



Towards evidence-based and sustainable adaptation action plans for European farms



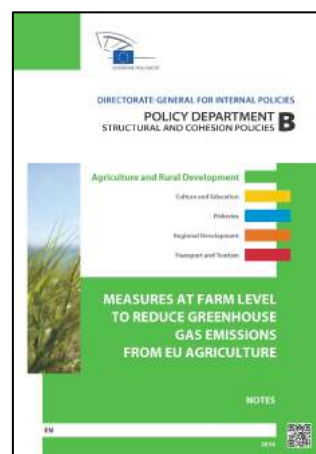
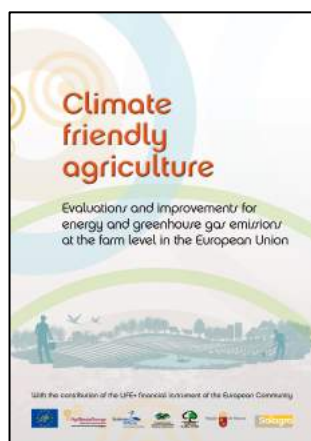
Thursday, 8th June 2017

Nicolas Métayer, Solagro



Life AgriClimateChange 2010-2013

- Best Life project 2014 and Green Award 2017
 - Simultaneously in four European countries, determine and support farming practices that best contribute to mitigating climate change at farm level.
 - Creation of a common software tool (ACCT) to assess energy consumption and GHGE.
 - Action plans implemented on 130 farms during 3 years, average reduction of GHGE and energy consumption between 10 and 40%.



www.agriclimatchange.eu

AgriAdapt partnership

Commission launches the debate on how European agriculture

France,
Solagro



- Floods risk
- Hotter and drier summers
- Sea levels
- Risk crop pests, diseases
- Crop, forage yields
- Animal health, welfare

- Summer rainfall
- Winter storms, floods
- Length growing season, yields
- Suitable farmland
- Pests, diseases risks

Estonia,
Estonian University of Life Sciences (EMU)



Eesti Maaülikool
Põllumajandus- ja keskkonnainstituut

- Winter rainfall, floods
- Summer rainfall
- Risk drought, water stress
- Soil erosion risk
- Yields, range of crops

Germany,
Lake Constance Foundation (LCF)



