

AgriClimateChange – Climate protection for farmers

Volker Kromrey

Programm Director
Energy Transition and Climate Protection

Lake Constance Foundation, Radolfzell

ENERGY TRANSITION

- CoAct – activated carbon instead of compost
- COALESCCE – citizen energy for Europe
- SocialRES: Together we make energy
- Photovoltaic Networks – Schwarzwald-Baar-Heuberg
- Energy region – efficient heating networks



AGRICULTURE & CLIMATE

- LIFE AgriAdapt – Sustainable adaptation of farming to climate change
- Clean Air Farming – Reducing ammonia and methane emissions from agriculture
- AgriClimateChange – Climate protection for farmers



Lake Constance Foundation



- LIFE Biodiversity in standards and labels for the food sector
- LIFE BooGI-BOP: Biodiversity-oriented premises in Europe

BUSINESS & BIODIVERSITY



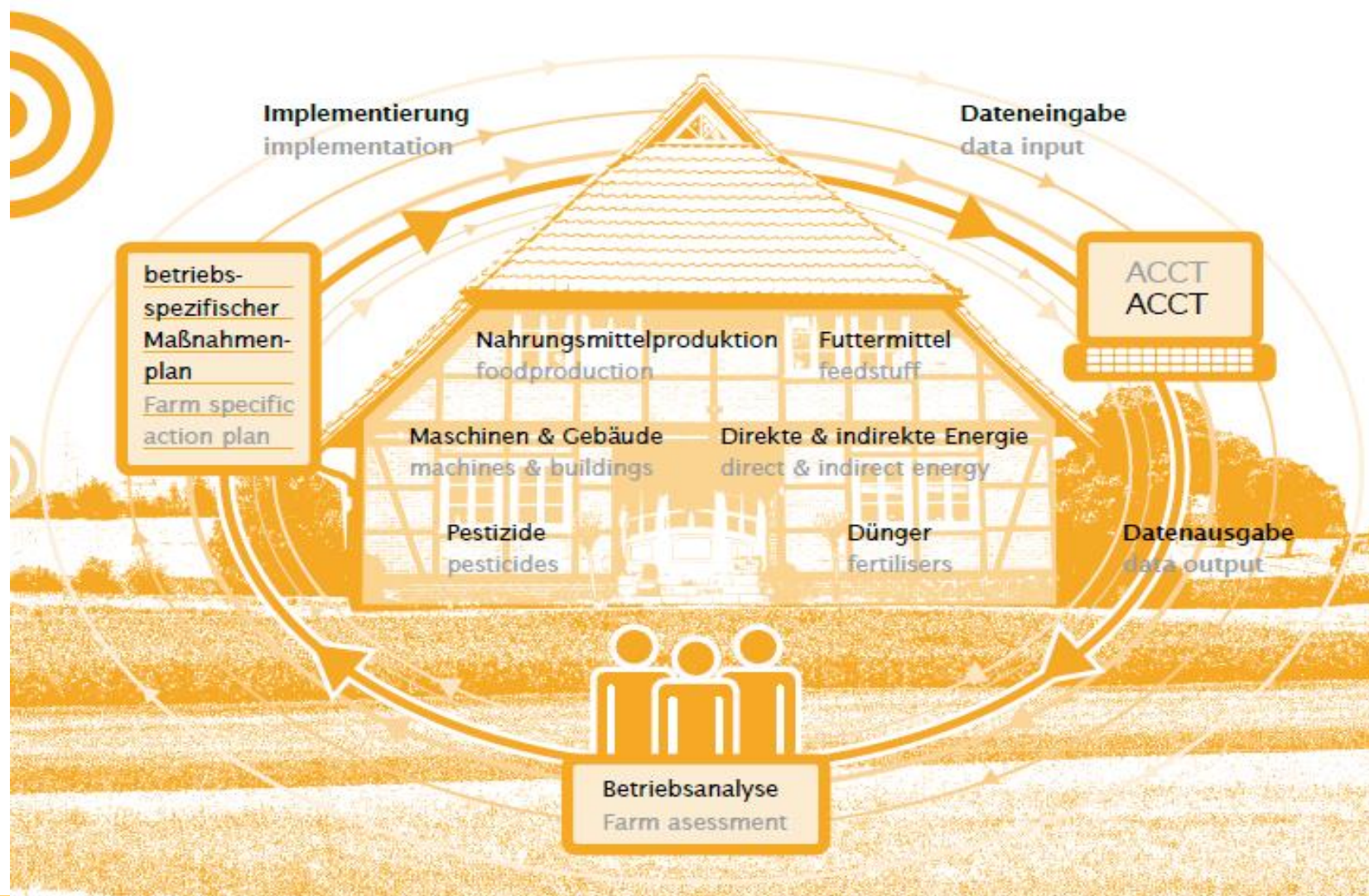
- People – Bees – Biodiversity
- Small water bodies for the Lake Constance region
- Model orchards for the promotion of biological diversity
- Pro Planet – Apple project at Lake Constance
- Living Lakes

