Global Agenda of Action in Support of Sustainable Livestock sector Development

Consultation on Focus Area number 2:

Restoring Value to Grasslands

Grassland development & degradation in low-input farming systems: an African perspective

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Content

1. Introduction
2. Livestock Grazing Systems in the Sahel: recent trends
3. Livestock Grazing Systems functions
4. Grassland / Rangeland dynamics in the Sahel
5. What makes value ?
6. Conclusion

INTRODUCTION

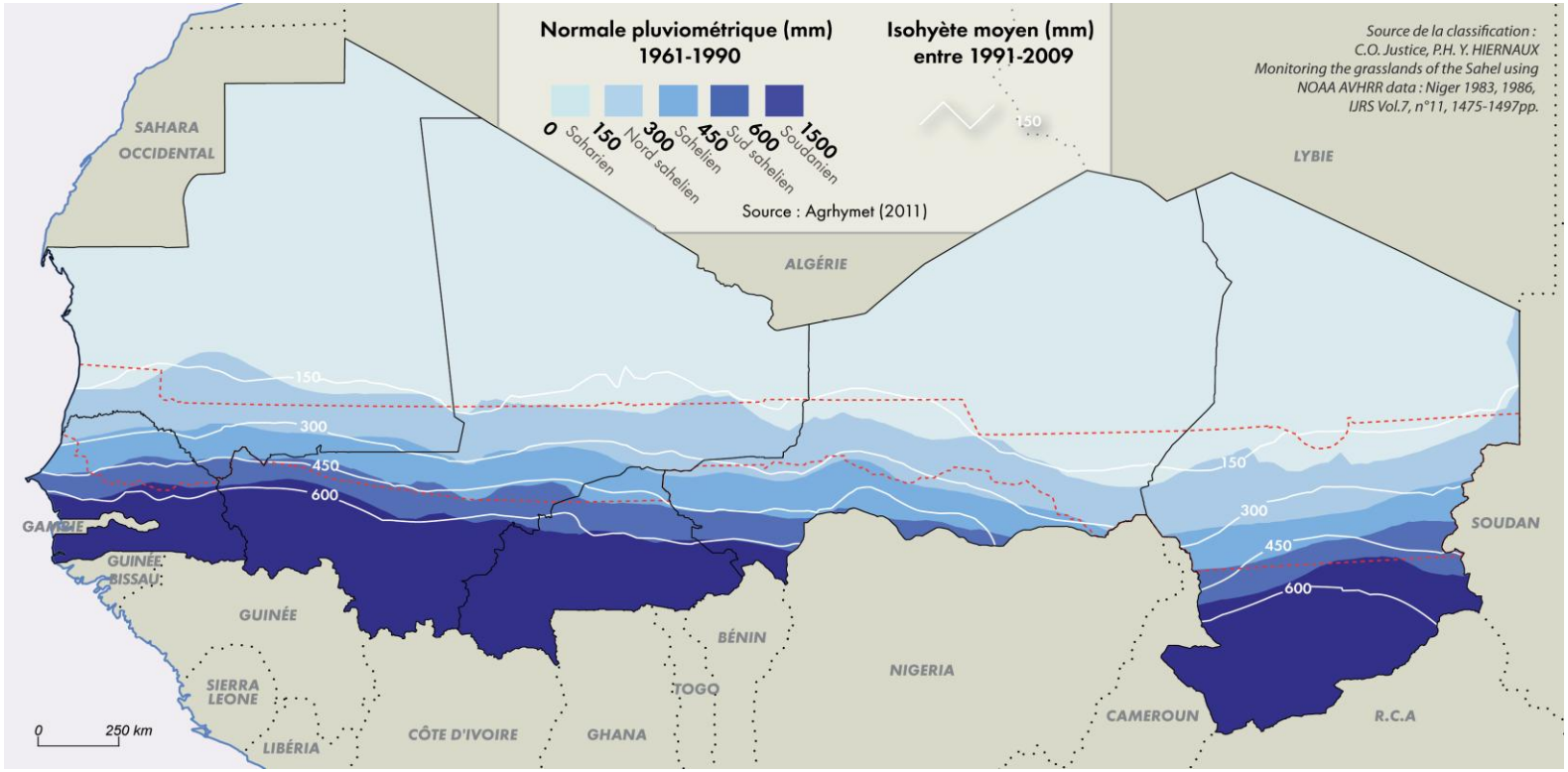
- Homogeneous agroecological zone in W-C Africa
- Unreliable rainfall (200-600mm/y)
- Rural population: >70%
- Mainly grazing systems (LGA and MRA) (FAO 1996)
- Long history of adaptation strategies

- New challenges : Demography; CC; Environt; Global Market
- Important impacts : are they resilient ?

- Functions and value ?