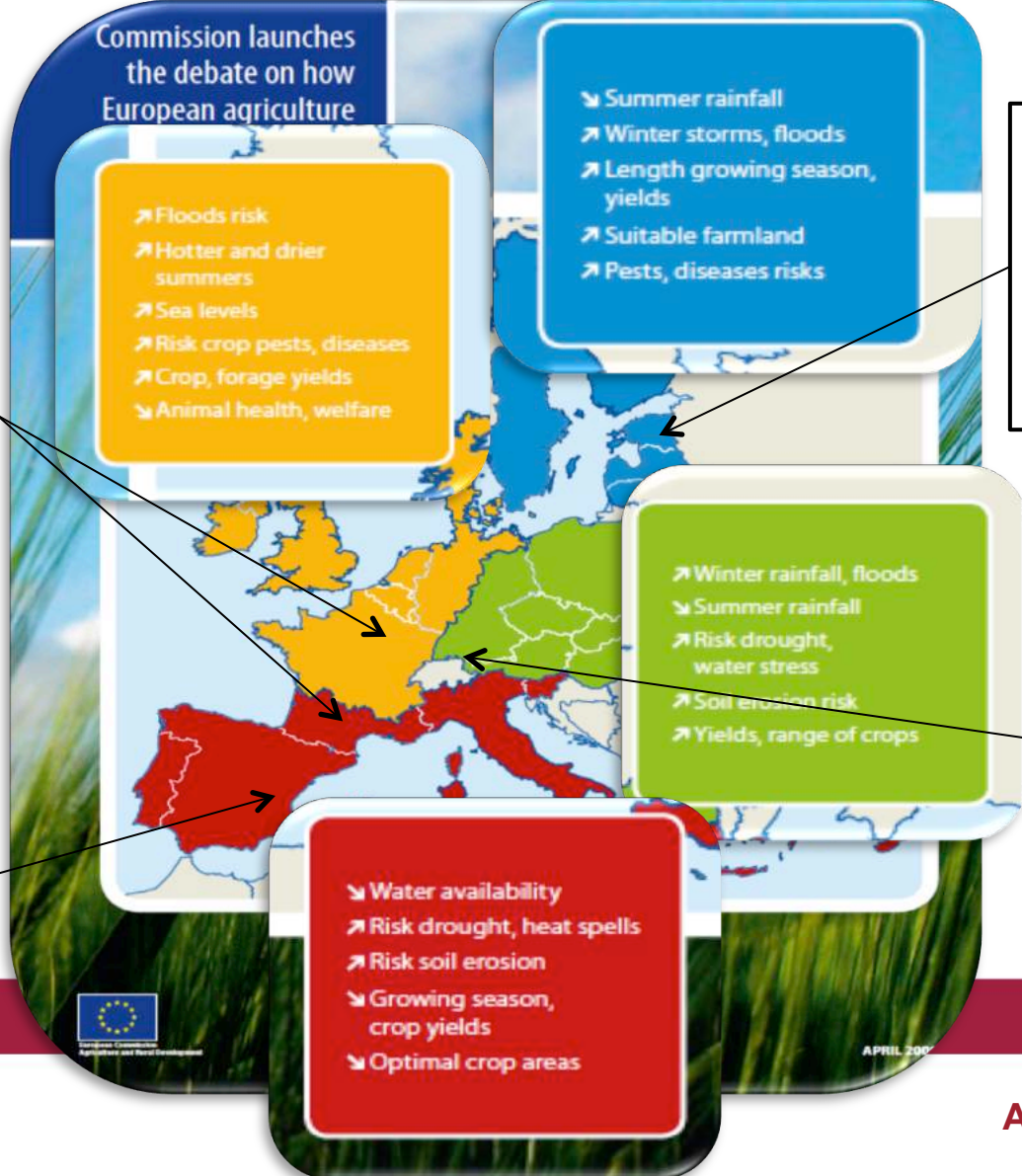
Bodensee Stiftung
Lake Constance Foundation

Spain,
Fundacion Global Nature (FGN)



FUNDACIÓN GLOBAL NATURE

- Water availability
- Risk drought, heat spells
- Risk soil erosion
- Growing season, crop yields
- Optimal crop areas



