Methoden der Evaluation investiver Maßnahmen im Vergleich

Hannes Wimmer und Franz Sinabell

“Den Wirkungen auf der Spur“ – Wie können uns theoriebasierte Evaluationsdesigns helfen?

DeGEval Frühjahrsworkshop des AK-Strukturpolitik

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STUDIENDESIGN

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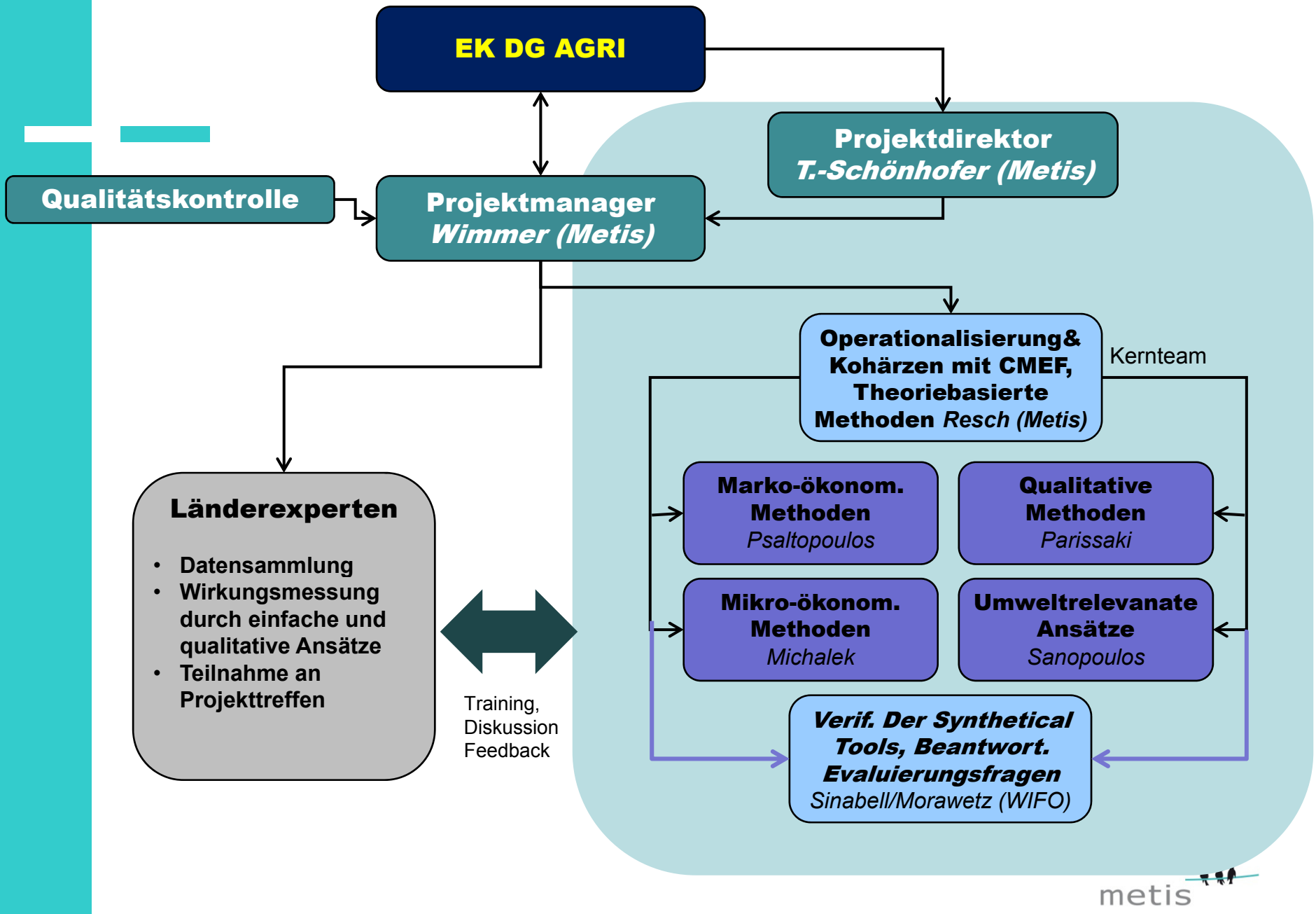
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Qualitätskontrolle
Projektmanager
Wimmer (Metis)
Operationalisierung& Kohärzen mit CMEF, Theoriebasierte Methoden Resch (Metis)
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Qualitative Methoden
Parissaki
Mikro-ökonom. Methoden
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Umweltrelevanate Ansätze
Sanopoulos
Verif. Der Synthetical Tools, Beantwort. Evaluierungsfragen
Sinabell/Morawetz (WIFO)
Länderexperten
• Datensammlung
• Wirkungsmessung durch einfache und qualitative Ansätze
• Teilnahme an Projekttreffen
Training,
Diskussion
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Evaluierungsfragen (lt. ToR)

