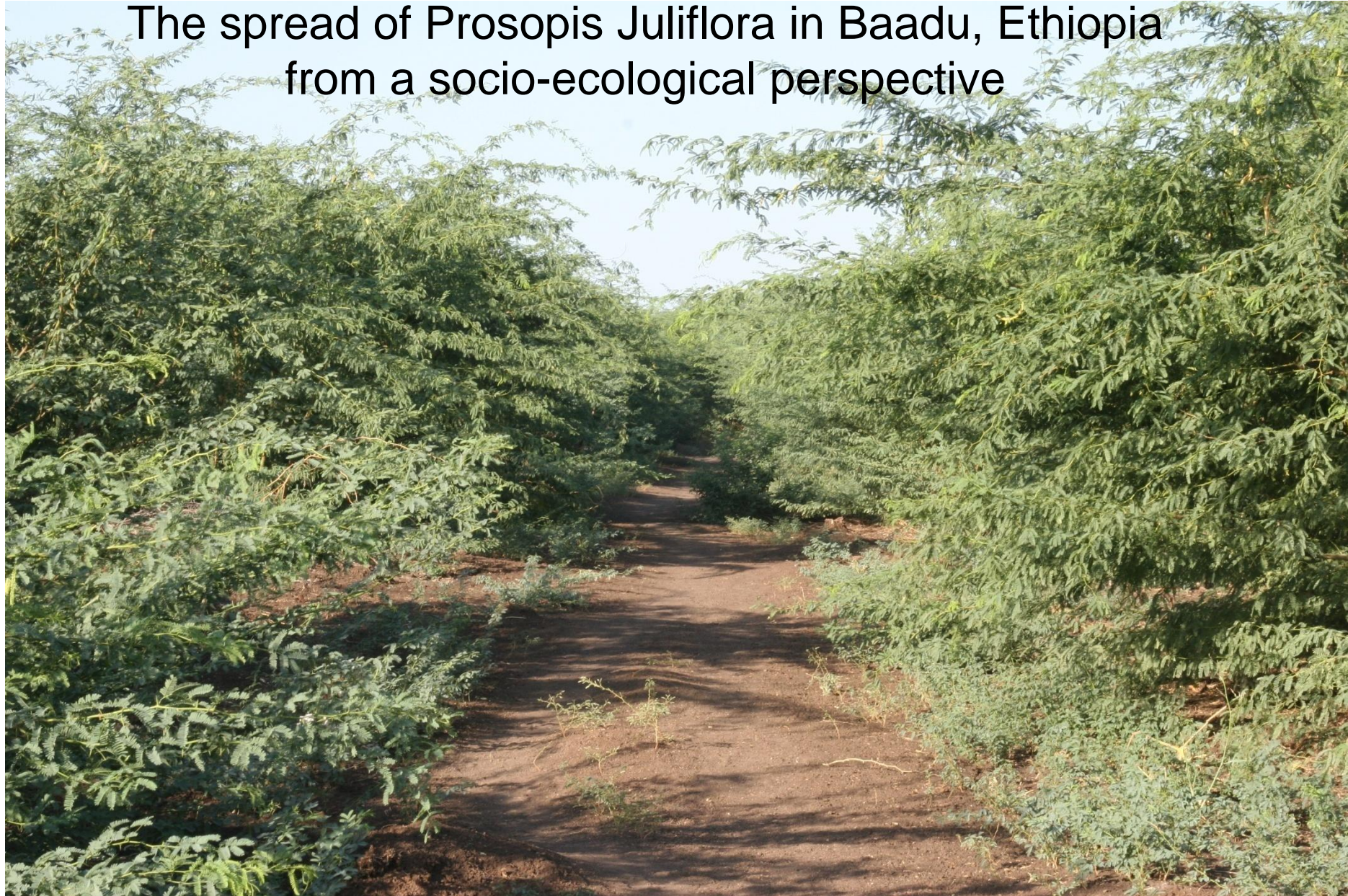




The spread of *Prosopis Juliflora* in Baadu, Ethiopia from a socio-ecological perspective