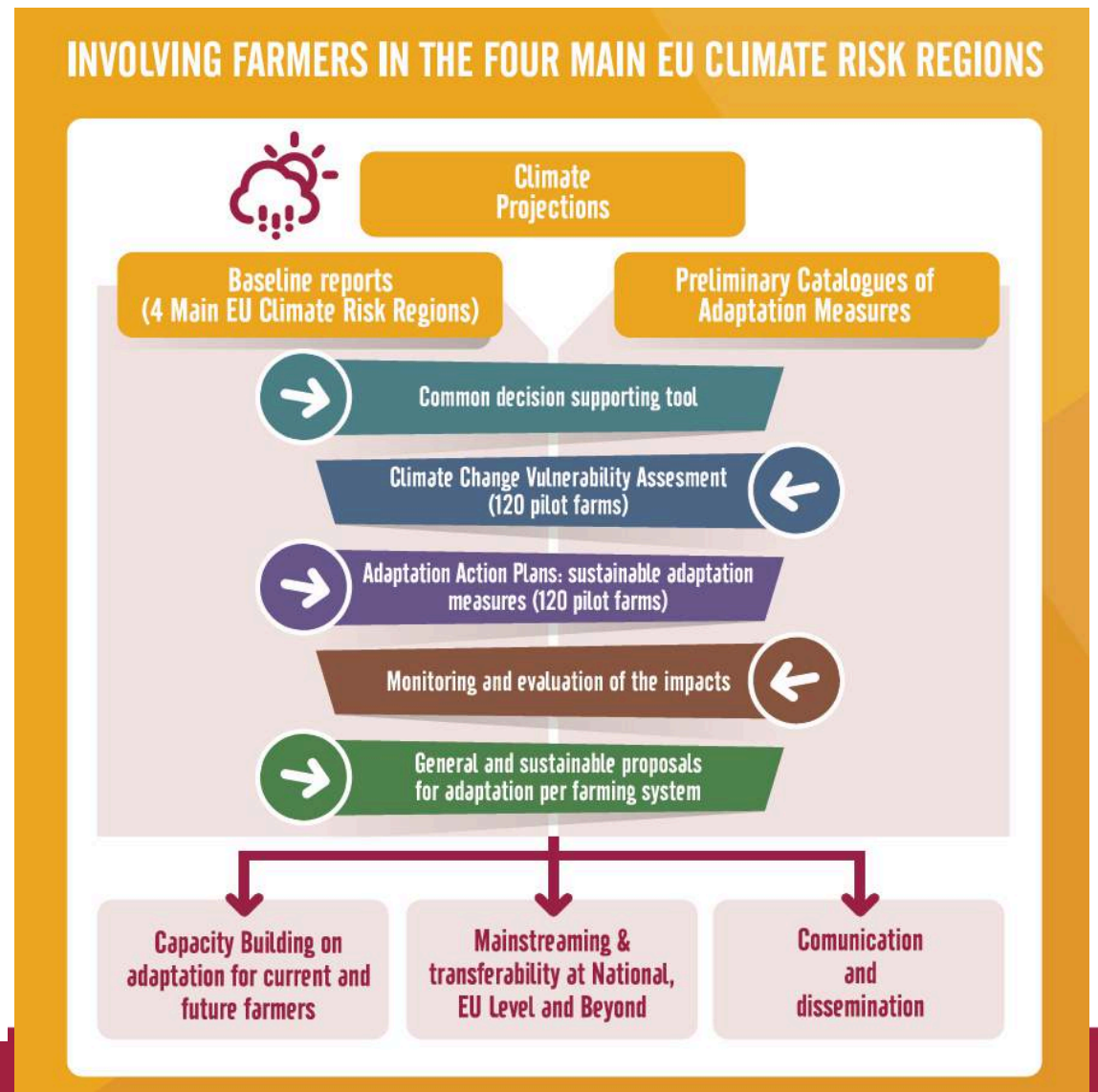
AgriAdapt project

Overall objective

- Demonstrate that 3 main farming systems (livestock, arable and permanent crops) can be more climate resilient by implementing sustainable adaptation measures.

In practice

- 4 Baseline reports with agro climate grids per climate zone
- Compilation of sustainable adaptation measures
- 5 Steering Committee Boards constituted of diverse stakeholders: farmer unions, cooperatives, experts, researchers, agronomic schools, authorities, etc.
- One decision supporting tool for vulnerability assessment
- 120 Pilot farms with dominant and minor farming practices.