Focus on Western Sahel

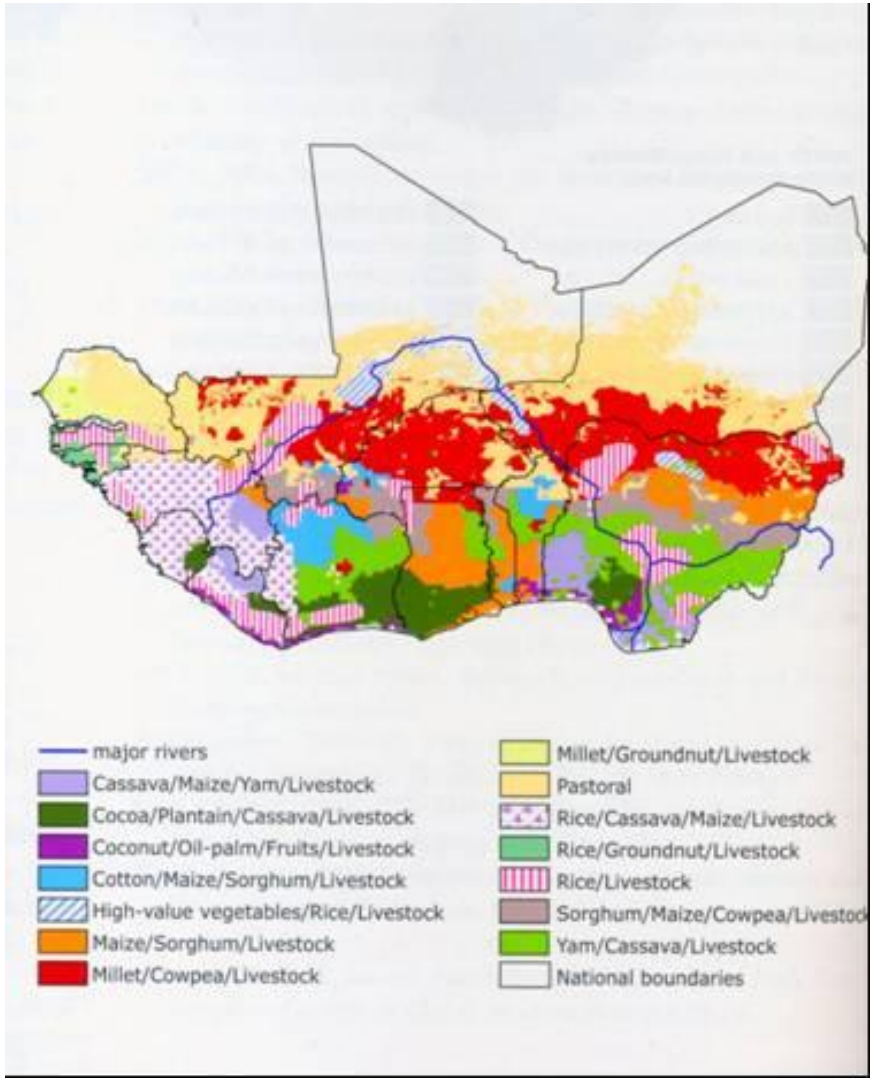
Livestock Grazing Systems in the Sahel



- Livestock only grazing systems in arid and semi-arid areas (LGA)
- Rainfed mixed crop-livestock systems in arid and semi-arid areas (MRA)
- Irrigated mixed crop-livestock systems in arid and semi-arid areas (MIA)

(Sere and Steinfeld 1996; Robinson et al 2011)

