METHODOLOGICAL GUIDANCE
TO IMPACT ASSESSMENT
IN LAND CONSOLIDATION PROCESS

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BASICS ABOUT MIAL PROJECT

- Short term (6 month) project „**Methodological guidance to impact assessment in land consolidation process**" - started in November, 2005
- 3 <u>main actors</u> took part:
  - MoA / NLS;
  - Dutch Government Agency for Land and Water management (DLG);
  - Lithuanian University of Agriculture.
- <u>Aim</u> of MIAL:
  - to build up capacity in the MoA and NLS
  - to introduce environmental impact assessment and cost/benefit analysis of Land Consolidation activities
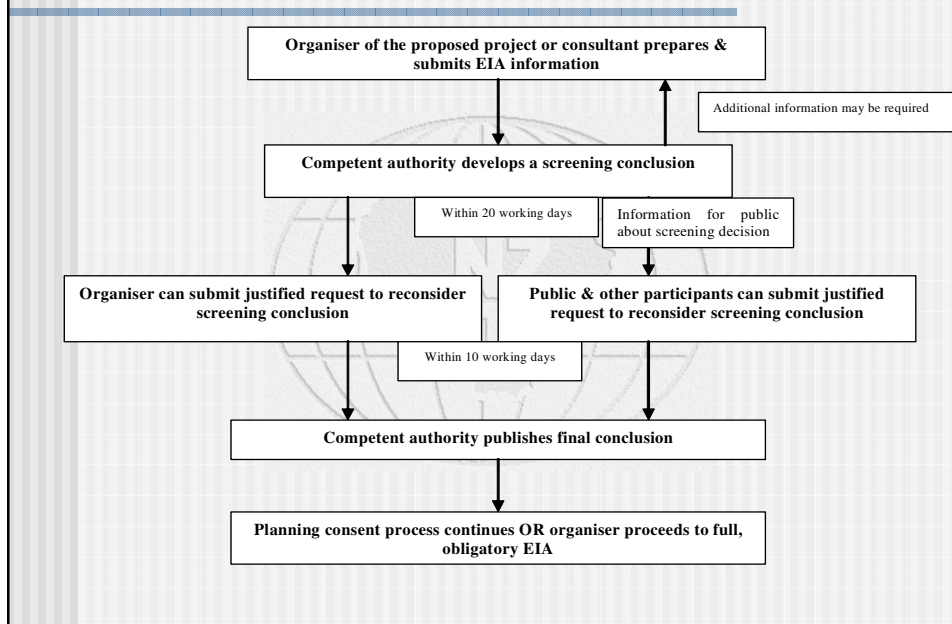
RESULTS OF MIAL PROJECT

• A framework of procedures, methods and instruments regarding environmental impact assessment in relation to land consolidation has been developed;

• A system for the performance of cost/benefit analysis regarding land reparceling has been introduced.

Two separate manuals were prepared

ENVIRONMENTAL IMPACT ASSESMENT (EIA) IN LC

■ A procedure
designed to identify and help prevent
significant adverse environmental changes
that would or could be associated
with (economic) development activities;

■ It is by law a requirement to assess the impact
on the environment of proposed economic
activities.

The process of screening for EIA in Lithuania

Organiser of the proposed project or consultant prepares & submits EIA information

Additional information may be required

Competent authority develops a screening conclusion

Within 20 working days

Information for public about screening decision

Organiser can submit justified request to reconsider screening conclusion

Public & other participants can submit justified request to reconsider screening conclusion

Within 10 working days

Competent authority publishes final conclusion

Planning consent process continues OR organiser proceeds to full, obligatory EIA

Land consolidation and related economic activities, requiring EIA

- Implementation of combined projects for the restructuring of rural land holdings (i.e Land consolidation)
- Water management projects for agriculture including irrigation and land drainage projects (with an area >5ha)
- Installation of ponds (amount of water >200.000m^3, or an area >10ha)
- Projects for the use of uncultivated land for intensive agricultural purposes (with an area > 0,5ha)
- Initial afforestation and deforestation for the purposes of conversion to another type of land use (with an area >1ha in the urban areas, and >10ha in the rural areas)
- Construction of overhead electrical power lines (with a voltage <110kV and a length >3km)

Screening is required for all these economic activities.

The potential impact of improvement or construction of access roads to plots could also be described.

Potential impacts of land consolidation and related proposed economic activities

The potential impacts of land consolidation projects and land consolidation related activities on:

- Water
- Air (atmosphere)
- Soil and underground
- Biodiversity
- Landscape
- Social
- Economic
- Cultural heritage

Screening is necessary and in most cases the only step in land consolidation projects in Lithuania.

Questionnaire for the impact assessment of the solutions of LC (territorial planning document)

I. IMPACT ON THE SUSTAINABLE DEVELOPMENT OF THE TERRITORY AND (OR) PROPOSED ACTIVITY

1. What results are expected after the implementation of solutions?
2. What will be the influence on the development of the planned territory?
3. …

II. IMPACT ON ECONOMIC ENVIRONMENT

8. How will influent the implementation of solutions on the on the structural changes of industry, agriculture and other sectors?
9. ….

