

AGENCE NATIONALE DE LA RECHERCHE



EIVulMed

**Role of livestock activities in the process of adaptation and reducing
vulnerability of Mediterranean societies facing global changes**

ANR CEP&S - 15 jan 2011 to 15 jan. 2013 - Exploratory project

Publications

- **Published**

- Alary, V., Aboul Naga, A., El Shafie, M., Abdelkrim N., H. Metawi, 2011 Dynamics and farmers strategies for small ruminant market in Egypt. *African Journal of Agricultural Research* Vol. 7(1), pp. 115-122, 5 Jan 2012
- Alary, V., Daoud, I., Salama, O., Aboul-Naga, AD., Merveille, N., Tourrand, J.F., 2012. Adaptation des sociétés bédouines de la côte nord-ouest de l'Égypte au changement global, Autrepart (62), 2012, 183-200.

- **Submitted**

- Alary, V., Aboul Naga, A., El Shafie, M., Abdelkrim N., H. handom, H. Metawi, 2011. Roles of small ruminants in the rural livelihood improvement – Comparative analysis in Egypt. In : *Livestock farming embedded in local development. A functional perspective to alleviate vulnerability of farming communities*, IRC Book.
- Alary V., Messad, S., A. Aboul-Naga, M. Abdelzaher, I. Daoud, Juanes, X., J.F. Tourrand, 2013. Livelihood strategies and role of livestock in the adaptation processes to drought in the Coastal Zone of Western Desert (Egypt) (Ag. System)
- Alary V., Messad, S., P. , I. Daoud, ,A. Aboul-Naga, M. Osman, P. Bonnet, J.F. Tourrand, 2013 Social network and vulnerability: a clear link in Bedouin society (Egypt) (Reg. Env. Change)

- **In preparation**

- Lasseur J, Alary, V., J. Bibliography review on the concepts...
- A. Aboul-Naga¹, Mona A. Osman¹, V. Alary², Ferial Hassan¹, H.R. Metawi¹, E.S. Abdel-Aal¹, Adaptation Process of Small Ruminant Breeders to Long Drought Incidence at the Coastal Zone of Western Desert in Egypt
- Tourrand, J.F., Daoud, I., Alary, V., Bastianelli, D., Noselhy, N. et al. Bedouin's Alternatives Facing Global Change in the Mediterranean Coast of Egypt, Until to Become a Poultener
- Tourrand, J.F., Daoud, I., Salama, O., Noselhy, N., Alary, V., Rationalizing Coupled Human-Natural System of Pastoralism in Desert Area, NWCZ, Egypt. In. *Building Resilience of Coupled Human-Natural Systems of Pastoralism in the Developing World*

Communications

- El Shafie, M., Metawi, H., Communication au LIFLOD Workshop, side event of IXth IRC / International Rangeland Congress, Rosario Argentina.
- Mona A. Osman, V. Alary, A. Aboul-Naga, Ferial Hassan, E.S. Abdel-Aal, H.R. Metawi and J.F. Tourrand, 2012. Adaptation process of farming systems in response to 14 successive years of drought in North West Coastal Zone (Egypt)- Communication IFSA / International Farming Systems Association, Denmark, July 2012. http://ifsa2012.dk/?page_id=760
- Hoffet, N., Daoud,I., Alary,V., Tourrand, J.F., Moselhy,N., 2012. Participation, Power and Sustainable Water Resource Management, A Case Study of The Rainfed Desert Region of Matruh, Egypt. Communication IFSA / International Farming Systems Association, Denmark, July 2012. Link: http://ifsa2012.dk/?page_id=755
- Aboul-Naga, A., V. Alary, M.A. Osman, F. Hassan, I. Daoud, J.F. Tourrand, 2012. Raising goats as adaptation process to prolonged drought incidence at the Coastal Zone of Western Desert in Egypt, XIth International Conference on Goats, Session 9: Economy, Sociology, System of production, Sept. 2012, Canary Islands (Spain).
- Bonnet, P., Lasseur, J., Grawitz, T., Boutonnet, J.P., Tourrand , J.F., Combining large scale and small scale analysis to characterize the Vulnerability of Territories for small ruminant farming systems in the PACA region of France: concepts and reality, Communication IFSA / International Farming Systems Association, Denmark, July 2012.
- Ding, L.M.; Daoud, I.; Fasioli, E.; Long, R.; Alary, V.; Coronato, F., Dong, S.; Abdelzaher, M.; Schweitzer, A.; Aboul Naga, A.; Bonaudo, T.; Tourrand, J.F. Adaptation Strategies of Breeders Face Global Change in Harsh Conditions. International Grass Land Congress, Australia, (Poster Submitted)
- Aboul Naga A., Alary, V., Osman, M., Tourrand, J.F., 2013. Contribution of livestock to the livelihood of local communities at different agro-ecological zones in the coastal area of Western Desert in Egypt. 11th International Dryland development Conference “Global Climate Change and its impact on Fod & Energy Security in the Drylands”, IDDC, 18-21 March 2013, Beijing, China
 - + *From sheep to broilers: development of poultry production around Marsa Matruh, egypt. International congress on advancements in poultry production in the Middle East and African states, Antalya, Turkey, Oct. 2013.*
 - + *Water Resources Management in North West Coast, Egypt- Wadi Naghamish case study, DRC Conf. Cairo, Egypt, Sept. 2013*
 - + *Adaptability of Small Ruminant Farming Facing Global Change in Mediterranean, EAAP, Nantes, France, August 2013*
 - + *From Local to Global: Mental Models of Local People about Livestock Sector. EAAP, Nantes, France, August 2013*

Coordination of Sessions

- 9th IRC – International Rangeland Congress, Rosario, Argentina, March 2011. *Livestock farming embedded in local development. A functional perspective to alleviate vulnerability of farming communities (Side Event)*
- 13th IRSA – International Rural Sociology Association, Lisbon, Portugal, August 2012. Human Dimensions in Livestock Farming Systems (Work Group 53)