Livestock Grazing Systems in the Sahel



Fernandez-Rivera et al., 2004

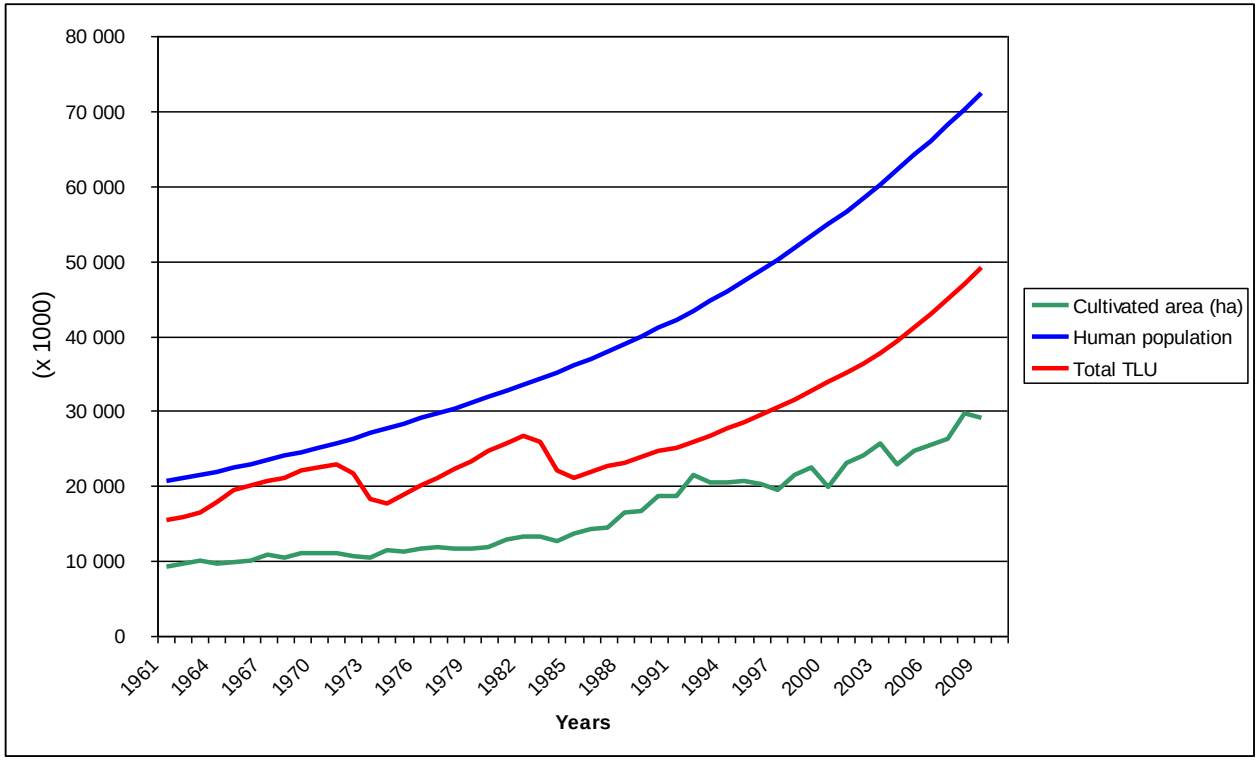
Senegal, Mali, Burkina Faso, Niger

- 40 million people
- 60 million hectares rangeland
- 18 million Cattle
- 24 million Sheep
- 32 million Goats
- more than 55 % of WA Livestock
- more than 30 % of Agric GDP (# 17.2%)
- decrease population expected by 2050

- Mobile LS
- Rangeland and crop residues

Livestock Grazing Systems in the Sahel

2. Trends: population



- Rapid growth : human and livestock population
- More tension on land and resources

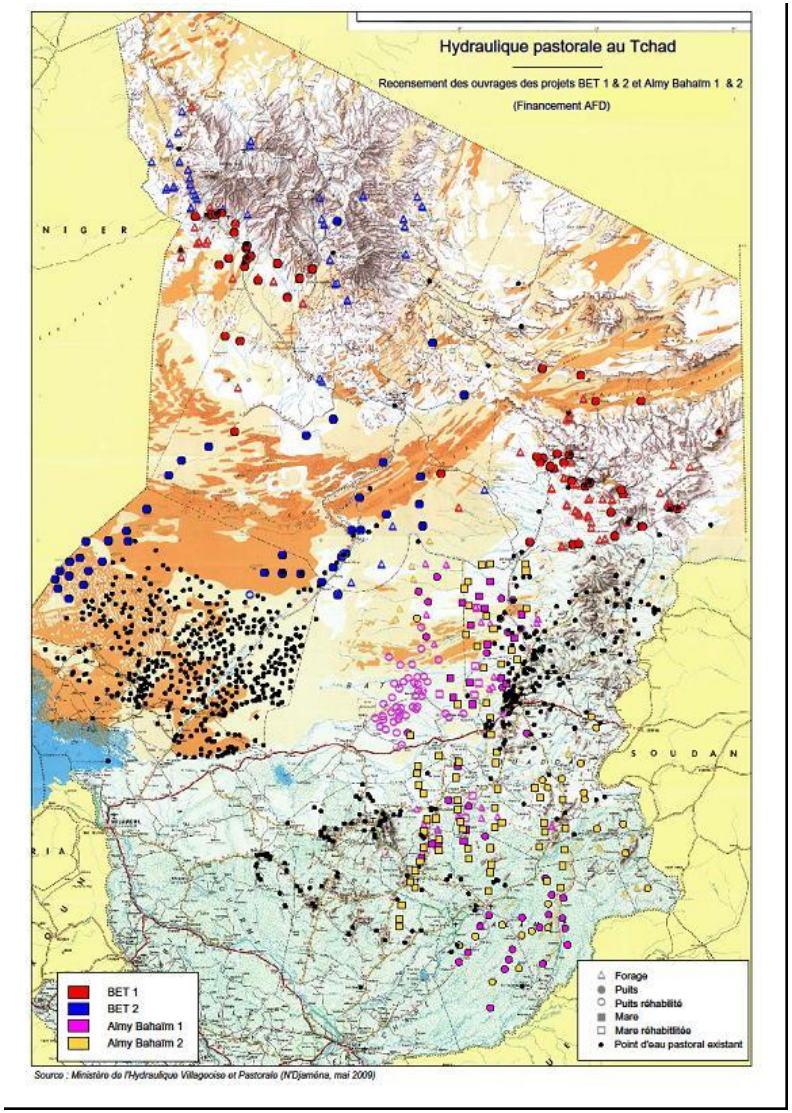
Livestock Grazing Systems in the Sahel

2. Trends: water for livestock

New pastoral water points in Chad 1995-2009

« Secure mobility »