III. IMPACT ON SOCIAL ENVIRONMENT

15. How will influent the implementation of solutions on the common social state of the particular region or district?
16. How will influent the implementation of solutions on the employment?
17. …

IV. IMPACT ON THE NATURAL ENVIRONMENT AND LANDSCAPE

21. How will influent the implementation of solutions on the air quality in$ the area?
22. How will influent the implementation of solutions on quality of groundwater and surface water in the area?………

Table for evaluation of
territorial planning document solutions

		Aspects of evaluation	Positive (short term, long term) impacts	Negative (short term, long term) impacts
1.	Organizer of Economic Activity			
2.	Preparer of Territorial Planning Document			
3.	Name of Territorial Planning Document			
4.	Links with agreed long term and middle term Strategic Planning Documents			
5.	Links with existing Territorial Planning Document			
6.	Existing situation / no-action alternative			
7.	Aim of Territorial Planning Document Solutions			
8.	Evaluation of possible impacts of solutions			
		Aspects of evaluation	Positive (short term, long term) impacts	Negative (short term, long term) impacts
9.	Impact of solution on:			
	sustainable development of territory or (and) type of activity			
	economic environment			
	social environment			
	nature and landscape			
10.	Impact of alternative on:			
	sustainable development of territory or (and) type of activity			
	economic environment			
	social environment			
	nature and landscape			

COST/BENEFIT ANALYSIS in LC

The main issue of the first LC projects – reallocation and enlargement of land plots

- Economical benefits:
- The main types of costs which will change:

1. Land cultivation costs because of improved shape of parcel;
2. Land cultivation costs because of enlarged size of parcel;
3. Transportation costs because of diminished average distance from farm center to the fields.
4. After comparison of cost for **current and planned** situation we will get the **reduced costs which means benefits** of land consolidation project.

Background for CBA

How to calculate???

- Different farm size;
- Different economical benefit for certain farms – bigger or smaller improvement of consolidation factors after project implementation;
- Different crops – different costs;
- Different soil productivity in separate districts of Lithuania;
- Different farms specialization;
- Different agricultural machinery.

Farm models

- **Two farm models** were developed, on the basis of most popular crops and average perspective farm size
- The models represent the most common wide scale of farms in Lithuania
- The models will be able to:
- Evaluate economical benefits on farm level;
- Evaluate economical benefits for all land consolidation project area.

Farm models description

- **Arable farm model:**
- 40 ha;
- Cropping plan - grassland, oat, rye, potatoes, barley;
- 5 plots, each 8 ha size;
- Agricultural machinery - MTZ − 80 (most popular);

- **Dairy farm model:**
- 30 cows;
- Total size − 50 ha;
- Grasslands − 30 ha;
- Arable land − 20 ha, 4 plots each of 5 ha size;
- Cropping plan in arable land: rye, barley, maize and oat-tare mix for silage;
- Milking in cowsheds.

Calculation technique (1)

- **The models are based on cultivation and transportation costs calculation for chosen crops:**

- **Arable farm model:**
- Costs for certain cultivation works − ploughing, spraying of chemicals, mineral fertilizers, harvesting, etc.
  (data on required cultivation compiled by agronomy specialists);
- Transportation costs for all these works were calculated;

  All costs are prepared by Agricultural economy institute and renewed yearly. Costs include:
  - Costs of amortization;
  - Costs for maintenance and repair;
  - Fuel cost;
  - Labor costs.

Calculation technique (2)

- **The dairy farm model calculation is split into two parts:**

- arable model for 20 ha (with different cropping plan);
- calculation of house parcel impact on cultivation costs

- **House parcel impact on cultivation costs consists of:**

- Required additional feeding (there is not enough grass 70 days from 155 in Lithuanian);
- Required additional moving due to small house parcel;

Benefits from LC

The main LC factors used in farm models:

1. Average distance from farm center to parcels.
2. Improved shape of the parcel.
3. Increased size of the parcel.
4. House plot size and percentage from total farm area.

Additional LC factors

- **Additional LC factors** are not accurately calculated in the models

- It is complicated to evaluate and monitor the additional consolidation factors:

  - **Better farm management** due to reduced number of plots;
  - **Better crop maintenance** and increased crop yield due to enlargement of plots and reduced number of plots;
  - **Reduce of plots boundaries** will result higher crop yield;
  - **Modernization of farms**. Better land parcels allocation will lead to higher farm income, possibility to renew the technologies, renovation of buildings, intensification (change) of cropping plan.

- With expert judgment we decided **to increase the calculated benefits by 15 %** to reflect such factors

Data collection for calculation of LC factors

- Number and size of farms' plots/parcels;

- Type of farming (arable, dairy, mixed);

- Distance from farm to plots/parcels by roads (different type of roads must be indicated – asphalt, gravel, field roads);

- Length and width of plots/parcels (to reflect size of plot/parcel);

- Shape of plots/parcels;

- **Average weighted figures** for all these factors must be calculated

Calculation of main LC factors

- **The main LC factors have to be calculated according to existing and planned situation**

- Type of farming must be calculated as a percentage of total farms area for :

- Arable farms %;
- Dairy farms %;
- Mixed farms %.

- **Mixed farms**:
- Our decision was to calculate the average benefits from arable and dairy farm models and apply it to mixed farms.

- Calculation of preliminary LC implementation costs.

Results

- Filling the data of **average weighted data for the project** will give us such results:

- Total benefit Lt/ha;
- Total benefit of whole project Lt;
- Internal rate of return of the project (IRR, 20 years).

- Filling the data of **certain farm** will give similar results for this farm after implementation of LC project
- In average, reducing the distance by 1 km and improving parcels shape and size will give economic benefit of 44-45 Lt/ha

Farm models should be created according to the given country farming conditions and to the data and methodology availability;

LC factors database should be created and periodically renewed.

THANK YOU FOR YOUR ATTENTION !

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