EQ1: **Inwieweit waren die getesteten Methoden geeignet die Effektivität, Effizienz und die Wirkung der unterschiedl. Investitionsfördermaßnahmen zu messen?**

EQ2: **Wie hoch ist die Effektivität, Effizienz und die Wirkung der untersuchten Investitionsfördermaßnahmen in den ausgewählten Programmen?**

EQ3: **In welchem Ausmaß waren die verschiedenen Ansätze zur Erhöhung der Zielgerichtetheit der Investitionsfördermaßnahmen wirksam und trugen zur Erreichung der generellen bzw. der spezifischen Ziele der LE-Politik bzw. Programme bei?**

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Vorauswahl potentieller Methoden

Type of method	Input	Output	Beispiele	Selected methods
Qualitative Methoden	Mainly text (spoken or written) and/or theory	Substance of text analyzed, effects (ordinal), impacts (ordinal)	Interviews, MAPP, Delphi method	**MAPP at regional or micro-level**
Theory of change	monitoring data, interviews, surveys, focus groups, case studies	Qualitative estimate of the gross impacts	Contribution Analysis **Theory based impact evaluation** Policy Scientific Approach Strategic Assessment Approach	Theory based impact evaluation at measure or programme level
Ökonometrische Methoden	Economic theory and figures on unit level	Estimates of (net) effects (cardinal), hypothesis-tests	**Microeconomic modelling** (counterfactuals), RCT, PSM, regression analysis, DID	Counterfactuals at regional and micro-level
Quantitative Ökonomische Modelle	Economic theory and parameters	Estimates of impacts (cardinal)	**regional and national Input-Output**, general and partial equilibrium models, farm models	Input-Output analysis at national and regional level, CBA, CEA
Umweltrelevante Ansätze	Scientific theory, figures on unit level, coefficient or parameter	Effects, impacts, text on environment	CBA, LCA, integrated modelling approaches	SEA, CEA
Methodenmix	All of the above	All of the above	GRIT, theory of DPIRS – driving forces, pressures, states, impacts, responses (e.g. GLOBIOM, FAMOS[space])	Takes place at the case study level (3 cases)

