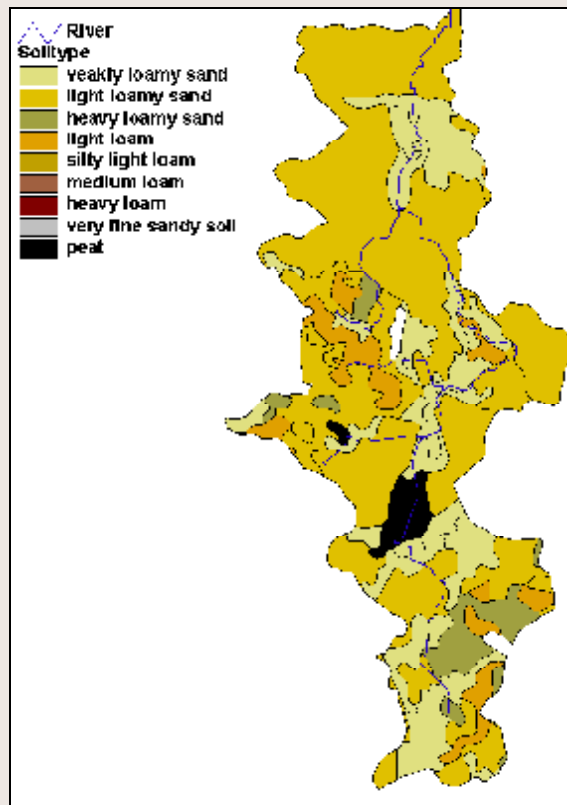
**POLISH PART**

Land use	km <sup>2</sup>	% of total area
Total area of region	15 125	100
Arable land	8 153	50.4
Forests	2 288	11.6
Waters: lagoons, rivers, lakes, streams and ponds	1 991	13
Pastures	3 945	22.5
Urban areas and infrastructure	827	2.5

