

Erwin Schmid
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Effects of the Austrian agri- environmental programme on regional nutrient flows and nutrient balances



 **WIFO**

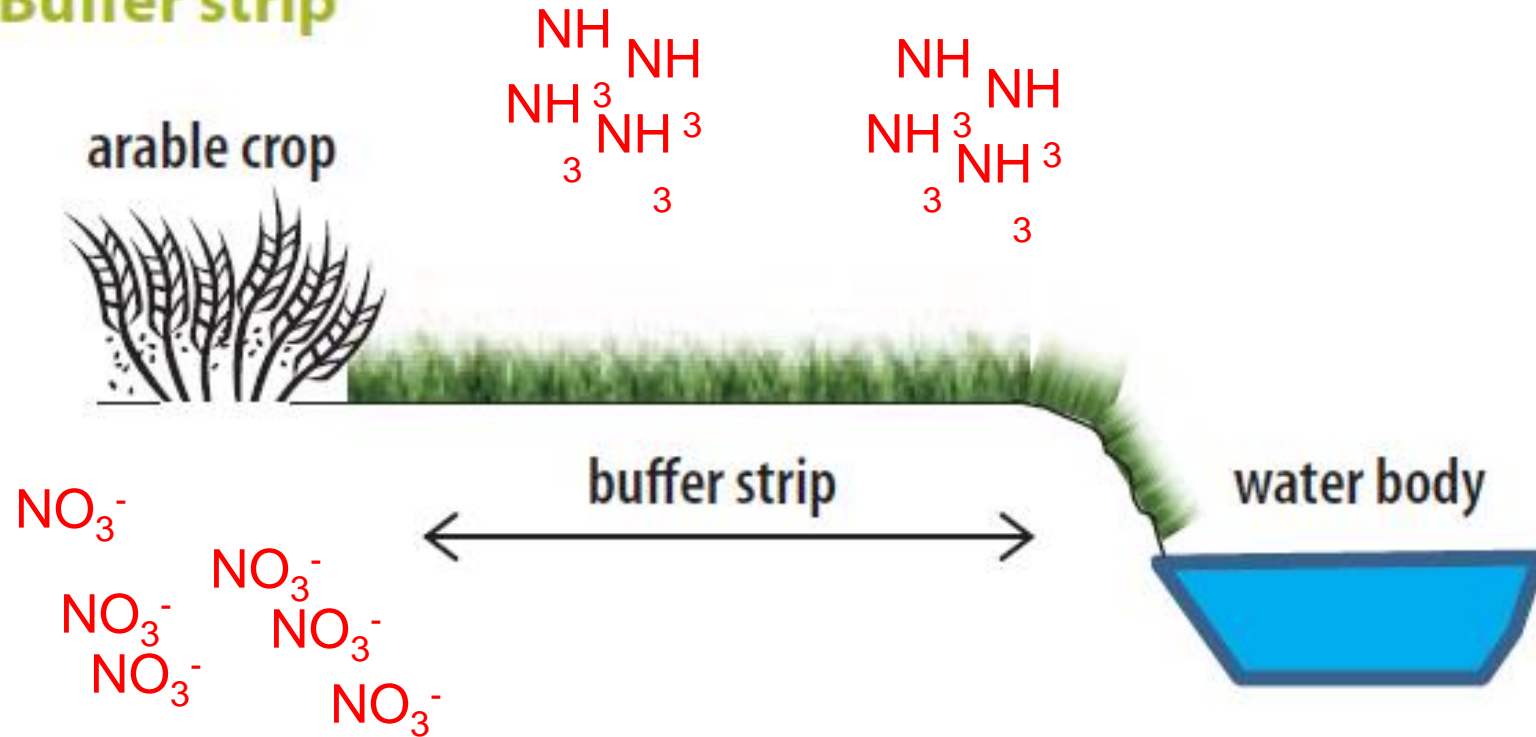
AUSTRIAN INSTITUTE OF
ECONOMIC RESEARCH

LUWQ2015 conference
23th September 2015
Vienna

- **motivation and problem statement**
- **concept, data and method**
- **policy experiment and results**
- **discussion**

