SEEA-EEA Ecosystem Extent Account for the Netherlands

Patrick Bogaart
Deirdre Bosch; Corine Driesen; Linda de Jongh; Maarten Reiling

Identifying Ecosystem Types by linking local Nature management types to IUCN GET

IUCN			NL Ecosystem Types		Nature Management Types	EUNIS Habitat types
Realm	Biome	Functional group	2006/2013	2018	(Eng)	(Eng)
Terrestrial	T1 Tropical-subtropical forests	(none)				
	T2 Temperate-boreal forests & woodlanc	T2.1 Boreal and temperate montane forests and woodlands				
		T2.2 Temperate deciduous forests	*21 Deciduous forest*	***Semi-natural forest***	N14.03 Carpinus/Fraxinus forest	9160 : Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpini
			11 Coastal dunes (veg.)		N15.01 Dune forests	2180 : Wooded dunes of the Atlantic, Continental and Boreal region
			23 Mixed forest		N15.02 Pine/oak/beech forest	9190 : Old acidophilous oak woods with Quercus robur on sandy plains
						9120 : Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the
						9110 : Luzulo-Fagetum beech forests
		T2.3 Oceanic temperate rainforests				
		...				
	T3 Shrublands & shrubby woodlands	T3.1 Seasonally dry tropical shrublands				
		T3.2 Seasonally dry temperate heaths and shrublands				
		T3.3 Cool temperate heathlands	24 Heathland	**Dry heath**	N07.01 Dry heathland	2310 : Dry sand heaths with Calluna and Genista
						2320 : Dry sand heaths with Calluna and Empetrum nigrum
						4030 : European dry heaths
						5130 : Juniperus communis formations on heaths or calcareous grasslands
			25 Driftsand	**Driftsand**	N07.02 Inland dunes	2330 : Inland dunes with open Corynephorus and Agrostis grasslands
		T3.4 Rocky pavements, screes and lava flows				
	T4 Savannas and grasslands	T4.1 Trophic savannas				
		...				
		T4.5 Temperate grasslands	*27 Semi-nat. grasslands*	**Semi-natural grasslands**	N10.01 Wet poor meadows	6410 : Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion ca
						7140 : Transition mires and quaking bogs
						7230 : Alkaline fens
					N10.02 Moist hay meadows	6510 : Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)
~						6410 : Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion ca
						7140 : Transition mires and quaking bogs
						7230 : Alkaline fens
					N11.01 Dry poor meadows	6210 : Semi-natural dry grasslands and scrubland facies on calcareous substrates (Fe
						6130 : Calaminarian grasslands of the Violetalia calaminariae
						6230 : Species-rich Nardus grasslands, on silicious substrates in mountain areas (and
						6210 : Semi-natural dry grasslands and scrubland facies on calcareous substrates (Fe
					N12.02 Herb-rich grassland	6510 : Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)
						1330 : Atlantic salt meadows (Glauco-Puccinellietalia maritimae)
					N12.03 Arrhenatherum hay meadow	6510 : Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)
					N12.04 Saline and flooded grassland	1330 : Atlantic salt meadows (Glauco-Puccinellietalia maritimae)
						1310 : Salicornia and other annuals colonizing mud and sand

T7 Intensive land use systems	T7.1 Croplands	1 Annuals	**Cropland (intensive)**	–	
		2 Perennials	**Perennials (intensive)**	–	
	T7.2 Sown pastures and old fields	4 Pastures	**Pastures (intensive)**	–	
	T7.3 Plantations	*21 Deciduous forest*	**Production and other forest**	*N16.03 Dry production forest*	*9190 : Old acidophilous oak woods with Quercus robur on sandy plains*
					9120 : Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or I
		22 Needleleaf forest		*N16.04 Moist production forest*	*91E0 : Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)*
					9120 : Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or I
					9160 : Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli
					9190 : Old acidophilous oak woods with Quercus robur on sandy plains
	Txx Intensive horticulture	3 Greenhouses	**Greenhouses**		
		(none)	**Open-air container horticulture**		
	T7.4 Urban and infrastructure land	41 Residential	**Residential (urban)**		
			Residential (rural)		
		42-48 Offices and businesses	**Industrial/business parks**		
			Mining pits etc.		
		27 Public green space	**Public green space**		
			Sports park		
			Semi-public recreational		
			Recreation (accomodation)		
		45 Infrastructural / paved	**Infrastructure**		
		6 Farmyards and barns	**Residential (rural)**		
T8* Extensive land use systems	T8.1* Extensive croplands	1 Annuals	**Cropland (extensive)**	N12.05 Herb-rich cropland	
				A01.02 Croplands (fauna supporting)	
				A01.03 Geese foraging areas	
				A02.02 Croplands w. high floral value	
				A12.01 Croplands (breeding birds habitat)	
				A12.02 Croplands (winter birds habitat)	
				A12.03 Croplands (Hamster habitat)	
		2 Perennials	**Perennials (extensive)**	L01.09 Traditional orchards	
	T8.2* Extensive pastures	27 Semi-nat. grasslands	**Pastures (extensive)**	N13.01 Moist farmland bird grassland	
				N13.02 wintering migrant bird meadow	
				A01.01 Meadow birds	
				A01.03 Geese foraging areas	
				A01.04 Insect-rich grassland	
				A02.01 Pastures w. high floral values	
				A11.01 Meadow birds (open landscape)	
				A11.02 Meadow birds (reed, high veg.)	
				A11.03 Winter birds	
	T8.3* Extensive Plantations	*21 Deciduous forest*	***Semi-natural forest***	N17.02 Dry coppice	9190 Old acidophilous oak woods with Quercus robur on sandy plains
		22 Needleleaf forest			9120 : Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae
		23 Mixed forest			9110 : Luzulo-Fagetum beech forests
					2180 : Wooded dunes of the Atlantic, Continental and Boreal region
				N17.06 Moist coppice	91E0 : Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion) incanae, Salicion albae)
					91F0 : Riparian mixed forests of Quercus robur, Ulmus laevis and Ulmus minor, Fraxinus excelsior or Fraxinus angustifolia, a
					9160 : Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli
				N17.03 historical estate forest	
				N17.04 Duck decoys	
				N17.05 Willow coppice	91E0 : Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)
	T8.4* Other extensive rural	5 Field borders, hedgerows etc	**Hedgerows etc**	N12.01 flower dyke	
				L01.02 Tree hedge	
				L01.03 Alnus tree hedge	
				L01.05 Clipped hedgerow	
				L01.06 Shrub hedgerow	
				L01.07 Tree-lined lane	
		-		L01.08 Pollard tree	
		29 Other unpaved	**Fallow & other extensive use**		
				N12.06 Rough grass and shrubs	