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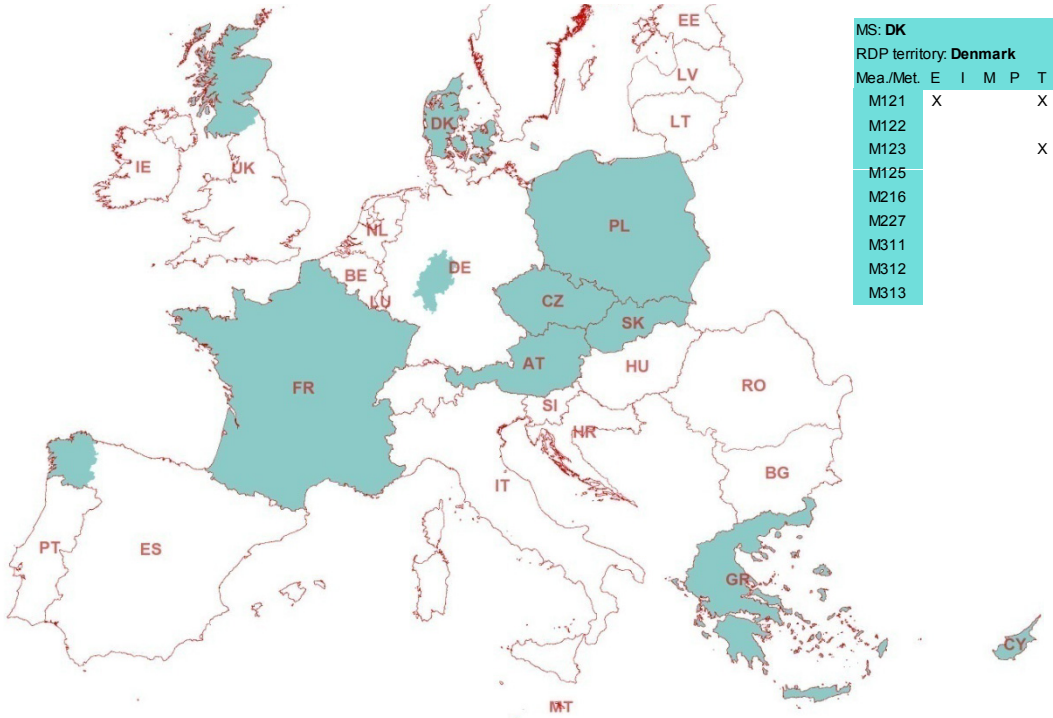
11 Fallstudien

MS: **UK**						
RDP territory: **Scotland**						
Mea./Met.	E	I	M	P	T	3
M121		X	X			
M122		X				
M123		X	X			
M125						
M216						
M227	X					
M311		X	X			
M312		X				
M313		X				

MS: **FR**						
RDP territory: **France**						
Mea./Met.	E	I	M	P	T	3
M121	X				X	
M122						
M123						X
M125						
M216	X				X	X
M227	X				X	
M311						
M312						
M313	X				X	X

MS: **ES**						
RDP territory: **Galicia**						
Mea./Met.	E	I	M	P	T	3
M121		X	X			X
M122		X	X			X
M123		X	X			X
M125	X		X			
M216						
M227	X		X			
M311		X	X			
M312		X	X			
M313		X	X			



MS: **AT**						
RDP territory: **Austria**						
Mea./Met.	E	I	M	P	T	3
M121		X		X		X
M122		X		X		
M123		X		X		
M125	X	X		X		X
M216						
M227						
M311	X	X		X		X
M312		X				
M313		X				

MS: **SK**						
RDP territory: **Slovakia**						
Mea./Met.	E	I	M	P	T	3
M121		X	X	X		X
M122		X				
M123		X	X			X
M125		X	X			
M216						
M227						
M311		X		X		X
M312						
M313		X				

MS: **GR**						
RDP territory: **Greece**						
Mea./Met.	E	I	M	P	T	3
M121		X	X			X
M122						
M123		X	X			X
M125	X	X				X
M216						
M227						
M311		X	X			
M312		X	X			
M313		X	X			

MS: **CY**						
RDP territory: **Cyprus**						
Mea./Met.	E	I	M	P	T	3
M121	X	X			X	X
M122						
M123		X			X	X
M125						
M216						
M227	X				X	
M311						
M312						
M313					X	X

MS: **DK**						
RDP territory: **Denmark**						
Mea./Met.	E	I	M	P	T	3
M121	X				X	X
M122						
M123					X	X
M125						
M216						
M227						
M311						
M312						
M313						

MS: **DE**						
RDP territory: **Hessen**						
Mea./Met.	E	I	M	P	T	3
M121		X		X	X	X
M122						
M123		X				
M125						
M216						
M227	X				X	X
M311		X				X
M312		X				
M313		X				