problem statement

Buffer strip



groundwater quality in EU

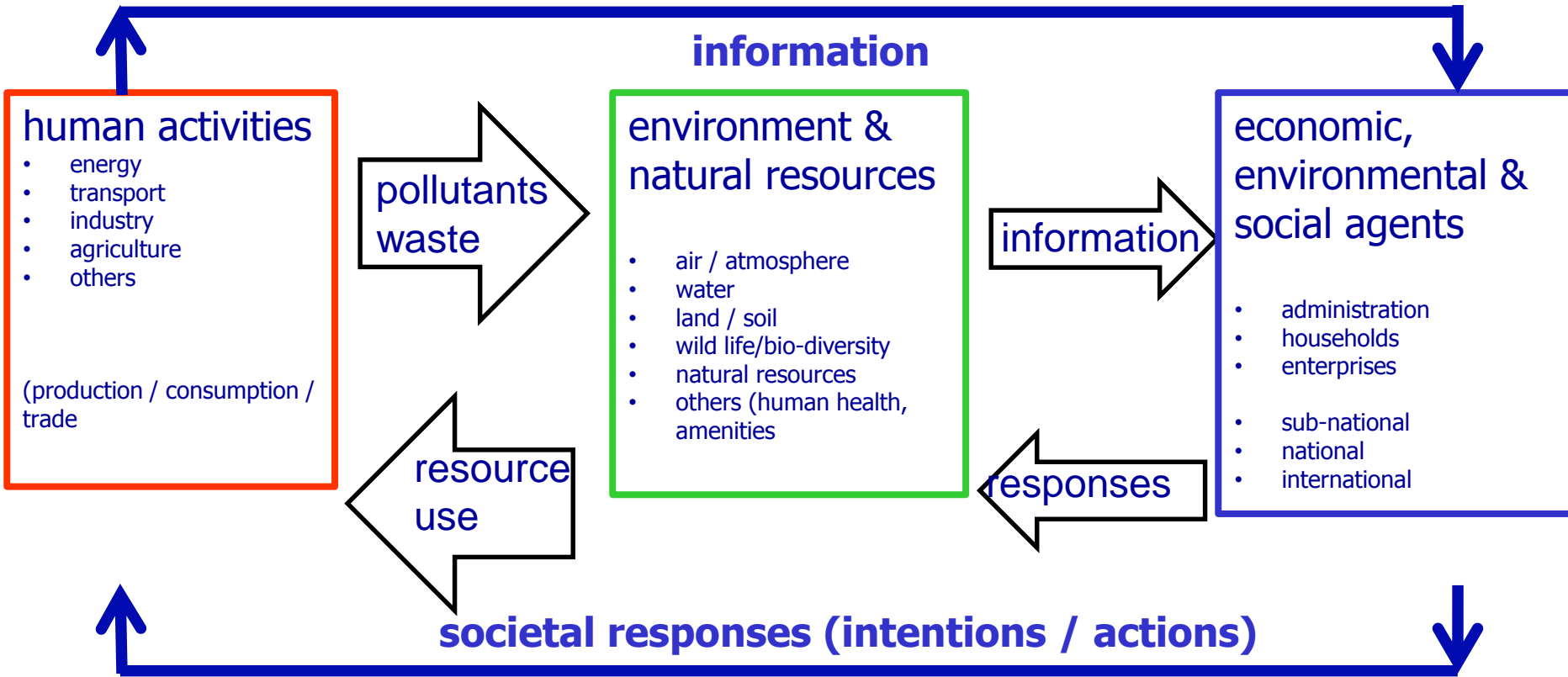
Member State	< 25	25-40	40-50	? 50
FI	98.7%	1.3%	0.0%	0.0%
IE	86.7%	10.9%	2.4%	0.0%
SE	98.2%	0.9%	0.6%	0.3%
LV	95.4%	2.9%	0.6%	1.2%
LT	93.5%	3.2%	0.0%	3.2%
PL	87.0%	5.0%	2.9%	5.2%
SI	78.8%	6.7%	7.8%	6.7%
HU	87.7%	4.0%	1.3%	6.9%
AT	74.5%	11.5%	5.3%	8.8%
SK	75.1%	10.0%	3.8%	11.0%
RO	76.5%	8.3%	3.8%	11.5%
FR	51.0%	25.1%	12.0%	12.0%
CZ	75.8%	8.0%	3.9%	12.3%
NL	77.8%	6.5%	3.2%	12.5%
IT	67.3%	14.0%	6.0%	12.7%
EE	54.2%	23.6%	8.4%	13.8%
UK	61.7%	17.4%	6.9%	14.0%
LU	40.0%	35.0%	10.0%	15.0%
CY	75.8%	6.6%	2.5%	15.2%
BE	60.4%	14.7%	7.1%	17.9%
BG	57.3%	16.7%	8.0%	18.1%
DK	65.4%	8.4%	6.9%	19.3%
GR	62.4%	11.4%	6.8%	19.5%
PT	64.7%	11.3%	3.8%	20.2%
ES	57.5%	13.1%	6.3%	23.1%
DE	8.2%	22.6%	18.2%	50.9%
MT	2.4%	9.8%	17.1%	70.7%
EU	67.0%	12.7%	5.9%	14.4%

