

Questionnaire:

## Experiences with taxes / levies on fertilisers and pesticides in European countries

Country: The Netherlands

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- What kind of taxes / levies or similar economic instruments related to fertilise and pesticide use do or did you have in your country?
  - Kind of instrument and main objectives

Currently, three types of economic instruments are being used (in addition to regulations) in The Netherlands to lower emissions from fertiliser and pesticide use:

1. *Levies on nitrogen and phosphorous surpluses*, as part of the Minerals accounting system (MINAS). The goal of MINAS is to provide a strong stimulus to farmers to reduce nitrogen and phosphate losses, to a level below allowable loss standards. The standards correspond with environmental quality standards, a.o. the EU standard of 50 mg nitrate per liter ground water.

2. *Buying up animal production rights*. Pig production rights, poultry production rights and manure production rights (for other livestock categories producing surplus manure) set a ceiling to manure production. Animal production rights are tradeable between farmers, within certain restrictions. Until recently, the government has creamed off a certain percentage of rights sold in each transaction, but this creaming off has been abolished. In 2000 and 2001 the Dutch government has bought up vast amounts of animal production rights, mainly pig and poultry. The objective was to reach an equilibrium on the market for manure by reducing the livestock population.

3. *Subsidies and tax reductions*. There is a variety of subsidies and tax reductions to stimulate sustainable farming. A source of subsidies of increasing importance is the "second pillar" (regional development) of the Common Agricultural Policy. The Dutch Regional Development Plan 2000-2006 has a budget of € 1057 mln., of which 9% is used for stimulating organic farming and nature management on farms. 20% of the budget is used to convert agricultural land into nature areas. Tax reductions are provided for environmentally-friendly investments - e.g. low-emission stables and green houses - under the condition that these investments are not yet common practice. Subsidies and tax reductions as implemented in The Netherlands are not directly aimed at reducing fertiliser and pesticide use, but may of course have an indirect effect.

Levies to reduce the use of pesticides have been discussed several times in The Netherlands. In 2003 it was again discussed by the Dutch government and it has been decided not to implement levies on pesticides in the coming years. The main reason was that the reimbursement of levy revenues could not be organised properly within Dutch and EU policy and legislation.

Below, the *Levies on nitrogen and phosphorous surpluses* will be elaborated further.

- Design (level of taxation, administration)

- If you have a levy on fertilizers: Does it relate to total mineral fertiliser use, specific nutrients (N, P?), total mineral and organic fertiliser use, nutrient surplus, any other?
- If you have a levy on pesticides: Does it relate to volume of active ingredient, the price of pesticides, the environmental effects, any other?

The levy on nutrients relates to the nutrient surplus calculated with a farm-gate balance. Under MINAS, a farmer records exactly how much nitrogen and phosphate enter his farm (inputs) and how much leave the farm (outputs). Inputs are organic manure, chemical fertiliser (nitrogen only), nitrogen fixation (leguminous crops), concentrate feed, livestock, by-products and roughage. Outputs are products of animal origin (milk, meat, eggs, etc.), arable and vegetable crops, roughage and livestock manure. The difference between inputs and outputs is the mineral loss. Loss standards, that is, the allowable surpluses of phosphate and nitrogen have been lowered stepwise in the past years. Taxes on exceedance of the allowable surplus amount € 9,- per kg P<sub>2</sub>O<sub>5</sub> and € 2,30 per kg N.

- Are there any exemptions or special regulations addressing particular farm types, sizes, regions, any other?

All farm types are involved in MINAS, except cultivation under glass for which there is another instrument. Allowable standards for nitrogen are lower on dry sand and loess soils than on other soils. The reason is that on these dry soils, larger part of the nitrogen surplus leaches to ground water.

➤ What environmental effects could be noticed?

- Could the use of fertilisers and pesticides be reduced? Any data?
- Could the relevant negative environmental effects be reduced? Any data?

The nitrogen and phosphate surpluses have declined since the implementation of MINAS in 1998. National nitrogen fertiliser use has declined from 392 to 298 mln. kg N between 1998 and 2002 (2002: preliminary data). This is mainly due to lower fertiliser use on dairy farms and more efficient use of animal manure. Total surplus on agricultural soils declined from 512 to 334 mln. kg N and 140 to 87 mln. kg P<sub>2</sub>O<sub>5</sub> between 1998 and 2002 (CBS, 2003).

The graph below shows the decline of the national surplus until 2000, compared with a reference situation (“Referentie”) without manure policy. For nitrogen a decline in fertiliser use (“Kunstmest”) is the main reason for the reduction, partly already achieved before the introduction of MINAS. For phosphate, the reduction is reached by lowering chemical fertiliser use, improving the efficiency of dairy production (“Efficiency melkvee”) and improving pig and poultry feed (“Varkens/kippenvoer”). Reduction of livestock by creaming off production rights or actively buying these rights by the government (“Volumebeleid”) has not been important before 2000.

