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Structure and Environmental Impacts of AEM in Germany – a Case Study

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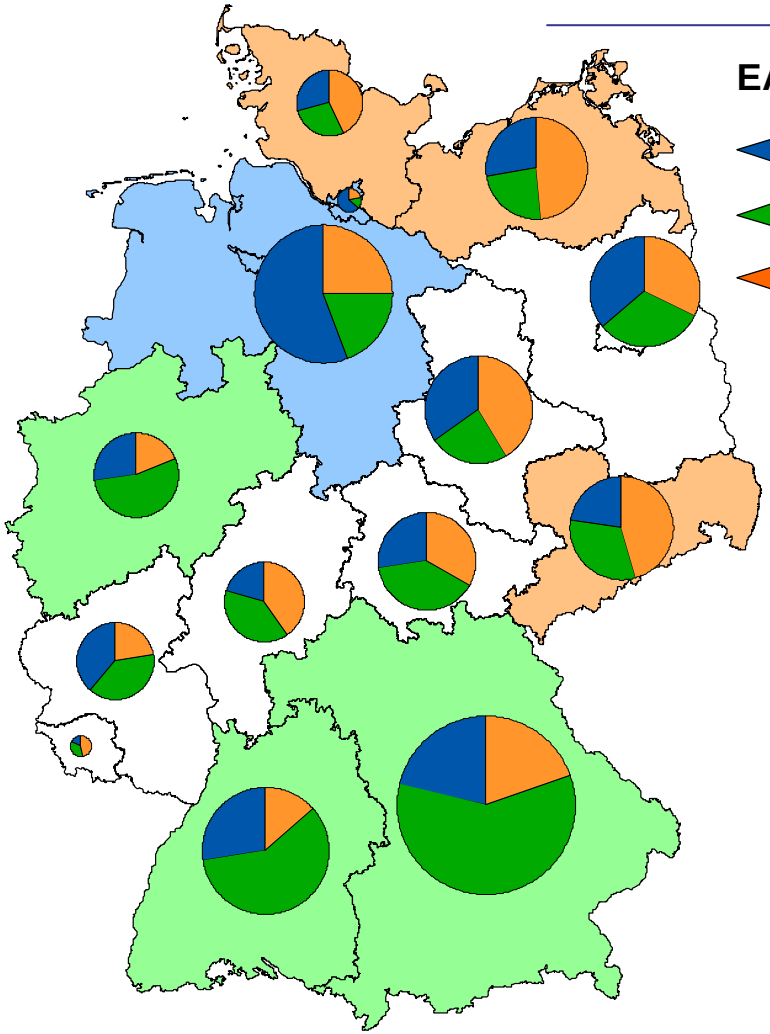
Content

- Overview of the structure of AEM in Germany
  - funding
  - measures
- Methodology of AEM evaluation
  - main system for data collection
- Results and perspectives

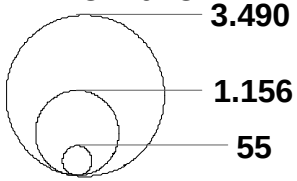
RDPs 2007- 2013 and their Financial Focus



EAFRD-Axis / Financial emphasis:

- **Axis 1: Competitiveness**
- **Axis 2: Environment / Landscape**
- **Axis 3/4: Rural Economy**
- **No financial focus**

Budget of the Programme in Mio Euro*:



***Public funds including Art.-89-Measures**

Quelle: RDP of the Länder, Grajewski (2007)

Funding and Kind of AEM in Germany

(non-convergence area)

50% EU	30 % Federal	20 % Land

grassland: extensive use - limit of live stock
ext. use of certain pasture plots/ result oriented

arable land: mulching or direct tillage
cultivation of intercrops and cover crops
accurate spreading of liquid manure

whole farm: organic farming

designated areas: possibly Nature-2000, WFD ….