MS: **PL**						
RDP territory: **Poland**						
Mea./Met.	E	I	M	P	T	3
M121		X		X	X	X
M122						
M123		X				X
M125						
M216						
M227						
M311		X				X
M312		X				
M313						

MS: **CZ**						
RDP territory: **Czech Rep.**						
Mea./Met.	E	I	M	P	T	3
M121		X	X	X	X	X
M122		X				X
M123		X	X	X		X
M125		X		X		X
M216						
M227					X	
M311			X	X	X	
M312		X				
M313		X			X	

Abkürzungen: E: CEA/SEA, I IO, M MAPP, P PSM, T TBE, 3 EQ3

Synthesis across all measures, case studies and methods

ANTWORTEN ZU EVALUIERUNGSFRAGEN

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Antwort EQ1:
EIGNUNG der Methoden – untersuchte Fälle

criteria	CEA / SEA	IO	MAPP	PSM	TBE
rigour					
causality	assumed	assumed	assumed	measured	assumed
scale	all scales	cardinal	ordinal	cardinal	ordinal
indicator					
efficiency	X CEA	X		X	
effectiveness	X SEA	X		X	X
impact	X SEA	X	X	X	
data requirements					
structured data		IO-tables		FADN+	
analyses/reports	X	X	(X)		X

Answer EQ1
EIGNUNG der Methoden – untersuchte Fälle

Criteria: resources necessary, judgment on quality, transparency

- **Resources**: necessary for case studies
  - ranking of GE **resources** (weight: number of case studies)
    - **manpower fieldwork**: TBE>PSM>MAPP>CEA/SEA>IO
    - **expenses fieldwork**: PSM>MAPP>TBE>CEA/SEA>IO (max 3,000)
  - Structured and maintained data necessary for IO and PSM
  - Analyses / reports necessary for IO, (MAPP), SEA/CEA, TBE
- **Perceived quality** of results relative to best case
  - IO =1.7; MAPP = 2.5; PSM = 2; SEA and CEA: 3.8; TBE = 2.8
- **Transparency**: all intermediate results *can* be made available; micro-data: access restricted

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Antwort EQ2
Ergebnisse zu Effizienz, Effektivität, Wirkung

- CEA/SEA
  - results on efficiency (CEA) and effectiveness/impact (SEA) sparse and not conclusive for many measures
- IO results (focus on employment per million €)
  - efficiency: negative (1 case), else wide range from 9 to more than 100; - but in most cases improvement due to demand effect; effectiveness and impact: diverse range
- MAPP and TBE
  - complementary on large number of aspects (incl. environment) and different results on various (sub-) indicators of the same measure
- PSM
  - most measures show positive efficiency indicators, though low compared to IO; effectiveness / impact low in many cases as well

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Antwort EQ2
Beobachtung von widersprüchl. Ergebnissen

- contrasting results - case CZ M121
  - IO measures significant increase of regional GVA and employment (jobs) based on MA data
  - MAPP indicates different effects for farmers and other sectors (e.g. low impact on farm jobs, medium on non-farm jobs)
  - PSM results show negative effect on farm employment but small positive effect on labour productivity
  - TBE observes "medium" effectiveness w.r.t. sub-indicator "better use of production factors"
- potential reasons and remedies
  - data source: micro-data vs. administrative data vs. observations of non-representative survey
  - measure the causal relationships

