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## INTENSIVE PROBLEMS, EXTENSIVE SOLUTIONS<sup>2</sup>

### HOW DID THE EUROPEAN UNION COUNTRIES GROW UP TO ECOLOGICAL FARMING – THE CASE OF THE GELDERSE VALLEY IN THE NETHERLANDS, A LESSON FOR THE POLISH AGRICULTURAL SECTOR

#### 1. The source of problems

##### 1.1. The Gelderse Valley

The Gelderse Valley is an agricultural zone situated between two higher lying areas. The surrounding terrain is not so high as the name "valley" might suggest, but for Dutch standards, where about 1/3 of country lies below sea level, the Gelderse Valley is fringed by quite high terrain. To the East, the almost 100 meter high sandy hills of the Veluwe, and to the West the Utrechtse Heuvelrug (the Utrecht hills). To the North lie narrow lakes – the Randmeren – and to the South the Rhine river. It lies within the area of two Dutch provinces: Utrecht and Gelderland. Agricultural land in the Valley occupies about 45,000 hectares, and these have mostly sandy soils suitable for animal husbandry. Some 3,000 ha are natural parkland and similar land. In the Valley there are 17 municipalities and about 350,000 people live there.

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Fig. 1. Map of the Gelderse Valley

## 1.2. History of rural development in the Gelderse Valley

Before the Second World War, the Valley used to be famous for its pure water streams and for this reason was a major location for the paper industry. But at the same time an increasing number of farmers were coming to and settling in the area. Nowadays, it is mainly an agricultural area. At the beginning, most of the farms were self-sufficient. Small farms were fertilised by cattle manure. Also, other animals like goats, chickens and sheep were kept on by some farms. After the Second World War, mechanisation and rationalisation caused specialisation of the production of some farms in poultry, cattle, etc. Nevertheless, the production of most farms remained diversified. As most of the arable land was transformed into pastures, there was a lack of land for growing feed crops for animals, so this was mostly imported. Day by day the intensity of farming increased and in the late 1970's the environmental situation in the area began to become jeopardized, as enormous surpluses of manure started to saturate soil with phosphate and nitrates. Corn replaced traditional crops, like wheat and rye, because it was able to absorb more nutrients. This was one of the signs that something had to be done in the near future.

Unfortunately, between 1970 and 1986 the livestock population in the Netherlands tripled, due to increasing production and export stimulated by the Common Agricultural policy.

The Gelderse Valley was one of the major regions contributing to this growth. In particular, the number of pigs and chickens rose in this area (to around 2.5 million and 5.5 million, respectively). Some of the farmers started to breed ducks and cattle for veal, set aside for export to France and Italy, for such meat is rarely on the Dutch menu.

The Gelderse Valley produced 50% of the duck meat in the Netherlands and the number of cattle bred for veal was almost twice the number in the second major Dutch agricultural region, Noord-Brabant [CBS, 2001]. Besides agriculture, more and more tourists from adjacent urban areas started to visit the Gelderse Valley seeking nature, a very scarce resource in the Netherlands.

In the late 1980's the situation started to become very dramatic. 1988 was the first year that a realistic proposal for sustainable agriculture was put forward. The Provinces started to organize workshops for farmers. The following year the Gelderse Valley Committee was established to help solve the problem. The committee played, and still plays, the most important role in the sustainable revitalisation of the area. Three years later the '1992 Action Plan for the Renewal of the Gelderse Valley' was prepared. The Gelderse Valley is also on a list of eleven projects on spatial and environmental planning, which focuses on regions in the Netherlands with serious environmental and spatial problems. A more detailed description of this project and the role of the valley committee are presented below.

### 1.3. Project results

The present environmental situation of the Gelderse Valley is rather worrying. About 20,000 ha. of land are saturated with phosphates. Phosphates leach into streams and underground water, polluting nearly all the water in the region. Phosphate use in the Valley is estimated at about 328 kg/ha, whereas the average level in Netherlands is about 107 kg/ha.

Also the nitrate standard for drinking water (50 mg/l) is exceeded everywhere in the valley. Due to intensive livestock breeding and the huge production of ammonia resulting from this, acid rains also appear in the region. It is estimated that one farm with 1000 pigs is responsible for 3000 kg of ammonia per year [VROM, 1996]. Ammonia is also emitted from stored manure. Ammonia production in the Valley is 102 kg/ha, while the average level in the Netherlands is about 60 kg/ha. Due to the

migration of ammonia, concentrations were also discovered in forestry soils at a high enough level to cause wood degradation. Even if ammonia emissions were reduced by 75% to 85% by 2030 compared to 1990 levels (as the 4th National Environmental Policy Plan [VROM, 2001] indicates), it is unlikely that the standard of 1,400 acids equivalent per hectare per year would be achieved.