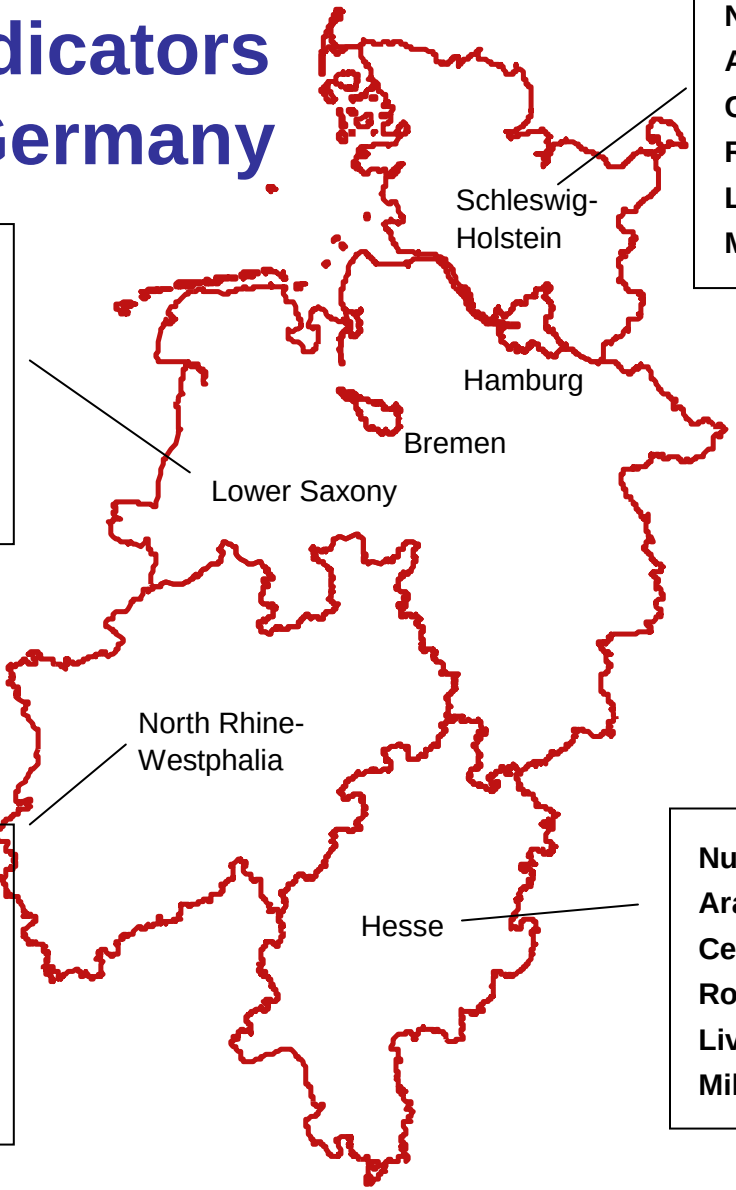
50% EU	50% Land

natural conservation: bird and wild animal protection,
biotop protection as wet grassland,
heath and moor .....

designated areas: Nature-2000

Our Region of Evaluation

Agricultural Indicators of Northwest Germany



Number of farms	18 200
Arable land of UAA (%)	67
Cereals on arable land (%)	49
Root crops on ar. land (%)	3
Livestock density (LU/ha)	1.0
Milk yield (kg/cow)	6800

Number of farms	57 400
Arable land of UAA (%)	71
Cereals on arable land (%)	53
Root crops on ar. land (%)	12
Livestock density (LU/ha)	1.0
Milk yield (kg/cow)	7200

Number of farms	53 500
Arable land of UAA (%)	71
Cereals on arable land (%)	60
Root crops on ar. land (%)	9
Livestock density (LU/ha)	1.05
Milk yield (kg/cow)	7200

Number of farms	26 800
Arable land of UAA (%)	62
Cereals on arable land (%)	64
Root crops on ar. land (%)	5
Livestock density (LU/ha)	0.6
Milk yield (kg/cow)	6500