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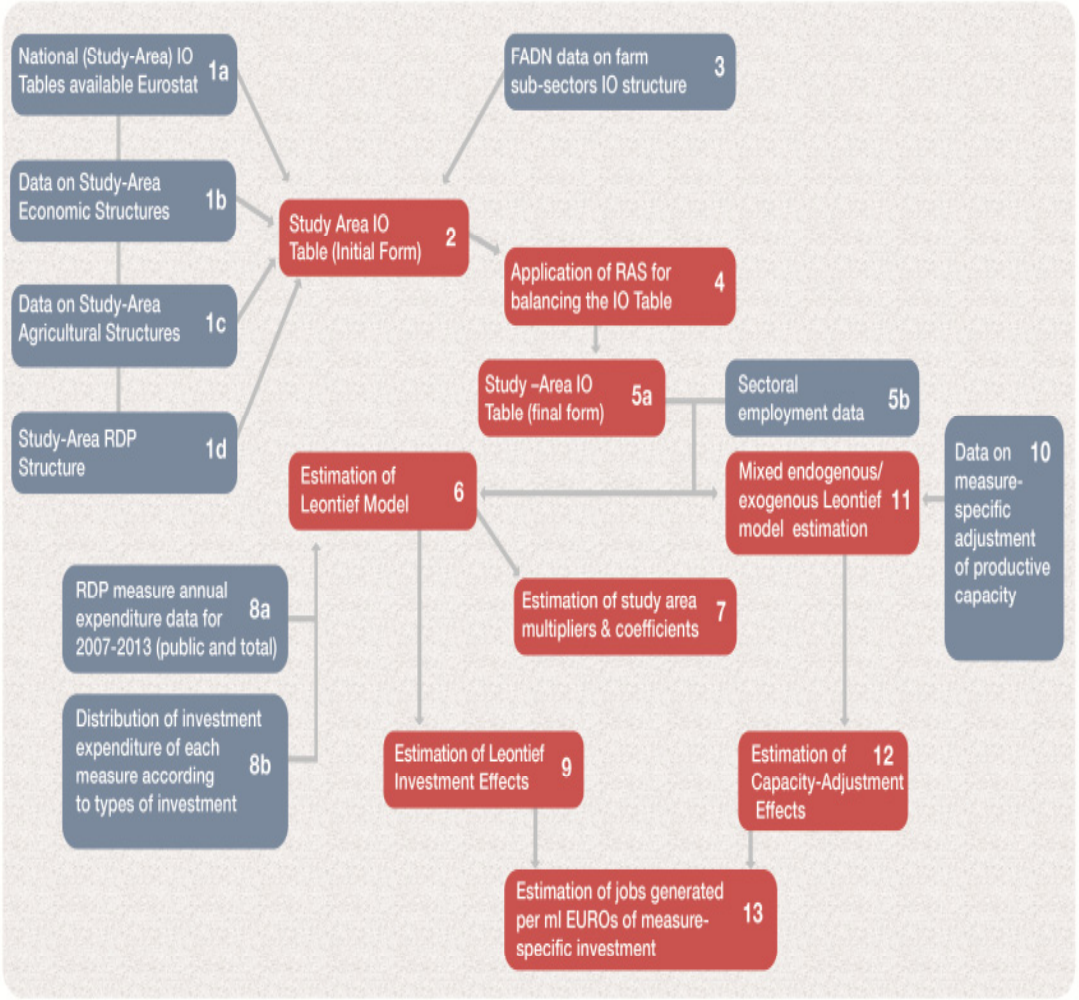
Input-Output Analysis (IO)

IO analysis includes five main components: (i) convert of published IO table into its final form (case study characteristics); (ii) obtain measure-specific data on annual expenditure distinguish by type of investment; (iii) obtain data on measure-specific adjustment of productive capacity; (iv) construct and run Leontief models (simple and mixed exogenous/endogenous versions); (v) obtain estimates and judge on efficiency, effectiveness and impact.



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Input-Output Analysis (IO)

Efficiency, effectiveness and impact results based on the IO analysis

Measure		indicator	AT	CZ	DE/He	ES/Ga	PO	UK/Sc	GR	CY	SK
121	effi. IE	jobs/mil	18.52	48.46	16.27	28.50	63.29	25.33	37.59	42.62	52.04
121	effi. CA	jobs/mil	13.43	15.40		-19.42	21.34	8.13	0.41	0.58	1.29
121	**effi. T**	**jobs/mil**	**31.95**	**63.86**	**16.27**	**9.08**	**84.63**	**33.46**	**38.00**	**43.20**	**53.33**
121	effi. CA-CF	jobs/mil	8.36	6.12	-0.13						0.92
121	**effe.**	**Δ GVA**	**1.70**	**12.90**		**-0.48**	**0.48**	**0.45**	**2.26**	**10.91**	**4.83**
121	**imp.**	**Δ jobs**						**0.18**	**0.57**		

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Workflow MAPP method

Sets the context. The overall trends in the quality of life throughout the period under analysis. And provides explanations for the trends.

