

# VOLANTE

VISIONS OF LAND USE TRANSITIONS IN EUROPE

Local Land Use Change:  
Lessons learnt from Case Studies



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## VOLANTE WP1 case areas

1. Roskilde municipality (30 km from Copenhagen, Denmark): UCPH.
2. Reichraming municipality in LTSER platform Eisenwurzen, Alpine Region in Austria: UNIKLU.
3. Stăncuța municipality, Inner Danube Delta wetland area in S.Romania & Rătești municipality, Arges County, (part of Neajlov Catchment LTSER) Muntenia. South-central Romania
4. SE Lesvos, Mediterranean Islands: Aegean.
5. Portofino regional park (30 km from Genova, Italy): Alterra
6. Heerde Municipality, IJssel Valley, near Zwolle; NL: Alterra



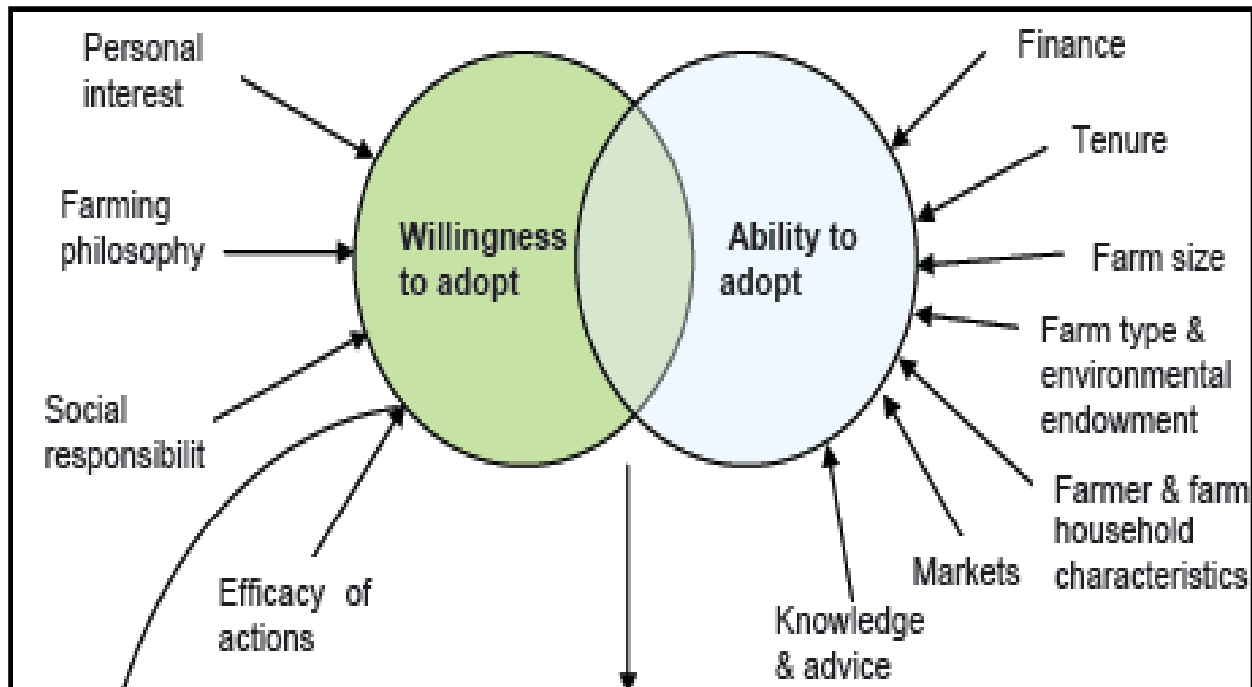
# WP1: Land owner decision making process

1. Patterns and drivers of land use change: Which changes occur where and how big are they? What were the motives and reasons for land owners to undertake land use changes?
2. Link with policies and subsidies: which land owner types use subsidies and for which purpose?
3. Multifunctionality: which type of agricultural and non-agricultural economic activities (OGA) take place on properties?
4. Patterns of intensification and extensification of production



# WP1: Land owner decision making process

1. Patterns and drivers of land use change: Which changes occur where and how big are they? What were the motives and reasons for land owners to undertake land use changes?



