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We are EFICAS!?

What performance indicators for assessing agroecology impacts?

ALiSEA National Thematic Workshop, Vientiane, 29 November 2016

Main questions

- In the context of Lao PDR:
  - Agroecology practices have shown successes at plot level: SRI, improved fallow systems, conservation agriculture, agroforestry…
    - **Enhance the recycling of biomass**,
    - **Minimize losses of energy, water, nutrients and genetic resources**,
    - **Diversify species and genetic resources** in the agroecosystems over time and space,
    - **Enhance beneficial biological interactions and synergies**

Agroecology principles (Altieri, 2012)

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Main questions

- In the context of Lao PDR:
  - agroecology practices have shown successes at plot level…
  - … but limited dissemination – can we say we have an impact?
- How can we transform agroecosystems/landscapes?
  - sustainable intensification
  - increased resilience to climate change
- How can we measure changes and impacts?
  - counterfactual: what would have happened without AE project?
  - indicators of what…? innovation dissemination, livelihood changes, increased resilience, food security - sovereignty…

Changes in landscapes and livelihoods

Institutional change

Global markets

Climate change

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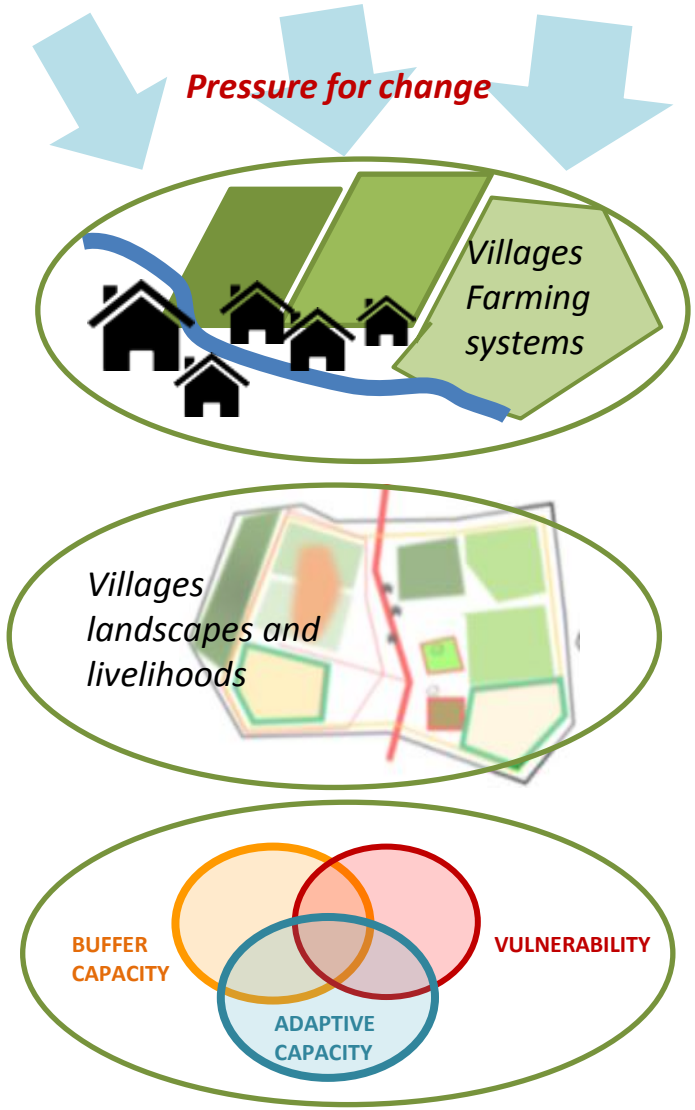

Theory of change	*Monitoring indicators*
INPUTS	Money Time Staffing
Landscape approach to agroecology	
OUTPUTS	- PLUP (CADP); -advices; -VLMC empowerment -coordination…
Sustainable Agricultural Intensification	
OUTCOMES	Changes in practices -Performances, diversity - Institutions & social cohesion
Resilience increase	
IMPACTS	-Buffer capacity -Vulnerability -Adaptive capacity

Changes in landscapes and livelihoods

- **Transformative landscape approach**
  - PLUP
  - CADP
  - Experiments,
  - Extension, FFS, etc.

- **Monitoring-evaluation system**
  - Intervention/control villages
  - Baseline
  - Repeated measurements

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Changes in landscapes and livelihoods

- **Transformative landscape approach**
  - PLUP
  - CADP
  - Experiments,
  - Extension, FFS, etc.

1. **Involve the whole village community in the planning processes**
2. **The whole village community is involved in transformative process**
3. **Integrated approach to crops, livestock, forest management**

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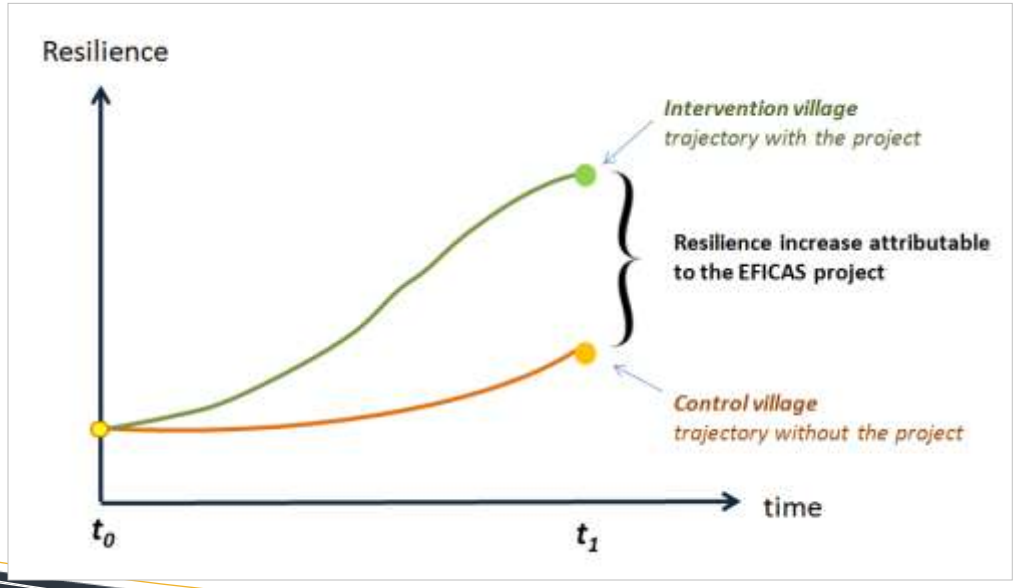
Changes in landscapes and livelihoods