Analysis of the impact indicator trends per year and for the whole period.

More focused analysis of indicators per measure/ intervention, i.e. which intervention has most impact on each indicator and overall. Overall means: a) which measure had most impact on rural areas and b) on which indicator the RDP had most impact.

Summarises all previous steps to show:

1) How each impact indicator behaved (increase, decrease, no change)
2) The extent to which the RDP influenced the indicator score
3) Remarks/ explanations of 1 and 2 above
4) Which measure or other factor(s) has most influence on each impact indicator.

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MAPP method / case study Scotland/UK

- Findings on impact of M121 – **Income, competitiveness, productivity**
  - Farm incomes boosted in RDP assisted holdings
  - No impact on farm incomes in non-RDP assisted holdings
  - Competitiveness affected a little by the measure towards the end of the period – other factors had higher impact
  - Investments improved output per unit of labour
- Findings on impact of M121 – **Environment**
  - Water quality and energy efficiency improved more as a result of other support regimes and regulations than the RDP investments
  - No impact on biodiversity

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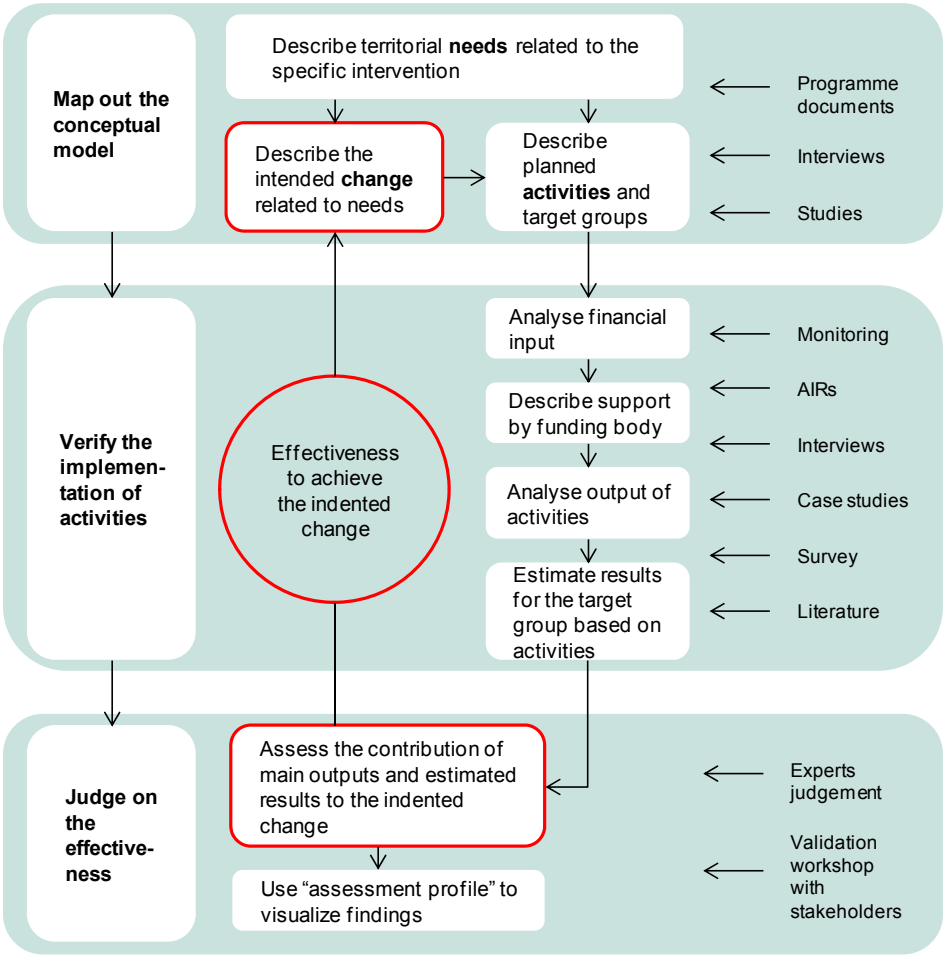
Programme theory based evaluation (TBE)