After Mills et al., 2013

# Land owner decision making process: seeing through "lenses of oppportunities"

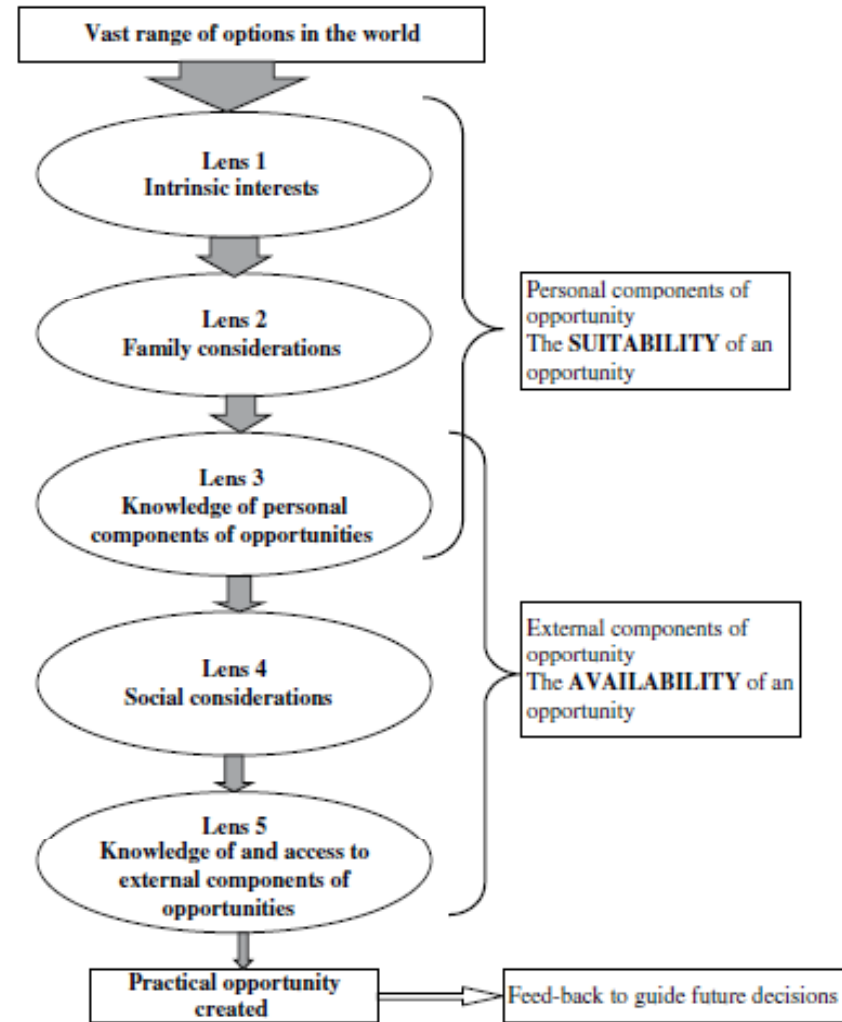
"Farmers are not foresters"

Life cycle, family situation

Financial, human capital

"Roadside farming"