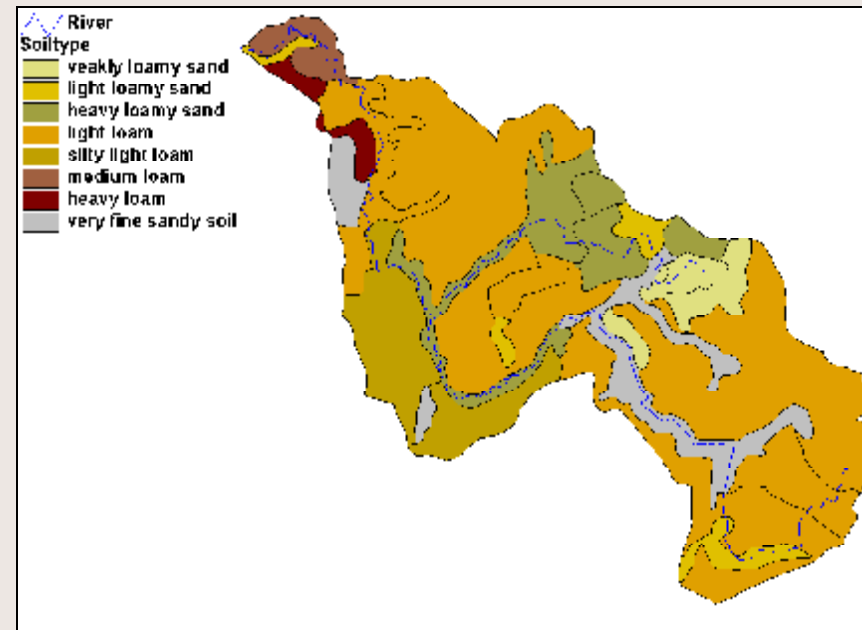
**RUSSIAN PART**

# INDIRECT DIFFUSE POLLUTION SOURCES

## SOIL TYPE

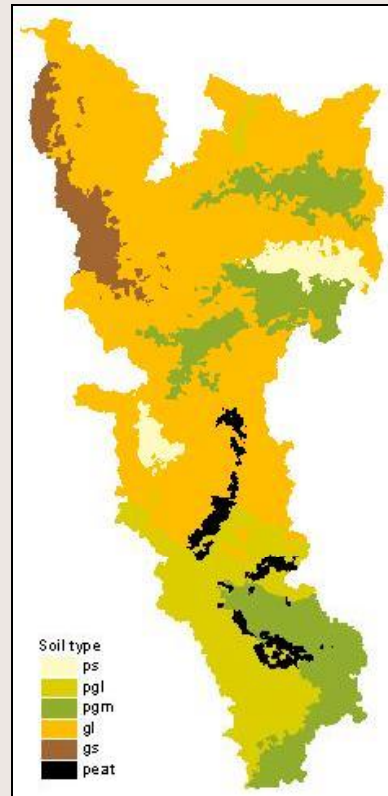


Laznica



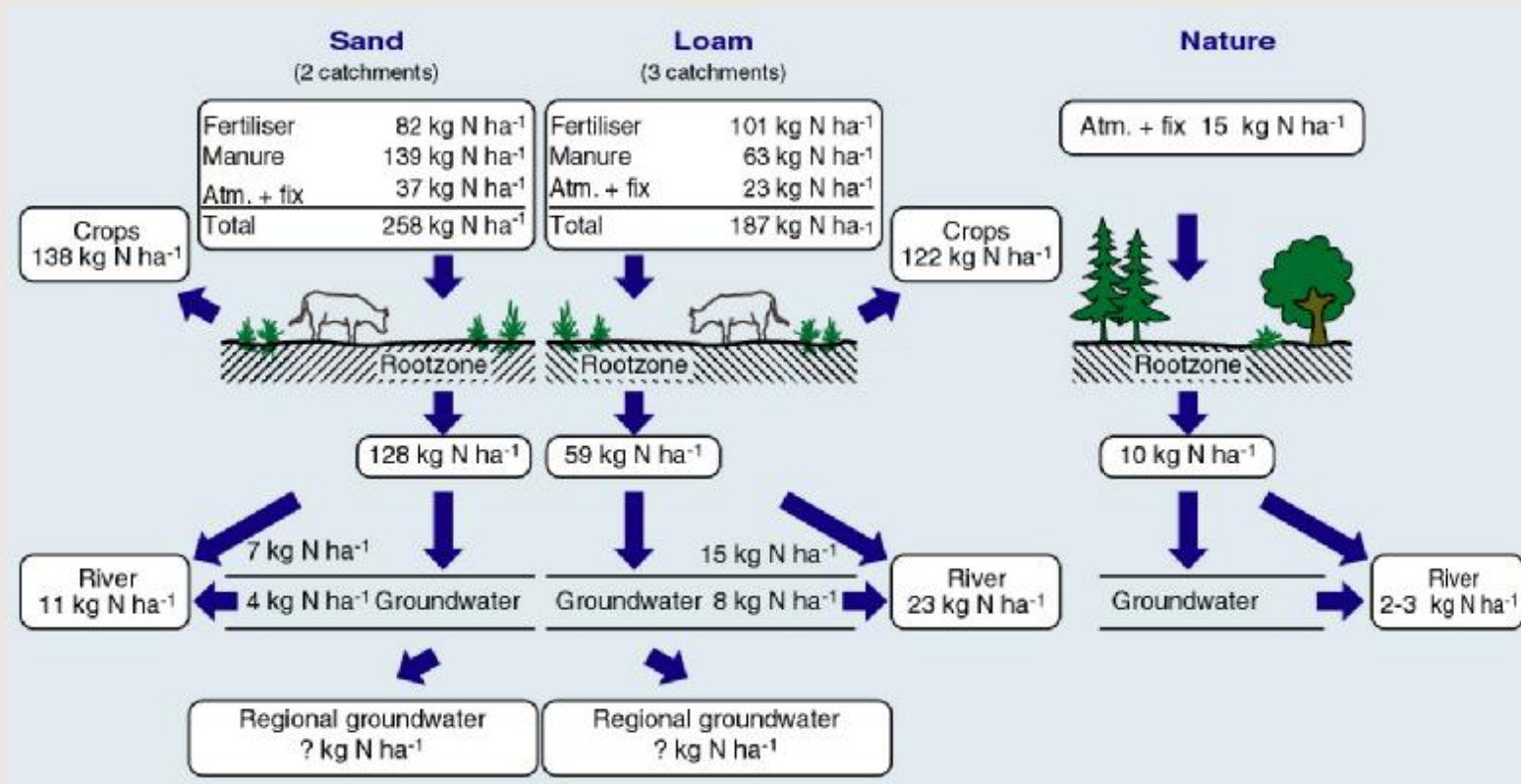
Mlynarka

# INDIRECT DIFFUSE POLLUTION SOURCES



Soil type	Area, ha	% of total area
ps – weakly loamy sand	8489	4
pgl – light loamy sand	33609	15
pgm – heavy loamy sand	41918	18
gl – light loam	131172	57
gs – medium loam	11332	5
org - peat	5311	2