Data Sources

- Digital topographic map 1:1
  - Baseline geometry
  - Land cover
  - Land use (selected uses)
- Nature:
  - Nature management types
- Agriculture:
  - Agricultural parcel registry
- Urban:
  - Large-scale topography
  - Public green
- Special topic maps
  - Salt marshes
  - WUR/PBL Nature map

General procedure

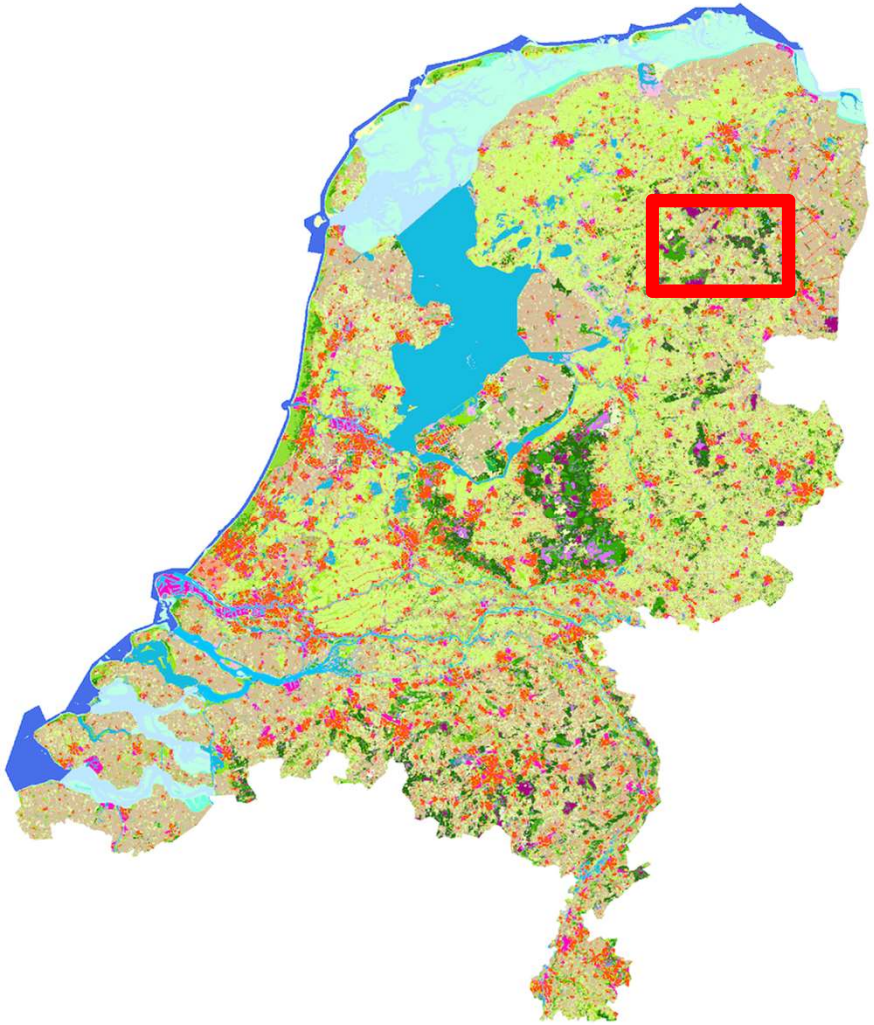
- Fully automated (ArcPython)
  - Custom algorithms for each ET
    - Both ‘vertical’ as ‘horizontal’
  - Processed in order of ecological quality
  - Assignment to small set of layers
  - Final stacking in interations reflecting ecologic quality

Terrestrial Ecosystem Types

Group	Ecosystem Type	Functional group	T2.1 Boreal and montane needle-leaved forest and woodland	T2.2 Temperate deciduous forests and shrublands	T3.2 Seasonally dry temperate heaths and shrublands	T3.3 Cool temperate heathlands	T3.4 Rocky pavements, screes and lava flows	T4.4 Temperate wooded savannas	T4.5 Temperate grasslands	T5.4 Cool temperate deserts	T7.1 Croplands	T7.2 Sown pastures and old fields	T7.3 Plantations	T7.4 Urban and infrastructure lands		Tally check	max	#candidate EFGs
Wet semi natural	Seminat. forest		0.2	0.8												1	0.8	2
	other forest		0.2	0.2									0.6			1	0.6	3
	tree lines			0.33									0.3			0.66	0.33	2
	Heathland					1										1	1	1
	Driftsand					0.2										0.2	0.2	1
	Seminat. Grassland							0.25	0.25			0.25				0.75	0.25	3
	Other unpaved															0	0	0
Agriculture	Cropland (intensive used)										1					1	1	1
	Cropland (extensive)										0.5					0.5	0.5	1
	Pasture (intensive)											1				1	1	1
	Pasture (extensive)								0.5			0.5				1	0.5	2
	Perennials (intensive)												0.8			0.8	0.8	1
	Perennials (extensive)												0.4			0.4	0.4	1
	Field borders										0.2	0.2				0.4	0.2	2
	Fallow										0.5	0.5				1	0.5	2
	Green houses													1		1	1	1
	Pots & container horticulture										0.2		0.2	0.2		0.6	0.2	3
Built-up	Built up (urban)													1		1	1	1
	Built up (rural)													1		1	1	1
	Industrial estate													1		1	1	1
	Other terrain use													1		1	1	1
	Infrastructure													1		1	1	1
	Sport park													1		1	1	1
	Public park													0.5		0.5	0.5	1
	Leisure													0.5		0.5	0.5	1
	Recreational residence													0.5		0.5	0.5	1

Orvelte:

- Intensive agr.
- Extensive agr.
- Nature.