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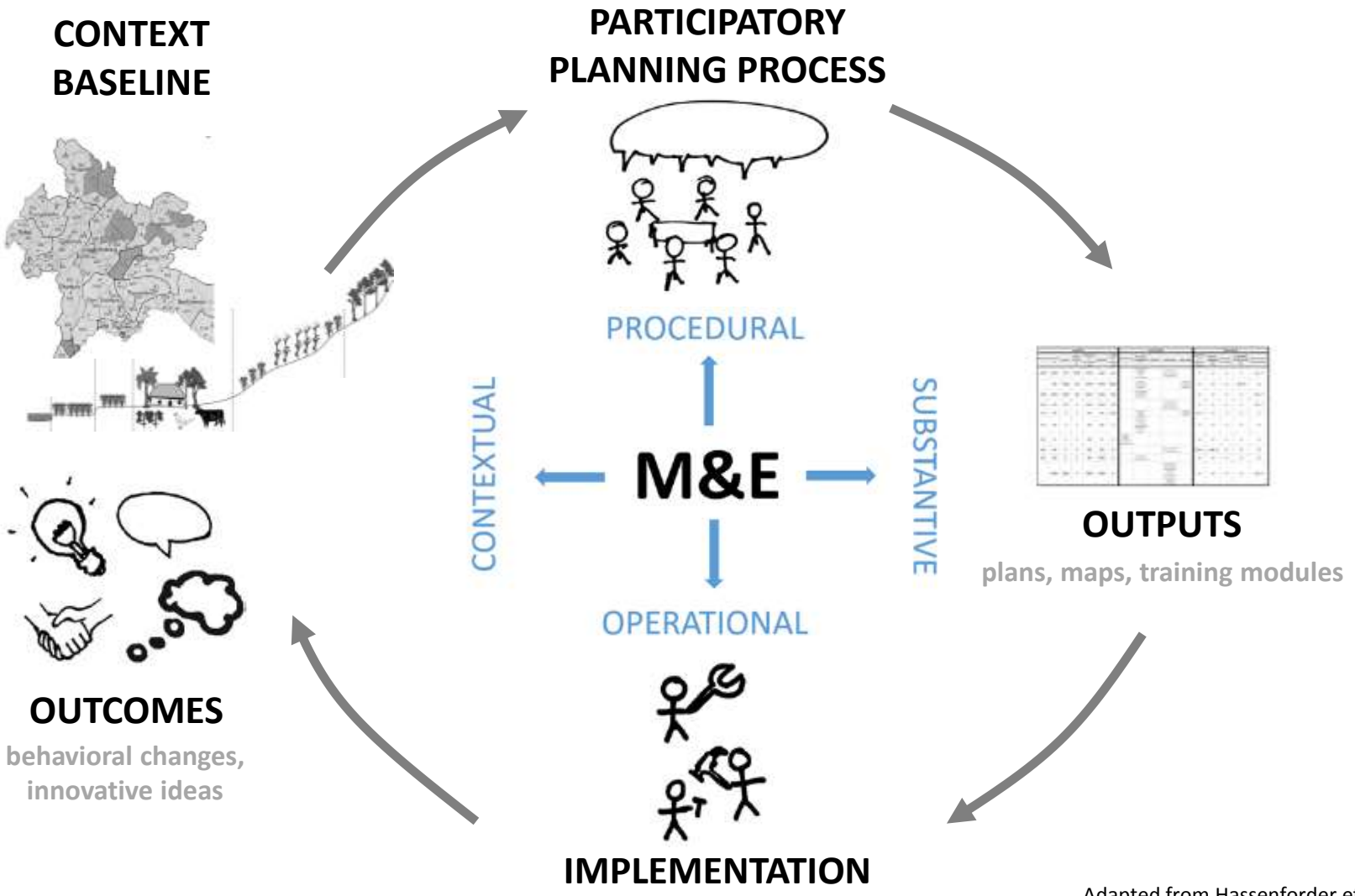
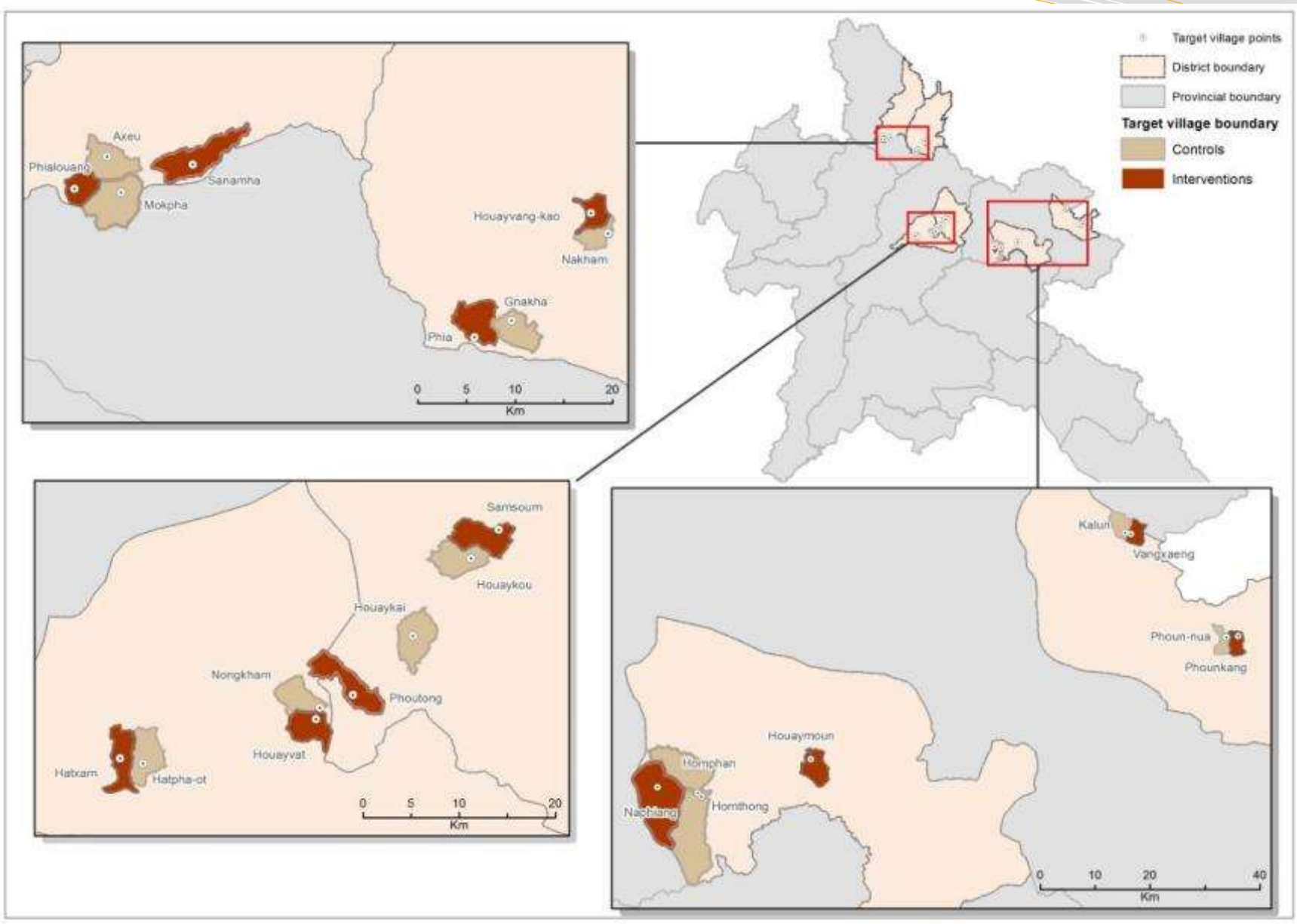
M&E as an integral part of a village transformative process



Adapted from Hassenforder et al. 2015

Village location



Measuring project metabolism

- Efficiency
  - Money, staff time
  - Participation
- Empowerment
  - Meaningful participation
  - Trust building
- Extension
  - From lecturer to facilitator
  - Critical thinking

Participation in planning meetings

Province	Phongsaly				Louang Prabang				Houaphan			
Village บ้าน	Phia	Houay vang	Phia louang	Sanam ha	Houay vat	Sam soom	Phou tong	Had sam	Na phieng	Houay moun	Vang seng	Phoun kang
Number of HH attended CADP 2015 final meeting / total households	93%	100%	100%	100%	91%	88%	87%	72%	100%	100%	100%	92%
Number of HH involved in CADP 2015 activities implementation / total HH	91%	29%	95%	94%	64%	58%	79%	37%	97%	79%	100%	100%
No women attended CADP 2015 final meeting / total participants	61%	31%	38%	63%	38%	92%	56%	40%	47%	21%	51%	36%
Number of HH attended CADP 2016 final meeting / total households	100%	78%	78%	91%	86%	75%	99%	74%	80%	100%	91%	86%
No women attended CADP 2016 final meeting / total participants	61%	14%	32%	34%	47%	79%	63%	43%	71%	22%	50%	42%

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Participation in livestock activities

Province		Phongsaly				Louang Prabang				Houaphan			
Activities	Village ບ້ານ	Phia	Houay vang	Phia louang	Sanam ha	Houay vat	Sam soom	Phou tong	Had sam	Na phieng	Houay moun	Vang seng	Phoun kang
Livestock health	% HH attended training	41%		88%	66%	75%	100%	51%	64%	73%	79%	100%	70%
	% HH did vaccinate livestock	80%		88%	100%	55%	50%	51%	33%	20%	9%	23%	100%
	% big livestock vaccinated	0%		68%	38%	55%	32%	56%	23%	4%	5%	25%	6%
Livestock feed	% HH attended training	11%	11%	63%	80%	66%	54%	70%	38%	73%	79%		85%
	Level of understanding	100%	100%	80%	89%		37%	71%	63%	50%	45%		80%
	% area improved pasture done vs planned			40%	33%	29%	198%	102%	33%	25%	20%		25%