agriculture and environment DPSIR framework

Pressure
indirect pressures /direct

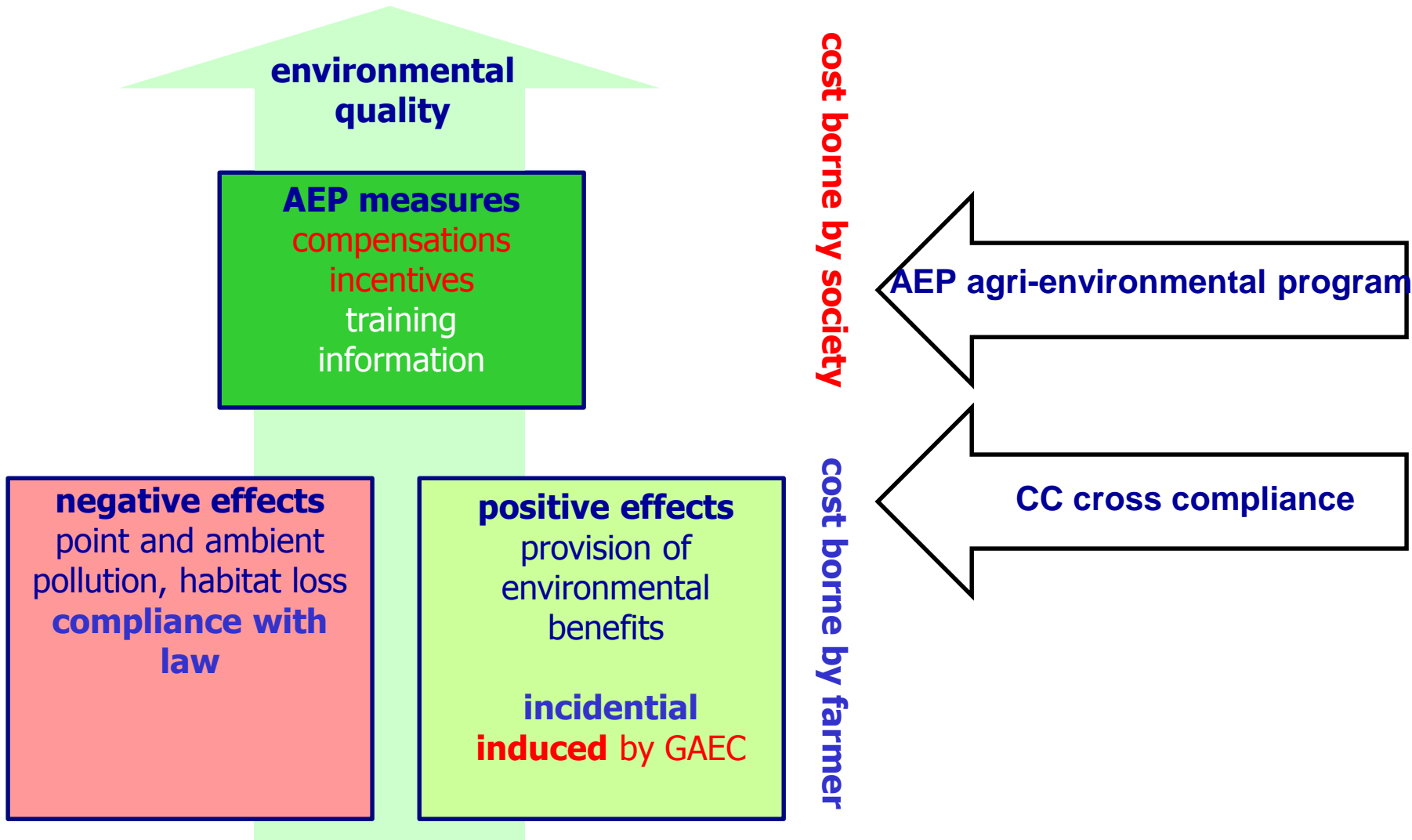
STATE

RESPONSE



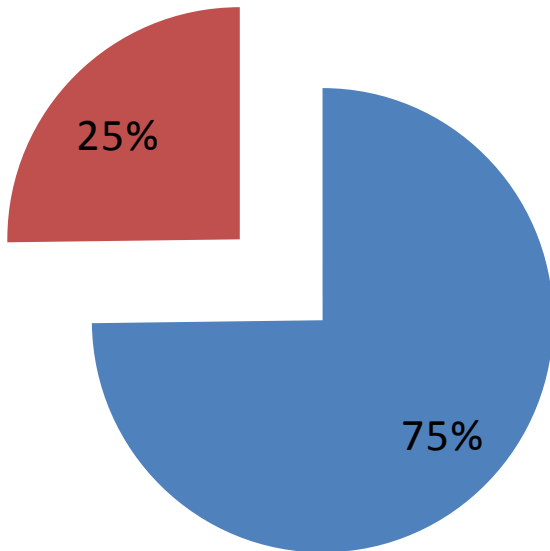
Source: Linster - OECD, 2003; see also Schmid, Sinabell, 2007b

agriculture and environment the farmer`s view



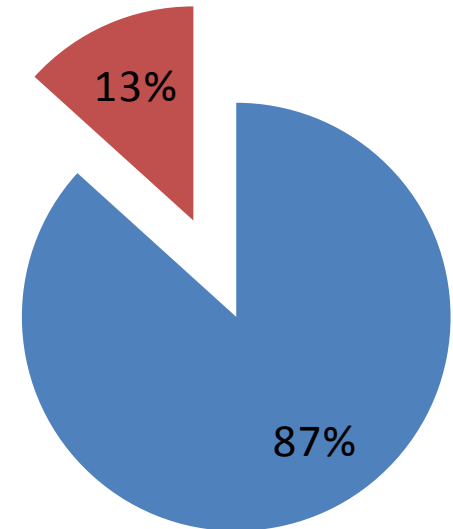
share of farms

■ AEP ■ non-AEP



share of farmland (excluding alpine grassland)