- Less conflicts
- Access to resources

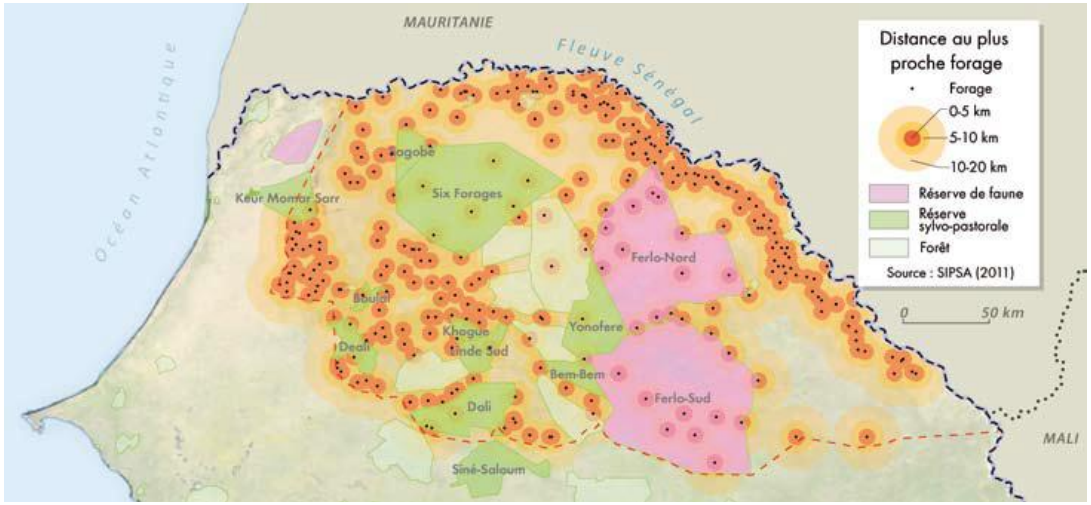


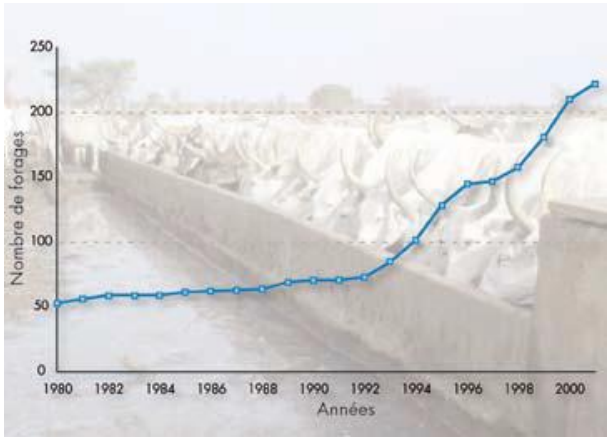
Livestock Grazing Systems in the Sahel

2. Trends: water for livestock

Recent pastoral water points (Drill) in Senegal 1990-2002

- Reduced mobility
- Services
- Marketing

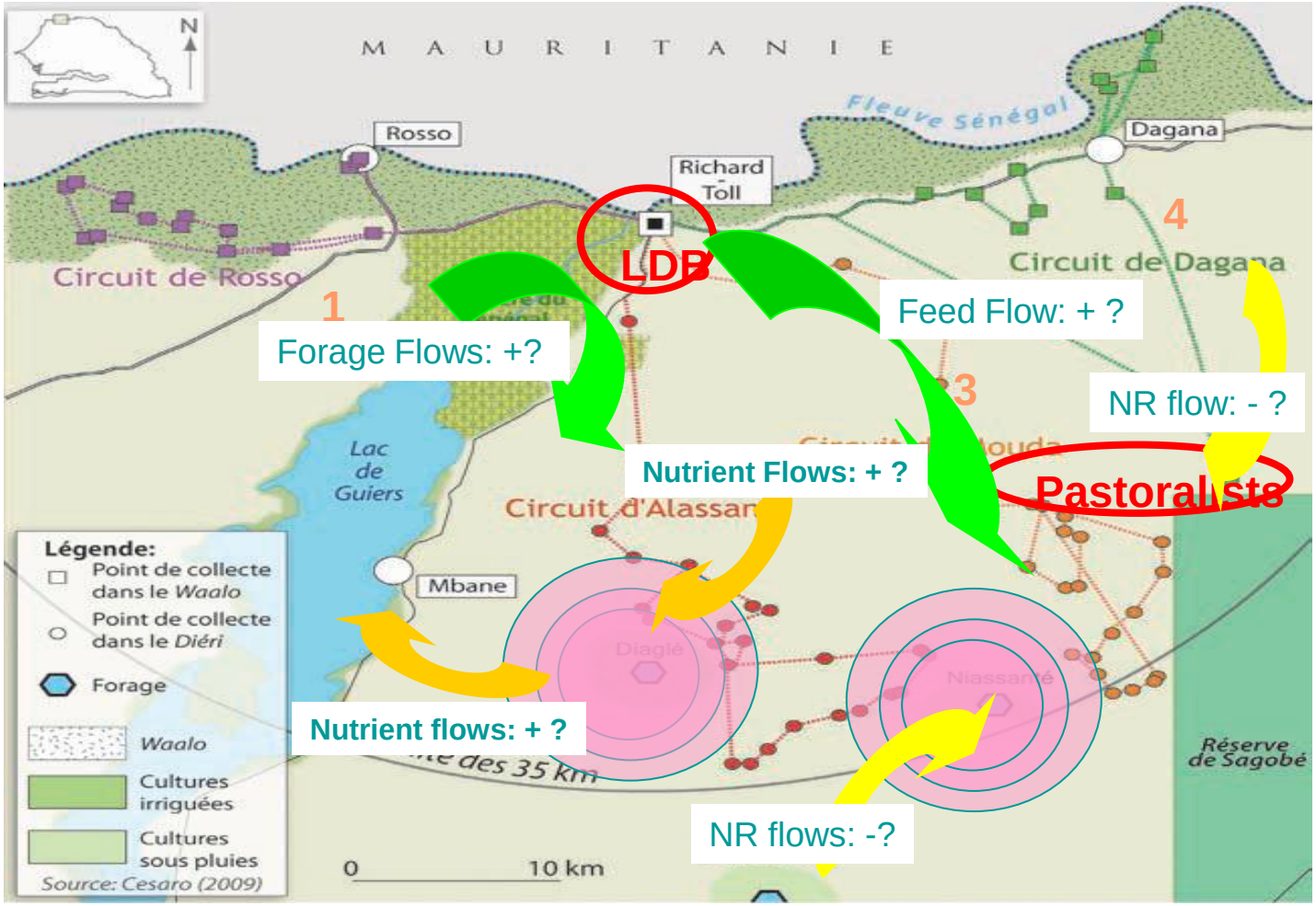




Livestock Grazing Systems in the Sahel

2. Trends: milk intensification

Map 1 : LDB milk factory and collecting routes in the pastoral area (Cesaro, 2009)



3. Functions of Livestock Grazing Systems in the Sahel

- **Economic:**
  - Value very wide areas of semi-arid rangelands
  - 30 % Agr GDP in the Sahel; cash income; savings; draught power; salary employment growing
  - Provide coastal markets;