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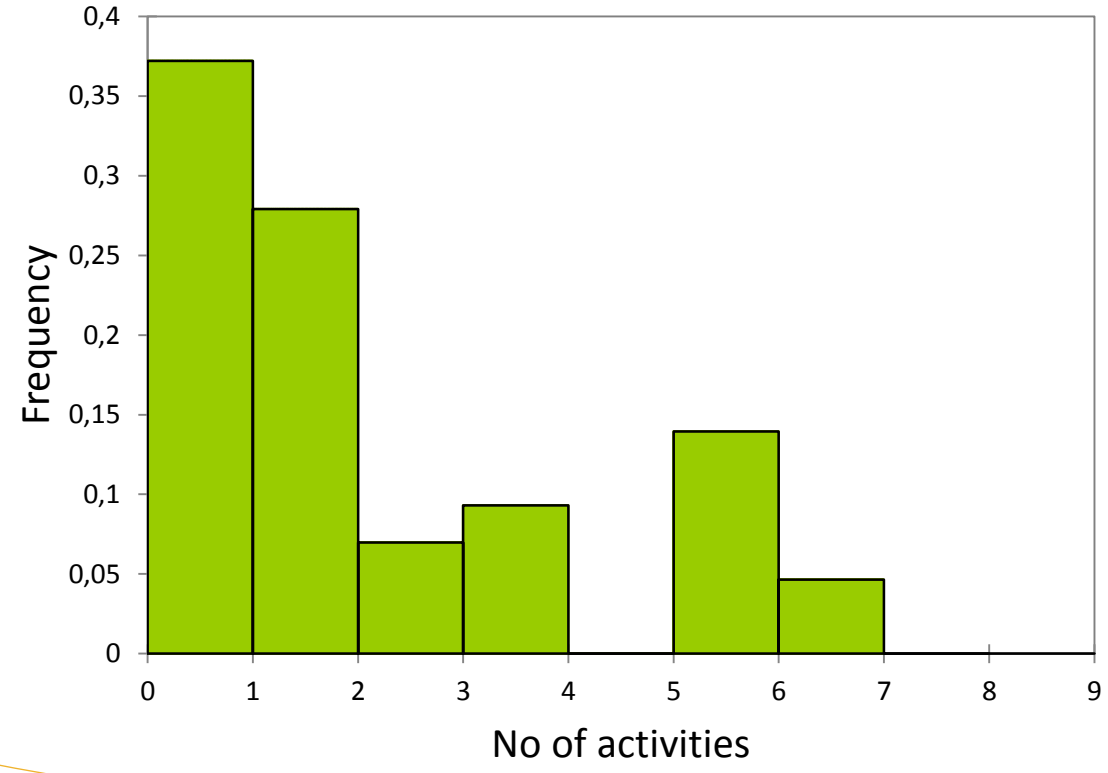
Participation in overall activities

- Houayvat 2015 (1st year)



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Measuring empowerment

- Meaningful participation
  - Capacity to implement after training,
  - Long term stewardship
- Time to build trust
  - Support to village land management committee – nurture local champions -> peer to peer trainings
  - Gradual build-up of participation as people observe positive changes – imitation trend, trickle down effect



Measuring soil health

- Soil erosion
- Water run-off
- Infiltration
- Soil biological activity
- Soil color
- Soil structure
- Soil compaction

- Dimensioning
  - 24 villages (intervention + control)
  - 88 landscape units
  - 3 plots/LU/village x 3 replicates/plot, total of ~800 sampling points

Soil quality card

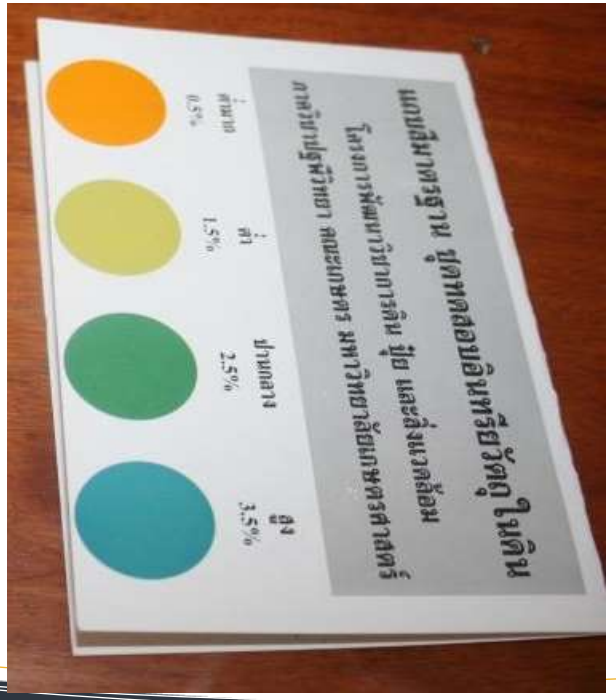
Landscape unit (LU)	Village
Forest (> 10y) (control)	24
Upland Crop (1-2y)	22
Fallow (1-3y)	14
Rubber (6-8y)	7
Fallow (6-8y)	7
Coffee (1-3y)	5
Improved fallow (1-3 y)	2
Improved pasture (T0)	4
Lowland paddy rice (T0)	3
Total	**88**

- Soil test kits (pH, NPK, SOM)
  - "In-village" laboratory
  - Top soil (0-10 cm)

- Soil test kit (pH, NPK, SOM)
  - Colorimetric analysis

pH: color from yellow (3.0) to violet (8.5)

SOM: color from orange (0.5%) to blue (3.5%)



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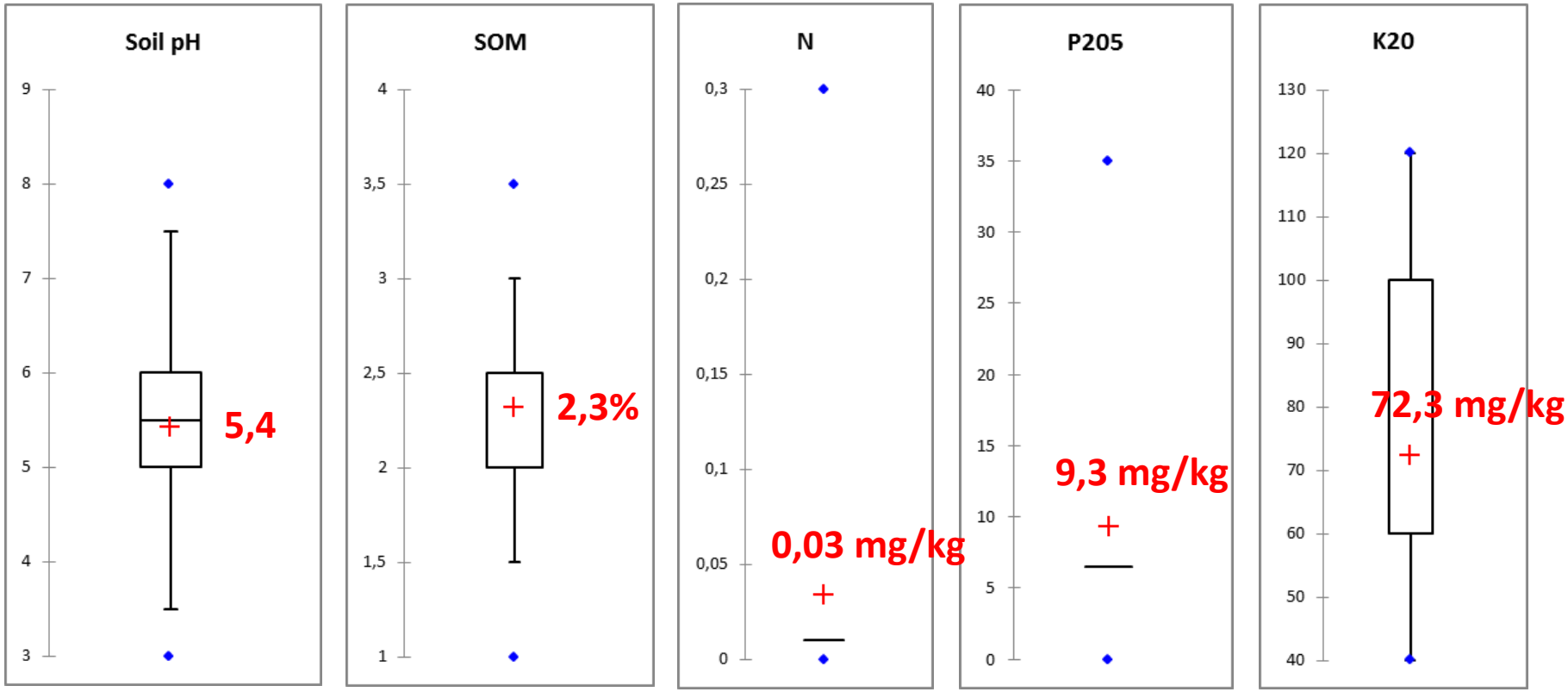
- Preliminary results (22 villages, n=720)
  - Variable description