■ AEP ■ non-AEP



nutrient flow relevant measures

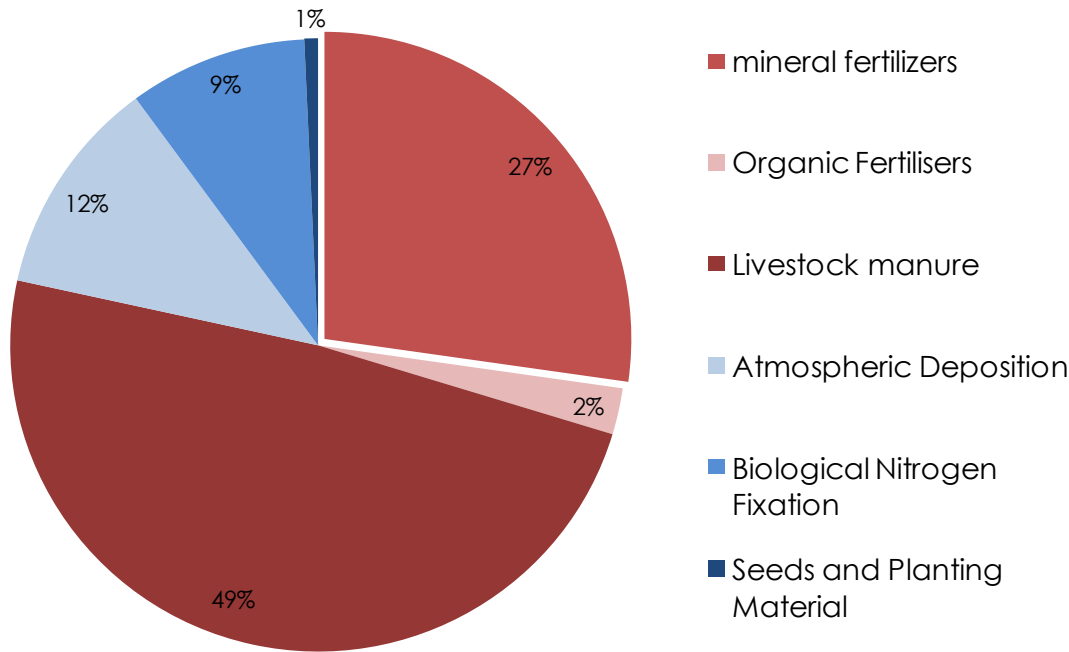
**total annual volume of AEP: 500 million Euro
of which 344 million Euro for relevant measures**

nutrient flow relevant AEP measures	Million €
organic farming	94.96
environmentally sensitive farming	101.6
ban of synthetic inputs arable land	0.46
ban of synthetic inputs grassland	16.45
integrated production on arable land	10.09
integrated production on wine yards	10.31
integrated production specific land	0.57
eco-point programme	35.42
winter cover farm land	61.91
mulch seed and direct seed	5.31
soil and ground water protection measures	7.69
ground water protection measures	0.01