  - Not sufficient to respond regional demand growth (trade deficit)
- **Ecological**
  - Some concerns (LLS, FAO 2006): GHG; Desertification.
  - Positive impacts : Soil fertility; Biodiversity; Water cycle; Carbon sequestration;…

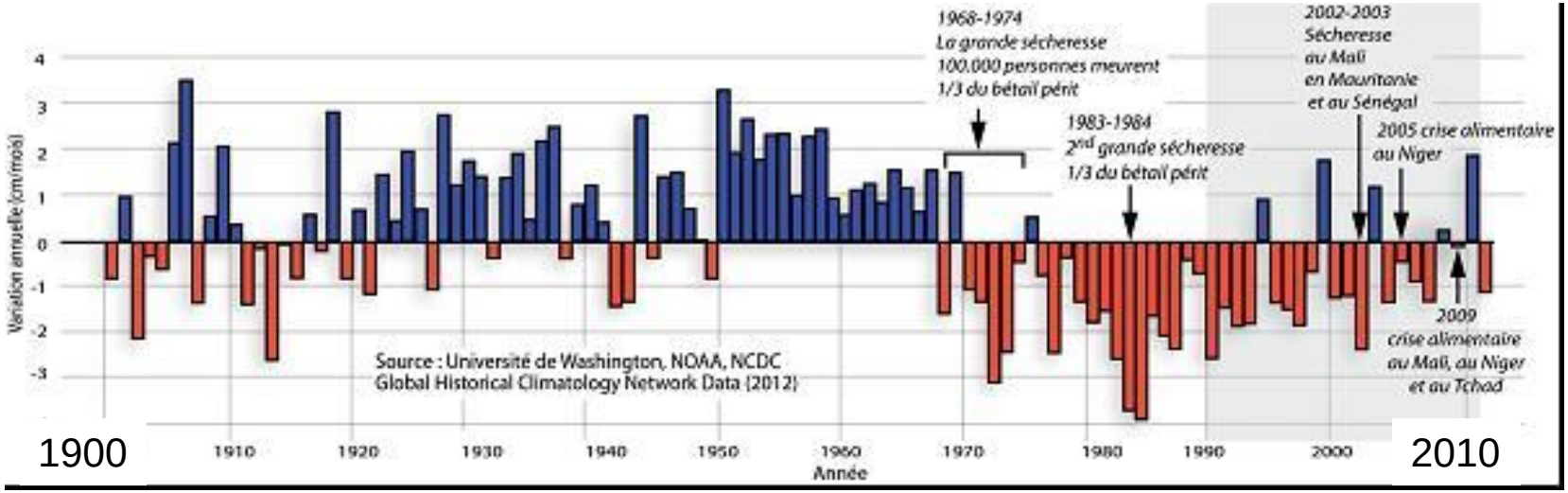
3. Functions of Livestock Grazing Systems in the Sahel

- **Social**
  - Traditional common resources use and regulations
  - Society organisation on herd/pasture/water
  - Collective risk managt; Food Security managt;
  - Growing interactions between MRA and LGA in local organisations (resource management; marketing)

- **Food security**
  - Pastoral: mobility and reciprocity (weekening): food; savings; income
  - Agropastoral: decreasing revenue from agriculture and land pressure > rural exodus. Livestock as a diversification.

