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VLAAMSE LANDMAATSCHAPPIJ (VLM)

VLAAMSE
LAND
MAATSCHAPPIJ

AGATE, FEB 13, 2025

Vlaamse Landmaatschappij (VLM)

- ▶ VLM = Flemisch Land Agency, Flanders, Belgium
- ▶ Part of the Flemish administration
 - under the ministry of Urban & Rural Policies
 - and under the ministry of Environment
- ▶ Focuses and works to improve rural areas/peri-urban areas
 - through the realisation of European and Flemish nature and environmental goals, & rural policy
 - EU Nitrates Directive ; EU Water Framework Directive, EU Natura 2000
- ▶ The ultimate aim is the realization of societal goals (nature & environmental goals, water-quality, agriculture, food / food & short supply chain, access - slow roads in rural areas, quality of life in rural areas, ...)

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A. Planning and implementation of Landscaping projects, Reparcelling projects of agricultural land

→ rearrangement of rural areas, with the aim for more optimal land use, and taking into account : agriculture, nature, water, food, access to rural areas,

...

- ▶ reallocation of agricultural plots
- ▶ landscaping : preservation and restoring typical landscapes
- ▶ restoring ecosystems that have suffered damage or are sensitive to excess of nitrogen (deposition)
- ▶ If necessary and as a support, property management:
 - acquire, exchange, and/or transfer real estate (land/plots)
 - create land reserves for exchange, for the execution and in function of the projects
 - transfer farms not located within the agricultural structure to the agricultural structure, or with adverse effects on nature
 - calculate and pay out capital damage in the event of change (of use of plots) of land

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B. Concluding management 5-year agreements with farmers

- contracts within the framework of the EU-CAP
- goals : implementation of (a) management measure(s) for more biodiversity (flora and fauna)
- in exchange for the efforts made, the farmer receives an annual payment

C. Working on a dynamic countryside

- improving the quality of life in rural areas:
lively villages, innovative rural economy and local food production, quality of landscape, and biodiversity
- supporting projects that focus on this,
through funding from the Flemish and European rural policy budgets, and with control over the use of those budgets

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D. Manure policy, and Implementation of the EU-Nitrates Directive

- must ensure that the watercourses and coastal waters are less polluted by nitrogen and phosphorus from fertilizers used ; an excess of manure and fertilizers result in poor water quality, and in eutrophication
- requires policy preparation, and monitoring of the progress (or regress)
- requires a regulatory framework, administrative monitoring and control on the field
- requires a correct fertilization of grass- and arable land, healthy soils therein the importance of informing and supporting farmers for application of appropriate (compulsory or expected) techniques

E. Climate mitigation and adaptation

- => deploying adequate measures within/through the manure policy, landscaping projects, management contracts, ...
- reducing emission of greenhouse gases
- **building** up soil carbon stock
- more space for natural environment, preservation and expansion of forest and grassland
- more space for water/water infiltration, measures against drought and flooding

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- ▶ Emission of NH_3 , N_2O , CO_2 , CH_4 (as nutrient, as greenhouse gas, as harmful element/pollutant)
 - NH_3 (ammonia): emission from stables, storage of animal manure, application on land of manure and chemical fertilizers
 - N_2O (nitrous oxides) : a result of biological nitrogen conversions
 - × from the soil, mainly under wet conditions
 - depends on soil structure (porous or compacted)
 - depends on mineral N-content (high or low)
 - depends on weather (rain and temperature)
 - × from manure treatment facilities (biological treatment, by nitrification and **denitrification**)
 - CO_2 (carbon dioxide) : as a result mineralization of organic compounds: manure, soil-humus, crop residues, manure crops, ...
 - C-% is an important factor in soil quality
 - depends on soil type, soil structure, composition (C/N), pH, weather

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→ CH₄ (methane): from manure storage, and because of fermentation of feed in the rumen of ruminants (cattle).

AGATE ?

What can satellite-detection (**-measurement**) of NH₃, N₂O, CO₂, CH₄, mean :

- a better/easier/more global monitoring
- a better understanding of emissions (time, place, size)
- to further reducing harmful emissions ?

Measurements, as an answer of questions “*what*”, “*when*”, “*where*”, “*how much*”,
bottom-line(s) (?) and change(s) in time and space (?)

spatial resolution => detection of differences in (large or very small) areas
on the scale of a farm/ manure treatment facility
on the scale of a municipality-village / agricultural region / soil-type?
 (“*where*”)

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temporal resolution => changes over the year (“when”)

(at the start) of the fertilization period

at the end of growing season

(locally) depending on temperature, rainfall and wind ?

Link with weather circumstance (today and past weeks/months)

limit(s) of detection, how precise, how accurate ? (“how much”)

emission and dispersion/deposition can be distinguished ??? (“where”)

emission (N₂O ? CO₂ ?) can be correlated to ???

- soil mineral N content (nitrates-residue in October/November)
- soil C-content

real-time or delayed monitoring ; the steps in data processing?

technical (pre-)requirements ?

cost, different cost-items ?

(possible) estimate of the time frame for implementation ?



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