Training – capacities building

MSc

- Grawitz T. 2011. Analyse diagnostic du système agraire du Haut var. Rôle des systèmes d'élevages pastoraux dans la réduction de la vulnérabilité d'un territoire. MSc. Ing. AgroParistech. (Dir. J. Lasseur) 92 p. + An.
- Papon A. 2012 Analyse diagnostic du système agraire de la région de Chorges . MSc. Ing. AgroParistech, Dir. J. Lasseur, 121 p. + An.
- Matehau M; 2012. Organisation d'un SIG sur l'élevage ovin de la région PACA dans le cadre de l'analyse de la vulnérabilité de l'élevage face au changement global sur les territoires. MSc. Ing. Gestion Territoriale/Univ. Montpellier Paul Valéry. Dir. P. Bonnet, 81 p. + GIS Data Base
- Timothée Petit, 2012. Le marché de la viande ovine en Provence-Alpes-Côte d'Azur. État des lieux et perspectives d'évolution. MSc. ESA, (Dir. M.-O. Nozières & J.-P. Boutonnet). 194 p.
- Hoffet, N. 2011. Water for the Desert: Participation and Integrated Water Resources Management,. The Rainfed Desert Region of Matruh, Egypt. MSc. LSE, London, Dir. V Alary & JF. Tourrand, 62p.
- Martin, V., Adaptations des communautés bédouines au changement global. Analyse des processus basée sur neuf familles bédouines dans la région de Matrouh, NWCZ, Egypte. MSc1. ESIPTA, Nancy, Dir. V. Alary & JF. Tourrand, 43p + An.
- Taha, Totti: (2012-2013). Small ruminant value chain in NWCZ. Preparation of Master degree, Ain Shams University, Dir. H. Mansour & JP. Boutonnet (in progress)

PhD

- Daoud, I.(2012-2014), Bedouin society strategies facing drought in NWCZ, Egypt: Role of livestock in global change adaptation and vulnerability reduction, PhD, AgroParistech, Dir. V. Alary & JF.Tourrand, (in progress)

Context: Main Global Changes in Mediterranean

- “Hot spots” of CC (Christensen et al., 2007) (temperature + rainfall)
- Doubling of the population during the last for 40 years
- Urbanization in the coastal zones and rural emigration

Hypothesis: Roles of livestock in adaptation process

- Livestock/ NRM at the regional level:
Use of rangelands and marginal lands, maintaining landscapes and increasing ecosystems resilience (biodiversity, fire hazards), natural resource management (including water)
- Livestock in the household:
Significant contribution in food security and livelihood improvement
- Livestock in multi-scales
 - Livestock: creation of links between families, communities and regions through transhumance and migration => social capital (protection, insurance, urban-rural interactions, that condition certain opportunities such as market facilities or innovation capacities)

Task 2: Role of livestock systems to reduce vulnerability at the farm and territorial level

Action 2.1 Literature review on
vulnerability and risk

Identify
variables & partitions

Action 2.2 Collective vulnerability
at territorial level /contextual and
environmental changes

Identifying stakes for
livestock activities

Action 2.3 Individual household
vulnerability (typology)

Identify
categories

**Opportunities
And constraints**

**Capital asset,
etc...**

Task 3 : Past dynamics and local mental models (representations, perceptions): Identification of key parameters of the adaptive capacities faced global changes

Action 3.1 Retrospective analysis

Trajectories

Experience

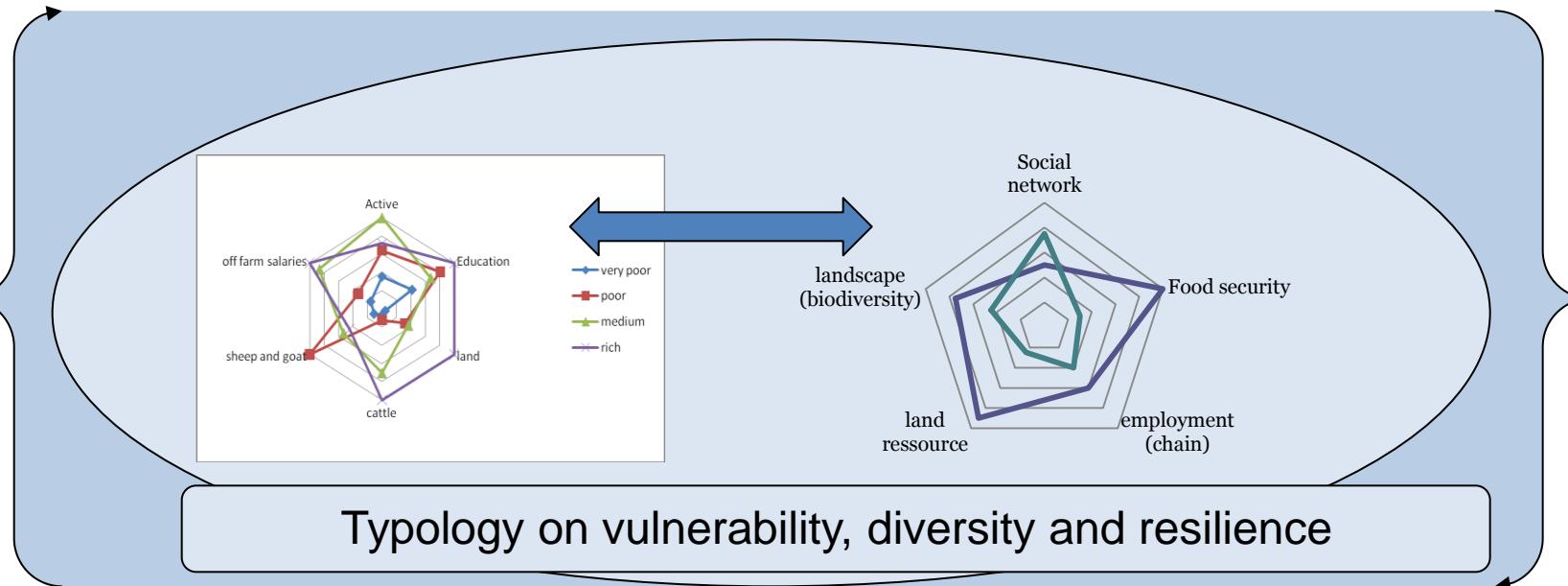
Action 3.2 Perception and
representation of changes