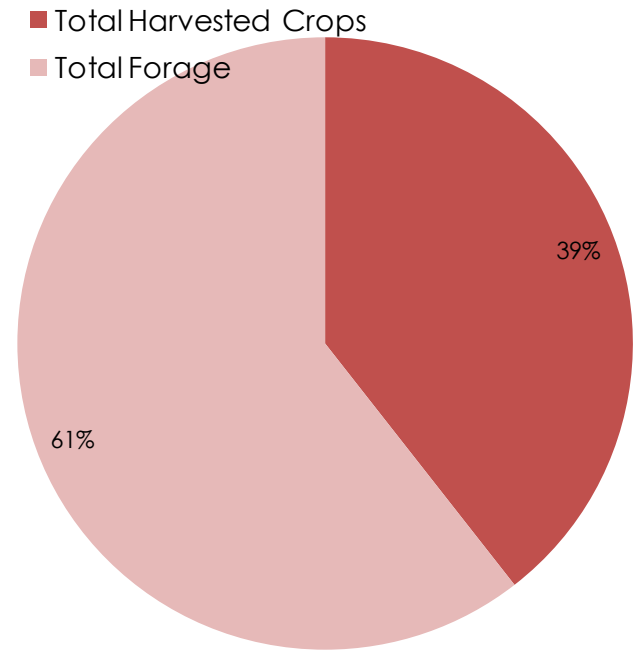
concept, data and model

N-balance for Austria OECD method

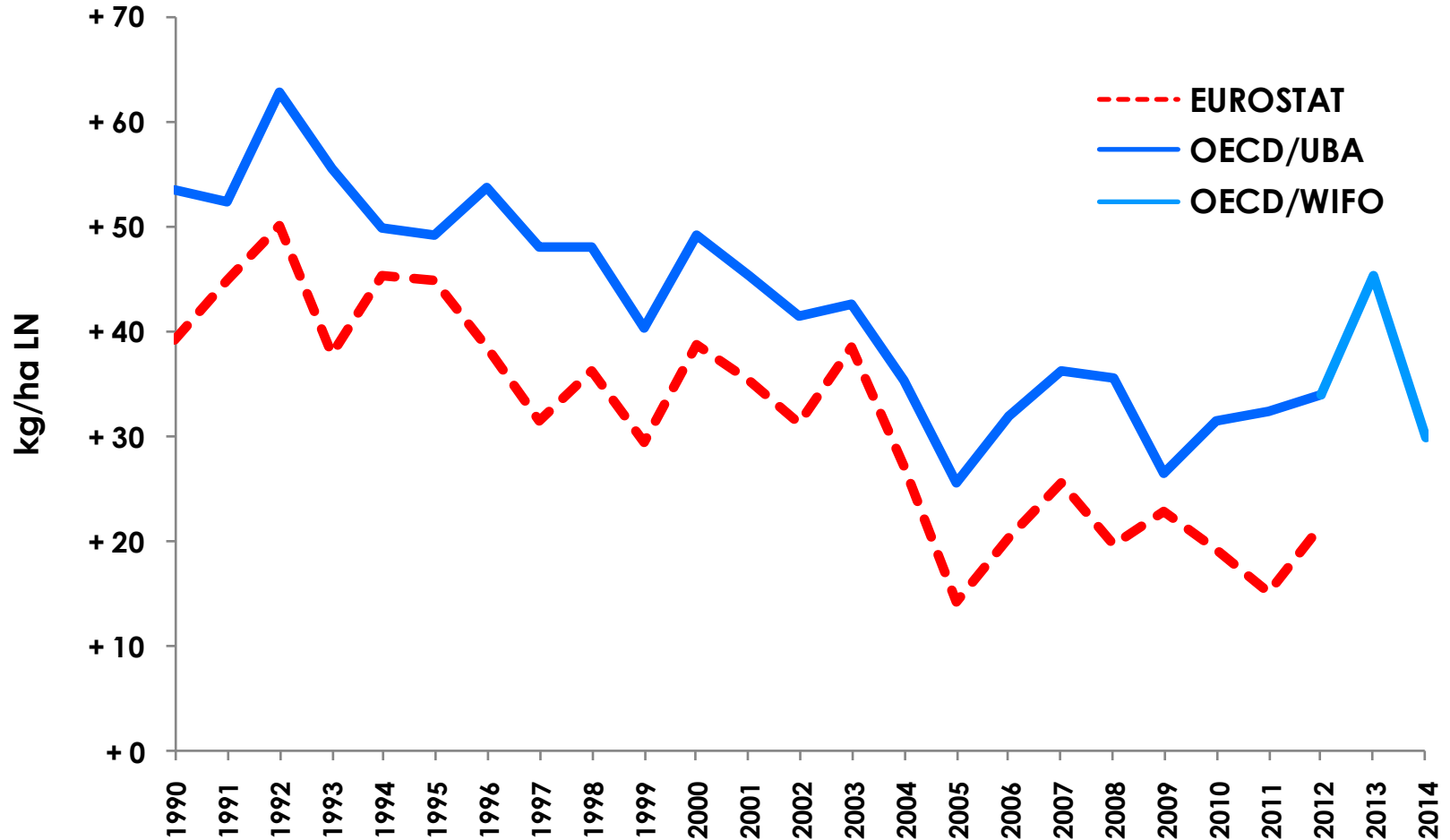