Intensive manure fertilization is also responsible for the higher level of the fields in which manure was once used. After 50 years of manure spreading the land is sometimes half a meter higher than previously. Manure spreading and storage also causes highly unpleasant smells. A manure treatment plant has partly solved this problem, but it is still a problem for non-agricultural areas in the vicinity and for tourists.

Mineral over-fertilisation is not the only problem. Due to intensive water use and an extensive drainage system, over the last 30 years the water table has fallen by about 0.5 metres. During drier summer months the entire valley suffers from drought. [VROM, 1996].

#### **1.4. Common features of agriculture in the Gelderse Valley and Poland**

Interestingly Gelderse Valley farmers have a lot in common with Polish farmers. There are currently (2003) about 5000 farmers working and living on about 4000 farms in the Gelderse Valley. Initially, most of the farms were small and now the average farm size is 7.7 ha, which is quite similar to the Polish average of 7.9 ha. per farm. The level of education of the Gelderse farmers is below the Dutch average, as is also the case in Poland. The small size of farms indicates their low profitability, in contrast with the rest of the Netherlands. Most Polish farms also have low incomes. This led to the situation in which during the negotiations on accession the Polish government requested special subsidies from the EU to Polish low-income farms.

To increase the profitability of these farms, both Polish and Gelderse farmers actively seek additional sources of income. Only about 25% of Polish farms obtain their main income from agriculture and about 40% of these have additional income [Sumelius, 2000]. In the Netherlands about half the farms have additional income, in the Gelderse Valley this is also the case.

Farmers in the Gelderse Valley are very religious. In general, religion is also very important in the everyday life of Polish farmers. However, the Dutch Reformed Church and the Roman Catholic Church only have the same Christian roots, besides this they are very different. The importance of religion and other factors mentioned induce a different men-

tality and attitude in both Polish and Dutch farmers. This is exhibited in their strong resistance to any change and a slow rate of adaptation to new conditions.

Neither Polish nor Geldersche farmers are well organized. Only a minority are members of farmers' unions or other associations. At present, every Gelderse farm suffers from erosion and acidification and in most Polish farms manure is stored openly, which results in the fact that more than 60% of Polish farms also suffer erosion and acidification [Nowicki, 1993].

### **1.5. Which way for Polish agriculture?**

In Poland the proportion of people employed in the agricultural sector is still very high, 26.7%, whereas the average in well developed European Union countries is about 6%. In the Netherlands it is about 4%, but before agricultural intensification in 1950 the percentage of people employed in agriculture was 19% [Nieminen, 2001]. A decrease of this figure to at most 12% is needed in the Polish agricultural sector.

But will Polish farmers go the same way as the Dutch farmers did and cause a comparable environmental disaster caused by intensive farming? All the reasons and similarities described may suggest that in the near future some could make the same mistakes. Especially after joining the European Union in 2004, Polish farmers will have the possibility of participating in the Common Agricultural Policy and Single European Market with no export restraints. They may well try to transform extensive, low yield farms into high yield, intensive farms similar to those found in Western Europe.

## **2. Solution to problems**

### **2.1. An Integrated regional approach**

As was shown in the first part of this report, many characteristics of agriculture in the Gelderse Valley allow us to compare this situation to the situation of Polish farmers. The level of similarity is high, be it the size of farms, production diversity, importance of religion, level of education, organisation, or income. So given the scenario described previously could also occur in Poland, the solution proposed for the Gelderse Valley could form an interesting lesson for the Polish authorities, farmers and other parties involved in agriculture.

This solution was worked out as a result of an area-specific policy (ROM) enacted into Dutch law within the Fourth Report on Spatial

Planning in the year 1988. It was confirmed by the designation of 11 ROM areas by the Minister of Spatial Planning and Environment in the same year. One of them is the Gelderse Valley [VROM, 1999]. This integrated regional approach aims at effective problem solving in regions where environmental and spatial planning problems are too difficult to solve within the framework of nationwide legislation. Such a situation was certainly the case in the Gelderse Valley. The Manure Act and the Soil Protection Act aimed at reducing ammonia and phosphate emissions to groundwater and soil were enacted by Dutch parliament over the whole of the Netherlands in 1987, just before the adoption of the draft Nitrates Directive by the European Union in 1988. Both acts, although slightly stricter than the directive, proved ineffective in the Gelderse Valley, due to a significant manure surplus in comparison with the rest of the country.

Area-specific policy was also established to ensure high transparency of decision-making and that bottom-up, and thus better, solutions would be proposed. But as it is not an objective of this article to deliberate on area-specific policy, it should only be said that the Dutch government initially signed a declaration of intent to solve environmental problems with the spontaneously formed valley committee in 1989. The Action Plan for the Gelderse Valley was proposed after three years of work, public consultation, and negotiation. To put the action plan into force the Dutch government signed a voluntary agreement with the committee in 1993 [VROM, 1999].