Risk perception

Action 3.3 Alternative/options/
scenarios for better adaptation

Main Approaches

Vulnerability analysis



Key parameters of adaptation and causal factors

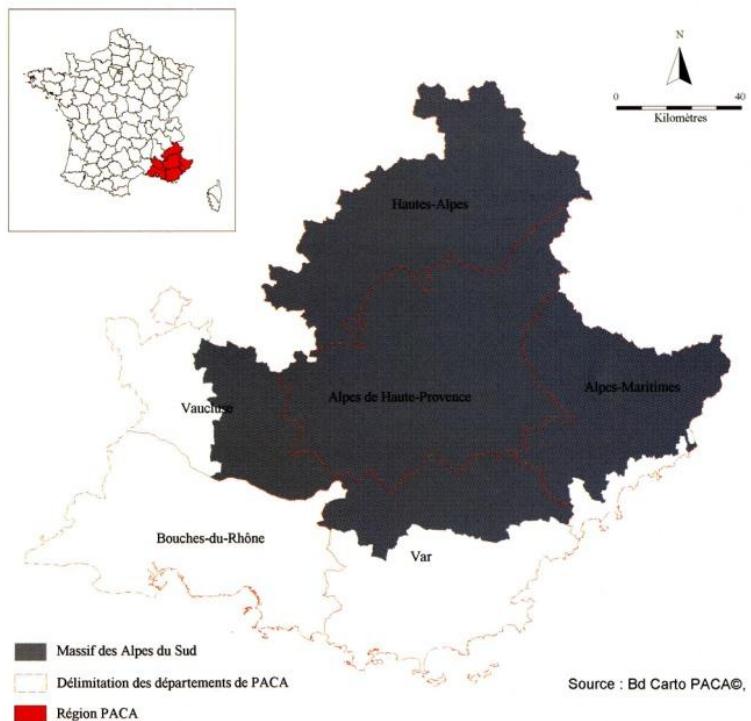
Adaptive process

Typology on adaptive process

Perception and representation

Retrospective analysis

Two case studies: PACA (Provence Alpes- Côte d'Azur, France) and North Coastal zones (Egypt)



Global Change & Vulnerability

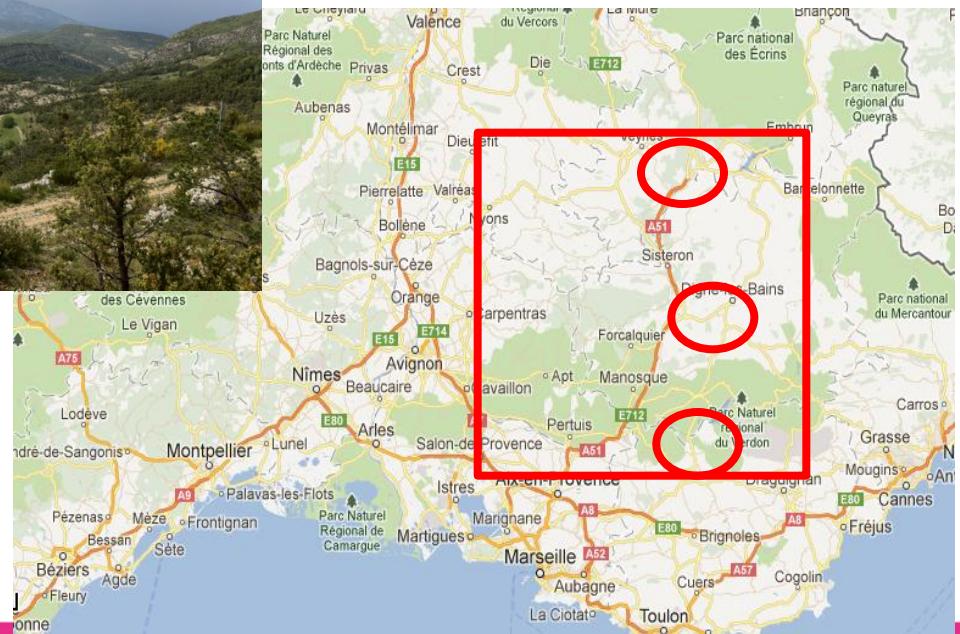
→ North Western Coast Zone

1. Climatic change → Drought events
2. Demography → Urbanization / rural exodus
3. Market change at regional and local level
4. Tourism and migration → employment, land pressure and access, political et economic
5. Youth demand of youth and life conditions
6. Biodiversity / NRM



Dispositif en PACA

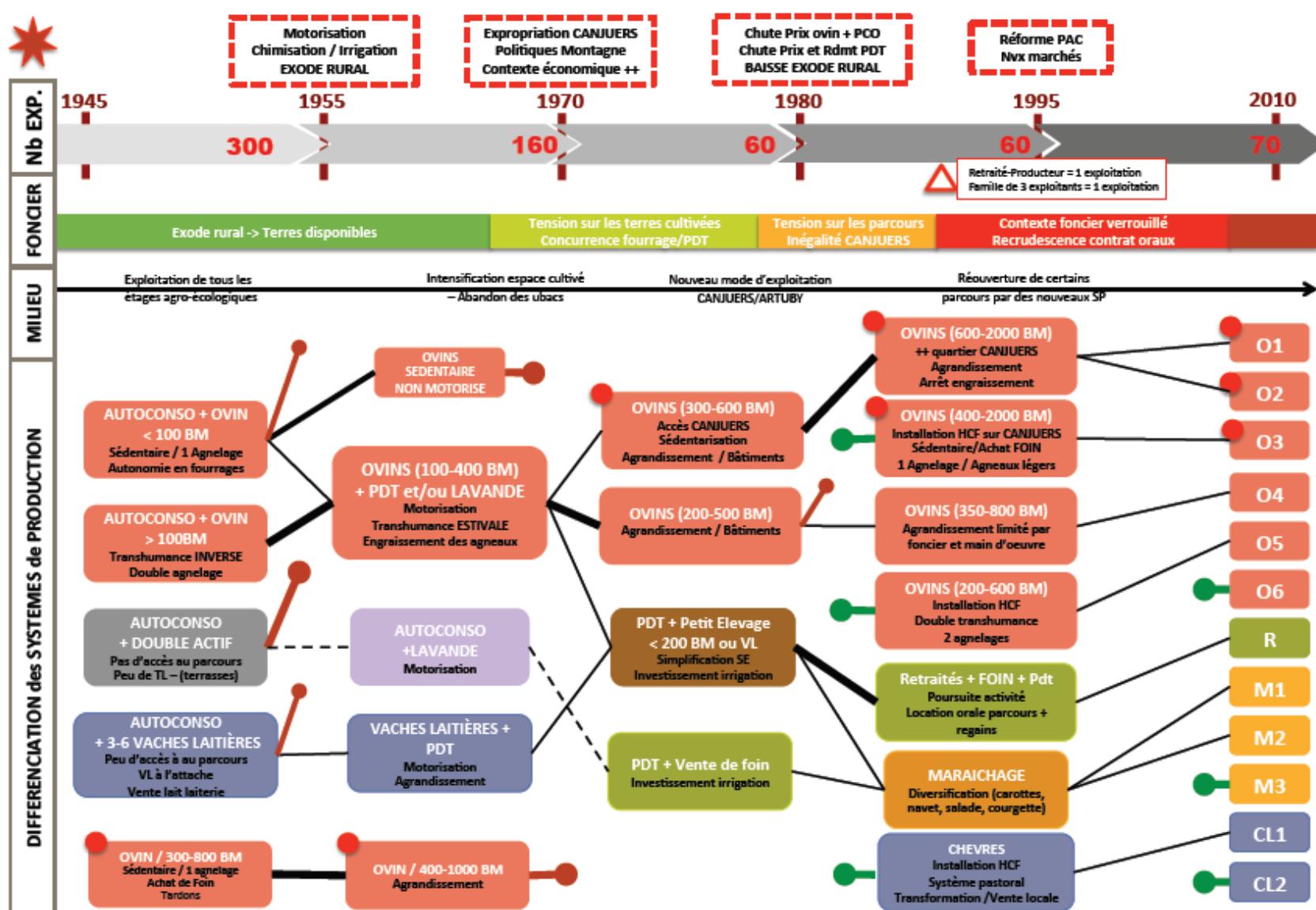
Une analyse régionale et 3 études de cas locales