Social capital, institutions



From: Farmar-Bowers & Lane, 2009



# Case areas

Marginalisation



Portofino (I):  
N=25

Intensive dairy



Heerde (NL):  
N=47

Peri-urban



Roskilde (DK):  
N=93

Marginalisation



Lesvos (GR):  
N=90

Post-socialist



Rătești & Stăncuța (RO)  
N=109

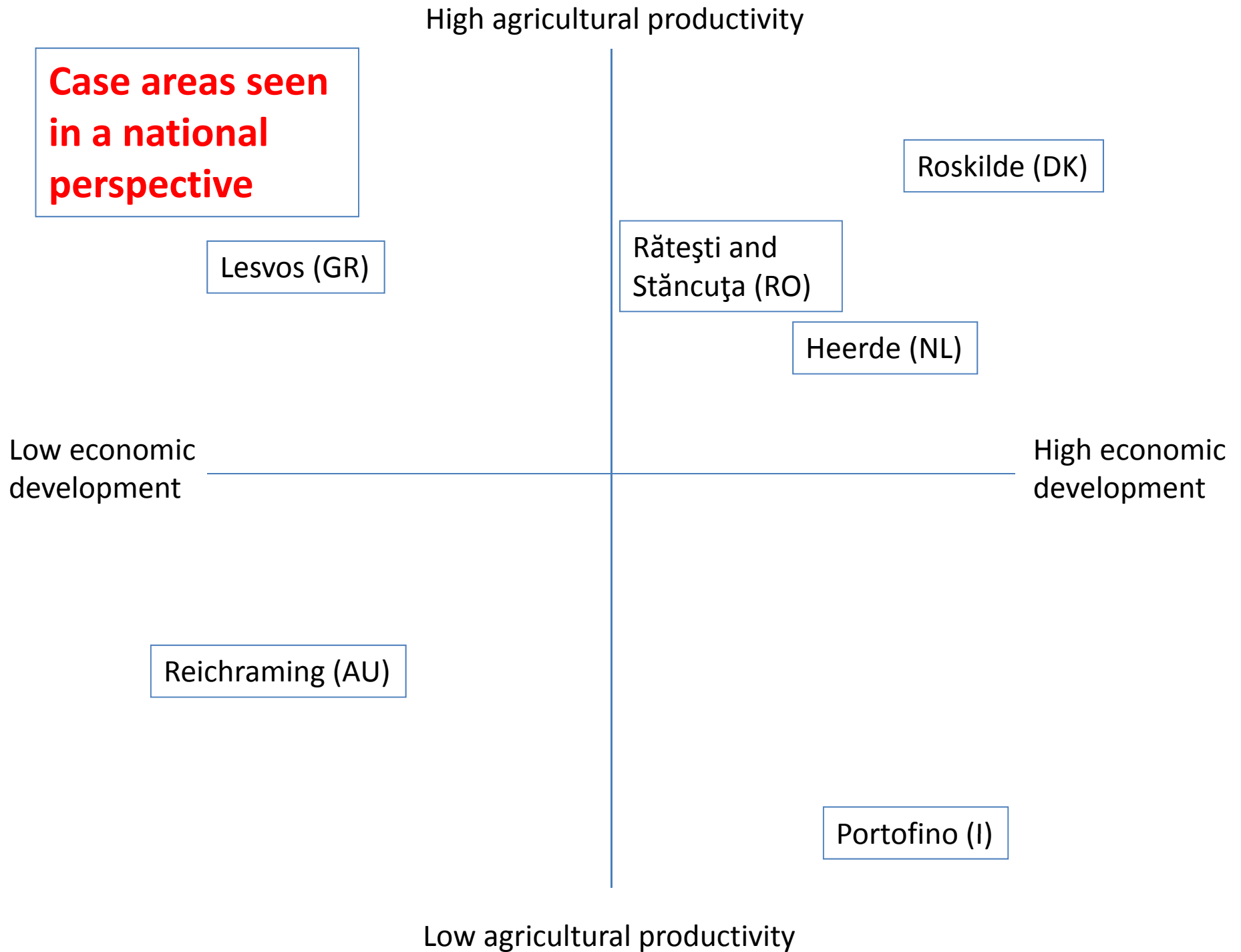
Marginalisation



Reichraming (AU):  
N=73

# Case areas

Case area	total farm area (ha)	N	Forest cover in municipality (%)	Farm-size (ha)	Cropland on farms (%)	full time farmer (%)	Farms with OGA (%)
Heerde (NL)	1009	48	20	22	21	33	17
Portofino (I)	40	25	70	2	14	16	16
Reichraming (AU)	4121	73	80	56	8	53	10
Rătești and Stăncuța (RO)	8284	109	10	76	99	71	3
Lesvos (G)	1120	90	33	9	1	13	22
Roskilde (DK)	4090	93	2,3	47	86	15	61



**Case areas seen  
in a national  
perspective**

Lesvos (GR)

Rătești and  
Stăncuța (RO)

Heerde (NL)

Roskilde (DK)

Low economic  
development

High economic  
development

Reichraming (AU)

Portofino (I)

High agricultural productivity

Low agricultural productivity



# Theme 1. Landscape changes between 2002-2012 and motives for change

1. Extensification of land use. Change from annual crops or grassland in rotation to more extensive land use.
2. Intensification of land use. Change from nature to annual crops or grassland in rotation
3. linear and point features established
4. linear and point features removed.
  - 38% of all landowners had engaged in these activities
  - Large variation between areas
  - In general: more landowners involved in extensification or establishment of new landscape features than intensification or removal.

# Theme 1. Landscape changes between 2002-2012 and motives for change

% of landowners involved in	less intensive land use	more intensive land use	establish linear or point features	remove linear or point features	Sample size per case area
Portofino	8	8	4	0	25
Heerde	17	6	44	10	48
Reichraming	29	27	23	18	73
Romania	13	1	2	0	109
Lesvos	22	9	17	7	90
Roskilde	32	3	37	2	93
All	22	8	21	6	438

- 38% of all landowners had engaged in these activities
- Large variation between areas
- In general: more involved in extensification/establishment of new landscape features than intensification/removal.