TBE has three vital components: (i) to map out the **conceptual model** – the intended change - for investment support (ii) to verify the **implementation of the model** by empirical data (iii) and to judge on the **effectiveness** to achieve the intended change



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Programme-theory based evaluation (TBE), case study Czech Republic

It turned out that the **effectiveness** is quite high ranging from “medium”, “high” to even “very high”

M	The intended change	Experts judgement					
		don´t know	very low	low	me-dium	high	very high
			1	2	3	4	5
Support to on farm investments (M121, M123, M311)x	1. Better use of production factors, both on farms and in the sector (some relevance of LFA)				X		
	2. Enhanced marketing, improved revenue on farms (some relevance of LFA)					X	
	3. Improved competitiveness (lower costs) of farms and of the sector				X		
	4. Enhanced animal welfare – on farms and in the sector						X
	5. Reduction of emissions in water and air – particularly in NVZ				X		
	6. Contribution to renewable energy production – the sector level				X		

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Counterfactual Econometric Method : Main Results of PSM method

Years 2007-2012	Poland	Austria	Czech Republic	Slovakia	Germany (Hessen)
Effectiveness (1)					
Indicator 1 a: **micro-level**: an increase of a Gross Farm Income or **GVA** (result indicator) for programme beneficiaries **due to M121 measure**	+19.1% vs. +119% (target)	+18.5% vs. + 19.8% (target)	+4.3% Lack of target value	+4% Lack of target value	-3% profits
Indicator 1 c: **micro-level**: an increase of farm **labour productivity** (result indicator) for programme beneficiaries **due to M121 measure**	+9.2%	+8.7%	+9%	-70%	-4%
Indicator 1 d: **micro-level**: an increase of **farm employment** (result indicator) for programme beneficiaries **due to M121 measure**	Not calculated	+4%	-1.6% (negative)	+13%	+3%

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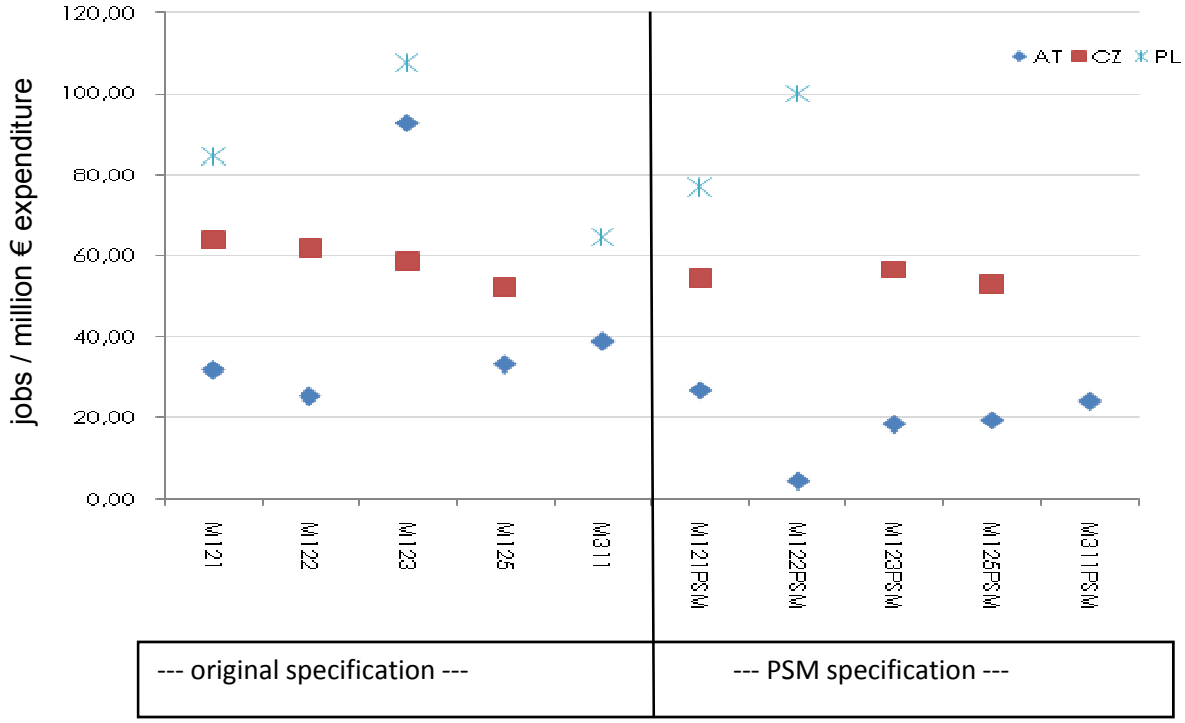
Answer EQ2
complementary results: improved IO results

