Financial arrangements in land consolidation

A visual method for valuation explained

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Key words: Financial arrangements, funding, valuation, cost of land land consolidation

Summary

Rural land consolidation projects can be diverse in their objectives. Some aim only at improving farming conditions for a few farmers. Other projects aim to improve infrastructure or to create new nature reserves. Often projects have multi-purpose goals. With these multipurpose goals more parties benefit from the result and in these kinds of complex projects the role of the government is substantial.

In The Netherlands there are two types of land consolidation as described in the Dutch rural development act (Wet Inrichting Landelijk Gebied; 2007). The two types are voluntary re-allotment and formal land consolidation. Next to the big difference of being voluntary or mandatory there is also a big difference in the complexity of legislation and guidelines about financial arrangements.

In this paper we aim to explain how the financial arrangements are made and determined. The Dutch rural development act (Wet Inrichting Landelijk Gebied; 2007) defines the two different types of land consolidation and its procedures. Next to an elaboration about the practice in the Netherlands of funding land consolidation projects this paper will focus on the method used. The method used ensures that the costs are divided in such way that those who benefit more from land consolidation pay more than those who do not. The framework for dividing cost is set in the rural development act. The method is based on experience.

As Vitikainen stated in his Overview of Land Consolidation in Europe: “a task of its own is the valuation of the benefit falling on the landowners. The objective of such valuation is to determine the final benefit for each property or functional unit according to which the landowners will participate in the costs caused by the procedure” (Vitikainen; 2004).

There are 2 types of cost. 1. Costs of the procedure and 2. Implementation costs (Vitikainen; 2004). These implementation costs can be subdivided into costs for measures which are beneficial for all and costs made for measures that only benefit the interests of a specific farmer. The valuations of benefits are to divide the costs of implementation.

Public goals are mostly being funded by the (local) government or organisations such as waterboards. A water retention area for example, is a public necessity and benefits all citizens, even citizens outside the land consolidation area. There are also measures that only benefit participants within a land consolidation area. For example the building of new
agricultural roads. That part of the project costs must be paid by the participants together. An example of a benefit for a specific farmer is farm enlargement. These costs are for the farmer.

To determine the benefits and valuate these, the subjective term “improvement” has to be objectified through a valuation method. The method used in the Netherlands takes 4 themes in account to measure “improvement”. An independent commission determines for every farm holding the improvement rate due to re-allotment. This commission will do this visually, with reference to examples. The whole farm holding is given a classification. The classification determines eventually what percentage of the project implementation costs must be paid.
1. Introduction

The last phase in a formal land consolidation progress in the Netherlands is the financial arrangement (figure 1). When the reallocation plan is definitive and the deed has been signed the calculation of costs can start. The method used is part of the legislation of the Dutch rural development act (Wet Inrichting Landelijk Gebied; 2007). The procedure is almost the same as it was in the former Dutch rural development act (Landinrichtingswet; 1985). Only the way to payoff is changed. In the old act the costs where imposed on the property. The owner could pay the costs in 26 years off, with 6% interest rate. In the current legislation the landowners have to pay the costs all at the end of the procedure.

There are two types of costs. The first are financial settlements. These are costs that are the result of the exchanges. For example costs for increasing property area or improving of soil quality. When a landowner gets more or less property due to land consolidation he will have to pay or has to be compensated. In chapter 4 are more examples listed.

The second type of costs are procedure and implementation costs. These are the costs that will contribute to the landowners in the progress. The amount of these costs will depend of the project costs in total. The landowners who benefit more from the land consolidation pay more than those who do less. The benefits of allotment have to be valuated. In the Netherlands this is done by an independent commission.

2. Funding and cost allocation in landconsolidation

When a land consolidation project is started, you have to define the goals. In early days agriculture was the main objective. The perspective on this objective of the landowner is often reduction of production cost. From the perspective of government often an optimally food production. Nowadays also other objectives and goals are the reason to start a project. Goals can be the realisation of nature reserves, water retention or infrastructure. Often it is a combination of multiple targets.
Figure 2 shows a piece of “Herinrichting Peize”. In this project there were multiple goals: agriculture, water retention, nature and recreation (biking and hiking trails and viewpoints).

The principle of “those who benefits more, pays more” also translates to the goals. If the only goal is an agriculture one, only the farmers have to pay. When a water retention area or nature reserve is realised, the waterboard or nature organisation also have to take their part in the costs. When there are multiple goals there is an advantage that you can split the costs. Another advantage is that there are also several possibilities to grant. For example in the “Herinrichting Peize” the farmers had to be compensated for the construction of water retention. Measures that are necessary for this compensation, for example draining, are also on costs of the waterboard. In the Herinrichting Peize the joint owners had to pay €500,000,- of all the measures The total work is budgeted throughout the project is € 20 million.

