Multilevel framework to tackle food security problems aggravated by climate change

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Food security within Millennium Development goals

- Goal: eradicate extreme poverty and hunger
- Target: halving proportion of people suffering from hunger by 2015
- Subtargets:
  - Reduce by half the prevalence of underweight children under five years of age
  - Halve proportion of population that can not secure a minimum level of dietary intake

What is 'Food Security'?

- "the situation when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life"
- availability (e.g. production losses)
- acces (e.g. drop in purchase power)
- stability (e.g. irregularities in output)
- utilization (e.g. inefficiënt use)

How does climate change affect food security?

-decreases in crop productivity

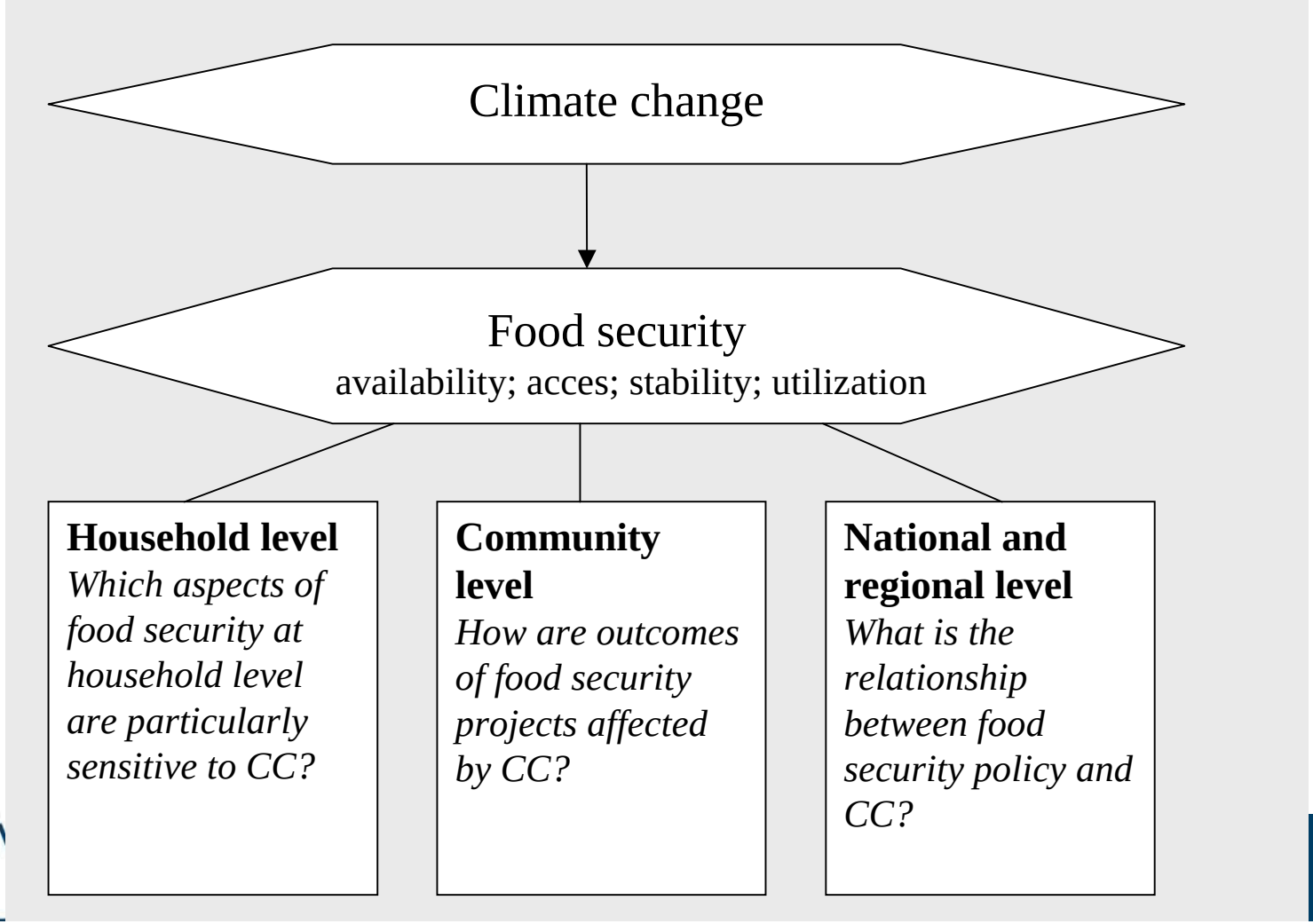
-less stable production (extreme weather events)