The environmental effects of MINAS have been evaluated in 2002 (MNP-RIVM, 2003). There has been a decline of nitrate concentration in ground water between 1992-2000. As MINAS has been implemented in 1998 for (intensive) livestock farms and in 2000 for all farms, it was too early to attribute part of the decline of nitrate concentration to MINAS. In 2004 a new evaluation will be published.

Although MINAS has been introduced recently, we believe the system will provide a strong stimulus to farmers to lower nitrogen and phosphate emissions. The first results underpin this preliminary conclusion. The levies used are high: from a farm economic point of view, it is unattractive to pay the levies. Nevertheless, for quite some farmers it was calculated that they have to pay a levy in 1998, with a total amount of € 47.5 mln (CBS, 2003). This is probably due to the fact that farmers were not experienced with the system and because the levies were much lower (not prohibitive) in 1998 and 1999 than they are now. In some cases levies also can be caused by inaccuracies within the system, for example in sampling and weighing the manure. Since intensive livestock farms without land have to have a zero balance (input=output) inaccuracies are not acceptable because they can lead to unjustified levies.

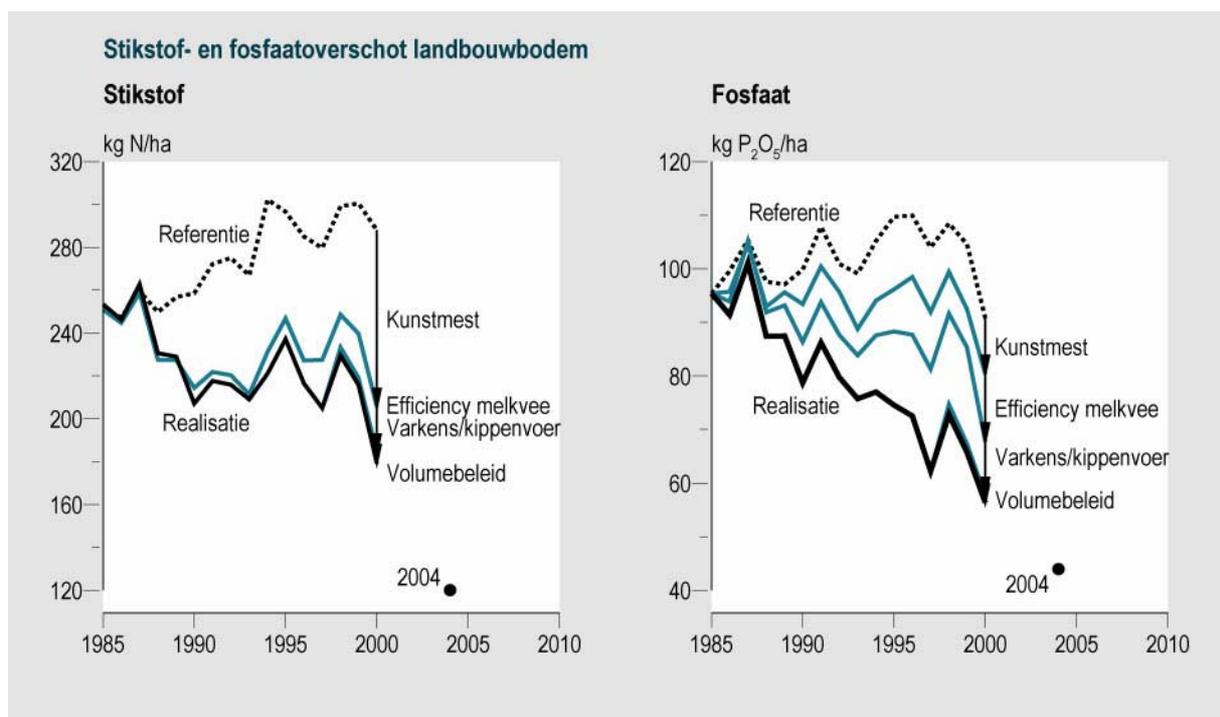


Figure. Explanation of the decrease of the nitrogen and phosphate surplus on agricultural soils, 1985-2000; including goal for 2004 (MNP-RIVM, 2003).

➤ What economic effects could be noticed?

- Micro-economic: Income effects for the farmers. Any data?

So far, main consequences of manure policy – including the introduction of MINAS and the step-by-step lowering of allowable surpluses - can be seen in the intensive livestock sector. The manure surplus on farms and the manure prices have gone up. In 1990, the costs for these farmers were almost zero, whereas prices to dispose of manure surpluses have on average gone up to €21.000 per pig farm and € 17.000 per laying hen farm in the year 2000. Since then, manure prices have fallen to more “normal” levels. The high costs for manure disposal lead (in combination with low meat prices) to very low or even negative incomes for many pig and poultry farmers.