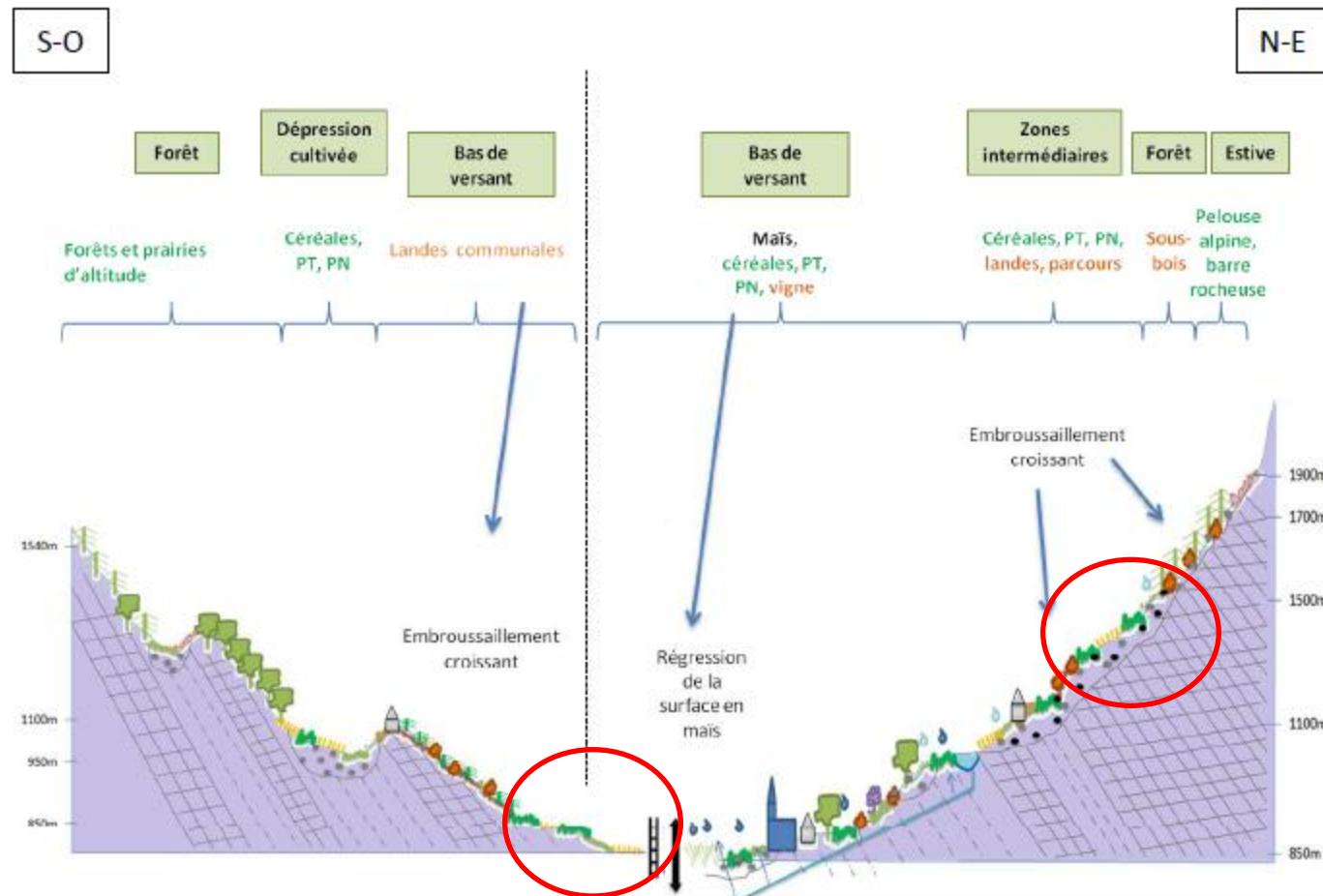
Analyse de la robustesse et dynamique de l'agro système

- **Evolution de la dynamique et diversité des systèmes de production**
 - Capacité à assurer le renouvellement de la diversité des systèmes
- **Inscription des activités d'élevage dans le territoire, dynamique des ressources**
 - Co-évolution des systèmes d'activité et des écosystèmes

Le renouvellement de la diversité des systèmes de production agricoles (Canjuers)



Principales évolutions d'usages et couverts des sols (Chorges 1950/ 2010)