NATURE & LAKE CONSERVATION

References

- EU-LIFE+-Project AgriClimateChange 2010-2013
 - Development of software ACCT
 - Tested on 120 (24) farms
 - Since 2012 cooperation with AgroCO2ncept in Switzerland (25 farms)
 - 2012-2014 various other projects in Germany
 - Since 2014 lecture and excursion at ETH Zurich
 - Since 2016 cooperation with dairy sector (25 farms)
 - Since 2018 Train the Trainer
 - Since 2018 Development of method for regions and bigger entities
- **About 200 assessments performed and 100 farms advised**
- **Monitoring and evaluation over a period of 8 years**

The ACCT-Method





ACCT-Tool

Viehbestand, Wirtschaftsünger und Futtermittel												Verflüchtigungsrate für den ausgeschiedenen Stickstoff			
Landwirt: Pestalozzi Kinder- und Jugenddorf Wahlwies, LN: 147,9 ha, Produktionszweige: Milchwirtschaft, Rindermast, Schweinmast, Grünland, Getreidebau, Kartoffel, Mais												30%	10%		
Wiederkäuer - Pflanzenfresser															
	Anzahl der Tiere	Dauer der Anwesenheit im Betrieb (in Tagen)	Draußen verbrachte Zeit (Weide, unterwegs) in Prozent der Anwesenheitszeit	Anzahl produzierte Tiere	Durchschnitt Lebendgewicht in kg	verzehrte kg TS gesamt /Tag/Kopf	Koeff GVE / Tier	Einheits-Energiewerte (pro kg Lebendgewicht)	ausgeschiedener N kg / Tier /Jahr	ausgesch. N Gebäude /Jahr	ausgesch. N Weide /Jahr	verfl. N NH3 Gebäude / Jahr	verfl. N NH3 Weide /Jahr	N-verfl. NH3 /Jahr	
Ziegen												Ziegen			
7	Ziegen				70 kg	0.76 kg	0.15	6.11	14.04	0	0	0	0	0	
8	Kitze bis 1 Jahr				66 kg	0.76 kg	0.09	6.11	7.02	0	0	0	0	0	
9	Ziegenböcke				90 kg	0.76 kg	0.04	6.11	13.89	0	0	0	0	0	
10	Verkaufte Mastkitze 1				35 kg		0.04	6.11	13.89	0	0	0	0	0	
11	Verkaufte Mastkitze 2				35 kg		0.04	6.11	13.89	0	0	0	0	0	
12							0.15	6.11	14.04	0	0	0	0	0	
13							0.15	6.11	14.04	0	0	0	0	0	
Milch- und Fleischschafe												Milch- und Fleischschafe			
14	Mutterschafe	Anz	Zeit (T/Jahr)	Weide %	Anz. Verk.	Durchschnitt Lebendgewicht									
15	Lämmer bis 1 Jahr					80 kg	0.15	13.6	14.04	0	0	0	0	0	
16	Schafböcke					64 kg	0.09	13.6	7.02	0	0	0	0	0	
17	Verkaufte Mastlämmer 1					120 kg	0.04	13.6	13.89	0	0	0	0	0	
18	Verkaufte Mastlämmer 2					40 kg	0.04	13.6	13.89	0	0	0	0	0	
19						40 kg	0.04	13.6	13.89	0	0	0	0	0	
20							0.15	13.6	14.04	0	0	0	0	0	
21							0.15	13.6	14.04	0	0	0	0	0	
Milchkühe												Milchkühe			
22	Milchkühe mit ~5000 kg Milch	Anz	Zeit (T/Jahr)	Weide %	Anz. Verk.	Durchschnitt Lebendgewicht									
23	Milchkühe mit ~6000 kg Milch	41	365	25%	4	650 kg	0.90	9.08	107.4	3.301	1.100	990	110	1.100	
24	Milchkühe mit ~8000 kg Milch					650 kg	1.00	9.08	113.0	0	0	0	0	0	
25	Schlachtungen					650 kg	1.10	9.08	124.6	0	0	0	0	0	
26	verkaufte junge Kälber					100 kg	0.80	9.19	113.00	0	0	0	0	0	
27	weibl. Kälber, Jungvieh 0-1 J.	21	365	25%	0	180 kg	0.00	6.33	6.00	0	0	0	0	0	
28	weibl. Jungvieh 1-2 Jahre	21	365	25%	0	400 kg	0.32	9.08	20.00	315	105	95	11	105	
29	Tragende Kalbinnen +2 J.	7	365	25%	7	550 kg	0.60	9.08	52.00	819	273	246	27	273	
30	Bullenkälber, Jungvieh 0-1 J.	20	365	25%	0	180 kg	0.80	9.08	61.00	320	107	96	11	107	
31	Jungbullen 1-2 Jahre	19	365	25%	16	400 kg	0.44	9.08	12.00	180	60	54	6	60	
32	Bullen +2 Jahre	einschl. Zuchttiere	3	365	25%	0	800 kg	0.60	9.08	75.00	1.069	356	321	36	356
33							0.90	9.08	91.00	205	68	61	7	68	
34										0	0	0	0	0	
35										0	0	0	0	0	
Fleischrinder												Fleischrinder			
36	Mutterkühe	Anz	Zeit (T/Jahr)	Weide %	Anz. Verk.	Durchschnitt Lebendgewicht									
37		4	365	25%	0	650 kg	0.85	15.20	101.00	303	101	91	10	101	
38						12.00 kg	0.80	13.40	101.00	0	0	0	0	0	