# Hydrological-Nitrogen pathway, DK (1996/97 – 1999/2000)

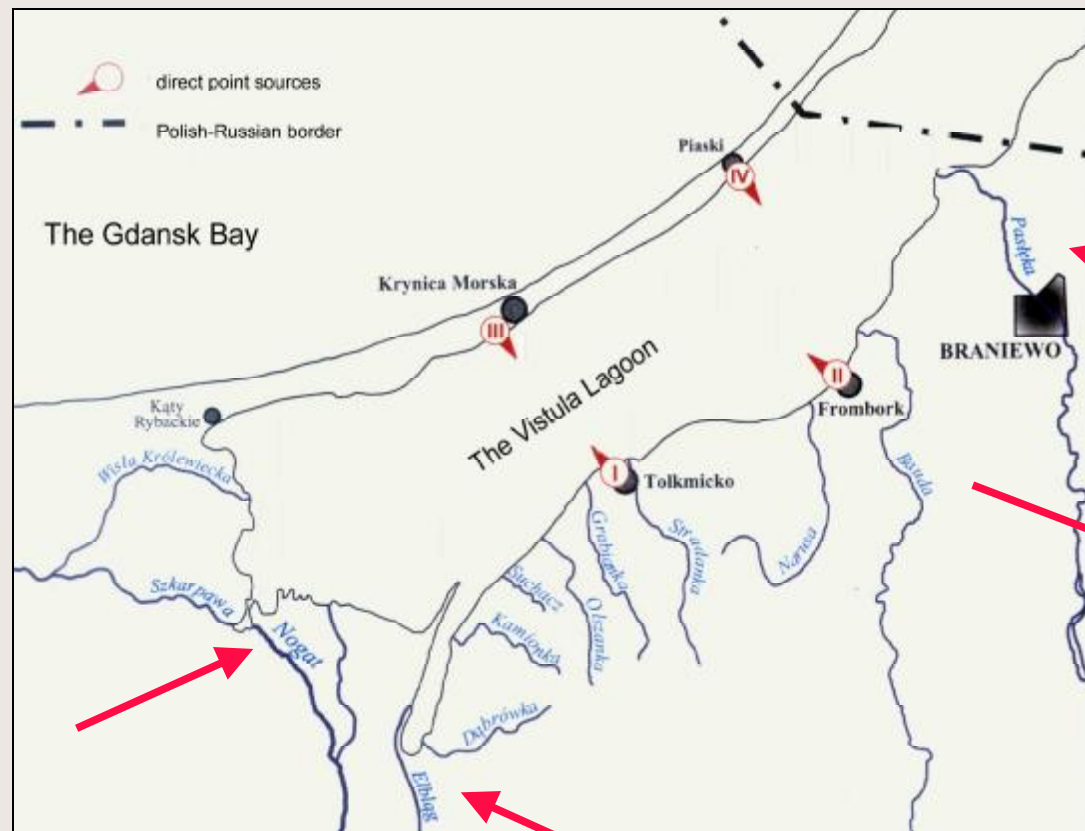


A graphic of a spiral-bound notebook with a brown cover and a white page. The spiral binding is on the left side. The text is centered on the page.