3. Legislation of financial arrangements

In the Dutch rural development act (Wet Inrichting Landelijk Gebied; 2007) is defined which procedure must be followed. This procedure is defined the rules for the government and for the private persons.

Before starting the financial arrangement you have to make a financial overview of the costs which are made in the project, the costs you are expecting to make and the financial benefits (for example grants). The expecting costs must be a good estimate of these costs. If too many assumptions you can make any good cost estimate yet. Most of the work had to be performed. The Provincial Executive making up this calculation estimation. This calculation also follows what part should be contribute by the joint landowners. Not for the individual landowner.

Before you start the further procedure there are rules to make how you divide the costs. The legislation gives some standard rules, but there are opportunities to deviate from these rules. The land consolidation commission is responsible to make this rules.
A standard rule is for example the factors that make the improvement: farm building parcel, less parcels on distance, the shape of parcels and the distance to the holding. Rules you can change, or omission are for example the financial settlements. Some projects offset financially electricity pylons, because you cannot make full use of your land. Other projects don’t offset the pylons, because landowners receive annual compensation of the energy companies. The Provincial Executive must adopt these rules. With these rules an independent committee determines the improvement of the commission is a group that is familiar with the area in which the land consolidation project takes place. The results of this estimate, a list of landowners rated by class of improvements are recorded and processed by Cadastre. The Cadastre makes a list of all costs (process and improvement costs and financial settlements) for every landowner in the project. The data will be deposited for public inspection. The landowners have the opportunity to submit an objection. The land consolidation commission will hear the persons. The commission will make a decision and the Cadastre makes possible changes in the calculation. If this changes are made, the commission sending the financial arrangements to the Provincial Executive. The Provincial Executive shall adopt and submit them again for public inspection. Landowners who had previously lodged an objection may submit an objection to the court if they disagree with the decision of the Provincial Executive. The court ultimately makes a decision. After that there is also the possibility to go to the Supreme Court, the last possible way to objection. If all objections are resolved, or have a judgment the final bill will be made. The Provincial Executive sent every landowner that have to pay the bill. Landowners who gets money in the process will be paid.

4. Financial settlements

The financial settlements are transfer charges between landowners arising from the exchange process. It only can be costs directly resulting from the exchanges. The landowners are not paying this to each other, but are paying this to the project. The project is paying this back to the landowners who have disadvantage of the exchange.
Two types of charges are always settled: The differences in surface and the quality of the soil. Some landowners getting more property, some will get less. These transfer charges are equal on the market prices. These market prices are based on their productive capacity. The better the quality of the soil, the more you can grow. The quality of the soil is had already been determined before the procedure of the reallocation plan based on soil maps.

Next to the loss or gaining of land acres and the quality of soil there are more values that could be settled. Electricity pylons for example are always placed on a parcel of a private landowner. If the property exchanged in the land consolidation you can make a settlement for it. The former landowner don’t have any problems anymore with this parcel. The new owner didn’t have this parcel in his property, now he has. It’s not only inconvenient to cultivate the parcel. The electricity companies should always get to the pylon when needed. Some projects don’t make this settlement, because there are annual fees from the electricity companies. If you’re going to settle this you have to fix this in the rules. Also the level of compensation should be set in the rules. Some other examples of settlements are:

- Damage by shadow: if a parcel lays next to a forest there is a possible shadow damage for agriculture crops. Of course, this depends on the side where it is in relation to the position of the sun.
- Root development: if there are large trees near parcels there is a possible problem with drought.
- Buildings or other stalling: sometimes there is a building, shelter or manure basin on an exchanged parcel. In the Dutch legislation it is only possible on voluntary basis. The settlement is determined by an independent valuator. The new owner has to pay the cost, the former owner gets the compensation for losing this building.

5. Procedural and implementation costs: factors

The procedural and implementation costs are the costs that landowners have to pay for the process of land consolidation. Most of the landowners are agricultural businesses. As stated in 2, farmer’s objective is often a reduction in production cost. They have an economic interest in a better editable parcels. In rural development act there are four factors determine that are taken in account when valuating the improvement / benefits of a farm:

- Farm building parcel enlarging
- less and larger parcels on distance
- The shape of the parcels
- Distance to the farm building parcel

Not all factors are equally important, it depends on the project. Every landowner will get a rate based on the 4 factors. The higher the score, how more there have to be paid.
5.1 Farm building parcel enlarging

Especially dairy farmers benefit from a large farm building parcel. In order to be able to milk efficiently the farmers want to keep the livestock near the holding. The committee rates the landowners on this factor. In an area with many dairy farms these factor of enlarging the home parcel will be valuated as more important than the other factors.

5.2 Less and larger parcels on distance

Unlike the dairy farmers, the arable farmers don’t need big home parcels. They are primarily served by larger and less parcels. The quality of the soil is more important than the distance. To measure made due to landconsolidation parcels are counted is before and after the reallocation. In an area with most arable farmers this factor will be valuated as most important.