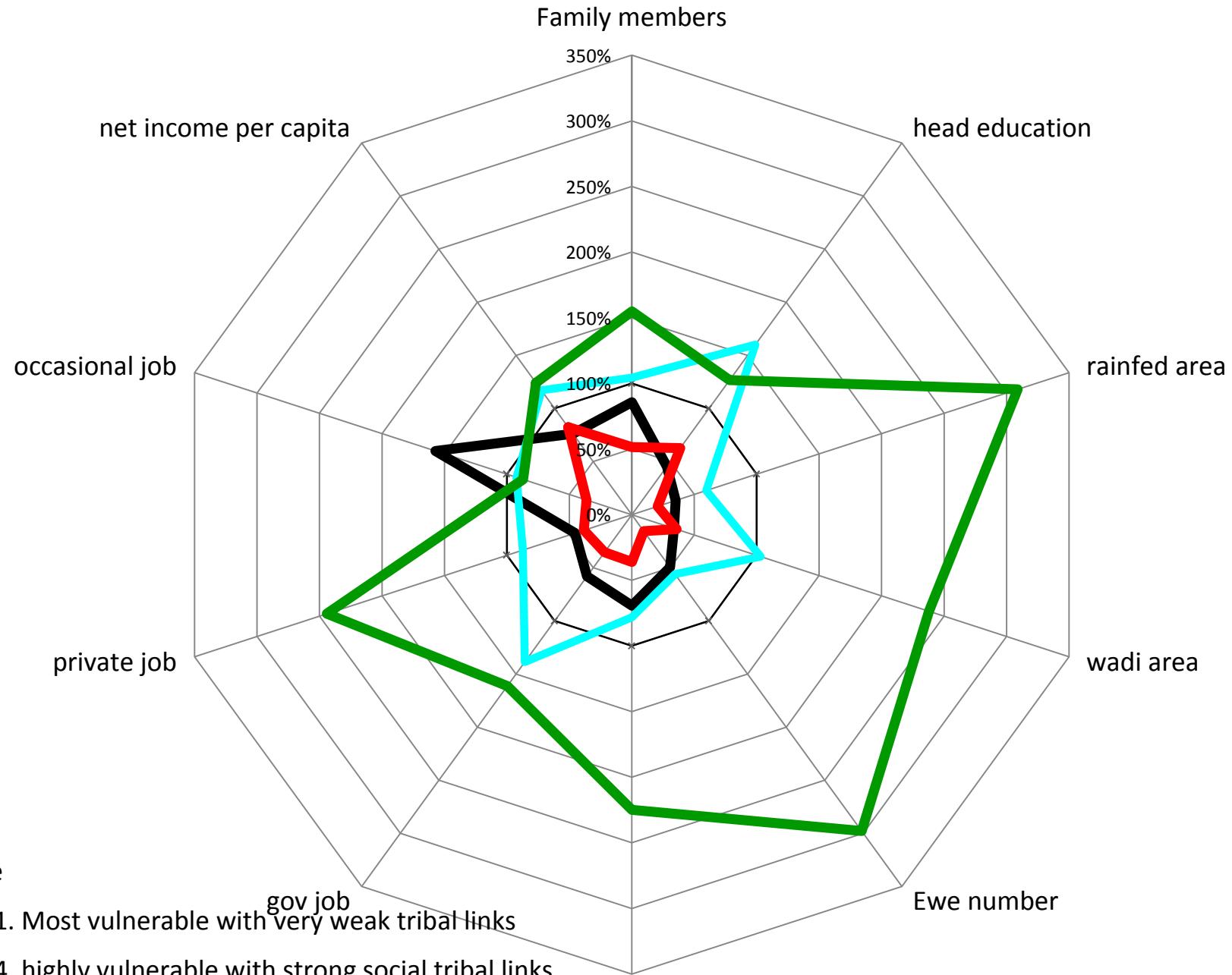
Quelques traits marquants

- **Une mobilité accrue des troupeaux, forme d'adaptation impliquant une analyse multi échelle**
- **Des activité d'élevage en retrait sur le territoire qui ne permettent que partiellement le maintien de mosaïques paysagères**
- **Des politiques publiques qui influent fortement sur l'évolution de la diversité à moyen terme des systèmes**

NWCZ, Egypt: Classification of Families in West

Clusters	Human asset	Land asset (F = Feydan)	Livestock asset (number)	Non- agricultural jobs	Social asset	Monetary poverty (per capita**)
Most vulnerable (profile 1)	18 mb < read and write	Rainfed: 12 F Wadi: 3 f. Pasture: 6 F. Trees: 122	Ewe/goat: 45 Camel:1-11	occasional	Weak Solve pb.	2571 EGP
Highly vulnerable (profile 4)	22 mb < read and write	Rainfed: 7 F Wadi: 3 f. Pasture: 1.5 F. Trees: 73	Ewe/goat: 17	Gov job	Strong link- > loan	2775 EGP
Less vulnerable (profile 2)	23 mb Read and write	Rainfed: 20 F Wadi: 10 f. Pasture: 8 F. Trees: 327	Ewe/goat: 53	Gov job/ business	Strong link	3945 EGP
Least vulnerable (profile 3)	24 mb < read and write	Rainfed: 103 F Wadi: 23 f. Pasture: 110 F. Trees: 735	Ewe/goat: 256 Camel:12	Gov. job Lybia migration Business	Strong link with tribe and MRMP	4188 EGP