-increasing disease pressure

-decreased access to food (due to lower agricultural incomes)

-many indirect effects: through impact on infrastructure, rural micro-finance systems

Multiple levels of analysis and interventions :



1. At household level

- Example of Burundi:
- among the poorest countries in Africa
  - Population of 8 million
  - GNI per capita PPP: 320 US$ (<> 1681US$ for SSA)
  - Life expectancy at birth: 49 years (<> 50.5 for SSA)
  - Child mortality under 5: 181/1000 births (<> 94.2 for SSA)
  - HDI ranking 167 out of 177
- 90% of people work in agriculture

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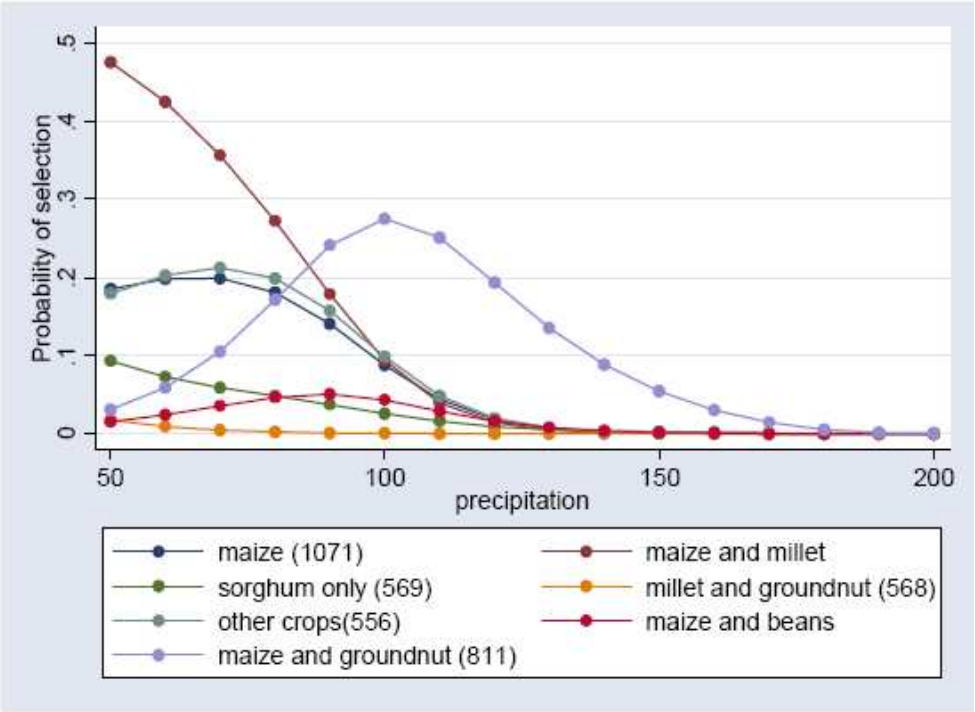
1. At household level (cont.)

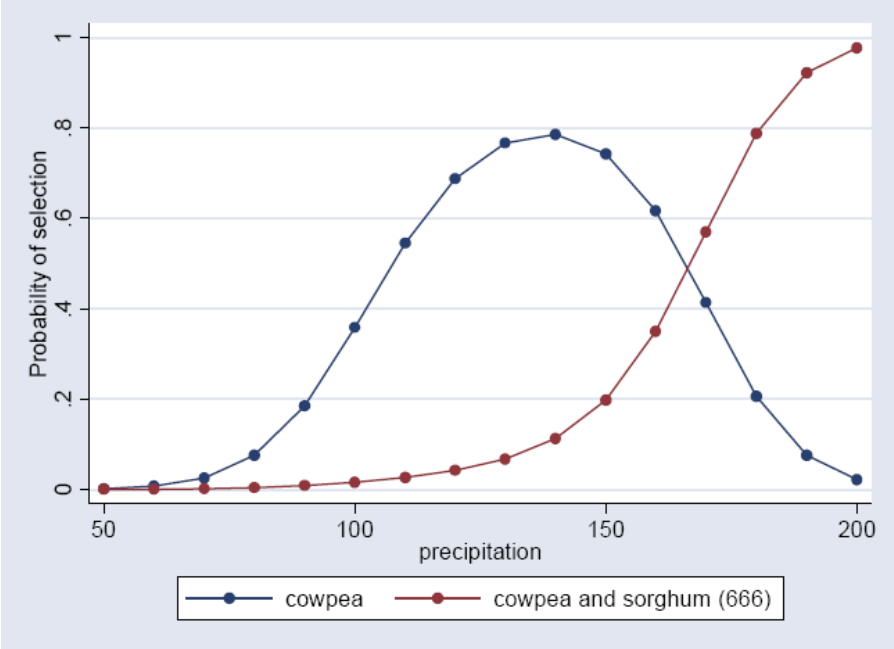
Burundi: Food security, household factors and climate change (based on Van de Velde, 2007-2008)