5.3 The shape of parcels

Each farmer benefits from a good shape of the parcel. Especially with the increasing of agricultural vehicles right angles are important to work efficient on a parcel. The more angles you have, how more difficult it is to work on the field. Triangles are even more difficult to work on..

5.4 Distance to the holding

When parcels are closer to the building you need less fuel and it takes less time to work on the land. Every farmer benefits from parcels closer to their holding. All the land close to the farm building parcel is the most prefect situation, especially for dairy farmers.

5.5 Calculation per owner

When all the factors are valuated an overall score can be determined for every owner. Class “0” is always “0” points per hectare. Class “1” is for example “1” point per hectare. Class “4” is in this example “4” points. So a farm with 30 hectare property and class “2” gets overall 60 points. You can make a system of higher pointing ratings, if the ratio remains the same.

5.5 Calculation overall

As explained, in the end every landowner gets points. These points are added up. When the costs of the land consolidation are divided by the total points you get the value of a point. And then you can calculate how many every landowner needs to pay for the land consolidation.
6. The method Visually determining the improvement

To visually determine the improvement due to the reallocation, there are model classes. These are examples that show the classes. Class “0” means no progress. In most of the projects class “4” is the highest. In order to classify a farm, examples are given to the classifiers. With this visual method, the commission can compare and rate the farms.

In the project “Herinrichting Peize” an example of all factors was made. In the figure 5 the 5 classes for less and larger parcels on distance. In green you see the farm building parcel. In blue is the situation before the reallocation. In red you see the situation after the reallocation. Class “0” there is no progress, there are still four parcels on distance. Class “4” is the maximum progress that can be made, no parcels on distance anymore. All parcels are near the farm building parcel. In the appendix you see all examples of the factors.

![Figure 5: Classes](image)

7. Examples from project Peze

Here there are two examples from the “Herinrichting Peize”. Farm building parcel enlarging (40%) and less and larger parcels on distance (40%) are the highest rated factors which determine the rate of improvement. The shape of the parcels (10%) and the distance to the holding (10%) are less important. In blue there is a reproduction of the ownership before the reallocation. In red there is a reproduction of the ownership after. The four factors were rated as:

- The farm building parcel is not enlarged. So this is classified as a class “0”.
- There are less parcels on distance. This example is equal as class 2.

![Figure 6: First example from the Herinrichting Peize](image)
• The shapes of the parcels are a bit better, because there are fewer angles. The parcels in the west are not ideally because of the triangular. But is it better than before? The committee thought that class “3” would be realistic.

• The property is a bit closer to the holding. So it will be a class “1”.

Overall scores this holding 1,2 for the improvement. But we work only with whole numbers. So overall it will be a class “1”.

In the second practice the blue is again before and in the red you see after the land consolidation. The farm building parcel is the most eastern parcel.

• The farm building parcel is enlarge enormous. This can only be Class “4”.

• There are no parcels on distance anymore. So also for this factor is Class “4” righteous.

• The shape of the parcels are better, but not best. So suffice in Class “2”.

• The distance is maximum improved, so Class “4”.

The overall score is 3,8, is rounded to “4”.

8. Conclusions and discussion

The financial arrangement in the Netherlands is based on a ratio of progress. The progress will be assessed by an independent committee. But it remains an estimate. Would a calculation based on using maps, with for example a Geographic Information System (GIS) not be more accurate? The answer is yes, but that’s exactly the problem.

Making an financial settlement based on calculation would be more work than an estimate. The project costs will be higher in preparation. And probably also in a later stage of the progress. In the legislation of the Netherlands is the possibility to make an objection against the Financial Arrangement. When the calculation is to precise the landowners probably making more objections to details. The result will be that there are several more objections will be made.

Many land consolidation projects chose not to estimate all factors parted. Landowners getting directly a class, based on the opinion of the committee. That’s also allowed in the legislation. In the land consolidation “Herinrichting Peize” they have chosen to estimate all factors and thus determine the total progress. There were two reasons for this system in this land consolidation:

• It gives landowners a better understanding of how the committee came to this class. It is easier to understand why they are still have to pay for the improving.
• Because it is more transparent than the other system less objections were expected. They succeeded. In this process there were 60% less objections than in other similar land consolidations.

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Appendix
Less and larger parcels on distance
farm building parcel enlarging
Distance to the holding

Afstandverkorting

- bedrijfs-/huiskavel
- inbreng
- toedeling
- ongewijzigd
- onverharde weg
- verharde weg

klasse 0

klasse 1

klasse 2

klasse 3

klasse 4
The shape of parcels

Kavelvormverbetering

- bedrijfs-/huiskavel
- inbreng
- toedeling
- ongewijzigd
- onverharde weg
- verharde weg

klasse 0

klasse 1

klasse 2

klasse 3

klasse 4