Until now, arable farms have mainly profited from MINAS, because manure prices have gone down until negative prices. E.g. in 1999/2000 arable farmers earned € 1.500 by accepting animal manure from livestock farmers (MNP-RIVM, 2002).

Dairy farms, have not yet encountered large costs due to MINAS. The large variation in nitrogen surpluses indicates that there is still room for further reduction of emissions without substantial economic losses. Total costs for 2003 were estimated to be between € 700 and € 2.000 per farm, not including manure transportation costs of intensive dairy farms (MNP-RIVM, 2002).

- Macro-economic:
  - Agricultural sector income and international competitiveness. Any data?
  - Costs / benefits at national level. Any data?

Until 2000, macro-economic costs have been limited. Costs in 2003 are expected to be about € 30 mln, leading to a reduction of 21% of the N-emissions and 33% of the phosphate emissions to soil compared to 2000 (own calculation with data from Van der Kamp, 2002). Further lowering of the allowable surplus will lead to a rapid decrease in agricultural sector income (up to € 1 bln.) caused by a vast decline in pigs and poultry numbers (MNP-RIVM, 2002).

- How is the tax revenue being used?

The tax revenue is not labelled for specific purposes, and is thus added to other state tax income. The goal of the tax is not to raise revenue, but to prohibit exceedance of the environmental standards.

➤ What other experiences with the instrument do you have?

In the past, experiments have been carried out with systems with premiums on low nitrogen and phosphate surpluses, in particular in some water protection areas. Results have been quite positive in terms of reductions, although part of the farmers claimed that they did not consider the financial incentive when deciding how far they were willing to reduce the nitrogen surplus.

➤ Is it generally perceived as positive and will it be used for much longer?

MINAS was up to 2003 perceived as positive by most parties involved, both from farming and environmental organisations. The administrative costs are a major drawback however, often mentioned by farmers. One could argue however that any accurate system would lead to these kind of costs. The MINAS system will be changed or abolished in 2006, as a consequence of a decision of the EU Court of Justice of October 2, 2003, which says the Dutch government has failed to implement certain elements of the EU Nitrate Directive. After that decision most parties started to criticise the system: (1) the environmental groups, because they felt that MINAS was not strict enough, (2) the arable farmers, because they hope that the new system will be less strict, (3) the intensive livestock farmers, because they hope that the new system will be easier and cheaper and will have less inaccuracies. So all parties hope that the new system will be better for their interest, so we think some of them will be disappointed at the end of the day. Only (most) dairy farmers and scientist still believe in the system.

➤ If you have had a tax or levy related to pesticide or fertiliser use, what were the main reasons to abolish it?

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- Considering the overall effects, how would you appraise the instrument?

In general, we believe that the MINAS is a good, but complex system. It would have needed more time to improve and optimise the instrument, so that it would lead to lower administrative cost. Furthermore, the effect of MINAS is quite different from sector to sector. MINAS is at its best for dairy farms, with relatively low external inputs, which are easy and cheap to quantify (fertiliser, milk). Internal fluxes (manure, grass) are very hard to quantify on dairy farms. On these farms, the MINAS combination of standards for allowable surpluses and levies on exceedance of these standards is both *effective* and *efficient*, in particular in intensive dairy farming areas like The Netherlands. Farmers are free to choose the most suitable measures on their farms. The relatively high administration costs are outbalanced by the gains in cost-effectiveness. Moreover, detailed regulations with regard to storage and application of manure can be abolished after implementation of MINAS.

On arable farms, the difference between a MINAS-system and the EU-Nitrate Directive is much smaller. On intensive livestock farms, all systems have their difficulties. The major problem is a good quantification of all inputs and outputs.

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**If there are any relevant studies / data, please provide full bibliographic references.**

CBS, 2003. Monitor Mineralen en Mestwetgeving. Centraal Bureau voor de Statistiek, Voorburg/Heerlen.

Kamp, A. van der (ed.), 2002. Verkenning gevolgen van verliesnormen: technisch, economisch en maatschappelijk. Praktijkonderzoek Veehouderij, Lelystad.

MNP-RIVM, 2002. MINAS en Milieu. Balans en Verkenning. Rijksinstituut voor Volksgezondheid en Milieu, Bilthoven.

MNP-RIVM, 2002. MINAS en Milieu. Balans en Verkenning. Rijksinstituut voor Volksgezondheid en Milieu, Bilthoven.

Westhoek, H., R. van den Berg, W. de Hoop and A. van der Kamp, 2002. Economic and environmental effects of the manure policy in the Netherlands: synthesis of integrated ex-post and ex-ante evaluation. Proceedings International Conference on Diffuse Pollution (International Water Association). Submitted to Water Science and Technology.