vTI

Reiter, Roggendorf

Main Data Source: Integrated Administration Control System (IACS) plus AEM

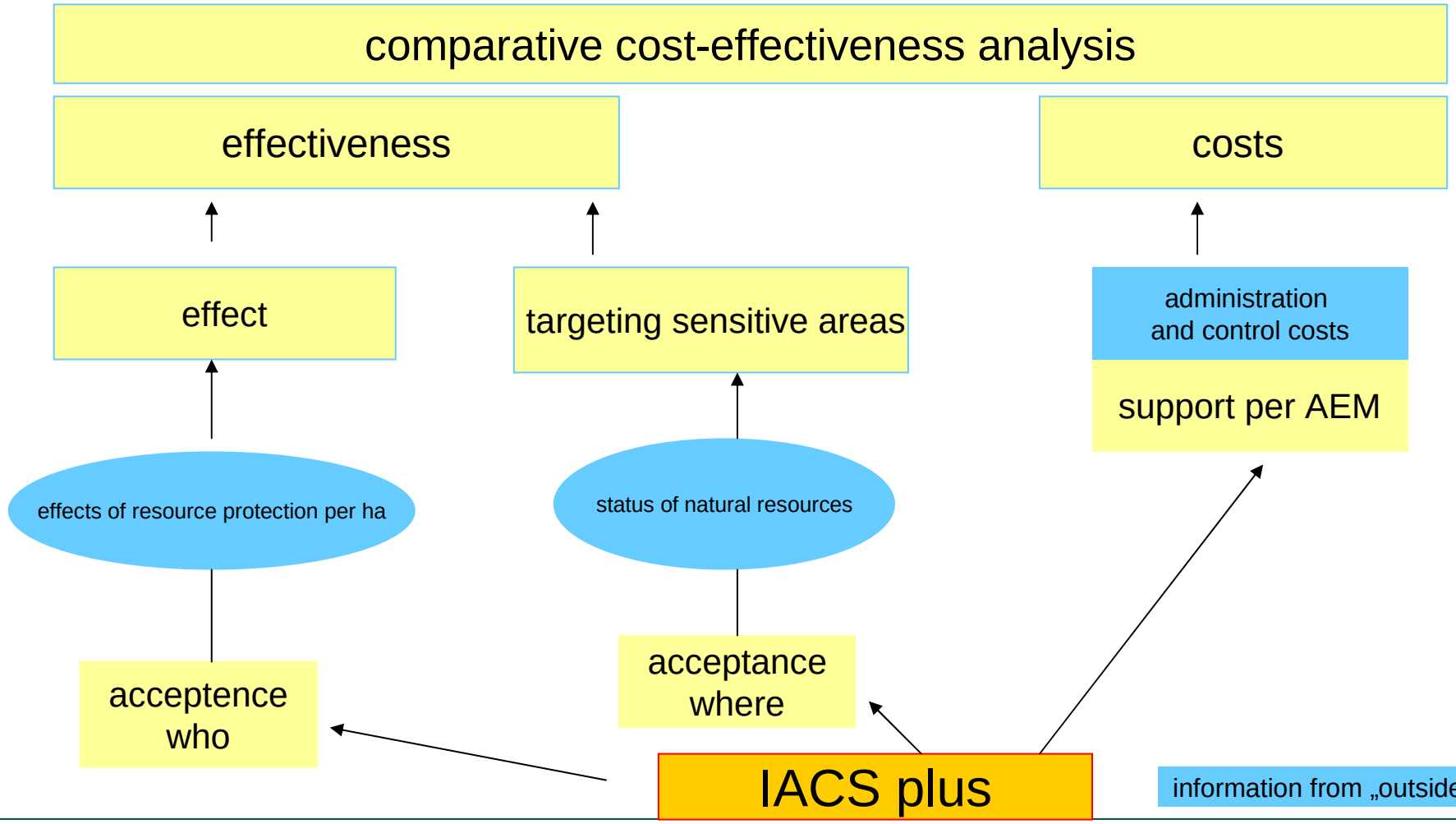
First Pillar, Land Parcel Identification System (LPIS)

Land manager	Field	Culture	ha	GIS	AEM_ID
Farm 1	A	gl. wet	10	xx	ext.gl.
	B	barley	2,8	xy	
	C	gl. pasture	2,8	xz	
	D	hedge	0,2	xa	nature cons.
Farm 2	A	neglected gl.	0,4	xg	org. farm.
					nature cons.
	B	rape seed	2,4	xv	org. farm.
	C	maize	7,8	xc	org. farm.
Farm 3	A	sugar beet	5,2	cq	
	B	wheat	11	xq	
	C	set aside	3,7	cs	
	D	pasture	1,1	cd	
Farm 4	A	pasture	8,2	cc	ext.gl.
	B	meadow	4,1	xl	ext.gl.
	C	wheat	3,2	cb	
	D	apple	6,7	xj	input reduct.