Acidic soils, with low nutrients and SOM content

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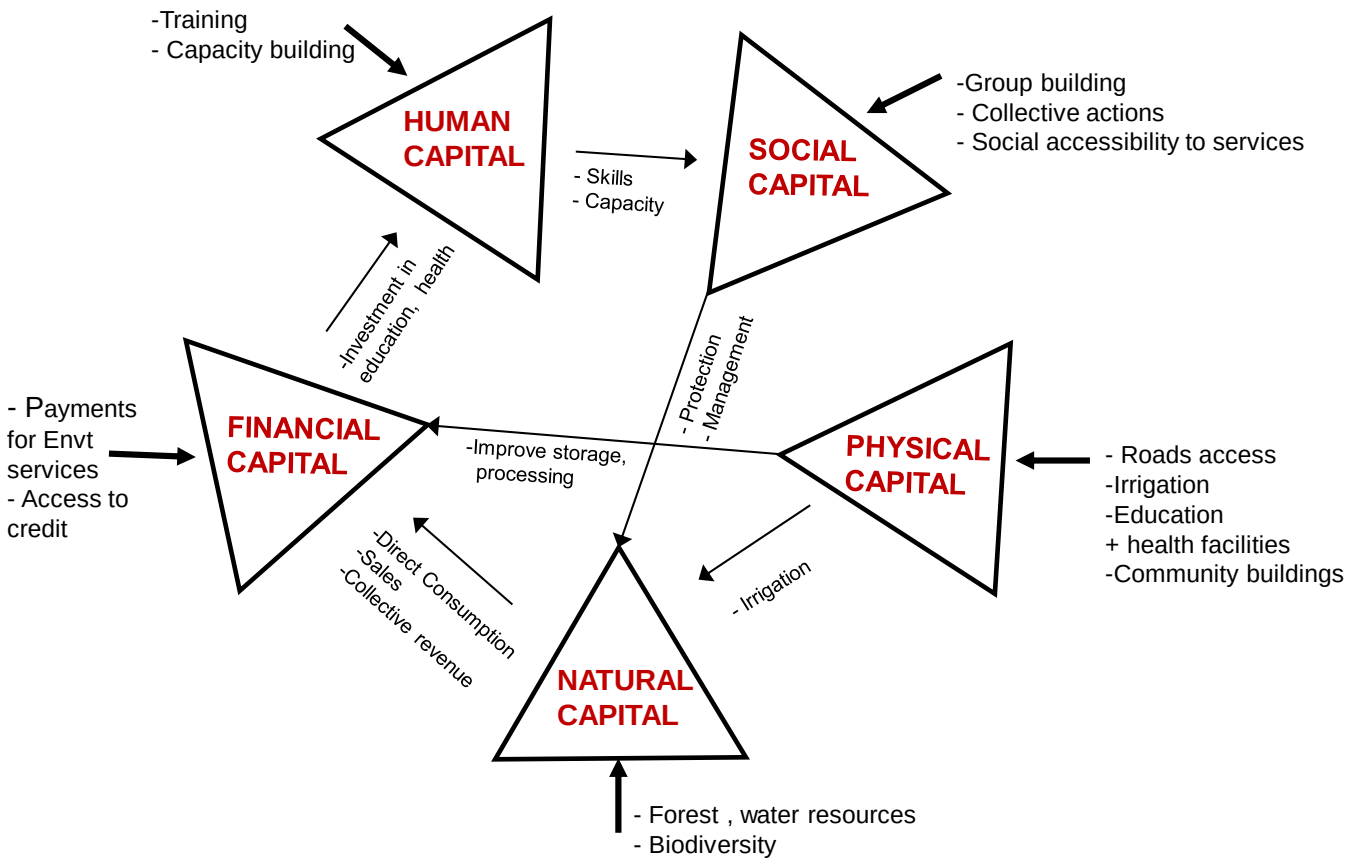
Measuring changes in livelihoods



Diversity of livelihood systems

- Geomorphology
  - village located on top of hill or along river
  - percentage of lowland / upland
- Accessibility
  - village accessible whole year or only dry season
  - access to market opportunities and services
- Population
  - density and dynamics
  - composition (ethnic groups)
- History
  - social capital
  - governance of natural resources

VILLAGE SCALE

- general village information
- problem census

HOUSEHOLD SCALE

- income
- agricultural practices

INDIVIDUAL SCALE

- family composition
- education

PLOT SCALE

- soil quality
- crop productivity

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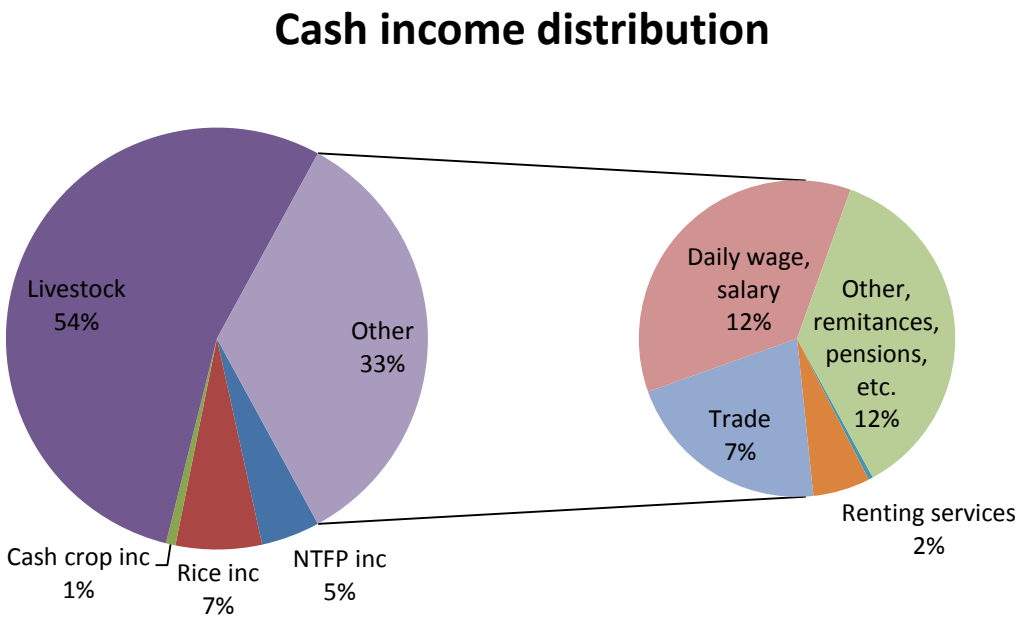
Village baseline data

Topics	Variable	Houaphan		Louang Prabang	
		Houamuang	Viengxay	Viengkham	Pakseng
		Houaymoun	**Phounkang**	**Phoutong**	**Houayvat**
Population	Households (no)	69	36	71	43
	HH members (no)	405	186	429	240
	Women (no)	191	93	195	118
	Labor force (no)	171	81	162	84
	% active population	42%	44%	38%	35%
	Dependency ratio (chidren/adult population)	46%	41%	53%	58%
	% children 6-15 going to school	87%	97%	97%	95%
Agriculture	Upland rice prod (t)	106	18	189	65
	Upland rice production (kg/capita)	234	97	441	272
	Lowland rice production (t)	11	48	0	0
	Lowland rice production (kg/capita)	28	258	0	0
	Rice production (kg/capita)	262	354	441	272
	% upland rice on total rice production	89%	27%	100%	100%
	Maize production (t)	517	65	90	7
	No Buffalo	0	28	188	59
	No Cattle	191	68	28	2
	No Goat	42	0	202	144
	No Pig	130	62	351	141
	No Fish pond	5	31	5	2