In general, this program is aimed at establishing more areas of nature protection, as well as promoting sustainable farming and agricultural restructuring. The main proposal is the designation of zones where nature protection will take priority, even at the expense of the size and number of farms. These are the so-called 'blue zones'. The blue zones occupy 13,000 ha and within their borders a minimum of 4,000 ha. of farmland is to be set aside for nature protection and a minimum of 4,000 ha. to undergo controlled farming. This means, that many farms within these zones will have to cease production or relocate. It is expected that 10 to 45% of farms in the area should stop production [VROM, 1996]. However, neither stopping nor relocation is obligatory, but money is designated for incentives to farmers willing to relocate or stop farming. For relocation purposes areas were proposed outside the blue zones in the Gelderse Valley. Such solutions ensured that nature would be preserved and restored and at the same time farmers will have space for development.

Previously, 'controlled farming' had been mentioned as a consensus solution as well. It relies on special compensation funds for those farmers, who prefer undergoing restrictions on the spreading of manure on

their farms. There are different levels of such restrictions, under which farmers are obliged to spread no more manure than was spread in a year, which is used as a base for the agreement. Compensation is given for smaller harvests, than obtained in years when more manure was spread. These reference years are also stated in the agreement. These regulations comprise of the concept of environmental decoupling, and provides farmers with prospects for development at the same time. The environment will be less polluted and farmers can develop their farms, but only within certain limits.

Various grants can be awarded to farmers under the Gelderse project as well. Apart from a relocation grant and compensation for controlled farming, extra money can be given to a farmer who starts biological farming. A grant is also available for research into new ecological initiatives in agriculture. For example, one farmer was involved in a research project on new forms of cattle breeding. Another activity for which grants can be obtained is manure treatment, for which a treatment plant has been constructed in the Gelderse Valley near the village of Garderen, as well as activity related to sowing crops which feed extensively on manure fertiliser. Many farmers have started secondary businesses alongside their agriculture activities, and money is also available in the program for such purposes.

Some non-essential agricultural activities carried out by farmers in the Gelderse Valley are named below, as an example for those who will have to stop agricultural production in Poland during the period of restructurisation:

- furniture production,
- toy manufacturing,
- a concrete factory for rural demand,
- cosmetic services,
- horticulture,
- production of grass for gardens,
- horse husbandry for tourist purposes and others.

It is worth noting here that many of solutions mentioned above for the widening of the rural production base are fully in accordance with European Union objectives for grants given to Polish agriculture after accession. This relation is especially close within the agro-environmental programs, which aim at more ecological farming, planting forests, hedgerows, implementing sustainable agricultural activities etc. [MRIRW, 2003]. Also, the payment for closing a farm can be compared with the Polish solution of early retirement, as many farmers in the Gelderse Valley are older than 55 and any hope for quick realisation of farm closures lays mostly with them.

## 2.2. Coming through with ideas

As previously mentioned, many of the objectives of this program are similar to the aims of grants designed for Polish agriculture under accession negotiation. This is a sign that the European Union does not want to copy the development that previously took place in the Gelderse Valley any longer. Therefore, the way of encouraging farmers to use these grants is an important question, as the restrictions placed on these payments can sometimes restrain the freedom of production, investment or operation of the farmer. Another problem lies in how to deal with farmers, not only in a way so they will accept the proposed policy, be it regional or European, but also support it. The lesson learnt from this case should be very beneficial, because, as it was already stated, there are a large number of similarities between the attitudes of Gelderse and Polish farmers.

The most important aspect of the Gelderse ROM project is its transparency and bottom up approach, financially supported by the government. There were delegates in the valley committee from: the three ministries competent in the fields of the environment, agriculture and spatial planning, and the two provinces in which the Gelderse Valley lies, also from five municipalities, which were in close contact with the other 12 municipalities in the area. non-governmental (NGOs) and private organizations, banks, farmer unions, environmental organizations, water boards and tourist organizations were also active. The Association of Rural Women, which also participated, brought in very interesting cultural features to the Committee. But it is not enough to say that the valley committee consisted of public and private stakeholders, which had differing local, regional and national interests. Despite this fact, public consultation with farmers and other people was necessary, as even all these organisations together could not speak for all the inhabitants. The results of consultation were taken into consideration in the revision of the draft plan. All this resulted in strong support for the plan at all levels of governance, both local and national. Such approaches could also be very useful in Poland, in order to make the most of EU accession and funds granted by the Brussels authorities to Polish farmers, especially for sustainable farming.