4. Grassland dynamics in the Sahel

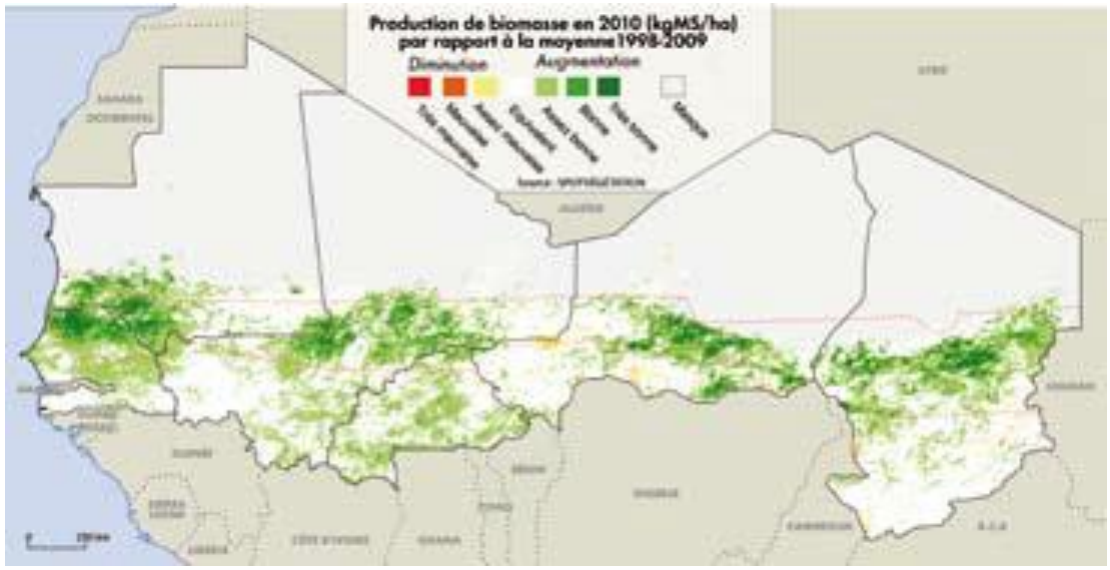
- **Climate change: rainfall**



- An historical patern (CV # 30 %)
- High spatial variability (20-30 km)
- Population adapted to this environment: mobility; species; herd size; crop areas; activities
- Major crisis when 2 successive dry years : stocks run short
- Sahel « regreening » in recent years
- Unreliable CC prediction: 1.8-2 C but on rainfall ? (Monsoon) (Hiernaux, Soussana 2011)
- Local differences > global trends; extreme events (Thornton et al 2009)

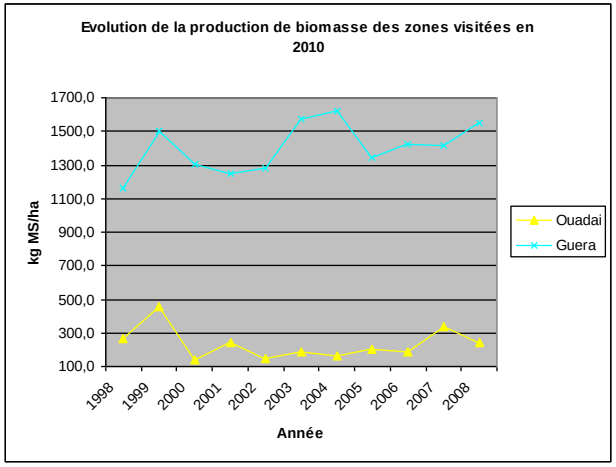
4. Grassland dynamics in the Sahel

Biomass production



Biomass production in 2010 compared to 1998-2009

Biomass production dynamics in Eastern Chad between 1998 and 2009

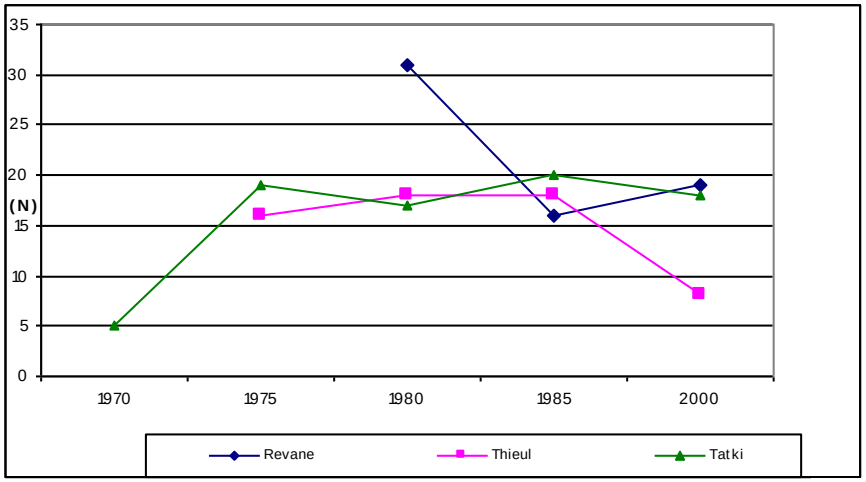


No evidence of degradation

(Touré et al 2012)

4. Grassland dynamics in the Sahel

Grassland composition



Dynamics of tree population species in rangeland, Ferlo, Senegal: 1970-2000

- less species
- aridification

Biomass production around waterpoints

- local degradation (<= 1km)
- homogeneous > 1km (less perenial grasses)