Orvelte:

- Intensive agr.
- Extensive agr.
- Nature.

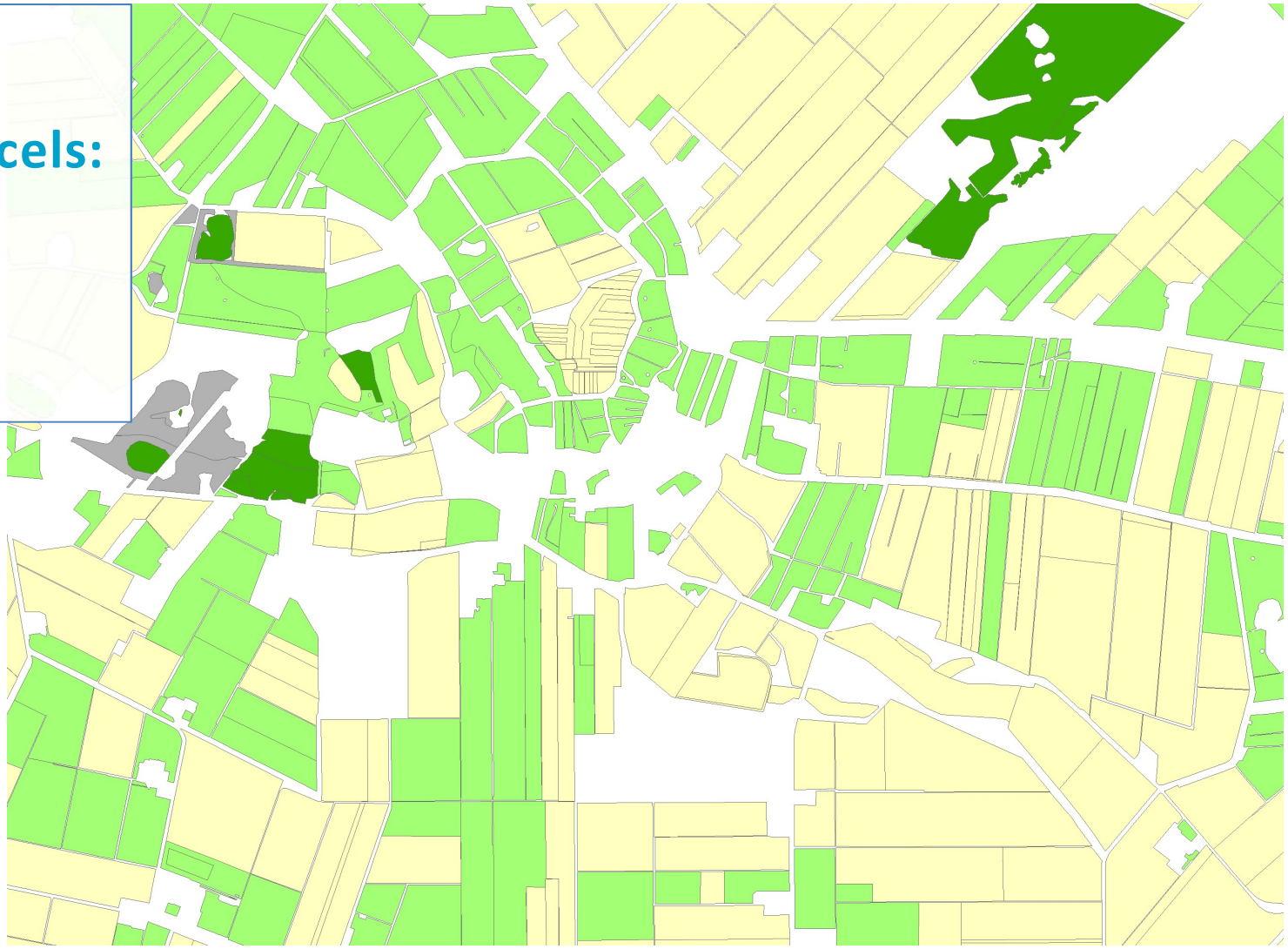
Orvelte:

Top10NL

Orvelte:

Agriculture parcels:

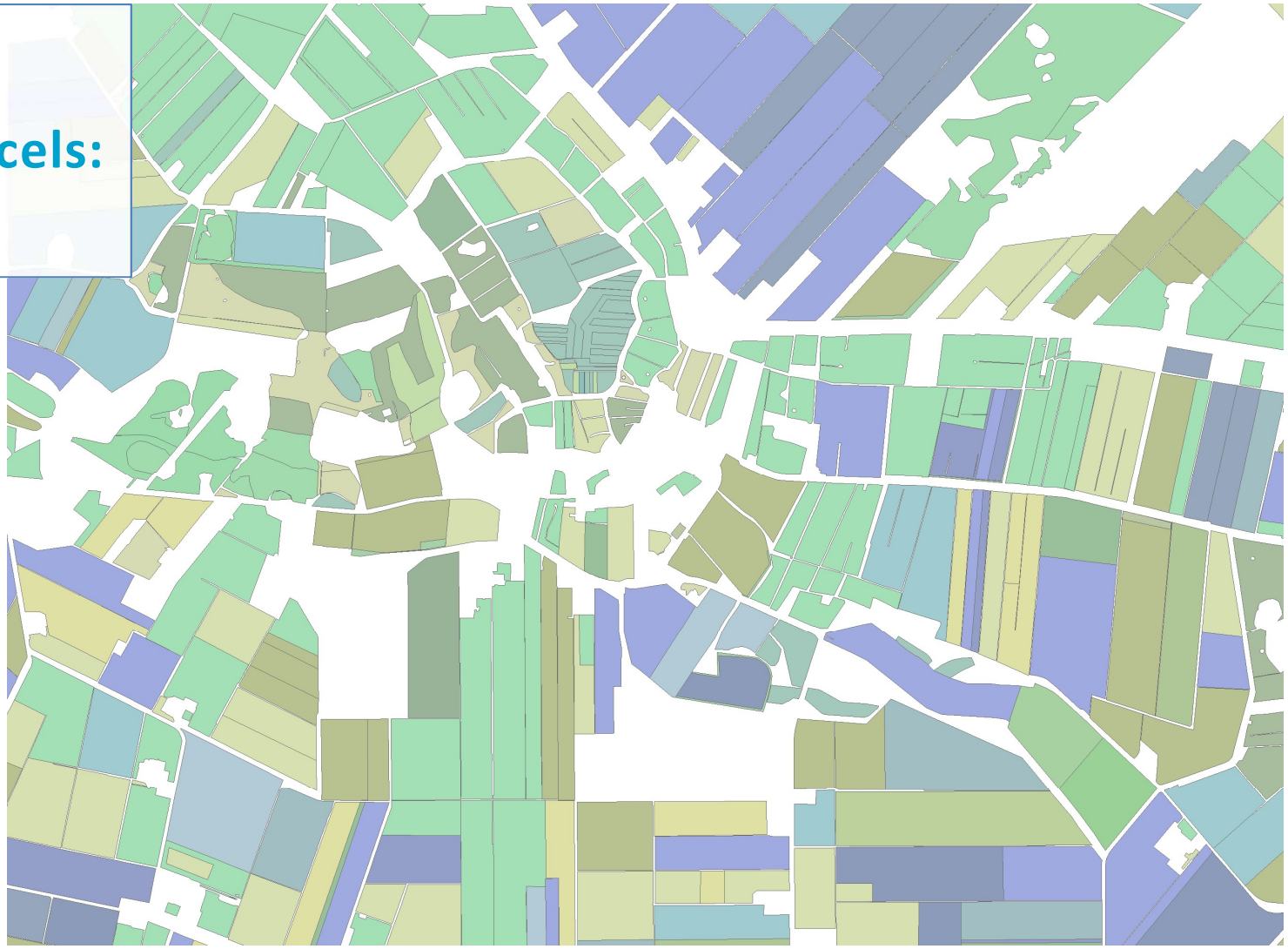
- Grassland
- Cropland
- Nature



Orvelte:

Agriculture parcels:

- Crop types



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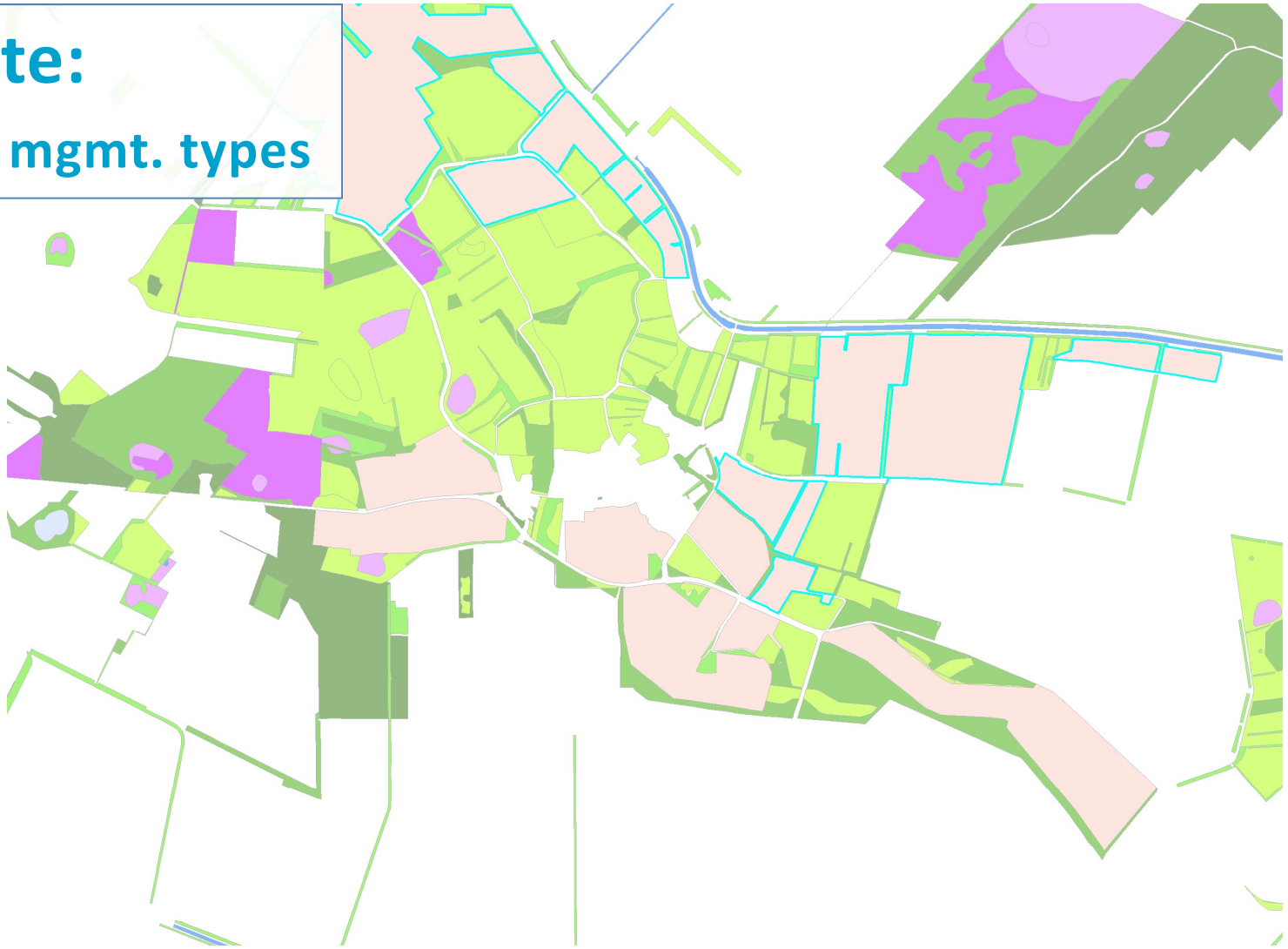
Nature mgmt. types



Orvelte:

Ecosystem Types

Haarlem:

Public green spaces;

Sport parks; etc.