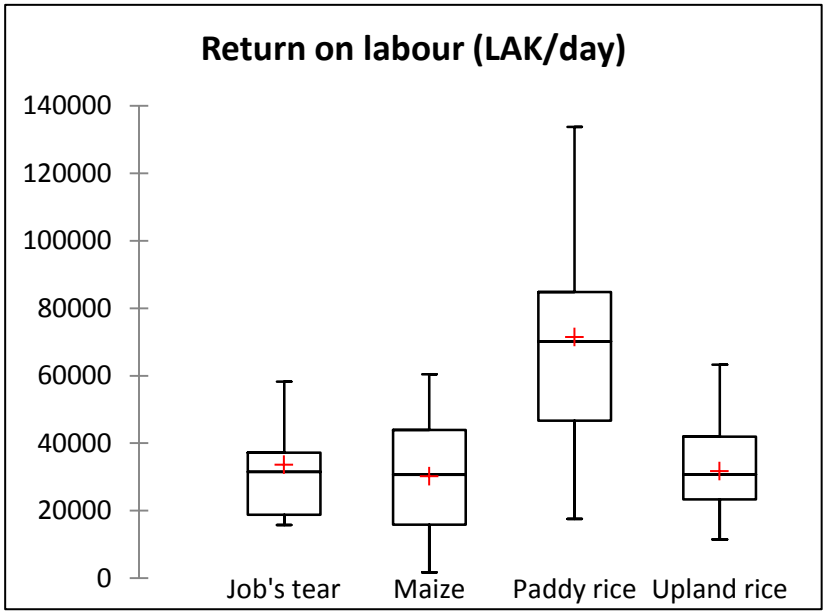
Village baseline data

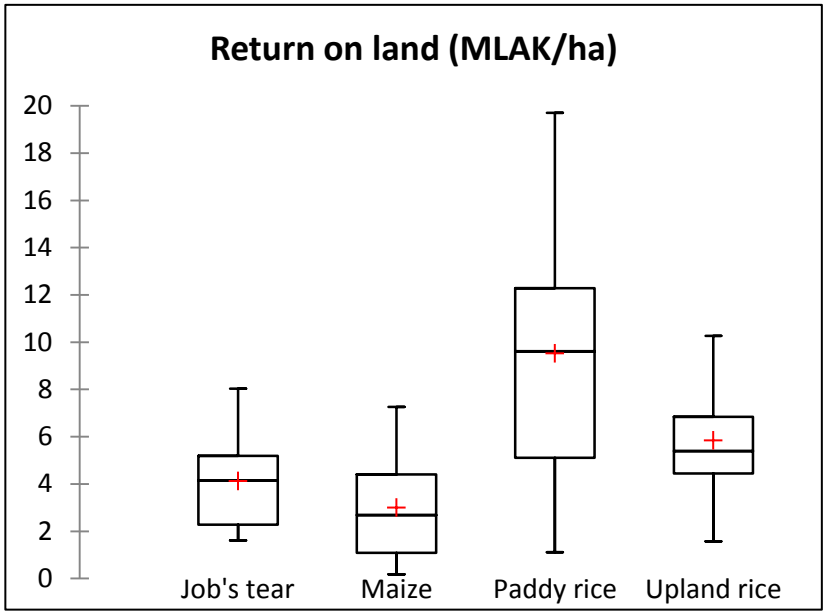
Topics	Variable	Houaphan		Louang Prabang	
		Houamuang	Viengxay	Viengkham	Pakseng
		Houaymoun	**Phounkang**	**Phoutong**	**Houayvat**
Household economics	% swidden	87%	67%	92%	95%
	% paddy	13%	28%	0%	0%
	% livestock	0%	0%	1%	0%
	% trade	0%	6%	3%	5%
	% salary/employment	0%	0%	4%	0%
	Village NTFP income (million kip)	48	17	43	75
	% NTFP income	6%	4%	5%	6%
	Village rice income (million kip)	0	33	63	22
	Village cash crop income (million kip)	554	25	7	27
	Village livestock income (million kip)	84	134	516	495
	Village non-farm income (million kip)	52	164	326	51
	% non-farm income	7%	44%	34%	8%
	Village annual cash income (million kip)	739	372	955	670
	Avg HH cash income (mill kip/hh/year)	10,7	10,3	13,0	15,6
	Avg farm income (mill kip/hh/year)	9,9	5,8	9,0	14,4
	Avg non-farm income (mill kip/hh/year)	0,8	4,6	5,0	1,2
	Gini index on cash income	44%	54%	59%	57%

Village baseline data

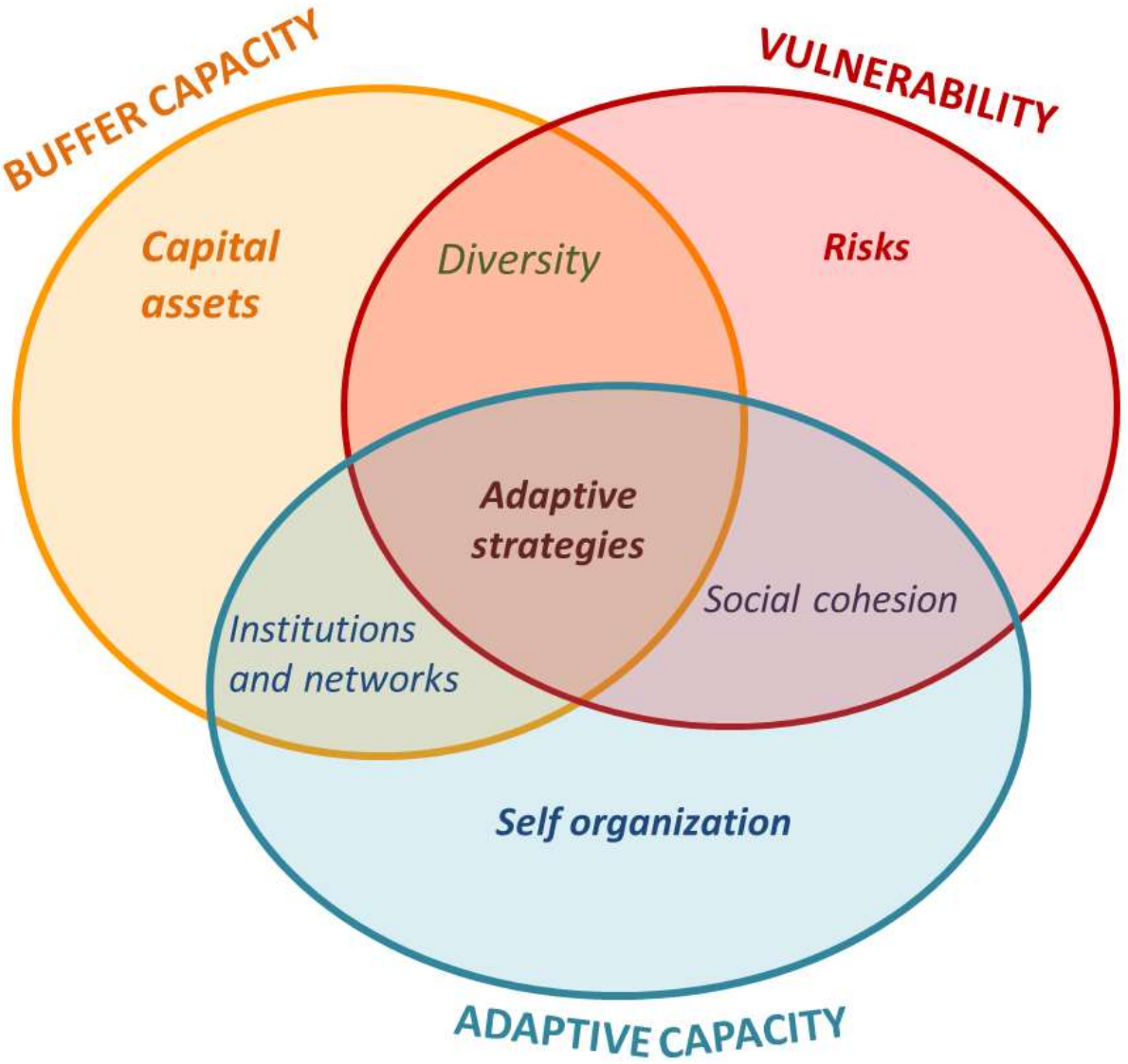


Cropping system performances





Measuring impact on resilience



Bottom-up definition of SMART indicators

e.g. exposure to crop damages

Village: ..... Interviewer: ..... Date: .....
No participants to the focus group: .....