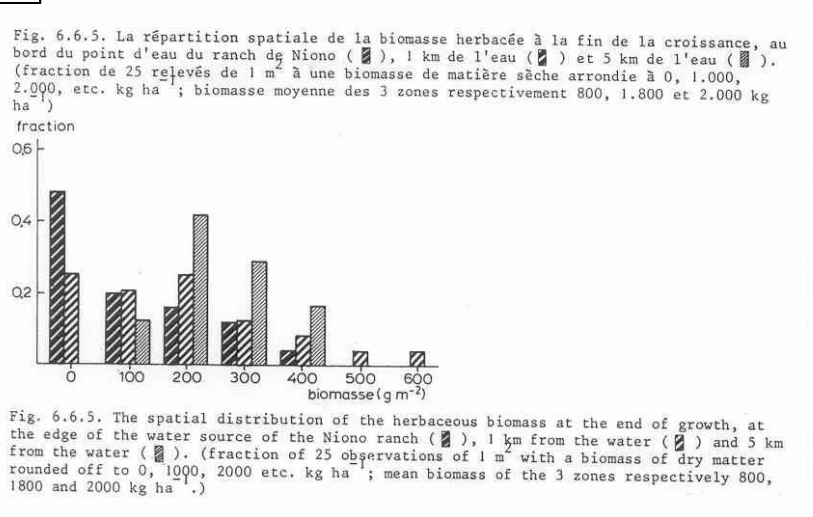


Fig. 6.6.5. La répartition spatiale de la biomasse herbacée à la fin de la croissance, au bord du point d'eau du ranch de Niono (▨), 1 km de l'eau (▨) et 5 km de l'eau (▨). (fraction de 25 relevés de 1 m^2 à une biomasse de matière sèche arrondie à 0, 1.000, 2.000, etc. kg ha^{-1} ; biomasse moyenne des 3 zones respectivement 800, 1.800 et 2.000 kg ha^{-1})

Fig. 6.6.5. The spatial distribution of the herbaceous biomass at the end of growth, at the edge of the water source of the Niono ranch (▨), 1 km from the water (▨) and 5 km from the water (▨). (fraction of 25 observations of 1 m^2 with a biomass of dry matter rounded off to 0, 1000, 2000 etc. kg ha^{-1} ; mean biomass of the 3 zones respectively 800, 1800 and 2000 kg ha^{-1}.)

4. Grassland dynamics in the Sahel

- **Land tenure change**
  - High demography in Sahel: 2.5 % /y; x2 in 2030 with 70% rural (100 million inhab)
  - Cultivated land growing rapidly at expense of rangeland : mobility constraint, conflicts
  - Modern legislation recognize collective land management by livestock F but not applied
  - Land appropriation: export crops
  - Decentralization policies: integration of livestock and mobile herders is a challenge

4. Grassland dynamics in the Sahel

Main adaptation strategies

- Mobility : unreliable resources, marketing; Human mobility

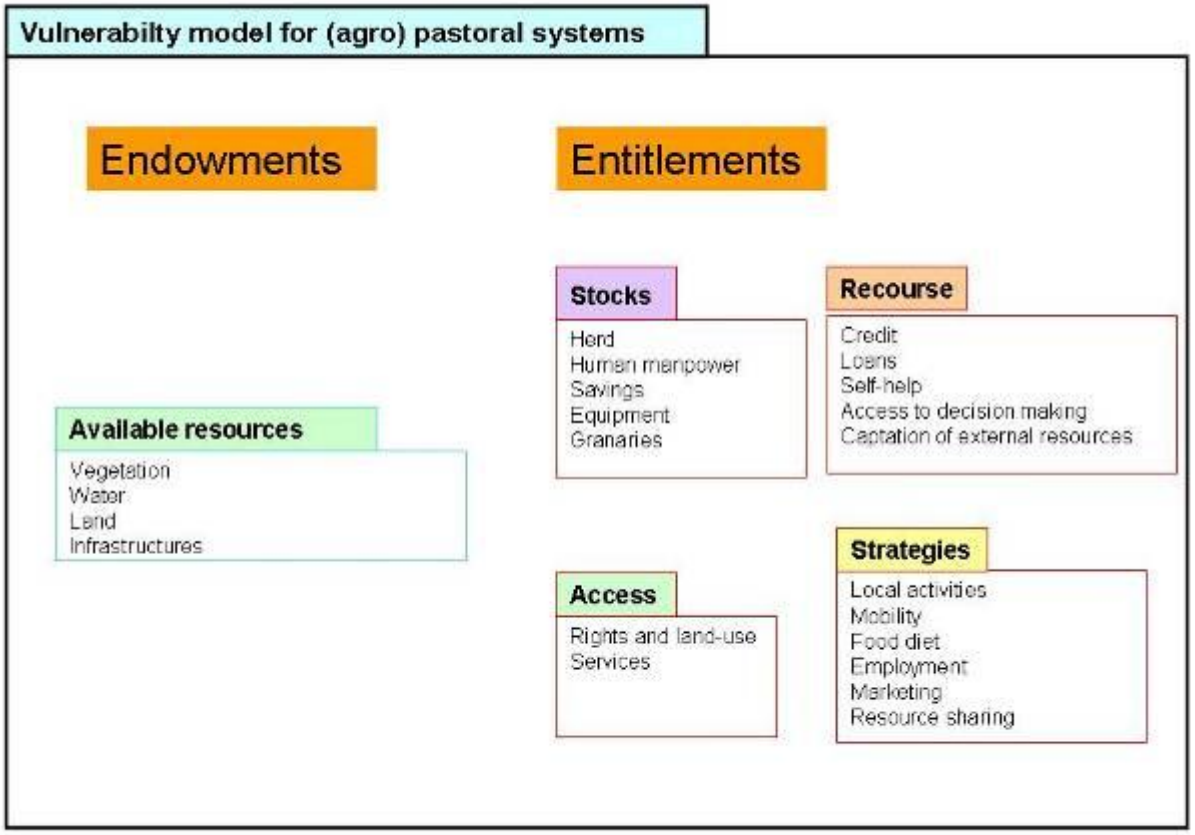
  Pastoralists less exposed to external shocks than export agricultural sector **(HLPE 2011)**