Nitrogen inputs, Ø 2010-2012



Nitrogen outputs, Ø 2010-2012



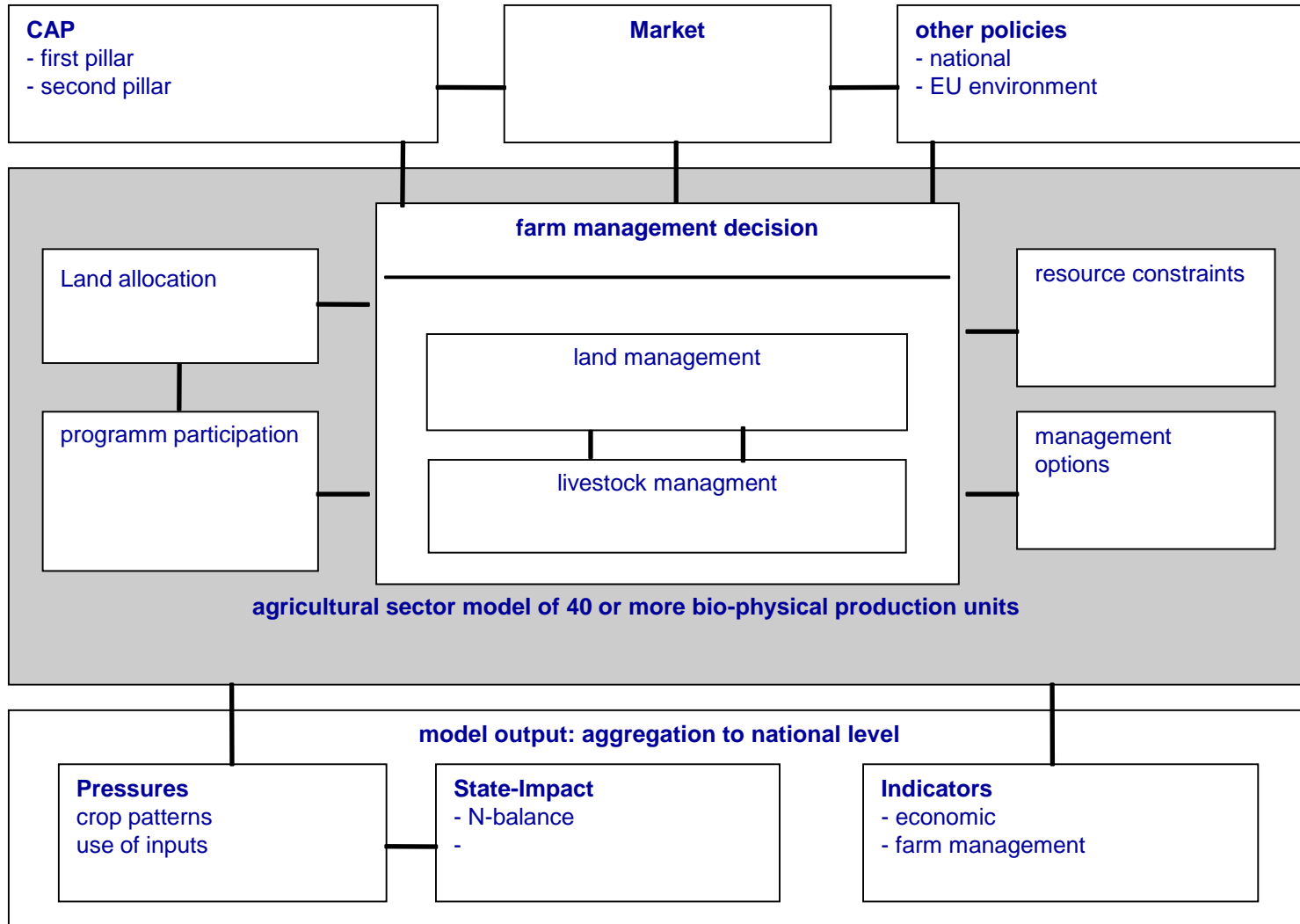
nitrate balances Austria EUROSTAT versus OECD