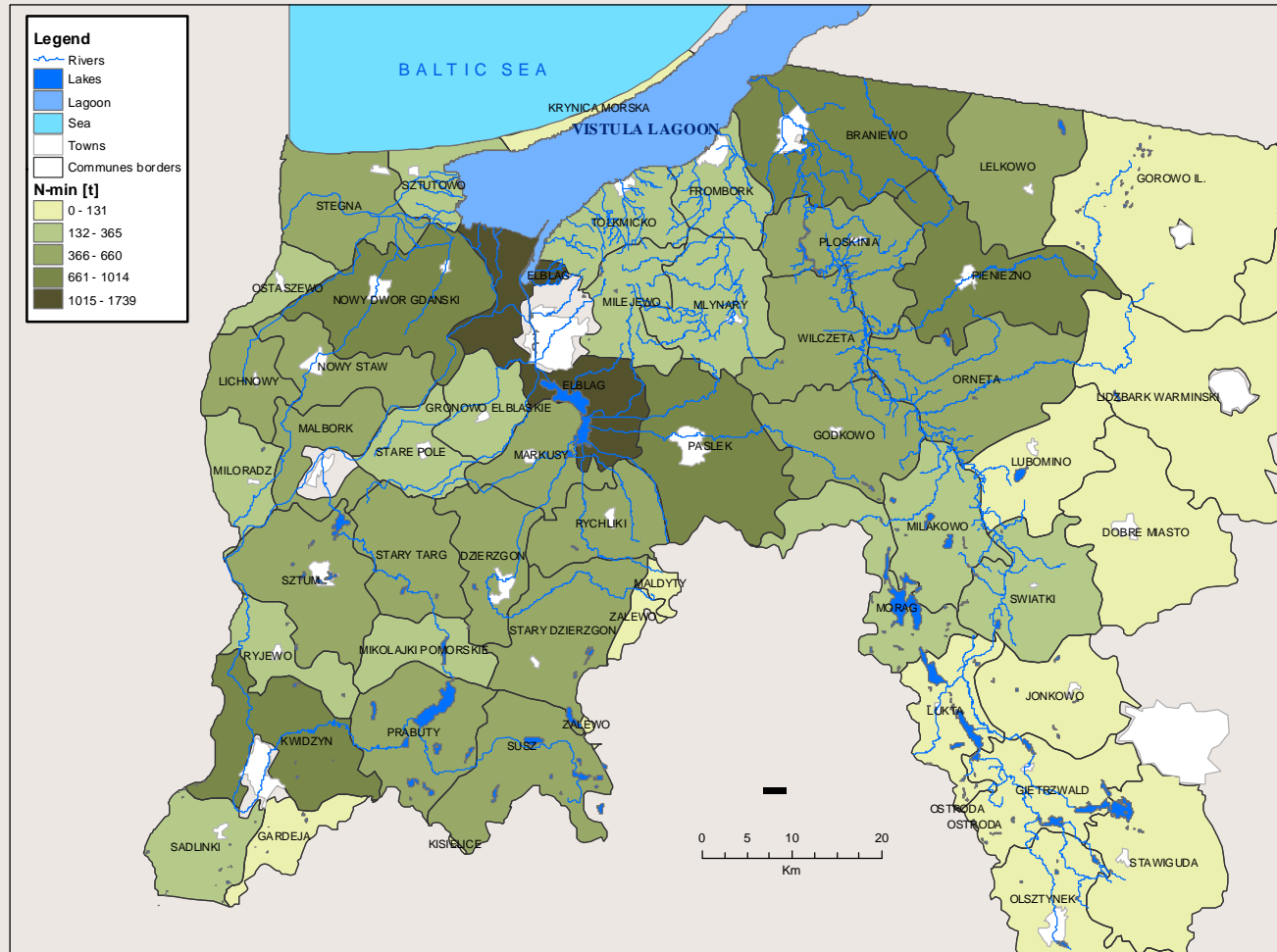
# Controlling Non-point Pollution Pasleka Basin Pilot Study

