

Question by Turkey

Category: Progress towards the achievement of its quantified economy-wide emission reduction target

Could Luxembourg provide more information on the efficiency levels of its policies and measures related to livestock management and F-gas regulation? What could be the lessons learned from implementation phases of these PaMs so far?

Two PaMs might be considered as “livestock management measures”. The first PaM are livestock density limits, which falls under the group of extensification measures, and the second is the promotion of slurry application through trailing hose, trailing shoe, injector or a slurry cultivator, and if applied on arable land without land cover, an incorporation within less than six hours.

Extensification measures	Activities improving grazing land	CH ₄ , N ₂ O, CO ₂	Regulatory	Implemented	Extensification of grassland in sensitive areas, meaning reduced use of organic and mineral fertilizers (AECM) Promotion of grazing of dairy cows (AECM) Increased promotion of organic production (AECM) Livestock density limits (cross compliance, AECM) Prohibition of ploughing grassland (AECM and greening) affects positively soil carbon content and reduced the release of CO ₂	2002/2016
Improved use of organic fertilizer / reduced emissions from organic fertilizer	Improving fertilizer use	N ₂ O, CH ₄ , CO ₂	Regulatory	Implemented	Several measures: 1. Promotion of slurry application through trailing hose and injector and incorporation in 6h (AECM). 2. Promotion of composting of solid manure (AECM)	2002/2014/2016

Livestock density limits are imposed in the cross compliance rules and applicable to all farmers, and stricter livestock density limits are applicable in several agro-environmental measures a single farmer might take on a voluntary basis an engagement for several years. There are two sorts of livestock density measures. The first one, the “Grossvieheinheit (GVE)”, which could be translated as “livestock units”, and its main aim is to avoid overgrazing. The GVE measures the number of heads of grazing livestock in livestock units per ha of used agriculture surface. The second livestock density measure are “Dungeinheit (DE)”, which could be translated as “fertilizer units” and which assesses the organic fertilizer originating from livestock (including all animals and not only grazing animals). The main aim of this second measure is to restrict the application of fertilizer per ha of used agriculture surface.

Both, the GVE and the DE restrict the number of livestock kept per ha. If a farmer reaches one of the thresholds - stricter thresholds for agro-environmental measures than for cross-compliance – the farmer needs either to restrict his livestock herd or to get additional land to get below the imposed threshold. In the case of DE, the farmer has an additional option: entering into a contract with another or other farmer(s) and apply his own slurry on its/their fields as long as the latter remain(s) below the imposed thresholds taking into account the additional imported slurry.

In more livestock density populated areas, these limits might hamper, or at least slow down, the activities of one or the other farmer. But, as the national averages for GVE/ha and for DE/ha are far below the thresholds, so far a reduction of the national livestock could not be observed. Moreover, livestock density limits are only one out of many factors that affect farmers’ decisions on whether reducing or extending his herd. This explains why a quantitative analysis of this measure has not yet been conducted.

The second PaM is the promotion of **slurry application** through trailing hose, trailing shoe, injector or a slurry cultivator, and if applied on arable land without land cover, an incorporation within less than six hours. The number of livestock is in itself not affected by this measure, but the application of slurry related emissions, and therefore livestock emissions, can be reduced quite significantly.

First of all, NH_3 emissions are reduced and as consequence also the indirect N_2O emissions. An externality of this measure is the better use of the N from organic fertilizer, hence requiring fewer synthetic N, and therefore a potential reduction of N_2O emissions from soils.

Since this measure started in 2002, there is a yearly increase in the number of participating farmers. For the year 2017, roughly 35% of the slurry was applied using more environmental friendly techniques. Spreading the slurry using these techniques has avoided 0.24 Mg NH_3 and 0.003 Mg indirect N_2O emissions associated with atmospheric deposition in 2017. Since the start of this measure, it is estimated that 2.1 Mg NH_3 and 0.03 Mg indirect N_2O emissions associated with atmospheric deposition have been avoided.