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Public green spaces;

Sport parks; etc.

Haarlem:

Top 10NL:

All grass is equal

Haarlem:

Large-scale topography:

Public green

Haarlem:

Top 10NL:

“Functional” layer

Haarlem:

Ecosystem Types

Schiermonnikoog:

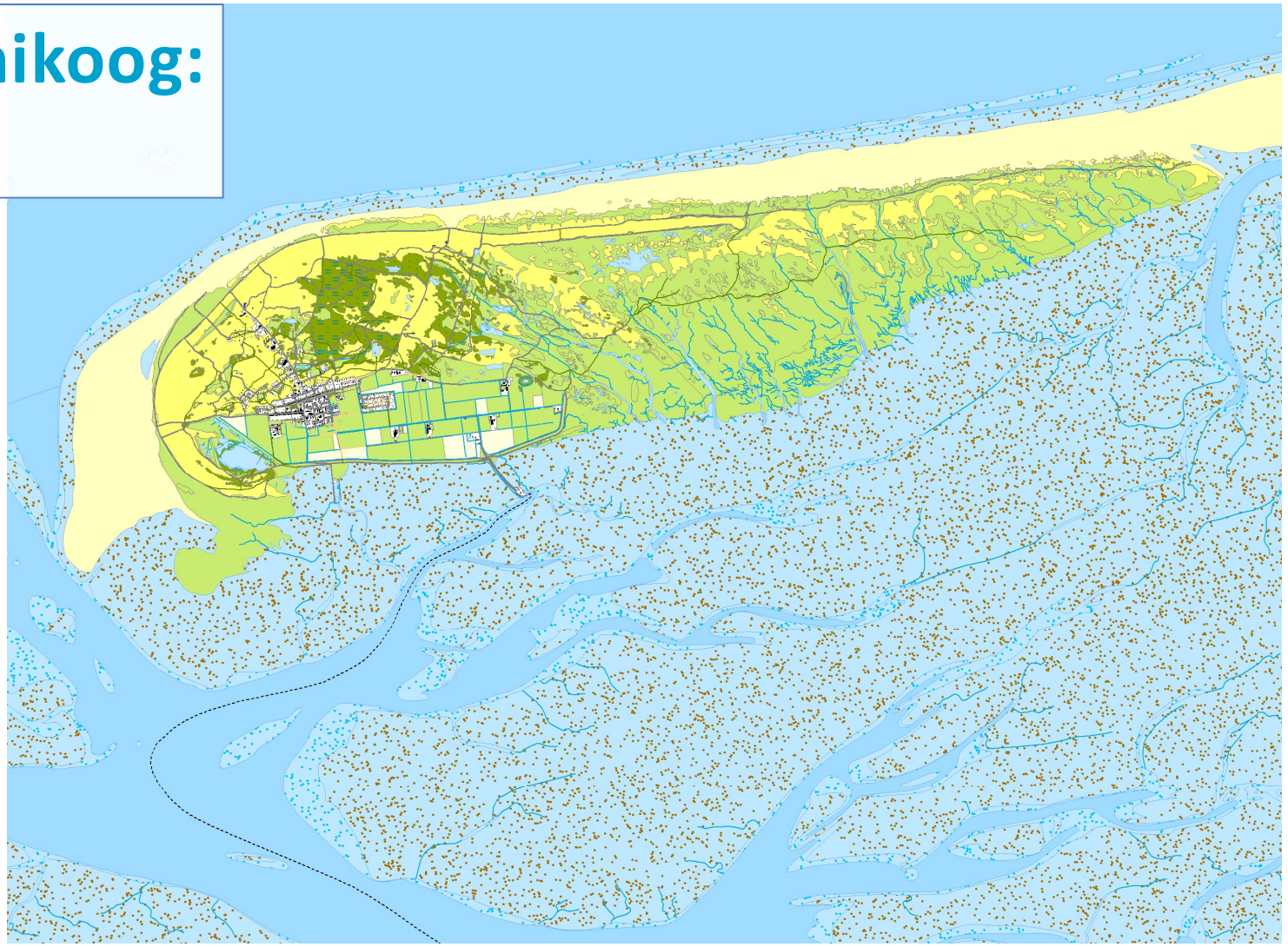
- Dynamic nature

Schiermonnikoog:

- Dynamic nature

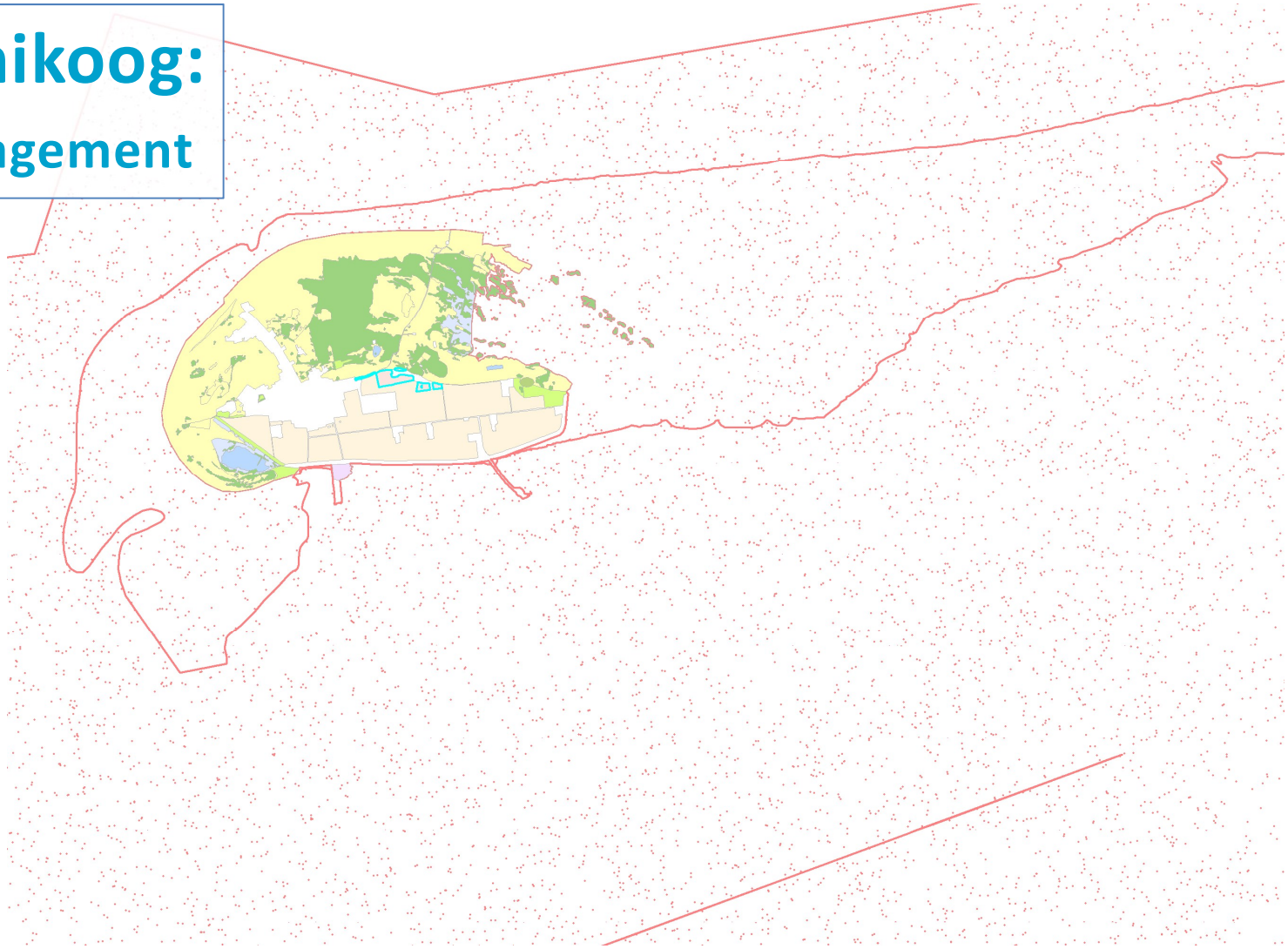
Schiermonnikoog:

- Top10NL



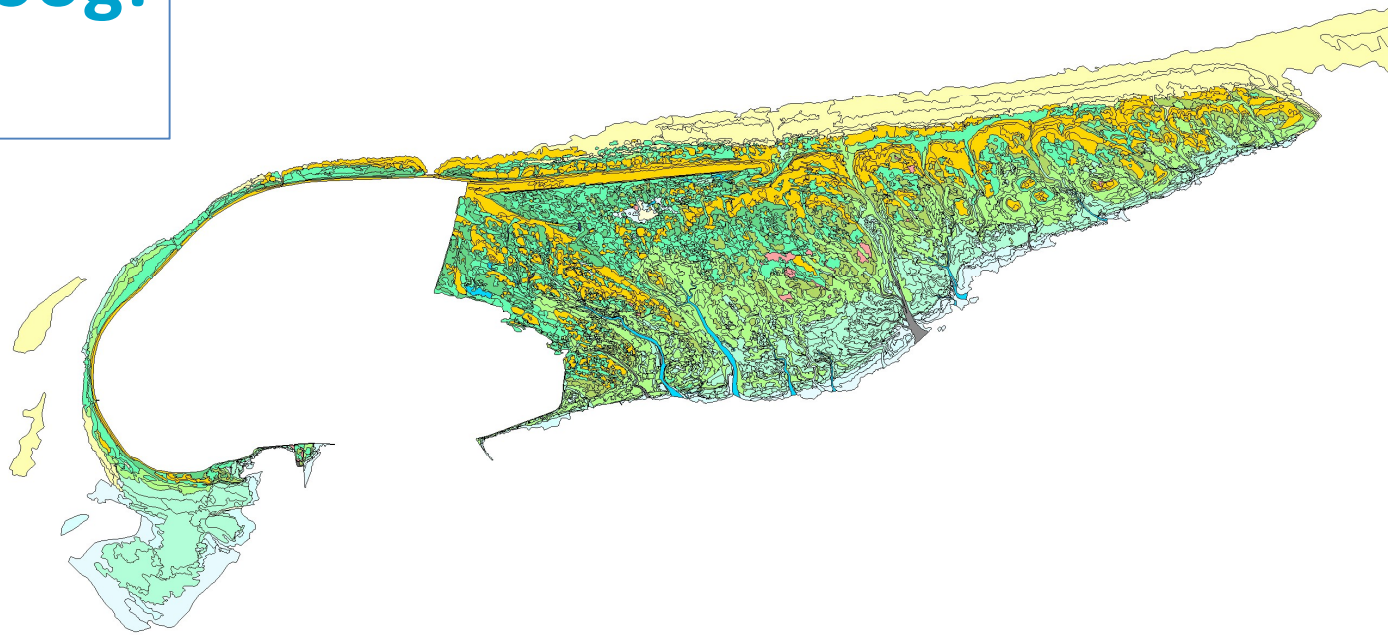
Schiermonnikoog:

- Nature management



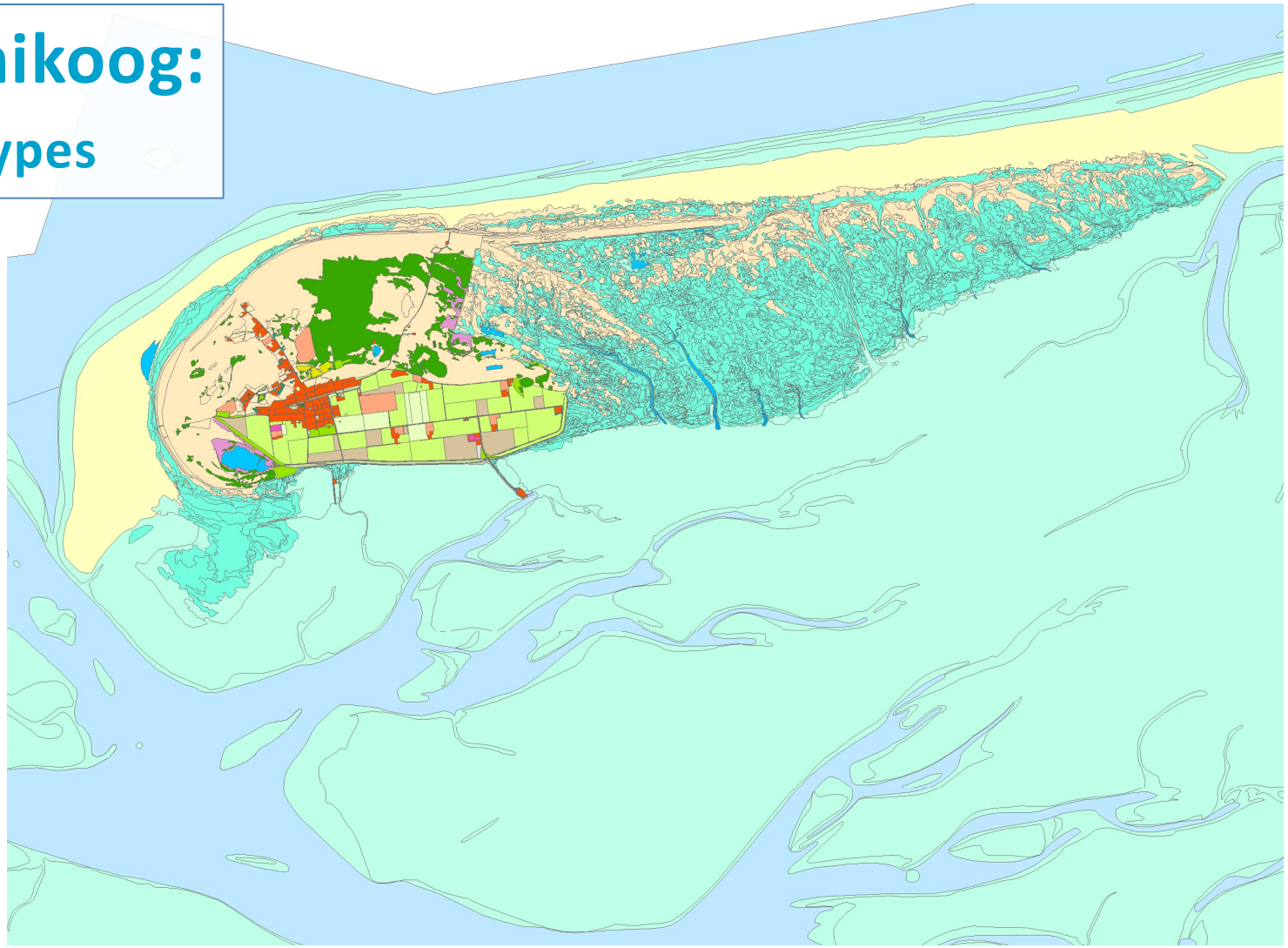
Schiermonnikoog:

- VEGWAD



Schiermonnikoog:

- Ecosystem Types



Friesche Wouden:

- Tree lines

Friesche Wouden:

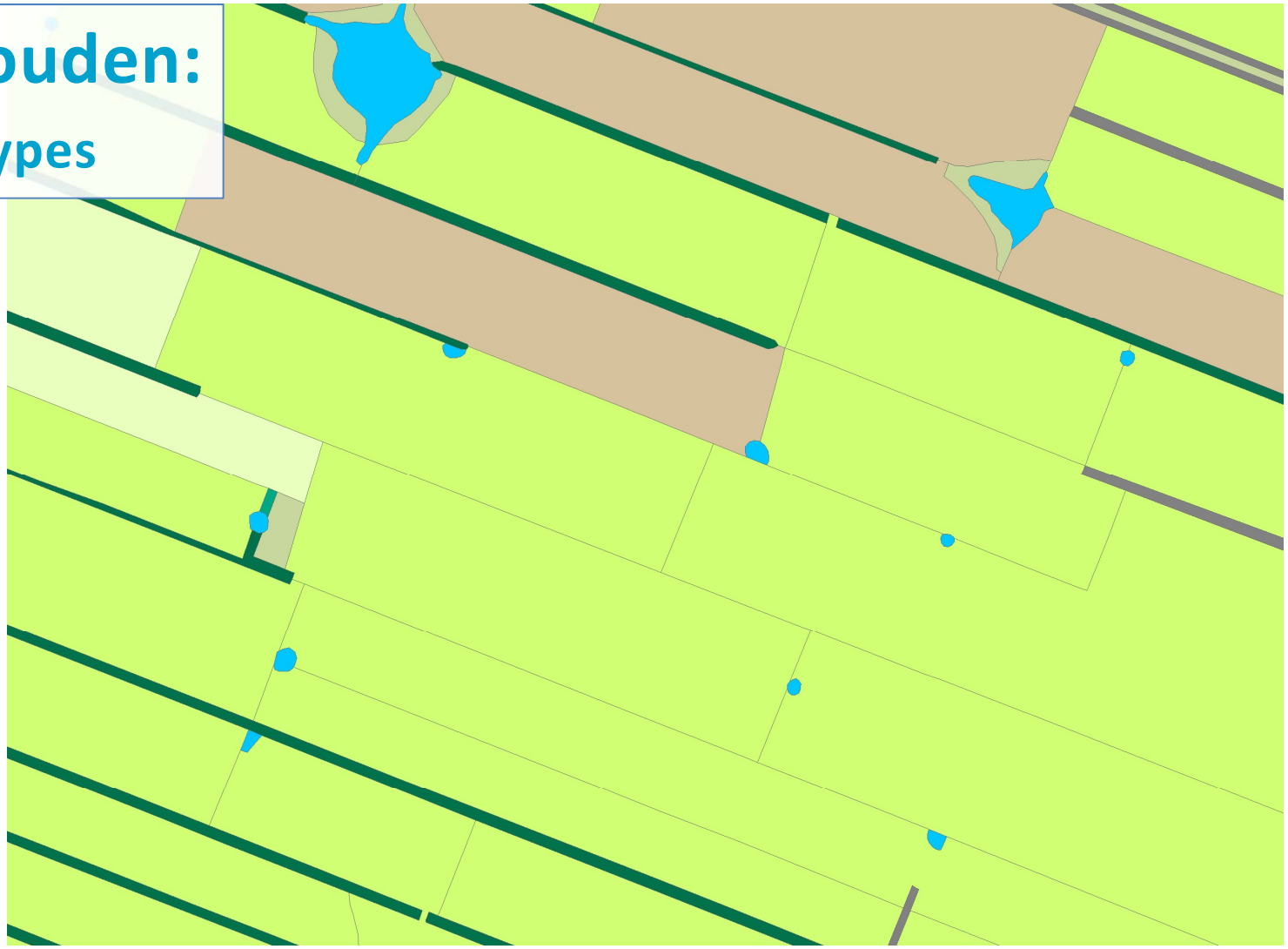
- Tree lines

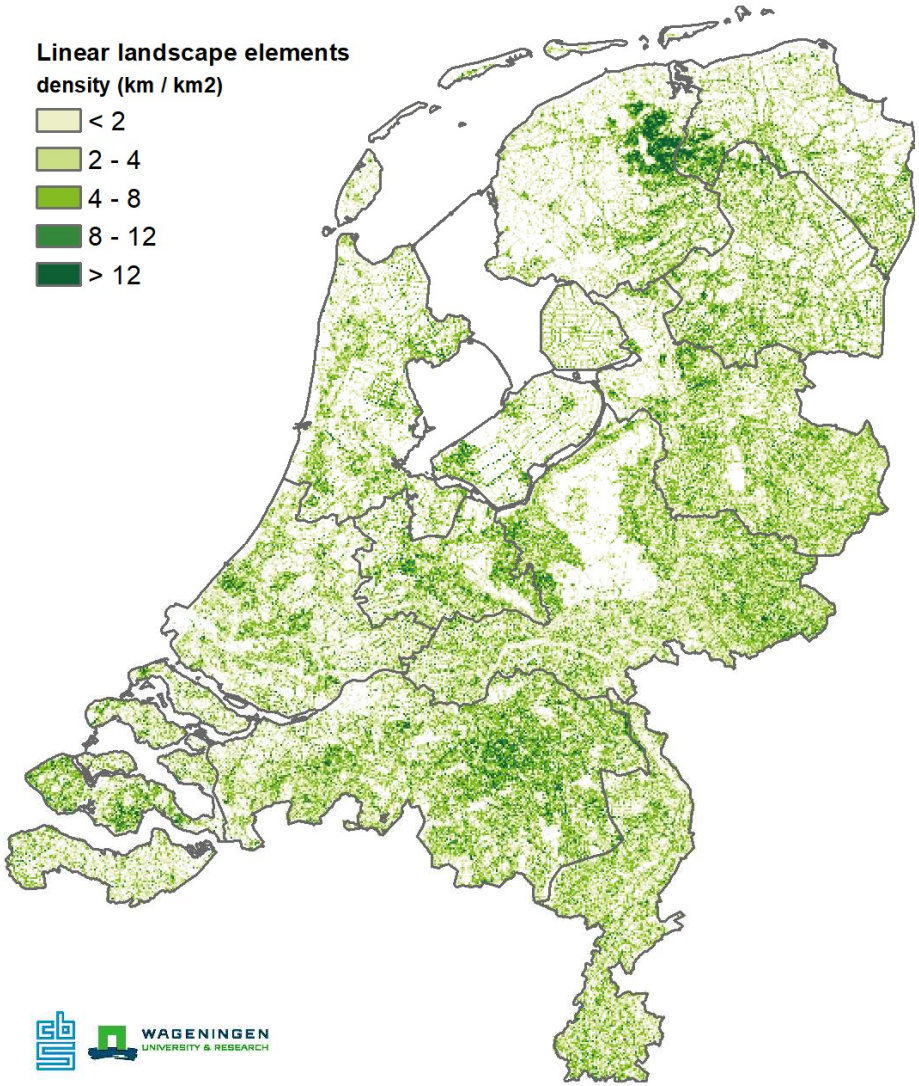
Friesche Wouden:

- Top10NL

Friesche Wouden:

- Ecosystem Types





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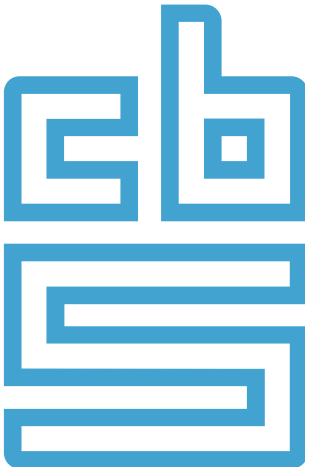
Final recommendations

- Carefully & iteratively define your ecosystem types
  - Balance data sources; ecology (GET) and applications
- Team up with agencies
  - Harmonization of maps is a big +
- Test, using well-known areas.
  - Expert knowledge > formal validation



Facts that matter