		Aufteilung der Energie pro Posten		pro ha LN		
		<i>betriebliche Nutzung</i>	Posten	GJ	GJ/ha	Anteil
Zufuhr	Direkt		Brennstoffverbrauch	301	5,2	31%
			Andere Kraftstoffe	7	0,1	1%
			Strom	187	3,2	19%
			Energie / Wasser	0	0,0	0%
			Andere direkte Energien	0	0,0	0%
	Indirekt		Bereitstellung der Energie	0	0,0	0%
			Zukauffutter	200	3,5	20%
			Dünger und Bodenverbesserungsmittel	32	0,5	3%
			Pflanzenschutzmittel	0	0,0	0%
			Saatgut	10	0,2	1%
			Jungtiere	50	0,9	5%
			Maschinen	85	1,5	9%
			Gebäude	14	0,3	1%
		Andere Zukäufe / Tiere + Kunststoffmaterialien	97	1,7	10%	
		ZUFUHR	984	17,1	100%	
Entnahme		Milch	798	13,9	53%	
		Fleisch	80	1,4	5%	
		Kulturen	0	0,0	0%	
		Strom	414	7,2	28%	
		Wärme	209	3,6	14%	
		andere		0,0	0%	
		ENTNAHME	1501	26,1	100%	



Overview on GHG-emission and C-sequestration

	Scope 1	Scope 2	Scope 3		
	Interner Umfang (direkt Betrieb)	Mittelbarer Umfang (indirekt Strom)	Globaler Umfang (indirekt sonstiges)	Total	
Derzeitige Situation (tCO₂eq / Jahr)					
Emissionen aus der eingesetzten Energie	14	2	36	52	24%
abgegebenes CH ₄ und N ₂ O aus der Tierhaltung	126	k.A.	k.A.	126	58%
N ₂ O-Emissionen aus den landwirtschaftlichen Böden	30	k.A.	9	39	18%
Kohlenstoffspeicherung in Boden und Hecken	-14		0	-14	-6%
Gesamt tCO₂eq netto / Jahr	156	2	45	203	94%
	77%	1%	22%	100%	
Erneuerbare Energien	0	0	0	0	0%
das sind:	in tCO ₂ / ha LN:	5,22	0,06	1,50	6,79
	in tCO ₂ / GVE:	5,22	0,06	1,50	6,78

Development of method for regions/companies

First approach „farm based“ (ACCT analysis)

Problems/restrictions:

- Time consuming
- Cost intensive

New concept

- based on representative farms and upscaling
- Formation of clusters in the whole group (pilot farms)
- Selection of representative farms per cluster
- ACCT analysis of representative farms for baseline definition
- Upscaling due to statistical data
- Monitoring: ACCT analysis after 3 years on pilot farms
- Evaluation: ACCT analysis after 6/10 years on pilot farms
- Incentive based on few selected measures - not on direct success

Real life examples

1. AgroCO2ncept (Switzerland)

- General aim: 20% reduction of GHG-emissions
- 25 farms in a valley formed an initiative
- Remuneration from ministry of 12 defined measures
 - precise description how to perform the action
 - Risk compensation
 - Additional cost remuneration
 - Success indicator
- No measure is allowed to be supported by any other programm
- ACCT analysis on every farm (years: 1;3;6;8)

Problems/restrictions:

- Farmers focus on measures with highest financial benefit
- Most efficient measures are left out if no remuneration is offered
- Very bureaucratic

→ **General aim will probably not be achieved!**

Real life examples

2. Cooperation with dairy company (Germany)

- General aim: implementation of effective climate measures on as many farms as possible
- 6000 dairy farms in 5 federal states
- Planned remuneration from dairy company of 2-3 selected measures
 - Clear aim (e.g. increase of lactation periods; reduction of synthetic fertilizer...)
 - Flexible way of performance
 - Remuneration for performing the measure but not on real GHG effect
- Measures need to be easily proven and monitored
- ACCT analysis on representative farms in 5 clusters (approx. 30) (years: 1;3;6)
- Upscaling of results for the clusters

Problems/restrictions:

- No personal consultancy for farmers
- Not all GHG reduction potentials will be realized

→ **Need to be accompanied by information and training opportunities!**

→ **Applicable also for regions!**

Contact

Lake Constance Foundation

Volker Kromrey

Programm Director Energy Transition and Climate Protection

0049 7732 9995-48

volker.kromrey@bodensee-stiftung.org

www.bodensee-stiftung.org