**Agricultural load from  
Polish catchments  
is relative low**

# INDIRECT DIFFUSE POLLUTION SOURCES

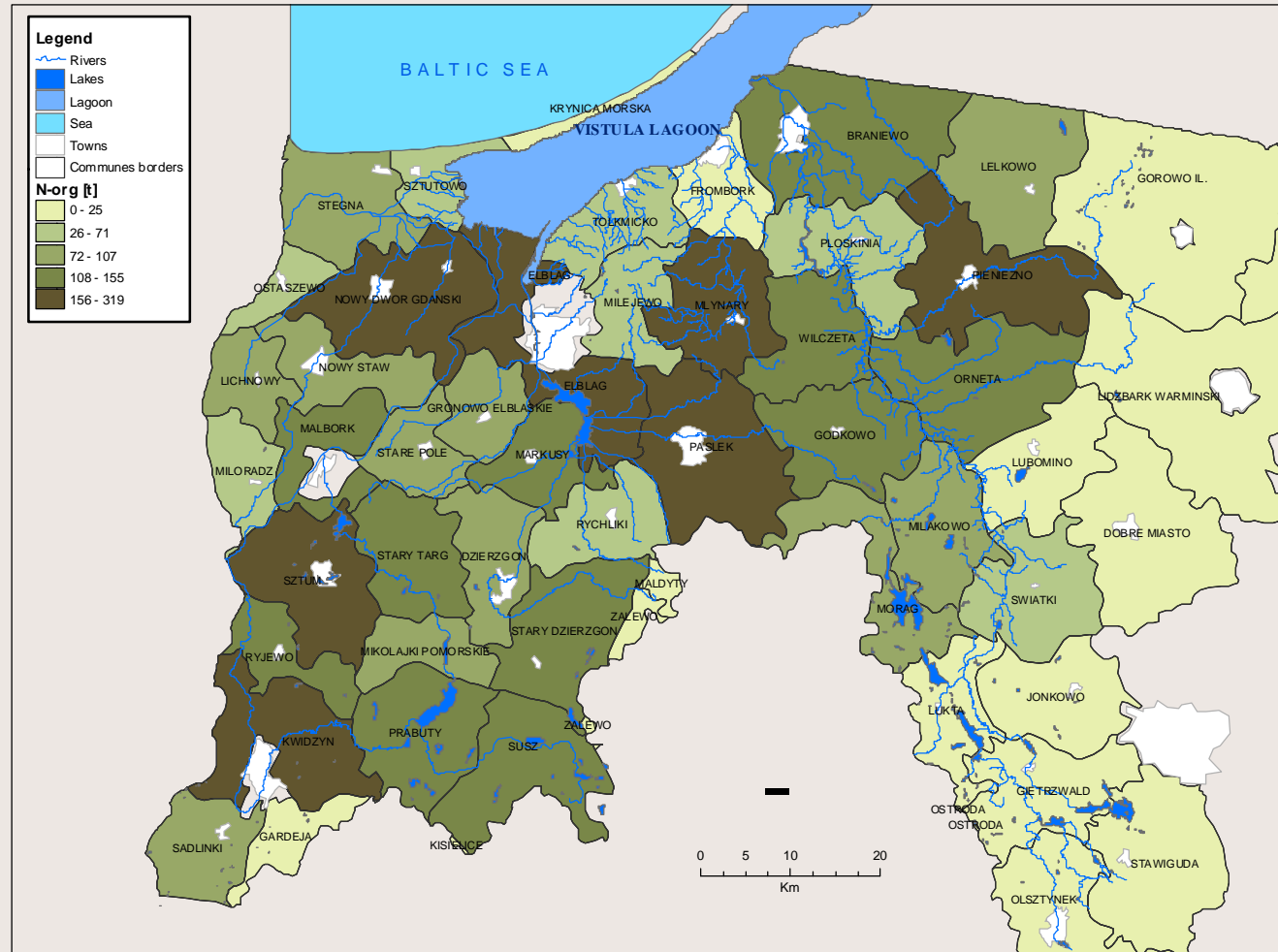


# INDIRECT DIFFUSE POLLUTION SOURCES

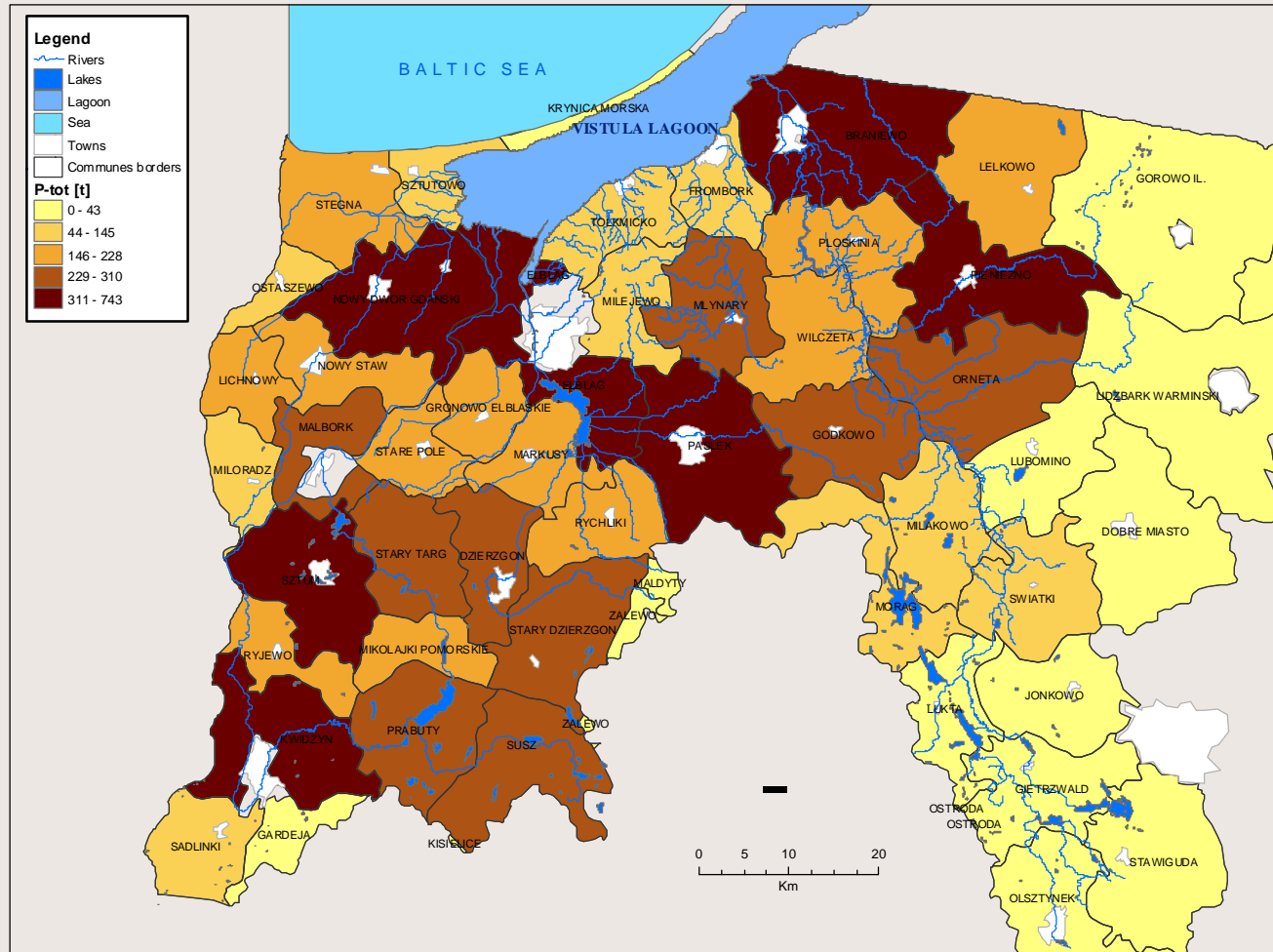




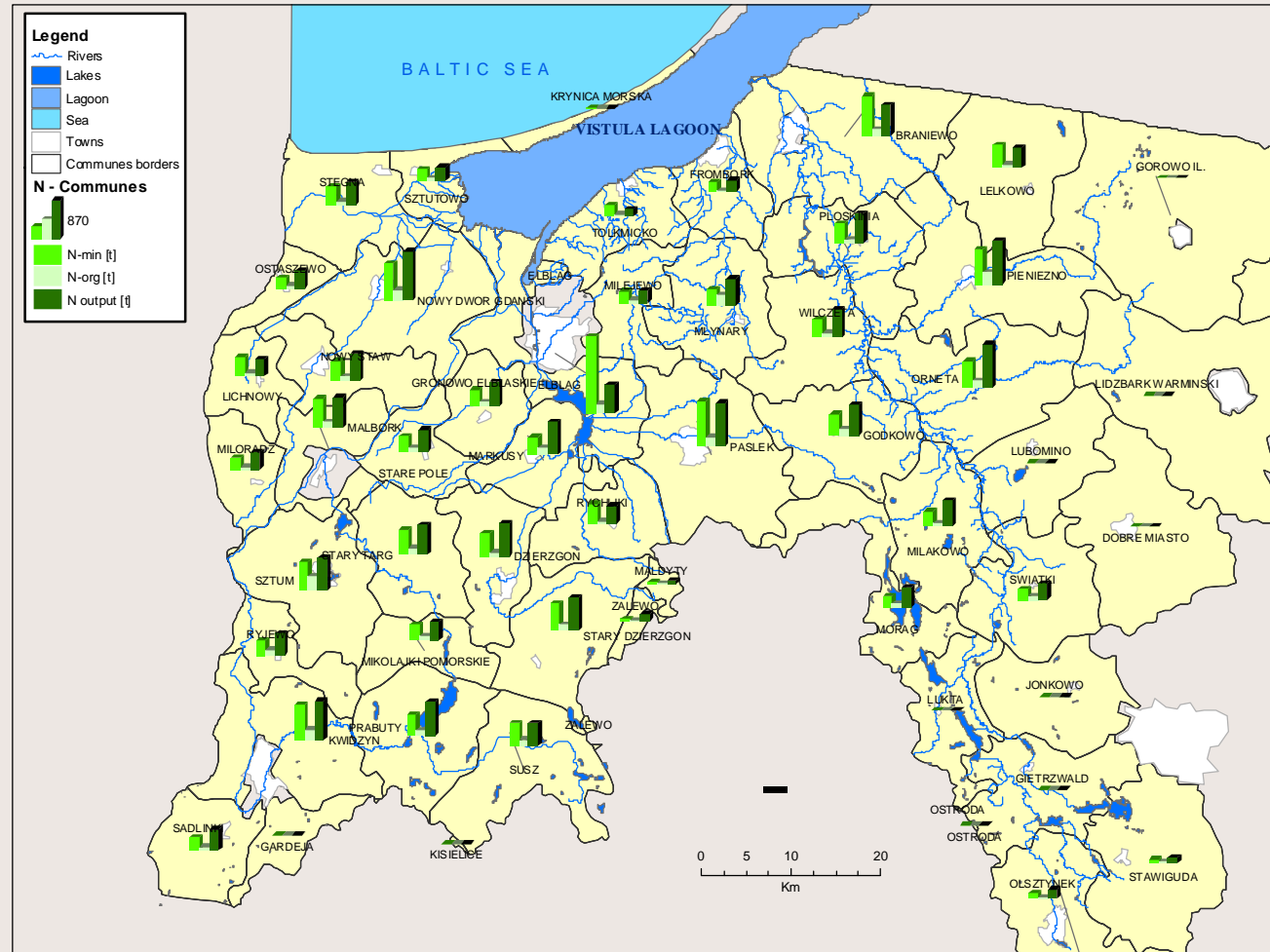
# INDIRECT DIFFUSE POLLUTION SOURCES



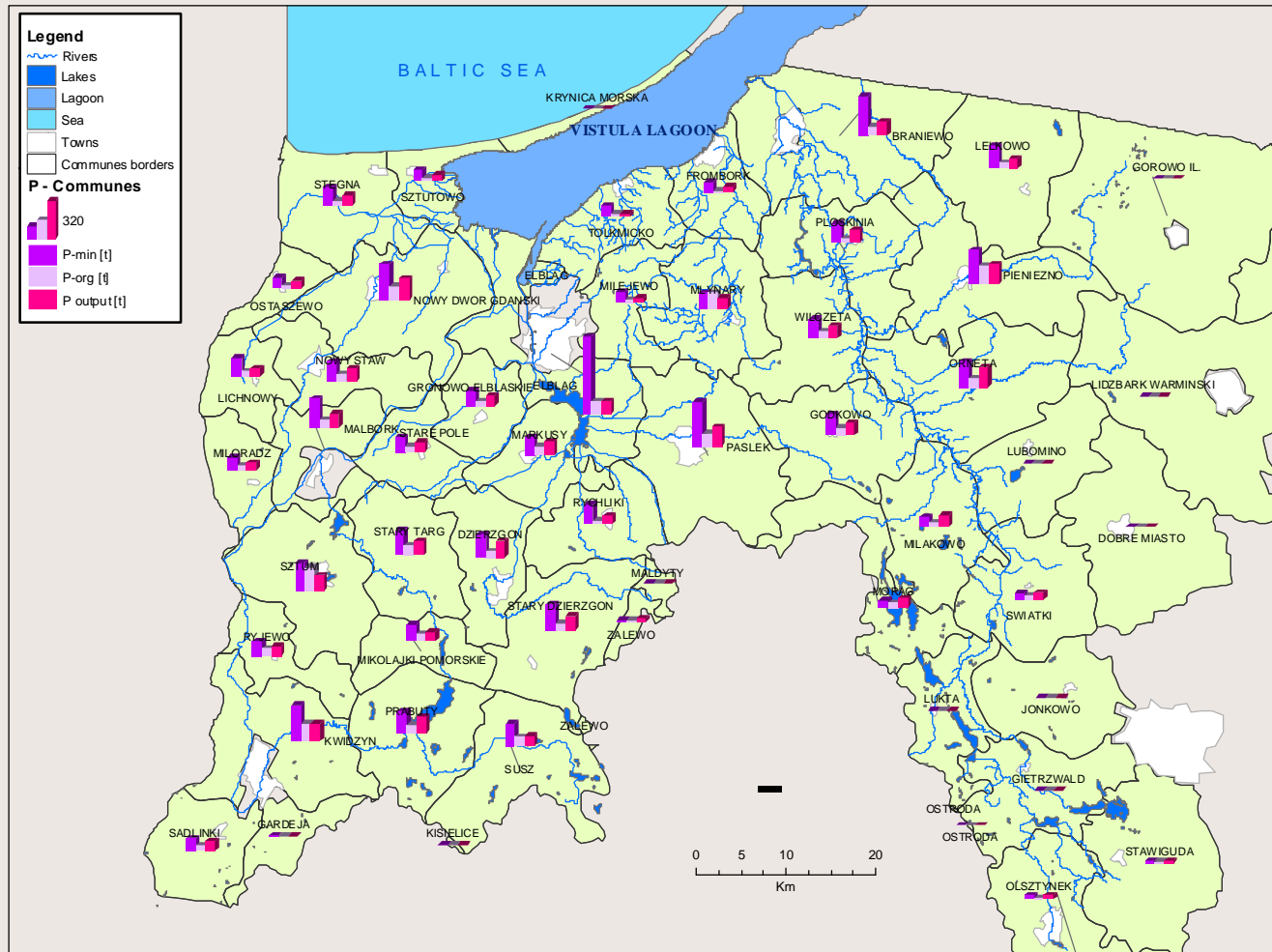
# INDIRECT DIFFUSE POLLUTION SOURCES



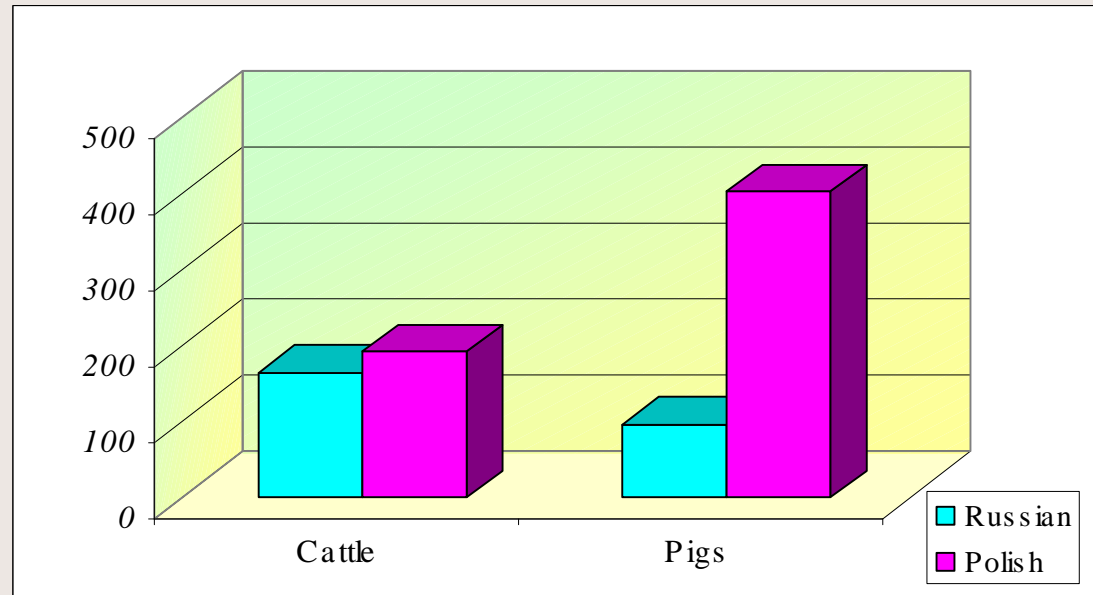
# INDIRECT DIFFUSE POLLUTION SOURCES



# INDIRECT DIFFUSE POLLUTION SOURCES



# INDIRECT DIFFUSE POLLUTION SOURCES



Livestock [ $10^3$  units]  