- Agreements for access to natural resources: reciprocity
- More sedentarisation of families: services, markets, employment
- Specialisation in livestock production and marketing (wealthy farmers)
- Diversification of activities: crop, small trade, employment (small holders)
- Social network and support: share manpower and livestock (poorest)

Grassland dynamics in the Sahel

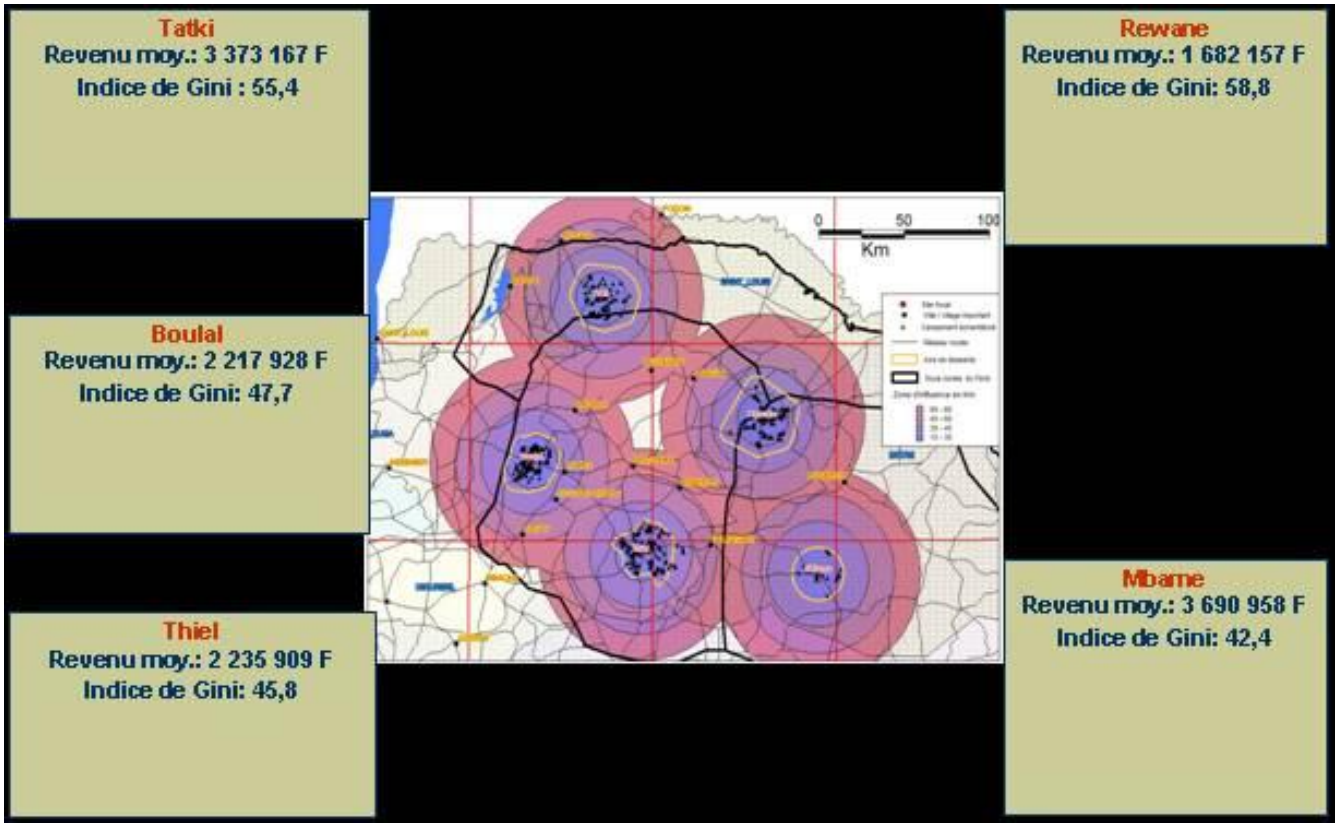
Vulnerability and adaptation strategies

- A model of vulnerability/securisation for livestock farmers **(Ancey et al 2009)**



5. What makes value ?

- Average annual income from livestock: 3200 to 7500 $
- Important inequity along with isolation or density



5. What makes value ?

- Gives value to very wide semi-arid areas (despite low C)
- Half of regional animal products
- Social structure, solidarity and networking
- Contribute to food security and human development
- Ecosystem services: Carbon sequestration, Water cycle, Biodiversity
- Preserve Human peace

Restoring value to grassland in the Sahel

Conclusion to enhance value

- LGS are highly adaptable production systems to various risks including climatic risks
- Mobility is one of major relevant factor of adaptation: securisation
- More pressure: demography; global market; environment
- Integrated and multiscale policies: Capacitiy of farmers to access resources and services at different scales; trade policies; Multistakeholder analysis and policy design
- Land tenure options: Collective management in arid areas to secure mobility and provision of public goods through investments
- Combine support to (semi)industrial and family livestock systems
- Information tools and systems to improve anticipation and efficiency
- Develop global assessment methods of livestock system functions
    - Agroecological intensification for sustainable development
    - System innovation to promote sustainable GLS at territorial level (see LDB)

THANK YOU