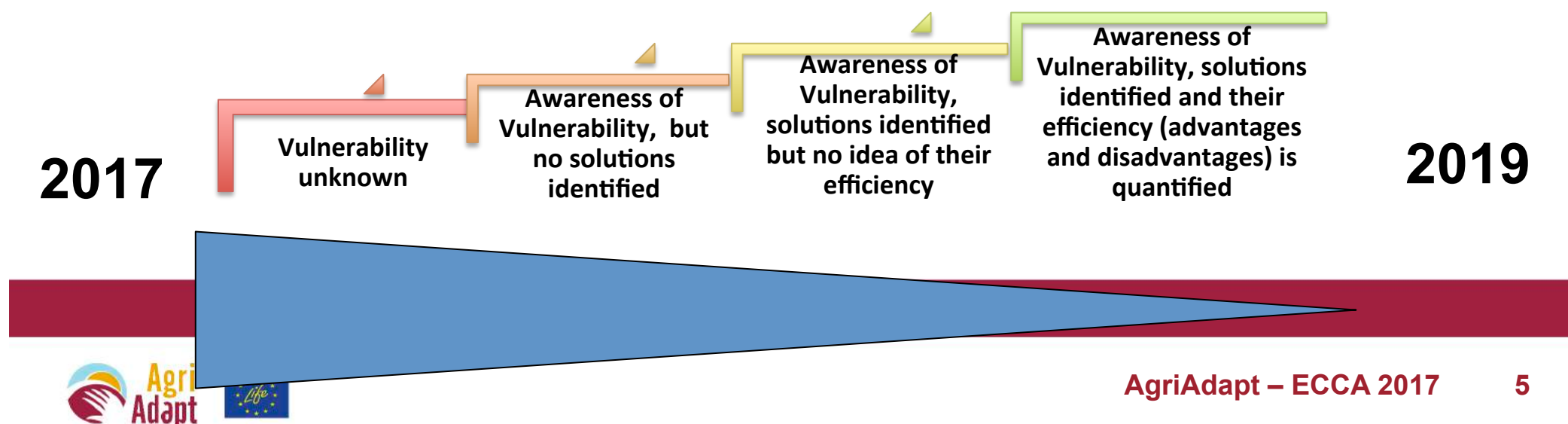
From vulnerability to adaptation: a learning process for farmers

Step 1: Climate vulnerability awareness

- Climate change is often unclear for farmers
 - Farmers are focused on weather and not climate (short term view)
 - There is a need to quantify as many Climate and Agro-Climate Indicators (ACI) as possible to illustrate climate trends and the farm vulnerability
- ⇒ Climate strengths and weaknesses of the farm (SWOT analysis)
- ⇒ Vulnerability in the Near Future (NF), about 2030

Step 2: Adaptation strategy at farm level

- Progressive elaboration of the action plan
- Sustainable measures are classified in Efficiency, Substitution or Redesign categories



Vulnerability assessment (1)