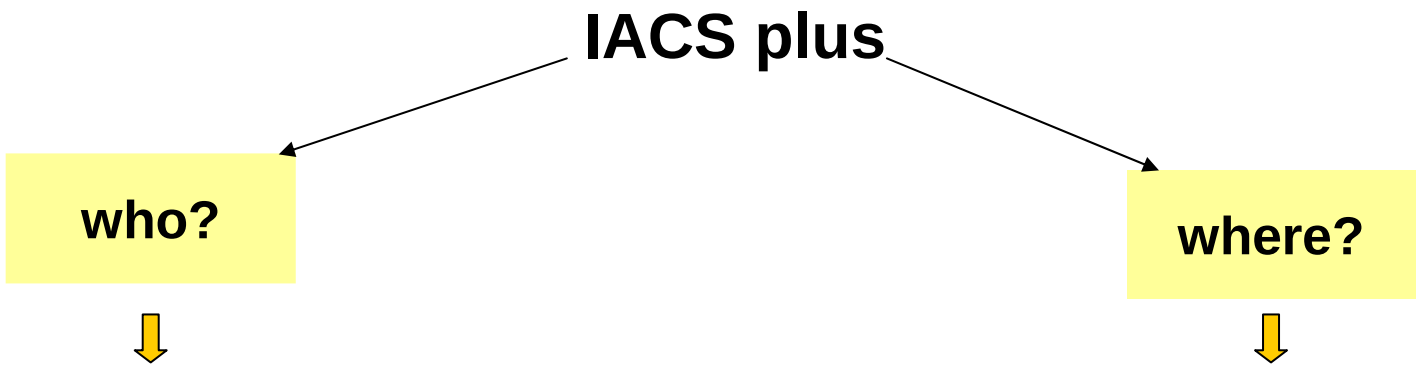
output indicators

- number of holdings
- hectares under support
- number of commitments

Steps of Evaluation - Schematic Illustration



Aceptance of AEM



- ✓ data on every Participant/ Non-Participant
- ➢ comparision of P/ Non-P by statistical methods by factors of location (poor/better)

- ✓ IACS-GIS
- ➢ targeting sensitive areas: ha under support in sensitive or polluted areas for water, erosion, ...

Who? Results Organic Farming and Grassland Extensification

Organic Farming:

- 2,4 – 7,2% of UAA, but high(er) acceptance in regions with poor locational conditions (3,1- 10% of UAA)
- $P_{farm\ size} > Non\text{-}P_{farm\ size}$, but not in regions with high(er) intensity
- P mostly forage growing or mixed farms with a high share of grassland
- much more grassland as arable land under support
- Due to skewed acceptance AEM „organic farming“ is not the „silver bullet“ to solve problems on arable land

Grasland Extensification:

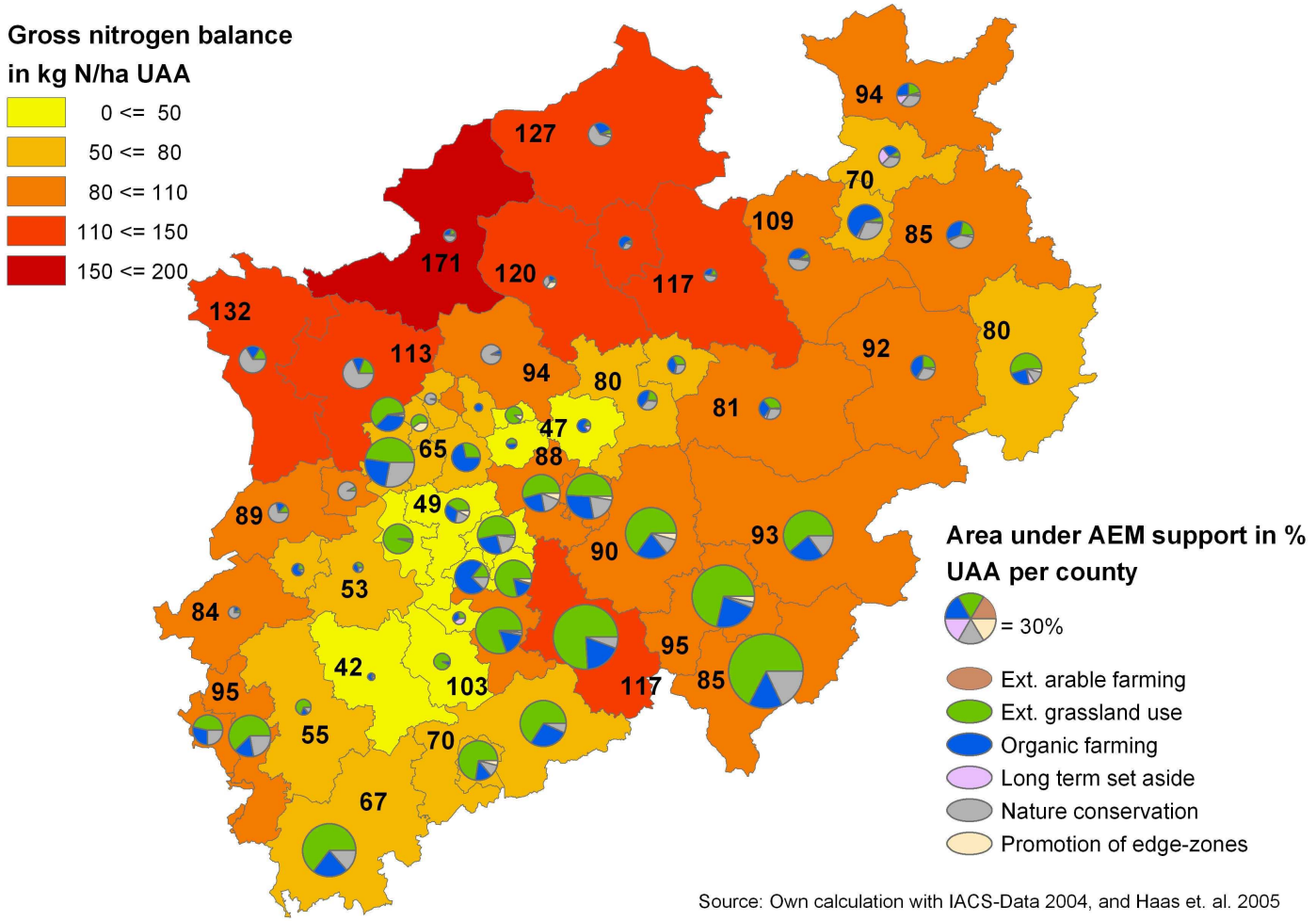
- 2,7- 35% of Grasland, poor locations: max. 43%
- $P_{farm\ size} > Non\text{-}P_{farm\ size}$
- live stock clearly below the upper limit
- prescription of pesticide and fertilizer different by Länder

Who? Results for Extensification Measures on Arable Land

mulching, cultivation of intercrops and cover crops, accurate spreading of liquid manure

- **high(er) acceptance rate in regions with good production conditions**
- **different interpretation because some AEM were only open for new contracts in 2003**
  - **a substantial rate of P practised the cultivation techniques before ⇒ low or no conversion**
- **$P_{\text{farm size}} > \text{Non-}P_{\text{farm size}}$**
- **but good <u>potential</u> resource protection by conversion**

Where? Targeting Sensitve Areas?
Gross Nitrogen Balance – North Rhine-Westphalia



Source: Own calculation with IACS-Data 2004, and Haas et. al. 2005

Results on Resource Conservation

- all resources: AEM reach sensitive or polluted regions insufficiently
- measures with positive effects on water resource need a better targeting to the areas of WFD
- measures on arable land have clear positive effects on soil conservation / erosion protection

Comparative Cost-Effectiveness Analysis

for every indicator

$$\frac{\Sigma \text{ (payments}_{\text{inside +outside}} + \text{administration costs)}}{\text{ha under suppot in targeted areas}}$$

$$\frac{\Sigma \text{ payments}_{\text{inside +outside}}}{\text{ha under suppot in targeted areas}}$$

ranking (-,+,++)

2015

quantification:
e.g. kg/N
+
results of
acceptance analysis

AEM	Cost-targeting-relation	Ranking	Effect-levels
Mulching	1,72	1	+
Grassland ext.	1,46	2	+
Organic farming	1,39	3	+
Intercrops	0,63	4	+
Set aside 10 years	0,25	5	+

Result + Forecast

In 2000 we knew that
AEM contribute to solve resource problems

In 2008 we know that AEM contribute to solve resource problems
AND who solves them where

In 2015 we would like to tell you:

we know that AEM contribute to solve resource problems AND who solves them where
AND to what extent

Thank you for your attention

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