*1F = 0,4ha, ** 1€ = EGP8



—*— average

— profile 1. Most vulnerable with very weak tribal links

— profile 4. highly vulnerable with strong social tribal links

— profile 2. Less vulnerable with only tribal links

— profile 3. Least vulnerable with strong out and in-tribal links

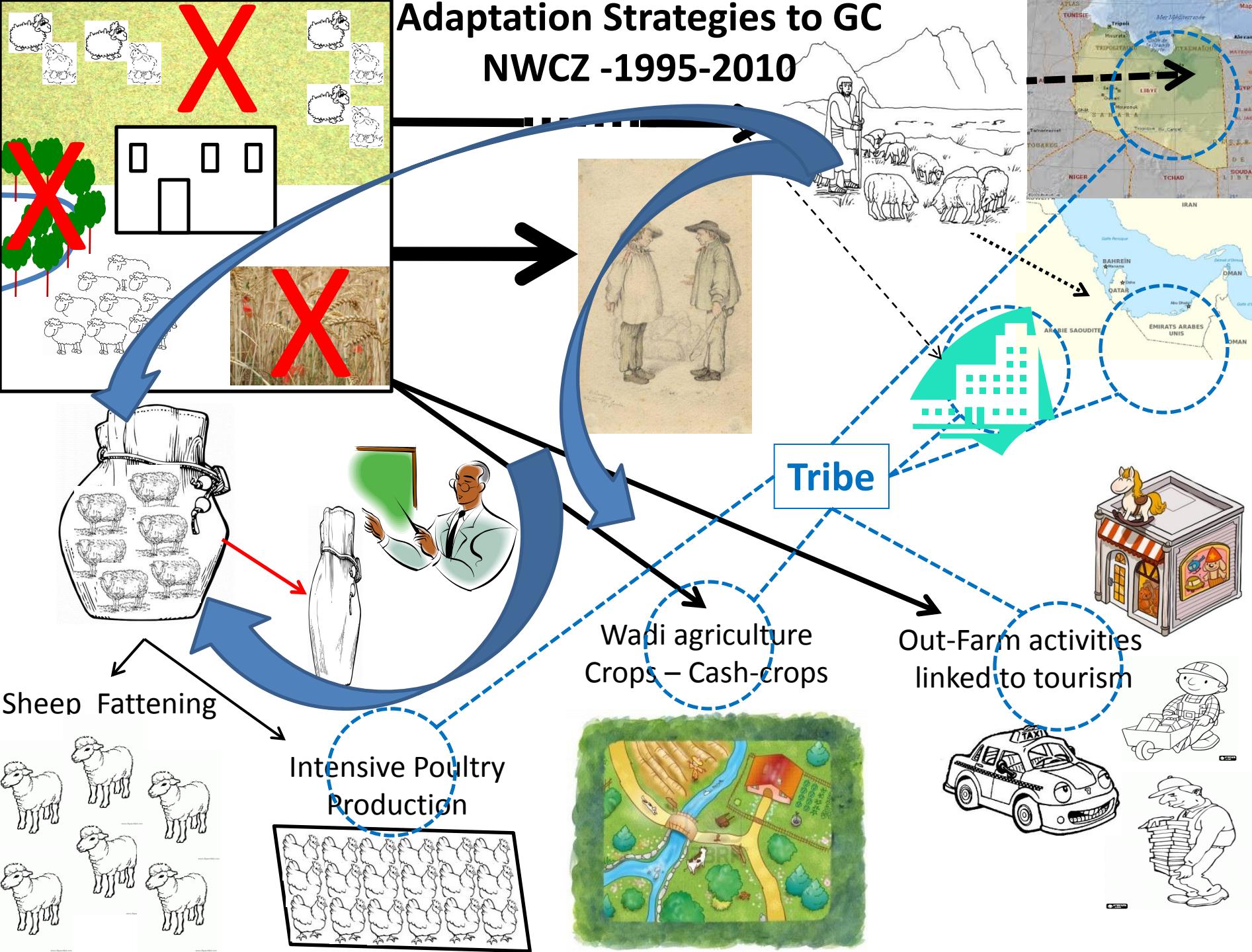
NWCZ, Egypt: In the West ...

... Vulnerability profiles..

Clusters

Clusters	Major sources of risk	How do households respond?
Most vulnerable (profile 1)	Drought and its impact on rangeland (reduction of plants and shrubs) and barley fields	Livestock mobility and animal transaction
Highly vulnerable (profile 4)	Drought. Economic or political instability	Diversification in cash crops (figs and olive) in wadi agriculture thanks to strong internal and external family bonds. Belonging to dominant tribe: Awlad Ali Ahmar
Less vulnerable (profile 2)	Drought. Economic activity in Marsa Matrouh city	Invest in education for diversification out of agriculture thanks to the proximity of the city of Marsa Matrouh
Least vulnerable (profile 3)	Drought. Trading activities and business with Libya	Strong family bonds. Dominant tribe in their area, especially Sengor and Ali Ahmar

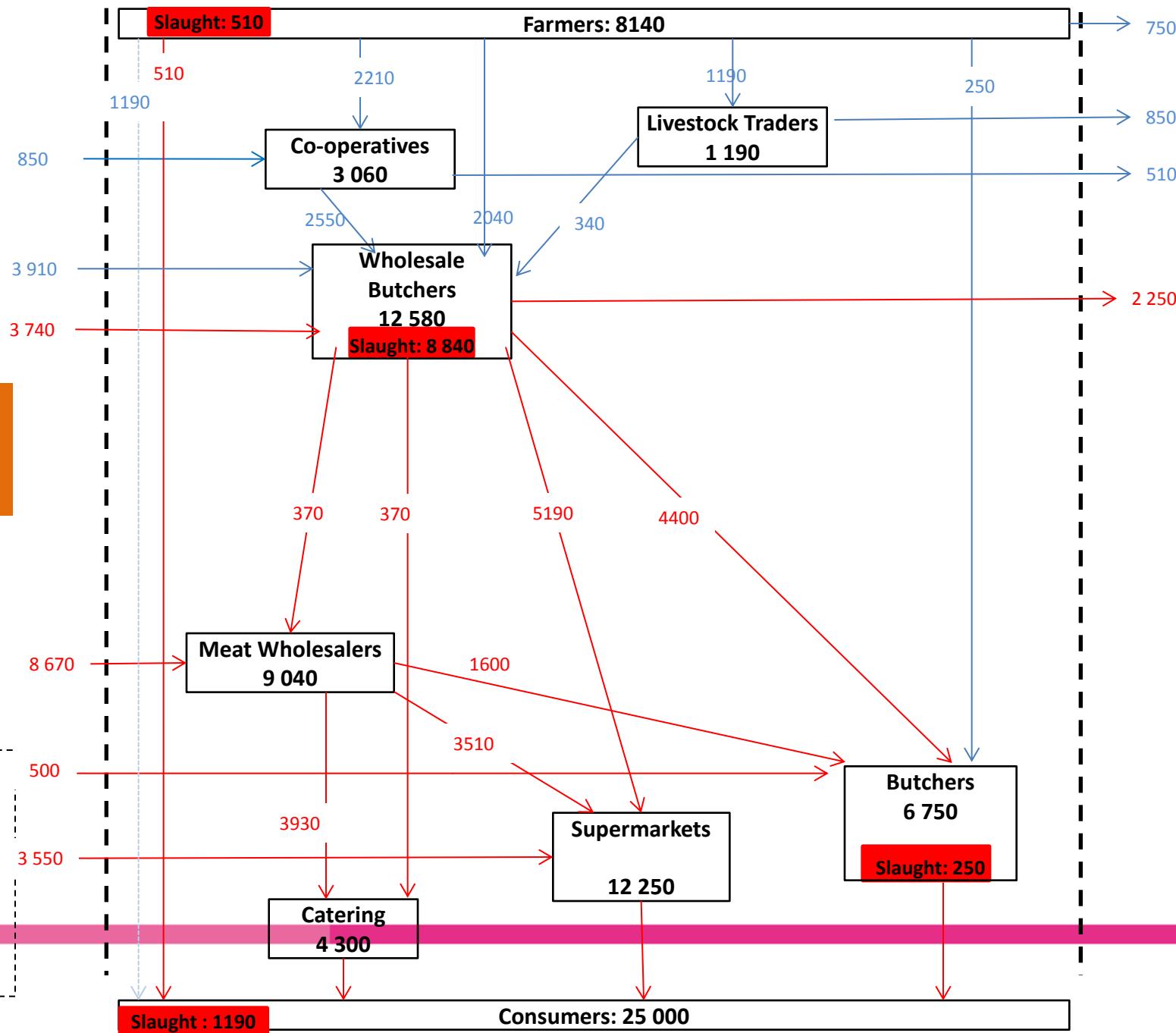
Adaptation Strategies to GC NWCZ -1995-2010