				INTENSITY (harvest loss)										
	Ranking of the causes	Year of the last big damage	Number of thimes over the last 10 yrs	0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %
Cropping system 1:	1-													
	2-													
	3-													
	4-													
	5-													
	6-													
Cropping system 2:	1-													
	2-													
	3-													
	4-													
	5-													
Cropping system 3:	1-													
	2-													
	3-													
	4-													
	5-													
Cropping system 4:	1-													
	2-													
	3-													
	4-													
	5-													

***S**pecific*
***M**easurable*
***A**ssignable*
***R**ealistic*
***T**ime-related*

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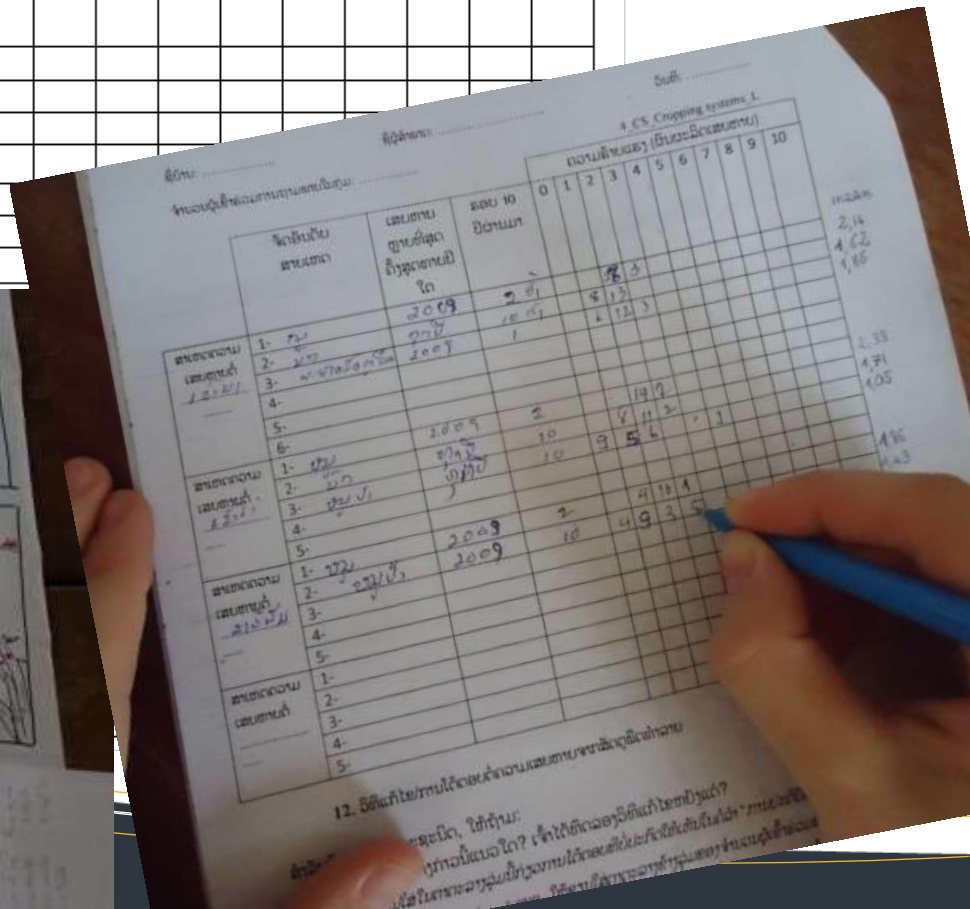
Bottom-up definition of SMART indicators

e.g. exposure to crop damages

Village: ..... Interviewer: ..... Date: .....
No participants to the focus group: .....

	Ranking of the causes	Year of the last big damage	Number of thimes over the last 10 yrs	INTENSITY (harvest loss) 0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %
Cropping system 1:	1-													
	2-													
	3-													
	4-													
	5-													
	6-													
Cropping system	1-													