source: WIFO

agricultural sector model of Austria

PASMA

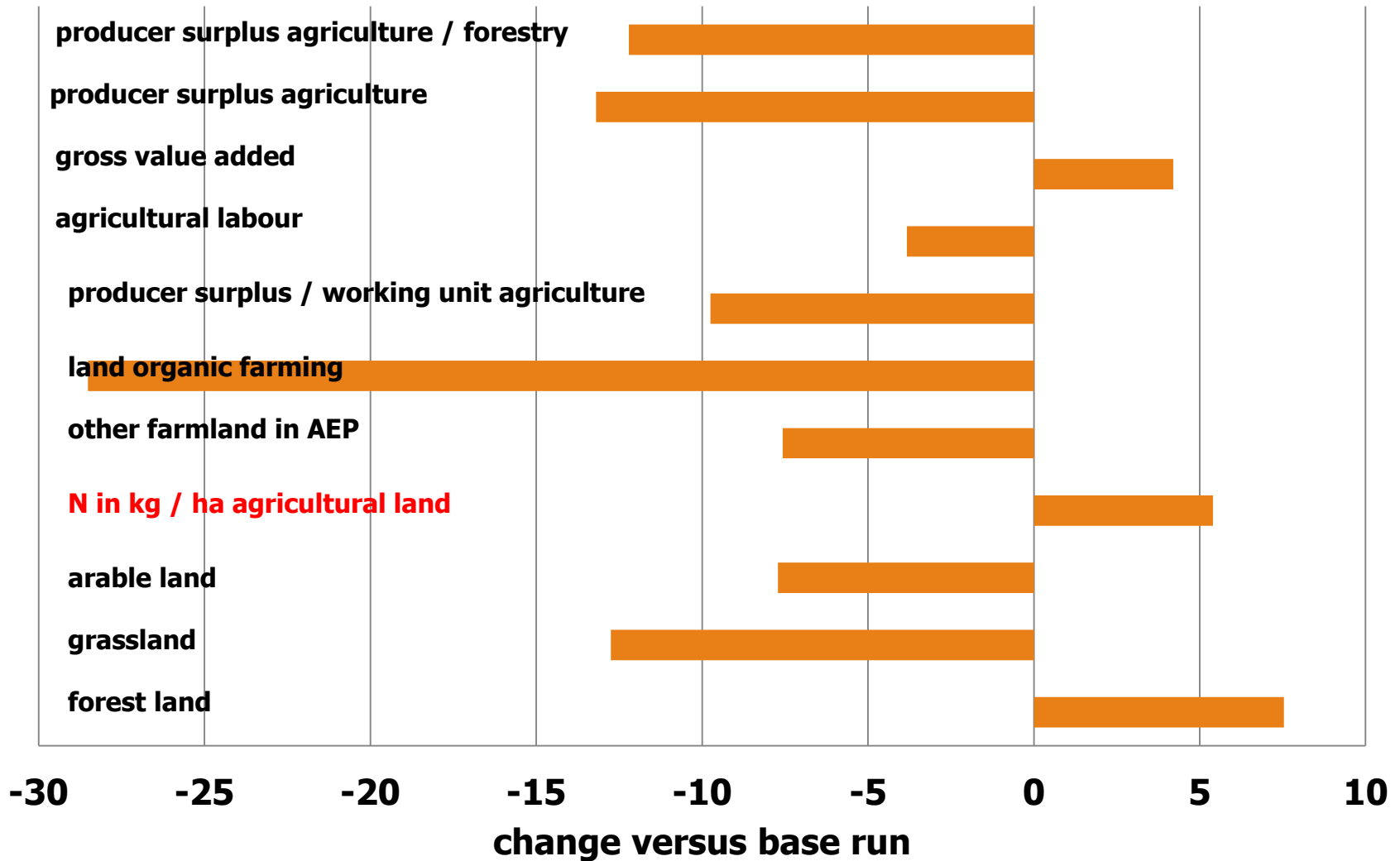


policy experiment and results

policy experiment reference versus counterfactual w/o PRD

	reference	w/o PRD
	billion €	
2000-2006	11.65	
2007-2013	13.09	5.44
2007-2013 p.a.	1.87	0.77
	relative to reference in %	
2007-2013		-59

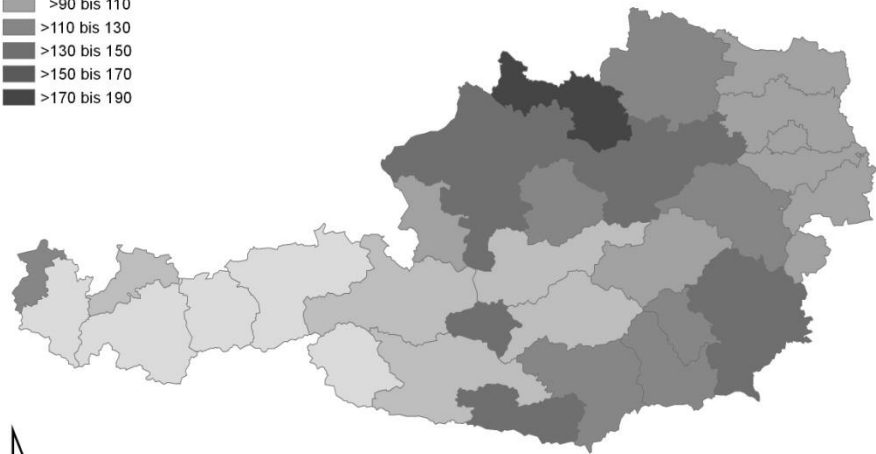
change of impact indicators in % w/o PRD vs base run



average N input on agricultural land in kg/ha

baserun

- 50 bis 70
- >70 bis 90
- >90 bis 110
- >110 bis 130
- >130 bis 150
- >150 bis 170
- >170 bis 190