Results of IO using parameters of MA (M121, M122, M123, M125, M311) and PSM estimates (MxxxPSM)



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Synthesis across all measures, case studies and methods

SCHLUSSFOLFERUNGEN UND EMPFEHLUNGEN

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Schlussfolgerung hinsichtlich EIGNUNG der Methoden (EQ1)

- **challenge of evaluation: make statements on non-directly observable outcomes**
  - **only specific econometric methods / experiments are adequate for empirical evaluation of causal effects**
  - **other methods: use such results or make assumptions**
- **results on efficiency, effectiveness, impact**
  - quantitative: only IO and PSM (note sample size!)
  - ordinal: MAPP and TBE but not all indicators
  - SEA and CEA: few results on environmental outcomes, mostly nominal/ordinal confirmation
- economies of scale when applying IO and PSM
- high variable costs for MAPP and TBE

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Schlussfolgerung hinsichtlich Effizienz, Effektivität und Wirkung (EQ2)

- **methods:** differences in measuring outcomes; non quantitative results give broad scope of interpretation
- **efficiency (focus on employment)**
  - IO: jobs/mil range from negative to 9 to over 100
  - PSM: jobs/mil similar range w.r.t. farm employment
  - non-quantitative: MAPP indicates +
  - measure groups A, B: non conclusive
  - negative values: labour saving investments
- **effectiveness** (compared to targets, focus on GVA)
  - IO and PSM : outcomes driven by targets with wide range
  - TBE: wide range of results on ordinal scales
- **impacts**: IO (relative to targets) and MAPP (broad range of indicators)

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Schlussfolgerungen (generell)

- **causal effects**: requires adequate ***econometric methods*** / experiments **and** high quality micro-data
- **quantitative methods** are well suited for evaluation of investment support measures of all three indicators
- strength of **non-quantitative methods**: exploration, feedback of stakeholders and (non-)beneficiaries
- effect of **targeting** approaches better understood now
- **complementarity** between methods:
  MAPP / TBE ➔ PSM ➔ IO: more valid results
- **economies of scale** for quantitative methods

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Empfehlungen

- for managing authorities:
  - define spectrum of results before choosing methodology
  - make sure evaluation method and data match / focus on micro-data / consider treatment and control-groups
  - seek for partnership in order to reap economies of scale
  - consider combinations of methods to increase validity
- for users:
  - prefer econometric / quantitative results
  - consider details of the method when interpreting results
  - make judgments on quality based on transparency of results
- general recommendations:
  - standardize targeting assessment (leakage rate)
  - adjust reporting such that IO / or similar method (e.g.regional CGE) can be used with minimum efforts in **all** regions
  - merge FADN data (anonymously) with RDP-beneficiary and non-beneficiary information

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Hannes Wimmer, wimmer@metis-vienna.eu

Franz Sinabell, Franz.Sinabell@wifo.ac.at

DANKE!

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