Sheep flows
in Provence
(France)
2011

Live animals
flows (tonne
carcass
equivalent =
tce)

Meat flows
(tonne carcass
equivalent =
tce)



Conclusions in PACA

High concentration of local long circuits : 1 Big wholesaler and 6 middle size

→ low competition, low prices for farmers

High dependency of external delivery (carcass >> live)

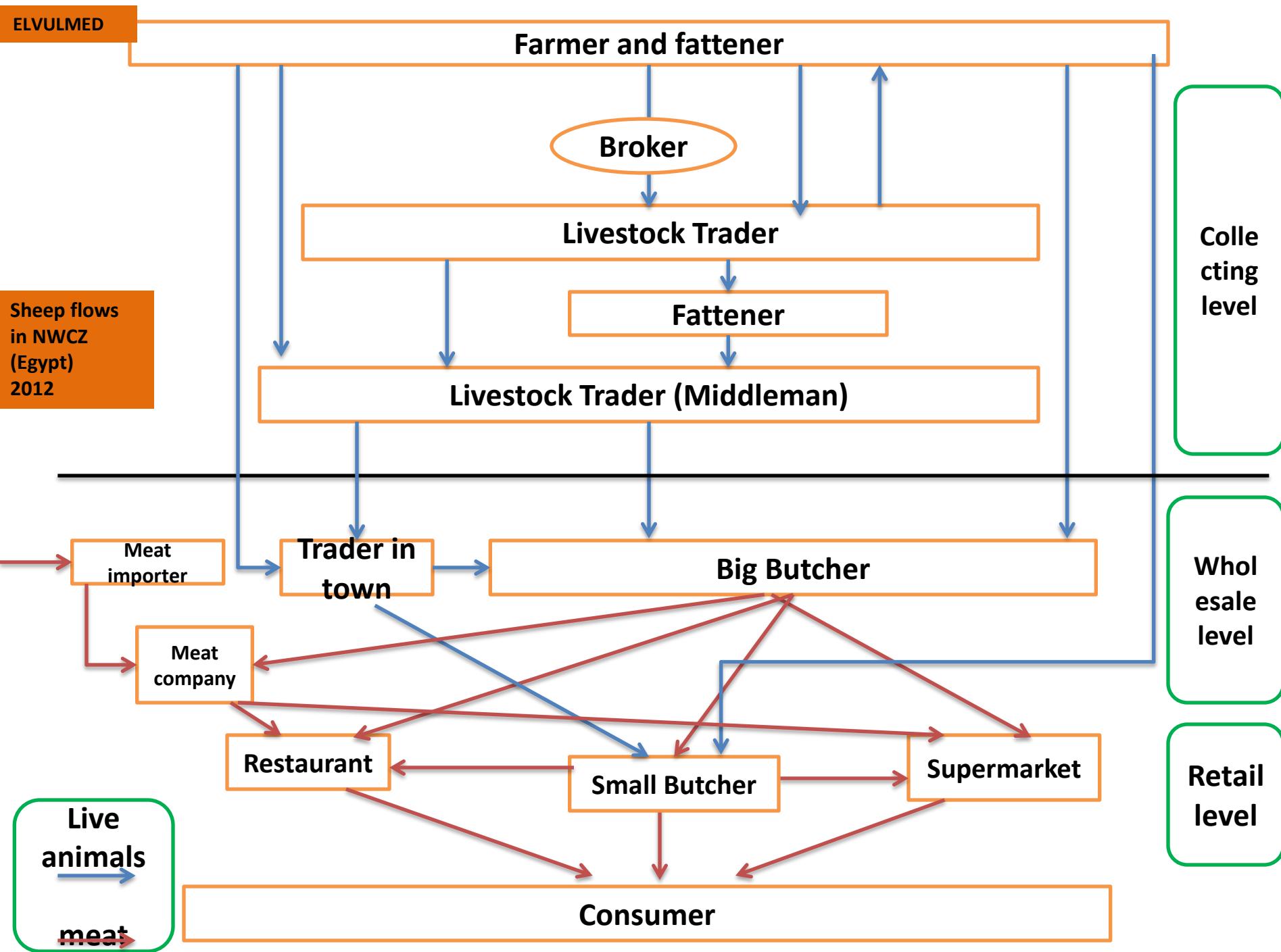
Local slaughtering decrease

→ Less power to upstream part of the chain

Increasing direct sales

New local small size initiatives :

→ **on going study on “emergent chains”**



Conclusions in NWCZ

Low concentration of local and distant long circuits : numerous and small scale traders