***S**pecific*
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Bottom-up definition of SMART indicators

e.g. exposure to crop damages

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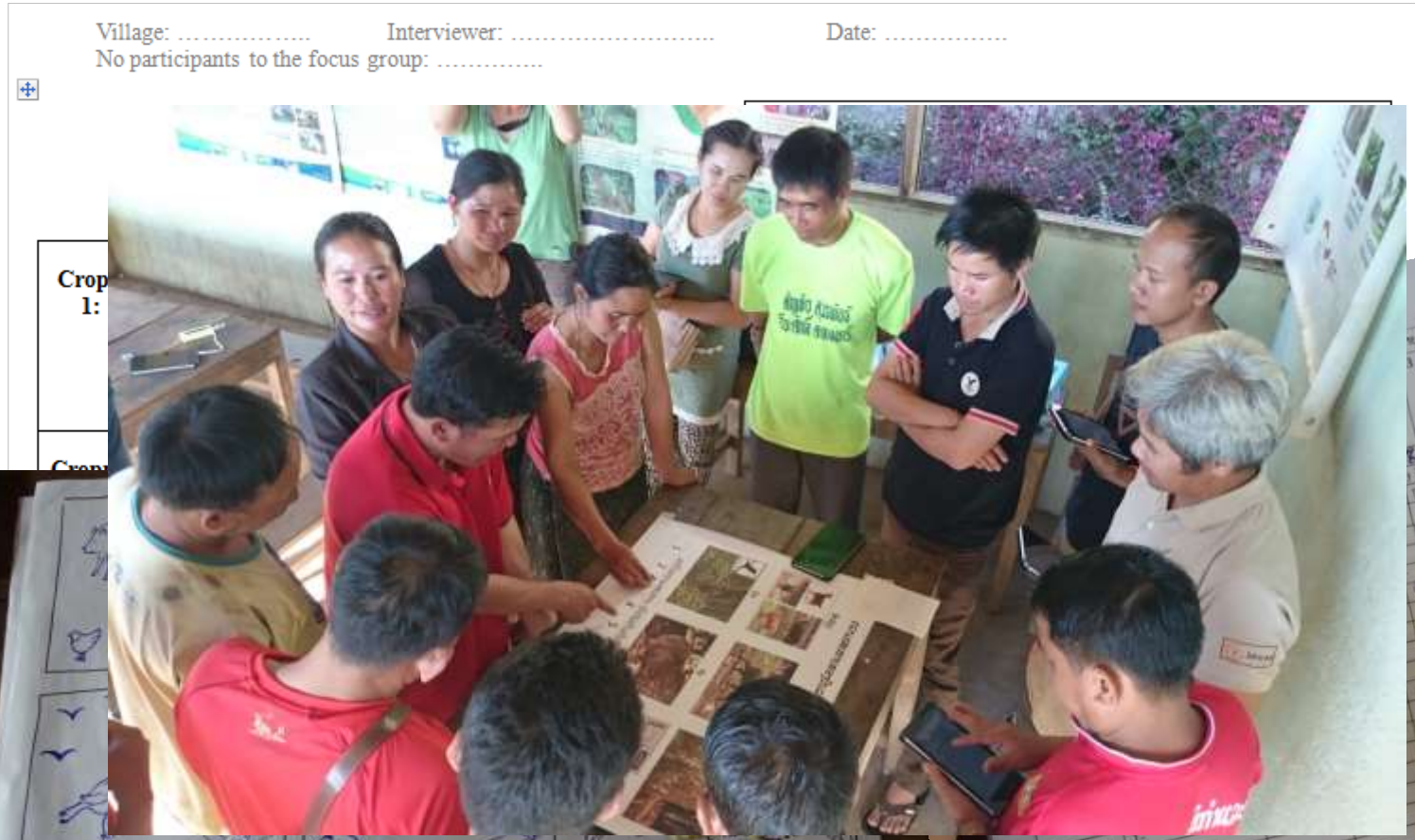
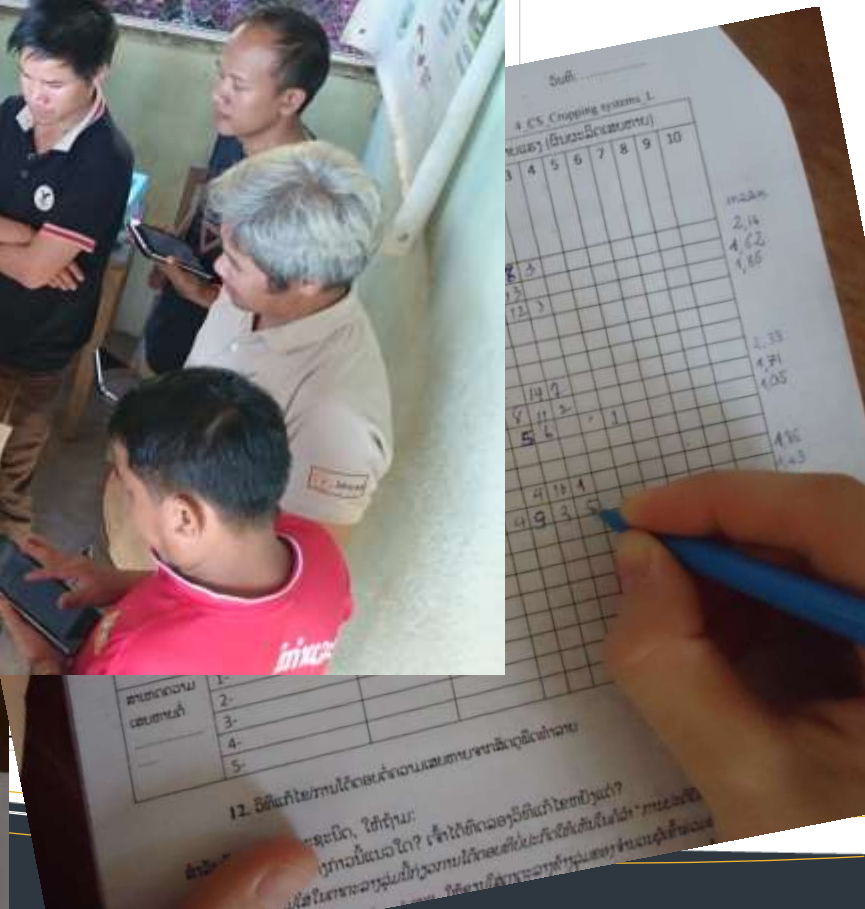
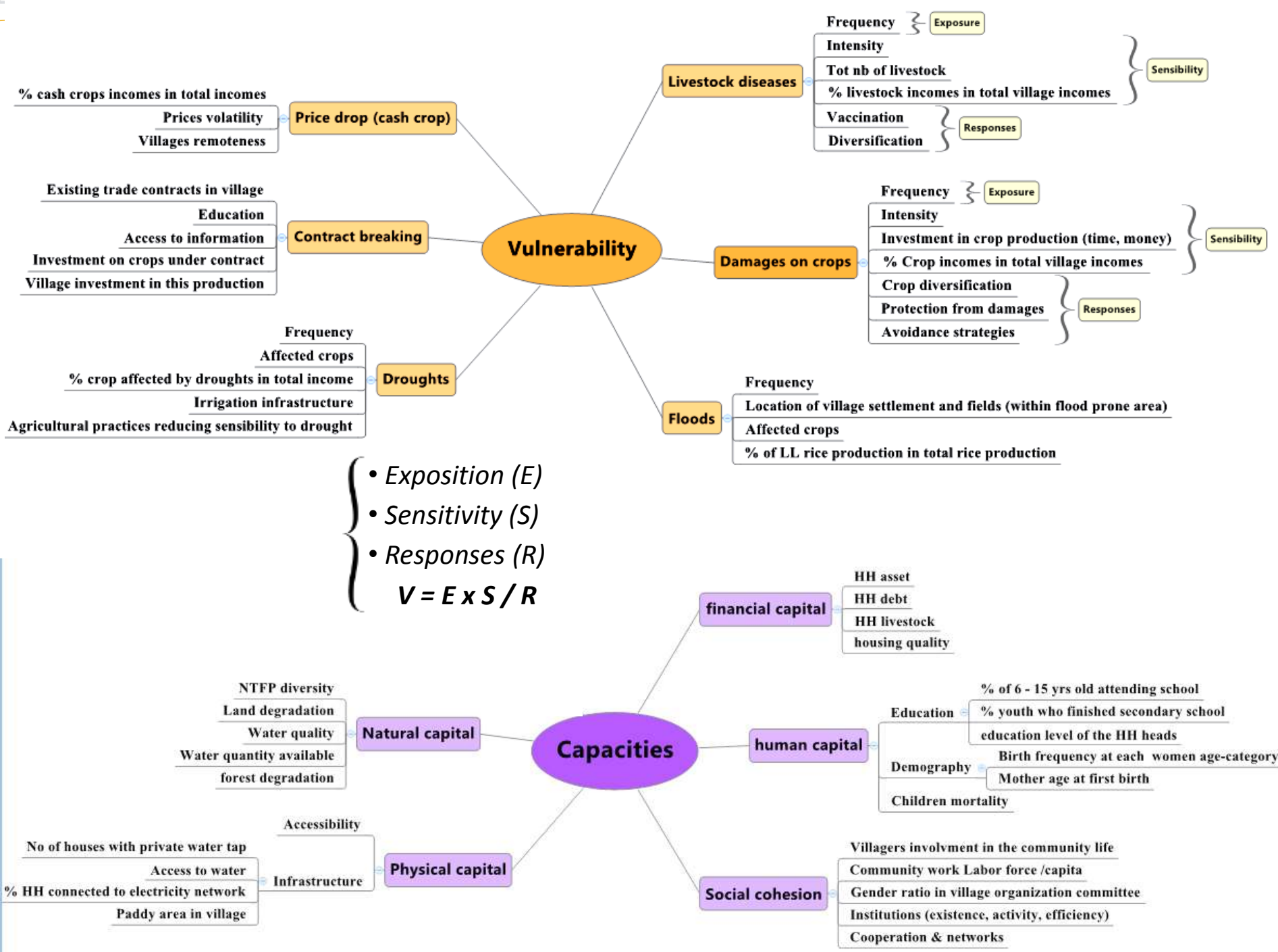
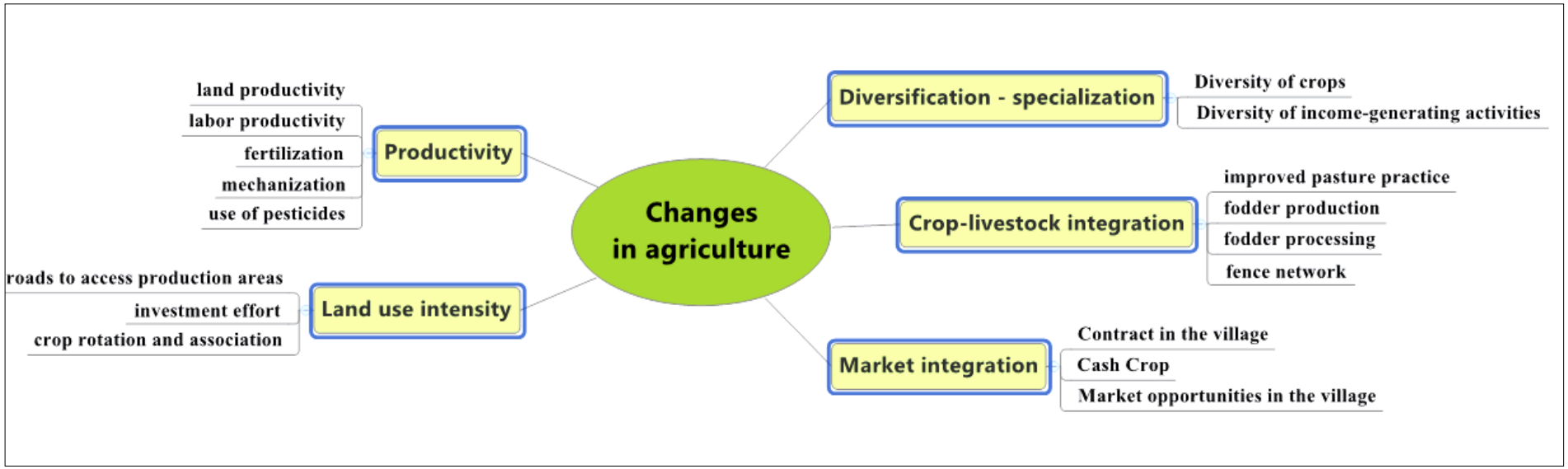





Vulnerability
Price drop (cash crop)
% cash crops incomes in total incomes
Prices volatility
Villages remoteness
Contract breaking
Existing trade contracts in village
Education
Access to information
Investment on crops under contract
Village investment in this production
Droughts
Frequency
Affected crops
% crop affected by droughts in total income
Irrigation infrastructure
Agricultural practices reducing sensibility to drought
Livestock diseases
Frequency
Exposure
Intensity
Tot nb of livestock
% livestock incomes in total village incomes
Sensibility
Vaccination
Diversification
Responses
Damages on crops
Frequency
Exposure
Intensity
Investment in crop production (time, money)
% Crop incomes in total village incomes
Sensibility
Crop diversification
Protection from damages
Avoidance strategies
Responses
Floods
Frequency
Location of village settlement and fields (within flood prone area)
Affected crops
% of LL rice production in total rice production
• Exposition (E)
• Sensitivity (S)
• Responses (R)
V = E x S / R
Capacities
financial capital
HH asset
HH debt
HH livestock
housing quality
Natural capital
NTFP diversity
Land degradation
Water quality
Water quantity available
forest degradation
human capital
Education
% of 6 - 15 yrs old attending school
% youth who finished secondary school
education level of the HH heads
Demography
Birth frequency at each women age-category
Mother age at first birth
Children mortality
Physical capital
Accessibility
Infrastructure
No of houses with private water tap
Access to water
% HH connected to electricity network
Paddy area in village
Social cohesion
Villagers involvment in the community life
Community work Labor force /capita
Gender ratio in village organization committee
Institutions (existence, activity, efficiency)
Cooperation & networks