in Russian (2000) and Polish (1996)  
part of the Vistula Lagoon catchment

# Pollution load 'shares'

<b>TOTAL LOAD</b>	<b>100% N</b>	<b>100% P</b>
<b>Diffuse load</b> SUM of: Forests Agriculture Precipitation Rinsed of from rural homesteads	<b>65% of N in TOTAL LOAD</b>  <b>60% of diffuse N load origin from agriculture</b>	<b>35% P in TOTAL LOAD</b>  <b>50% of diffuse P load origin from agriculture</b>
<b>Agriculture</b>	<b>37% of TOTAL LOAD</b>	<b>12% of TOTAL LOAD</b>

# LOADS in 2000

from rivers entering the Vistula Lagoon

[ t/year]	Pasleka	Bauda	Elblag	Nogat	Pregel	Mamonovka	Prochladnaya +Vilejka	Nelma
Total N	1769.13	242.56	2536.56	1261.61	4720.07	314.26	719.45	96.17
Total P	144.03	17.62	235.75	50.13	131.88	14.00	25.09	4.29
Diffuse N	1149.94	157.67	1648.77	820.05	3068.04	204.27	467.64	62.51
Diffuse P	50.41	6.17	82.51	17.55	46.16	4.90	8.78	1.50
PointS N	619.20	84.90	887.80	441.56	1652.02	109.99	251.81	33.66
PointS P	93.62	11.45	153.24	32.58	85.72	9.10	16.31	2.79
Agriculture N	689.96	94.60	989.26	492.03	1840.83	122.56	280.58	37.51
Agriculture P	25.21	3.08	41.26	8.77	23.08	2.45	4.39	0.75

# LOADS in 2000

## from rivers entering the Vistula Lagoon

LOAD	[tons/year]
<b>SUM of all rivers loads entering the Vistula Lagoon</b>	
Total N	11659.81
Total P	622.77
<b>Polish point sources (WWTP directly to the Lagoon)</b>	
Total N	800
Total P	160
<b>Kaliningrad sewage collector (directly to the Lagoon)</b>	
Total N	2031.60
Total P	135.24
<b>TOTAL LOAD TO THE VISTULA LAGOON</b>	
<i>Total N</i>	14 491.41
<i>Total P</i>	918.01



A spiral-bound notebook with a light beige, textured cover and a dark brown border. The metal spiral binding is on the left side.

**FIN**

*Thank you very much !*