Factor	Impact on food security	Possible relation to CC
Household structure	More members per household leads to lower food insecurity per member	None
Farm size (surface per household member)	The larger the surface, the lower the food insecurity	Decrease in land fertility
Crop diversification	More crop diversification leads to more food security	Change in food crops, change in productivity
Off-farm income	Off-farm sector participation increases food expenditure, but doesn't influence food security levels	Increased importance of off-farm sector, institutional development of viable rural non-farm economy
Investment costs	Households having acces to drained or irrigated fields have better food security status	Need for more irrigation installations

Example: changes in cropping pattern following increased risks

	Percent farmers producing		Average production per household* (kg)		Average share sold (%)	
	1996	2007	1996	2007	1996	2007
Beans	98	96	306.4	176.5	2.3	4.4
Sweet potato	77	92	2833.4	1176.5	4.2	8.7
Manioc	87	60	1374.3	483.2	11.7	11.4
Maize	77	56	311.3	102.8	7.2	34.4
Bananas	85	95	17 to 18	14 bunches /month	15	8 to 11 bunches/ month

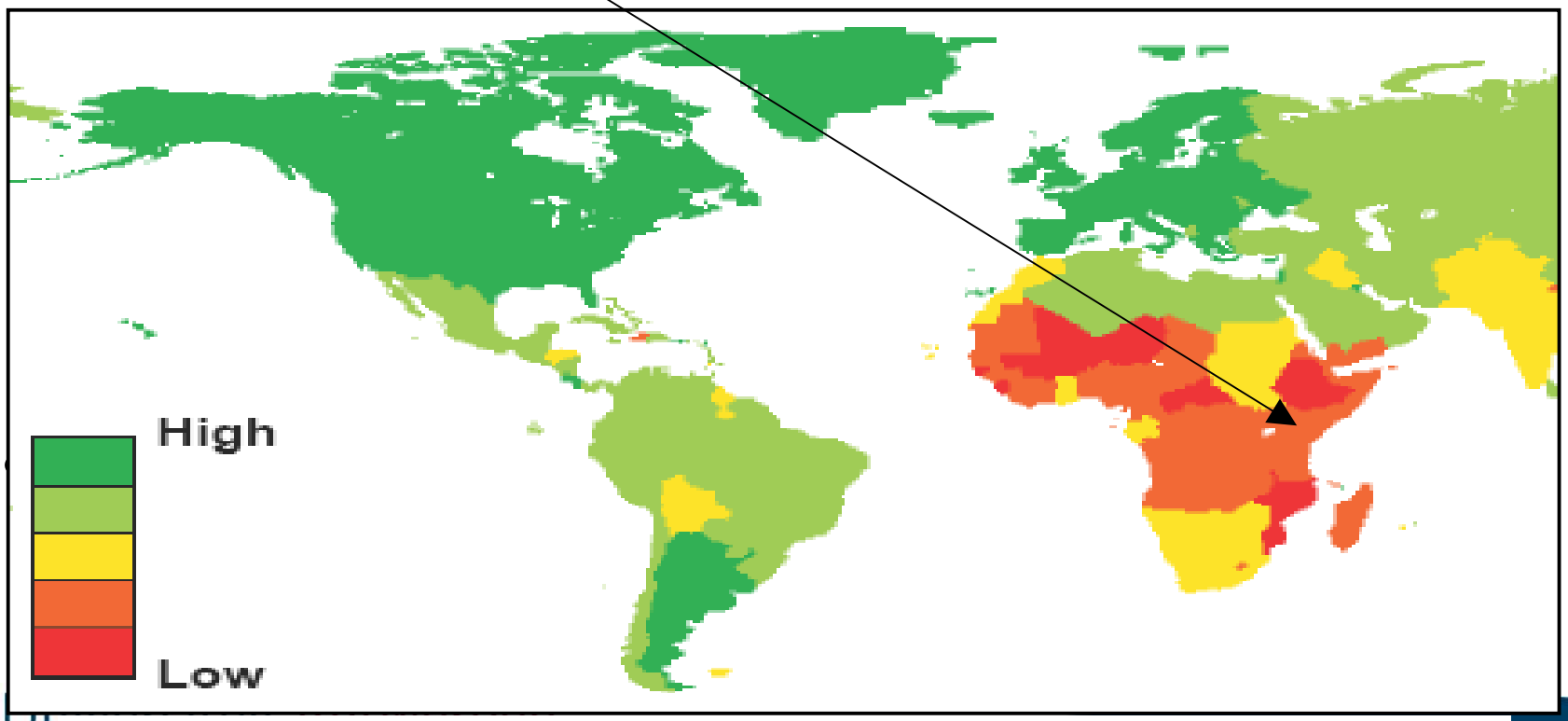




Choice of cropping pattern clearly changes with level of precipitation (source Kurukulasuriya and Mendelsohn, 2008)

2. At community level

- Example of Kenya:



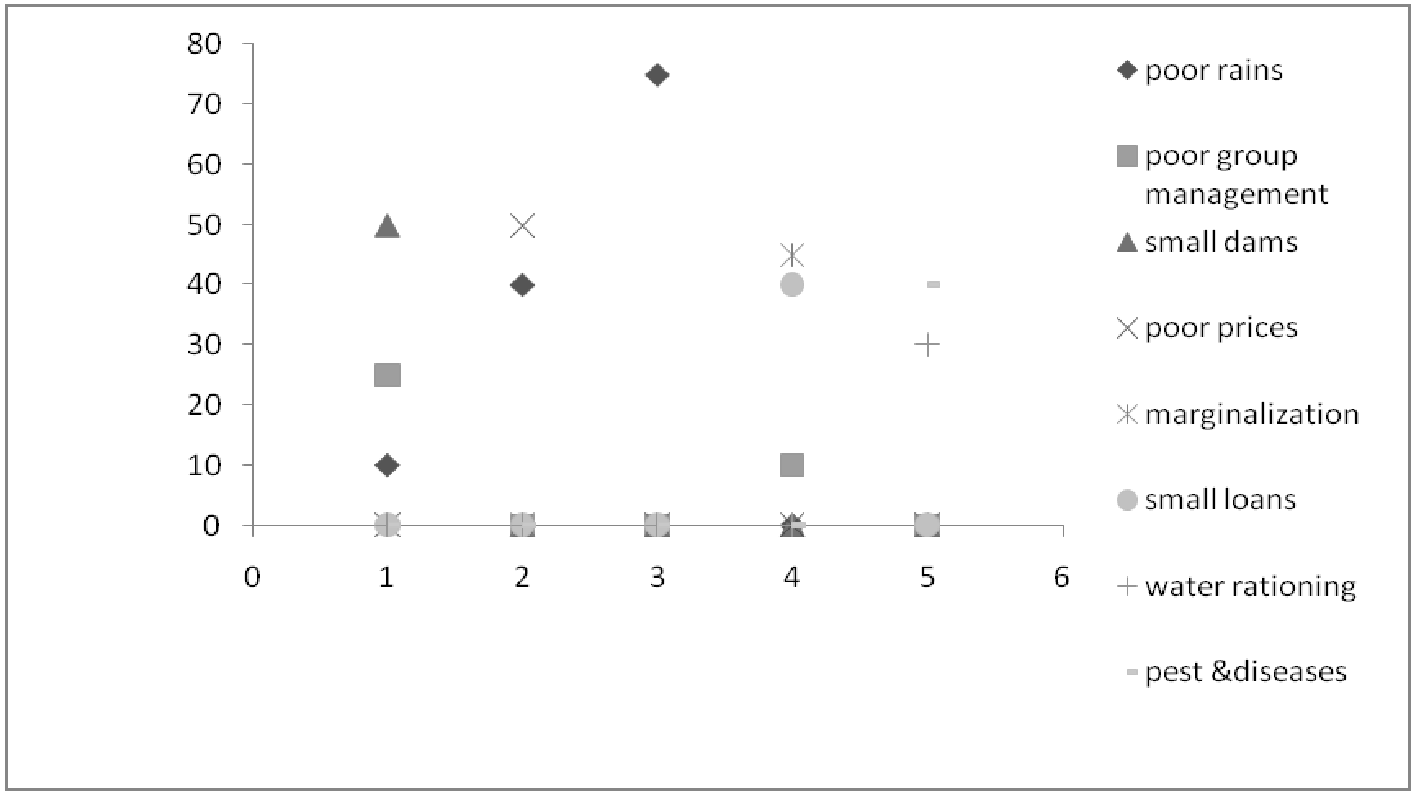
Africa's Adaptive Capacity to Climate Change, (Source: Lucas and Hilderink, 2004)