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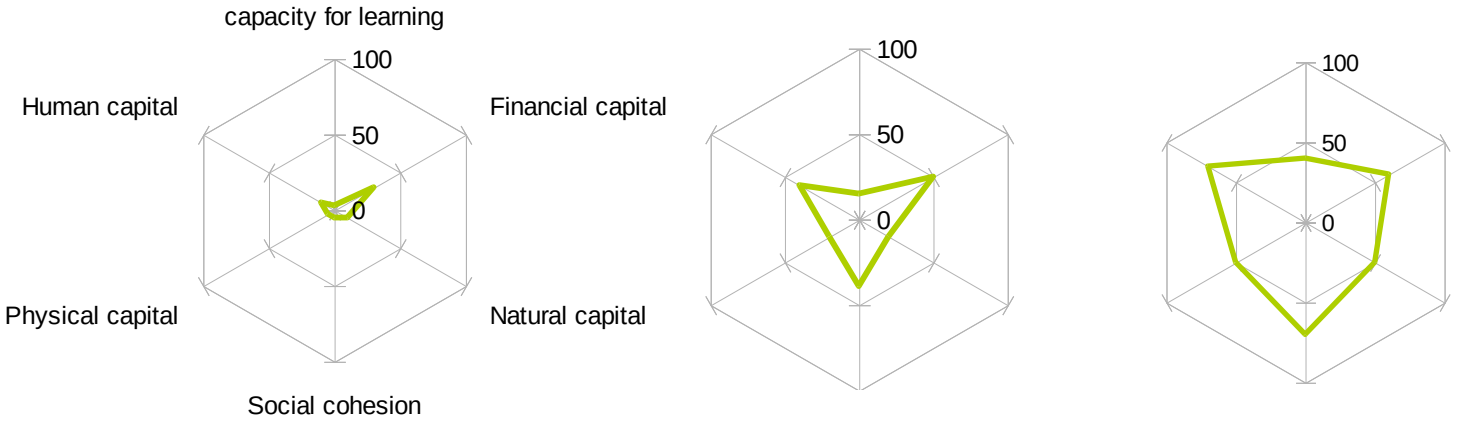
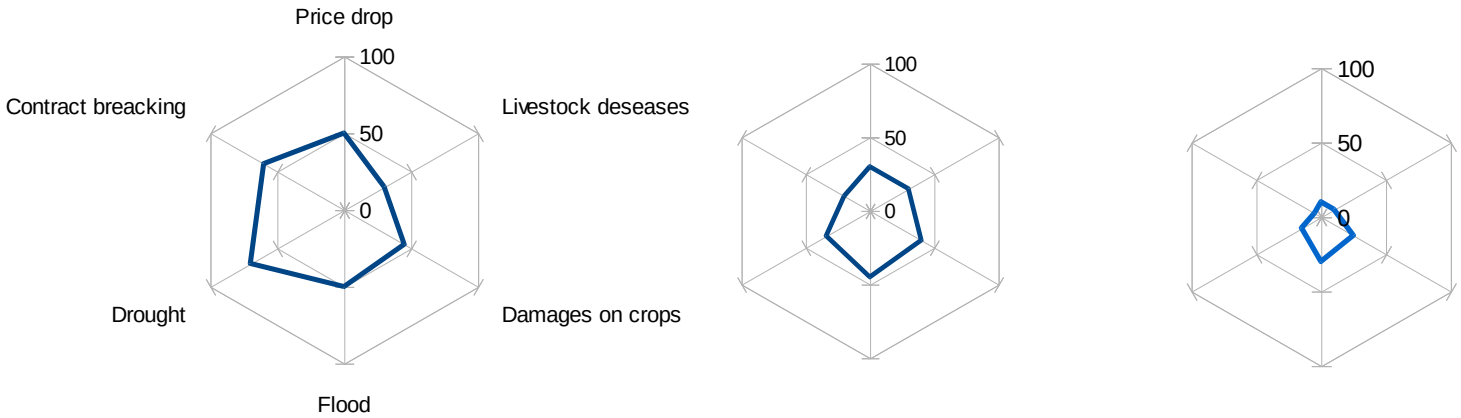
Expected indicator changes in time

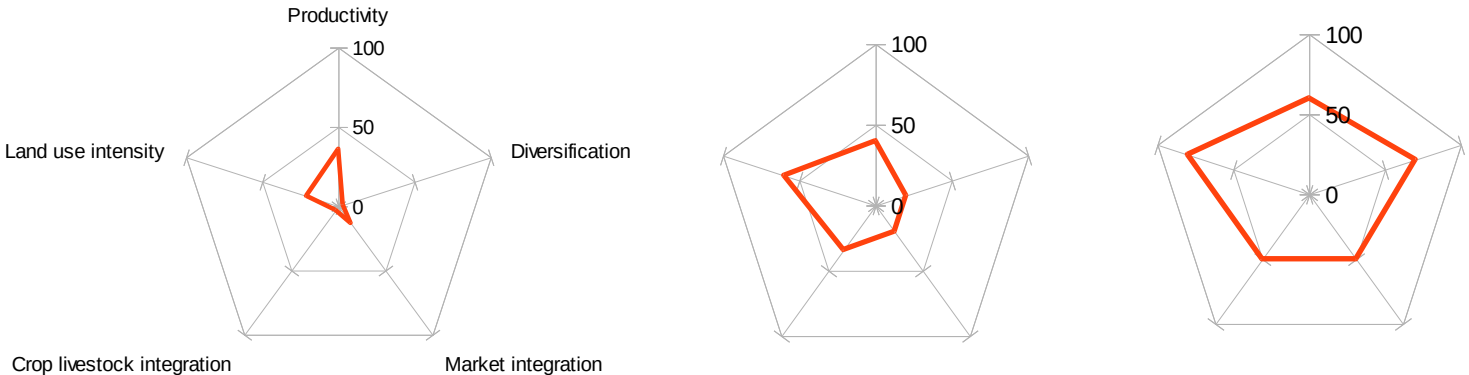
CAPACITIES



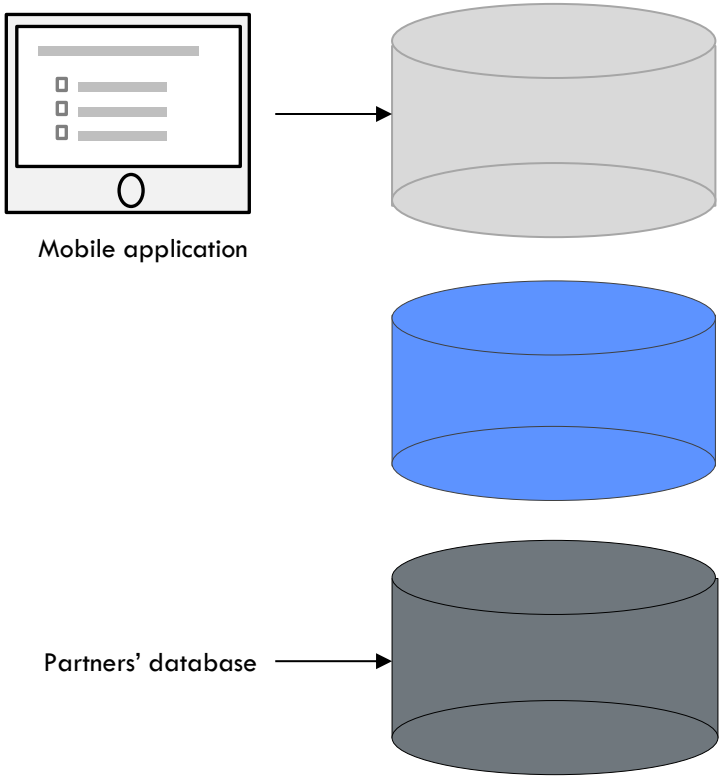
VULNERABILITY



Agricultural intensification



DATA MANAGEMENT



Eco-Friendly Intensification and Climate resilient Agricultural Systems (EFICAS)





Thank you for your attention!

For more information:

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