Additional communication measures applied in the implementation phase of the action plan were used as another way of educating Geldersche farmers. In this phase one of the most important aspects, as pointed out by Mr. Hermans Voortman during a field trip, were pilot farms. Taking into consideration that in rural areas (also in Poland), people tend to copy good things from each other, this represents one of



the most efficient ways of getting ideas through. In the Gelderse Valley the action plan was also communicated through church organizations to some extent.

Of course as the basic way of communicating an information centre was established in Barneveld, a town in the middle of the area. Farmers can get advice there on how to produce while being less harmful to the environment. This centre works in close cooperation with the local school, where at the same time children are taught about the benefits of ecological agriculture. Farmers, who are eager to learn, can also organise themselves into study groups, or can attend courses in the information centre on nature-friendly agriculture. As can be seen, all this is adapted to the mentality of local farmers and therefore strongly influences their behaviour and eases the process of applying the plan. Such measures could be useful in the organisation of ecological agriculture in Poland as well.

### 2.3. Results of the Plan

After five years of implementation a survey was carried out to find out to what extent the objectives had been met. Firstly, it was assessed that only 13% of farms had stopped operation, while 18% of farms had withdrawn from operation in the whole of the Netherlands. Nevertheless, this was satisfactory. Anyway, it is expected that the closure program will accelerate in coming years, as many of the farmers are ageing and have no descendants to take their place. It has also been observed that among the farms ceasing operations, most were those of medium size. While smaller farms on average stayed the same size, big farms seemed to benefit, because they even expanded their area. This confirmed that the plan did not hold up possibilities of farm development.

Moreover, the number of biological farms rose significantly from 2 to 82, and this is the most spectacular effect of the initiative. About 1400 ha are now used for controlled farming, and 10 farms have completely ceased operations. About 400 ha of areas of nature development and/or preservation have been established on this and other terrain reclaimed from farmers. Also, as there was no cooperation between the tourism and agrarian sectors previously, a union of farms carrying out agrarian-tourist activities was formed and has a strong position in the region. The level of ammonia and phosphate emissions into the air and water has not decreased significantly and is still far from being satisfactory. It is still in the state described in the first section of this report. Authorities are aware of the fact that it will take years to improve this situation. The large number of farms does not help in solving the problems ei-

ther. Although there were about 4000 farms in 2000, this is a fall of 1000 in comparison to the 5000 farms of 1990.

One may say that the results are not very spectacular. But one must take into consideration the difficulties mentioned, which occurred due to the specific communication problems within the very close-knit community of farmers in the Gelderse Valley and thus the results were actually quite positive. Hopefully, such a level of social cooperation and support for ecological farming programs can be accomplished in Poland.

#### **4. Cost assessment**

Research into the costs can be performed, comparing the funds available to the Gelderse Valley Action Plan with the money granted to Polish farmers by the European Union following accession. The Gelderse Action Plan was established for a fixed period of 15 years, from 1993 to 2008. It was awarded 365 million euros for the 5000 farms that were present in the area. A simple calculation shows that on average a farm received about 4800 euro annually. For the first three years of Polish EU membership, the funds for the whole agrarian sector are estimated to be 7408 mln Euro. Of this about 3700 mln euro is for sustainable farming or restructuring [MRIRW, 2003]. In Poland there are 2.04 million farms [Burnat et al., 2001, 24], so on average a farm in Poland will receive 1200 Euro annually. However, if only structural and rural areas development funds are included, as only they are set aside for ecological production in rural Poland, on average a farm receives about 605 Euro annually. Allocation of these funds to a farm will differ according to the actions of the farmer, such as his willingness to start ecological production, which allows such a comparison to be made.

Taking these numbers into consideration, we can deduce that Polish farmers are already producing much more ecologically than the Gelderse farmers. But it could be also stated that it is highly unprofitable to guide Polish agriculture towards the road of intensive production, because the cost of cleaning and restoring the environment after such intensive production is considerably higher. It is favourable to initially establish and maintain ecological production.

#### **5. Final remarks**

It is good to note that the European Union favours the ecological path of growth within the agrarian sector, meaning that the Polish countryside will be encouraged by the European authorities to avoid the mis-

takes made in the Gelderse Valley. Additional funds within the Common Agricultural Policy have been designated for promotion of ecological production in Poland. This should put a hold on the processes similar to those which occurred in Gelderland as a result of competition, production incentives and no export limits for agriculture within the Single European Market. However, it should be realized that without persuasion and proper communication with Polish farmers, ecological farming might not be supported in Poland or introduced at the cost of decreasing incomes. In the Gelderse Valley a few problems were witnessed with communication within the farming community. These problems were quite efficiently solved by the use of certain measures, which could also be applied in the Polish situation. Therefore, this article is dedicated to developing a better understanding of these processes in the agricultural sector, and for their good guidance.

## ISSUES OF RURAL DEVELOPMENT

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