2. At community level (cont.)

- **Kenya: success of food security projects** (Lemba, 2009)

- projects that aim at enhancing access to resources: very vulnerable to the direct impact of climate change on production (especially limited rainfall).
- in the past: limited project results because of underestimation of 'bad' weather conditions
- the current situation (with many of the typical characteristics associated with climate change): very important to create efficient projects
- the future situation: climate change will make difficulties to create an efficient project gradually more important

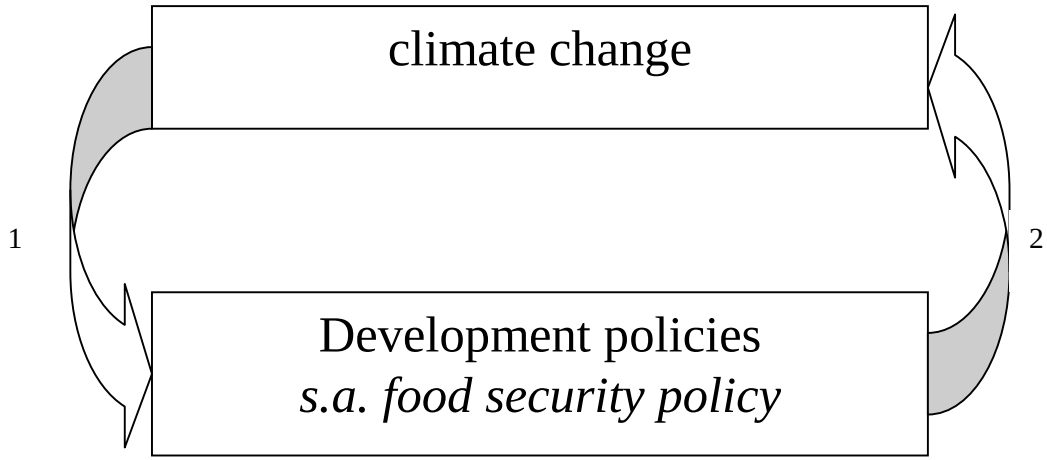
Example: participation in interventions



Problems reportedly (percent) encountered during participation in the interventions. Note: Numbers 1-5 denote MAP, ICRISAT, CBNP, KREP and KIP interventions respectively.

3. At national and regional level

- **Africa: food security policy**



3. At national and regional level (cont.)

1. climate change affects development policies (Halsnaes and Traerup, 2009)

   "key goals related to poverty reduction, water, food energy, education and health are critically influenced by climate change"

2. existing and realized development policies might have an impact on many aspects of climate change (Garg et al., 2009)

   "improving some development variables can reduce the adverse impacts on the system due to climate change"

Example: several initiatives currently elaborated

⇒improve capacity of national governments: National Adaptation Programmes of Action (NAPAs) support of UN

⇒African Union, COMESA: integration of climate change in regional development agenda

⇒NEPAD: "Combating climate change in Africa" programme

Discussion and Conclusion

1. *household level:* although climate change has been acknowledged; households are more concerned about the current climate impact on food security (current assessment of risk)
2. *community level:* climate change should be included in food security projects as an important external risk or shock, alongside the physical, political and social environment.
3. *regional/national level:* creating a positive vicious circle of improved food security and desired climate changes

⇒ an **integrated approach** is necessary in tackling food security problems aggravated by climate change