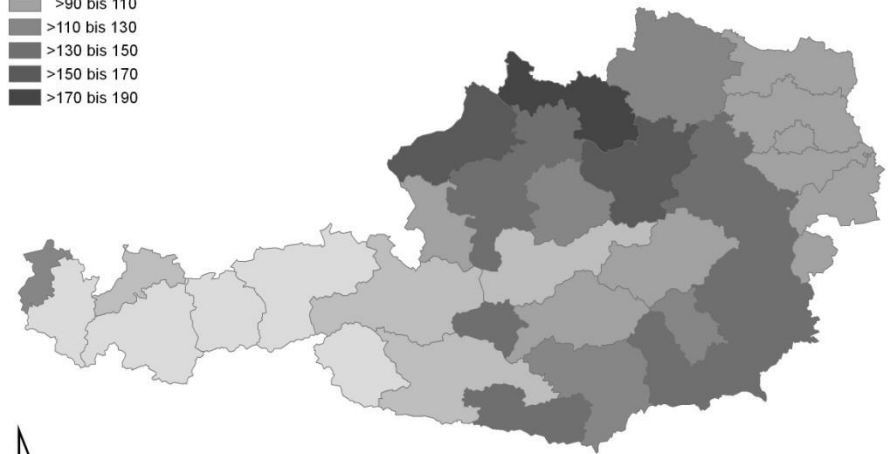


2.8. 2010
 Quellen: Modellergebnisse aus PASMA
 Bearbeitung: Martin Schönhart



without PRD

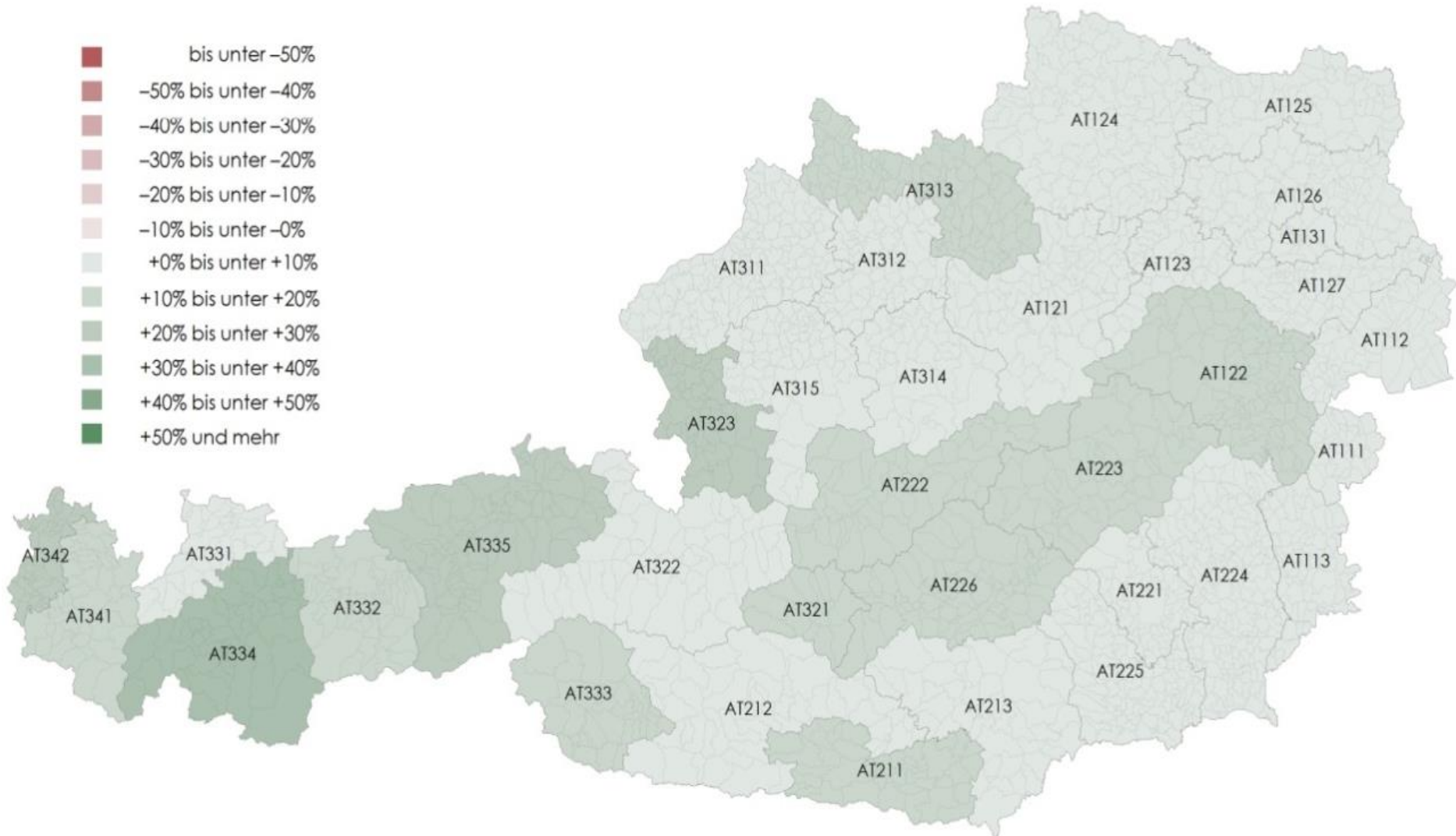
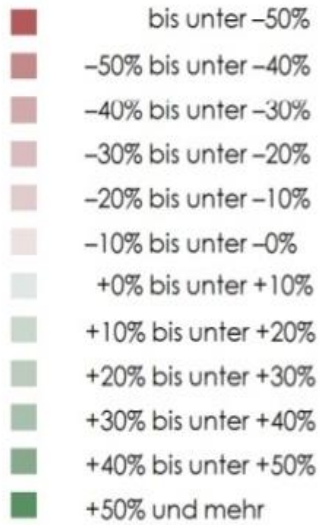
- 50 bis 70
- >70 bis 90
- >90 bis 110
- >110 bis 130
- >130 bis 150
- >150 bis 170
- >170 bis 190



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change of regional nutrient balance in % w/o PRD vs base run



discussion and conclusions

■ effects of PRD on nutrient flows

- agricultural land is kept in production
- commercial fertilizer +13% than otherwise
- intensity per ha is lower than otherwise

■ results are therefore ambiguous

■ evaluation of effects depend on policy goal

- impact indicator: **nutrient balance**

MIT UNTERSTÜTZUNG VON BUND UND EUROPÄISCHER UNION



Europäischer Landwirtschaftsfonds
für die Entwicklung des ländlichen
Raums: Hier investiert Europa in
die ländlichen Gebiete.