# Extensification of land use

New landscape feature	No.	FULL TIME	HOBBY	NOT A FARMER	PART TIME	total area
AFFORESTATION(>1 ha)	16	48,5	27	1	35	111,5
PERENNIAL CROPS (fruit orchards, olive groves, christmas trees, willows, wine)	51	64,5	8,7	3	46,2	122,4
SMALL THICKETS/BUSHES(<1ha)	15	13,5	1,4	1	4,3	20,2
UNMANAGED LAND (abandonment)	10		19,1		4,9	24
PERMANENT GRASSLAND	8	17,07	1,5	2	2	22,57
All	100	143,57	57,7	7	92,4	300,67

- A few land owners made large changes
- Perennial crops: Mediterranean countries typically planted olive groves or fruit orchards, Romanian landowners had planted wine while land owners in Denmark had planted christmas trees.

Motives for change. Land owners' level of agreement with statements concerning the main reasons for the land use change /activity (N: 55).

Motives for landscape change**	1.	2.	3.	4.	5.
<b>Farm economic considerations /gains</b> (e.g. reducing economic risks, new investments, improving hunting opportunities as business, other)	21	0	10	10	14
<b>Personal satisfaction</b> (learning new skills, challenging myself, getting better at what I do, professional pride, moral/ ethical reasons, i.e. feel good)	10	1	15	5	24
<b>Family / life-style reasons</b> (creating the best environment for the family, passing values on to children, passing practical knowledge on to children, passing on the land and its values, considerations for tasks /activities for the family (e.g. taking care of animals can involve children), other)	9	2	13	13	18
<b>Social network/local community</b> (less isolated, opportunities to have colleagues, new networks, acknowledgement from people)	27	3	16	9	0
<b>Improved qualities on property</b> (aesthetic, nature qualities, habitats for certain species, recreational hunting, environmental improvements, other)	6	3	3	7	36

\*\*Answer options were: 1. Completely disagree, 2. Somewhat disagree, 3. Not important, 4. Somewhat agree and 5. Totally agree

# Conclusion

- In general: more nature created
  - Creation of 23 km of hedgerows while 1.3 km has been removed.
  - Creation of 83 ponds while 1 pond has been removed.
  - Extensification of 300 ha of farmland and intensification of 128 ha of “nature”
- full-time land owners were responsible for the largest proportion of these landscape changes.
- Strong geographic patterns
  - Perennial crops
  - The building and removal of terraces was only found in Greece and is linked with olive production in hilly landscapes.
  - Hedgerow planting and removal was strongly dominated by landowners from Heerde (NL) and Roskilde (DK).
- Improved qualities on the property was the single most important motive. Social considerations was least important. Other motives more ambivalent



# Personal and property characteristics

Category	Parameter	1	14	13
Personal characteristics	Age of respondent			
	Motives for farm purchase (farming, residential, etc)			
	Educational background	*		*
	Background			
	Succession planned			
Property characteristics	Organic farm yes/no?	*		*
	Farm Size	*	*	*
	Receive subsidies?	*		
	Farm income share of household income	*	*	*
	Ownership of grazing livestock	*		*
	% land in rotation	*		
	Change in nitrogen use 2002-12			
	Land owner type 2012			
	Land owner type 2002			
	Case area	na	*	na

(\*: significant at 0.05% level) black: after Mills et al., (2013)

# Drivers of landscape change

Case area	Agricultural production	Land owner motives (preferences, ambitions)	Tradition	Regulation (legislation, subsidies)	State of the (rural) economy (marginalisation)
Portofino (I)					+++
Lesvos (G)	+		+++		+++
Reichraming (AU)	++			+++	+++
Rătești and Stăncuța (RO)	+++				
Heerde (NL)			+++	++	+
Roskilde (DK)	+	+++	+++	++	+

+: weak    ++: medium    +++: strong

# ”Window of opportunity” for land use changes.....

- Is land available?
- Which land use changes are relevant (from a physical environmental perspective)?
- Will land use changes fit with current production system?
- What land use changes are socially acceptable (in terms of tradition and legislation)?
- Which land use changes are economically viable?
- Are land use changes acceptable to the personal characteristics and ambitions of the land owner?

# Tips for researching land use changes.....

- Clear definitions
- Avoid multicollinearity and data redundancy
- Representativeness or uniqueness?