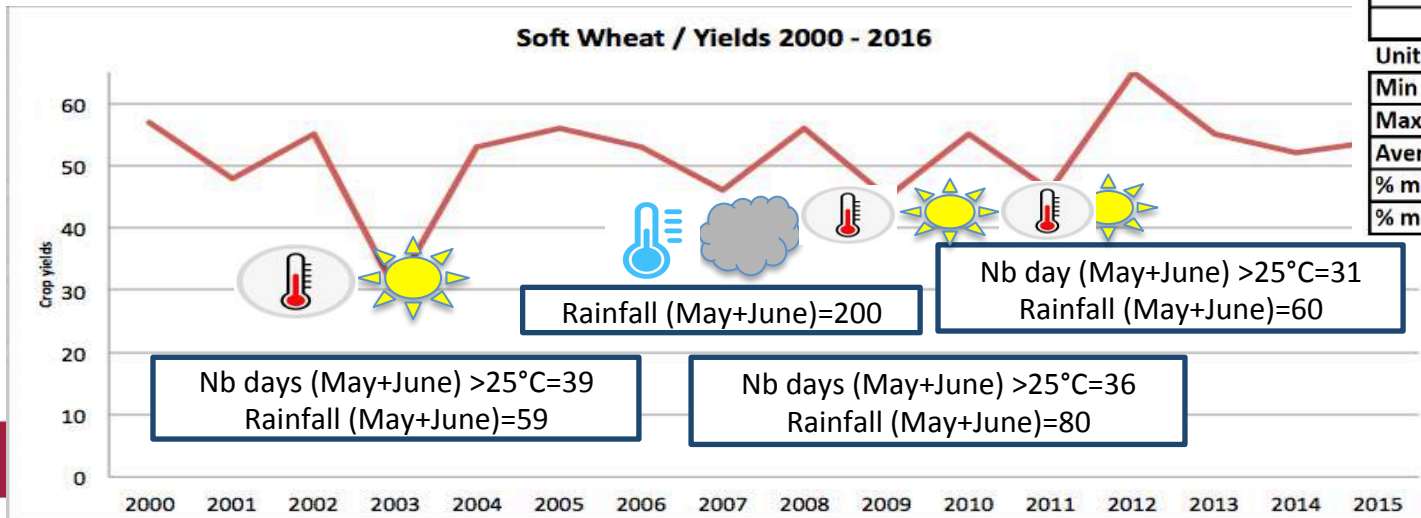
• Agro Climate Zone level

- Recent Past (RP) climatic data
- Crop yield compilation from 2000 to 2015
- Determination of the frequency of climate stress for each crop (= exposure) => score from 1 to 5
- Impact or % of crop yield reduction experienced (= sensitivity) => score from 1 to 5
- Combination of the probability of occurrence of climate stress (exposure) and the extent of the consequences (crop impact)

$$\text{Vulnerability} = \text{Exposure} \times \text{Impact}$$

PERIOD	Winter soft wheat	Winter durum wheat	Grain maize, irrigated
2000	58,0	54,0	90,0
2001	51,0	52,0	92,0
2002	58,0	51,0	84,0
2003	49,0	42,0	77,0
2004	58,0	52,0	90,0
2005	54,0	50,0	95,0
2006	52,0	48,0	104,0
2007	45,0	40,0	101,0
2008	57,0	50,0	105,0
2009	45,0	43,0	97,0
2010	56,0	54,0	103,0
2011	48,0	47,0	108,0
2012	63,0	59,0	110,0
2013	52,0	49,0	103,0
2014	52,0	52,0	113,0
2015	57,0	54,0	105,0

Unit for yield	100 kg/ha		
Min	45,0	40,0	77,0
Max	63,0	59,0	113,0
Average (15 years)	53,4	49,8	98,6
% min / average	-16%	-20%	-22%
% max / average	18%	18%	15%



Vulnerability assessment (2)

- Farm level

- Farm questionnaire focused on the last cultural campaign and specific years (agro climatic grids)
- Vulnerability facts are then listed and weighted/ prioritized based on their impact on the farm.
- Farm vulnerability (indicators and score):
 - Agronomic, Animal, Economic,
 - SWOT Analysis
- Climate projections for the Near Future (NF), time horizon 2030
 - The current farm situation within the next future climate
 - Comparison of ACIs (RP / NF) for main crops

LIKELIHOOD OF OCCURRENCE	Almost certain	5	5 ↑	10 ↑	15 ↑↑	20 ↑↑	25 ↑↑
	Highly likely	4	4 =	8 ↑	12 ↑	16 ↑↑	20 ↑↑
	Even chance	3	3 =	6 ↑	9 ↑	12 ↑	15 ↑↑
	Likely	2	2 =	4 =	6 ↑	8 ↑	10 ↑
	Rare	1	1 =	2 =	3 =	4 =	5 ↑
			1	2	3	4	5
			Insignificant	Minor	Moderate	Major	Catastrophic
SEVERITY OF CONSEQUENCES							

- End of the project

- Web tool based on lessons learned for wide dissemination in EU.

	NF without adaptation measures	RP - NF	Low	FARM CLIMATE VULNERABILITY				High
Agronomic	10,9	32%	1	10	15	20	25	
Animals	11,3	58%	1	10	15	20	25	
Economic	11,7	44%	1	10	15	20	25	



AgriAdapt

SUSTAINABLE ADAPTATION
OF TYPICAL EU FARMING
SYSTEMS TO CLIMATE CHANGE

ECCA

LIFE15 CCA/DE/000072

www.agriadapt.eu