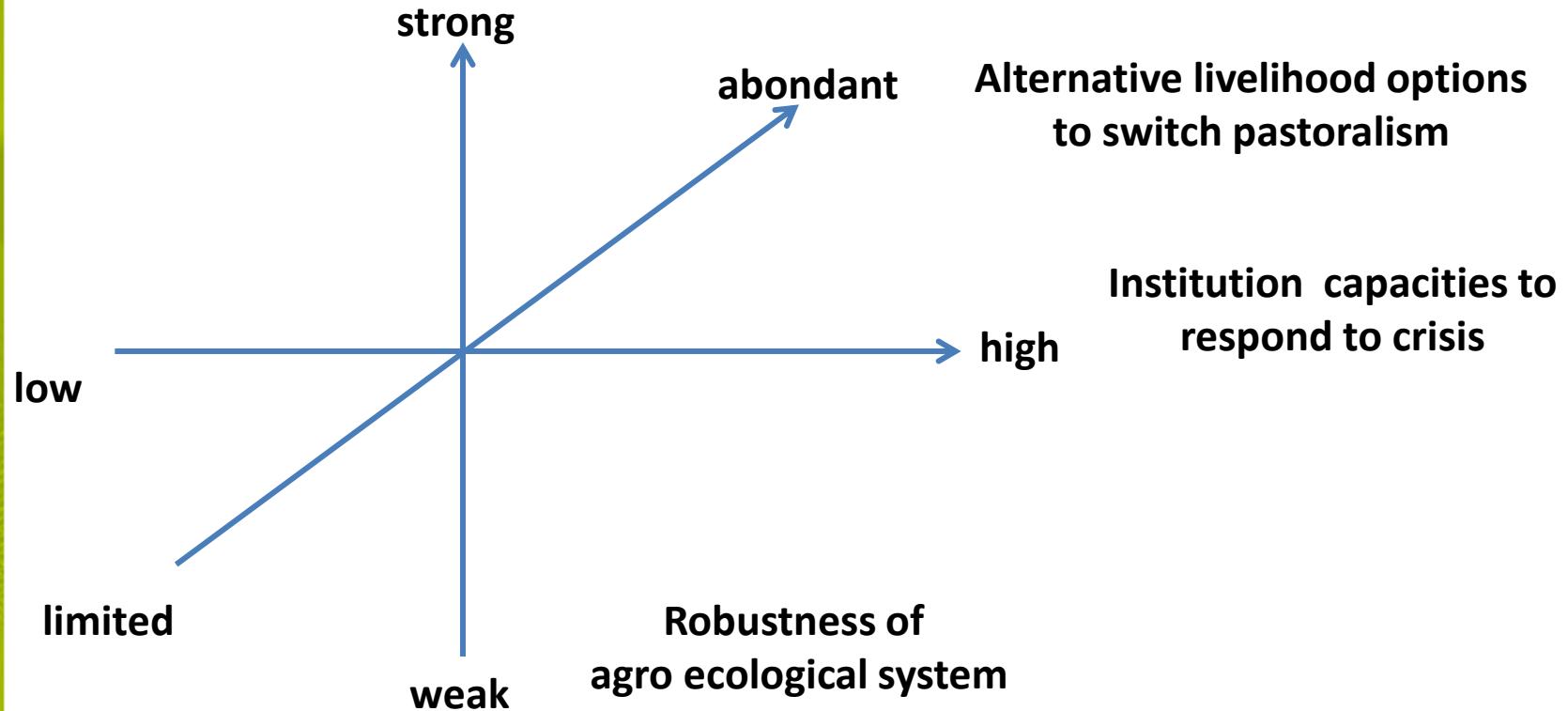
→ high competition, good market efficiency

Guarantee of good faith by brokers and middlemen, social networks instead of State regulation

Low transparency of transactions in feedstuffs chains : →
on going study on “feedstuffs national and regional commodity chains”

Perspectives to January 2014

1. A General Framework to Analyze Vulnerability (cf. Frazer 2007, Dong 2011)



2. Validate Scenarios in NWCZ and Prospective Analysis in PACA

3. Publications and Thesis



Capacity Building and collaboration

- Researchers from Egypt to France (14 missions; 185 days):
 - 5 for the workshop ELVULMED in PACA+ visit Montpellier (Mona)
 - 1 researcher at INRA Toulouse (A. ElBeltagy)
 - 1 researcher at CIRAD Montpellier (A. Aboul naga)
 - 4 participations to conference (Mona EAAP, M. El Shafie and H. Metawi LIFLOD, Adel EAAP)
 - 1 visit of Taha (1 month in sept-oct)
 - 2 visits of Ibrahim (3 months)
- Researcher France to Egypt (14 missions; 75 days)
 - On Poultry development: 2 missions (D. bastianelli+P. Lescouat)
 - On collective vulnerability and comparative analysis: 3 mission (Pascal, Jacques)
 - On livestock policies: 1 mission (Pierre)
 - On family vulnerability: 2 missions (Samir, Xavier)
 - On Filiere: 2 missions (JPB)
 - On representation: 1 mission (Nicolas Merveille)
 - On adaptation processes : around 3 missions (JF)
- Other missions (support): (5 missions, 21 days)
 - PHD support+ coordination (JF): 4 missions
 - 1 international mission: A. Aw Assan (1 mission; 5 days)
- Students and capacities building
 - 4 students in France (4 Ms) and 4 students in Egypt: 2 French (2 MsD)+2 Egyptians (One MsD + 1 PhD))
 - 4 training/support In Egypt (14 days): 2 training on ACCESS, 1 training on GIS and 1 training on R

Scientific objectives

- how to approach, qualify and quantify the interactions between (1) livestock activities, (2) sustainable use of natural resources at the farm/local level and (3) market access and overall adaptation to global change.

→ **Main challenge:** how to integrate family, territorial and extra territorial scales (with different time scale) in a pertinent research approach...
- How to integrate the multiple roles of livestock activities and their direct and indirect impact on environment, on society and economics?

→ **Main challenge:** how to combine/integrate historical, anthropological, socioeconomic, geographic and agronomy approaches to elaborate pertinent scenarios of adaptation...

Expected results

- Identify “key parameters” to promote the roles of livestock activities toward society vulnerability
- Characterize the mechanism of adaptability of livestock activities and ressources (including people) to global changes and their potentials impacts but also risks... *conceptual model*