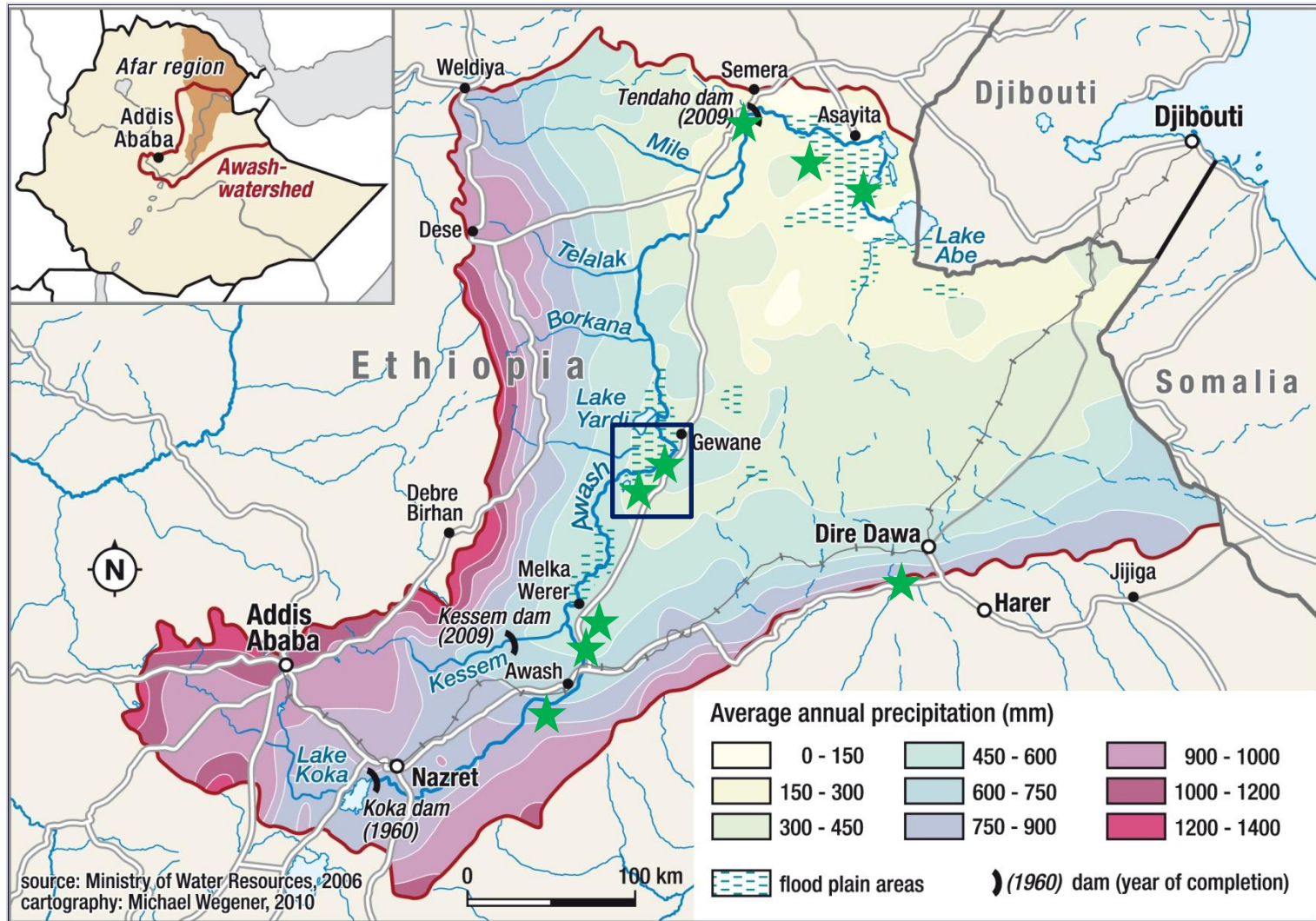


Outline

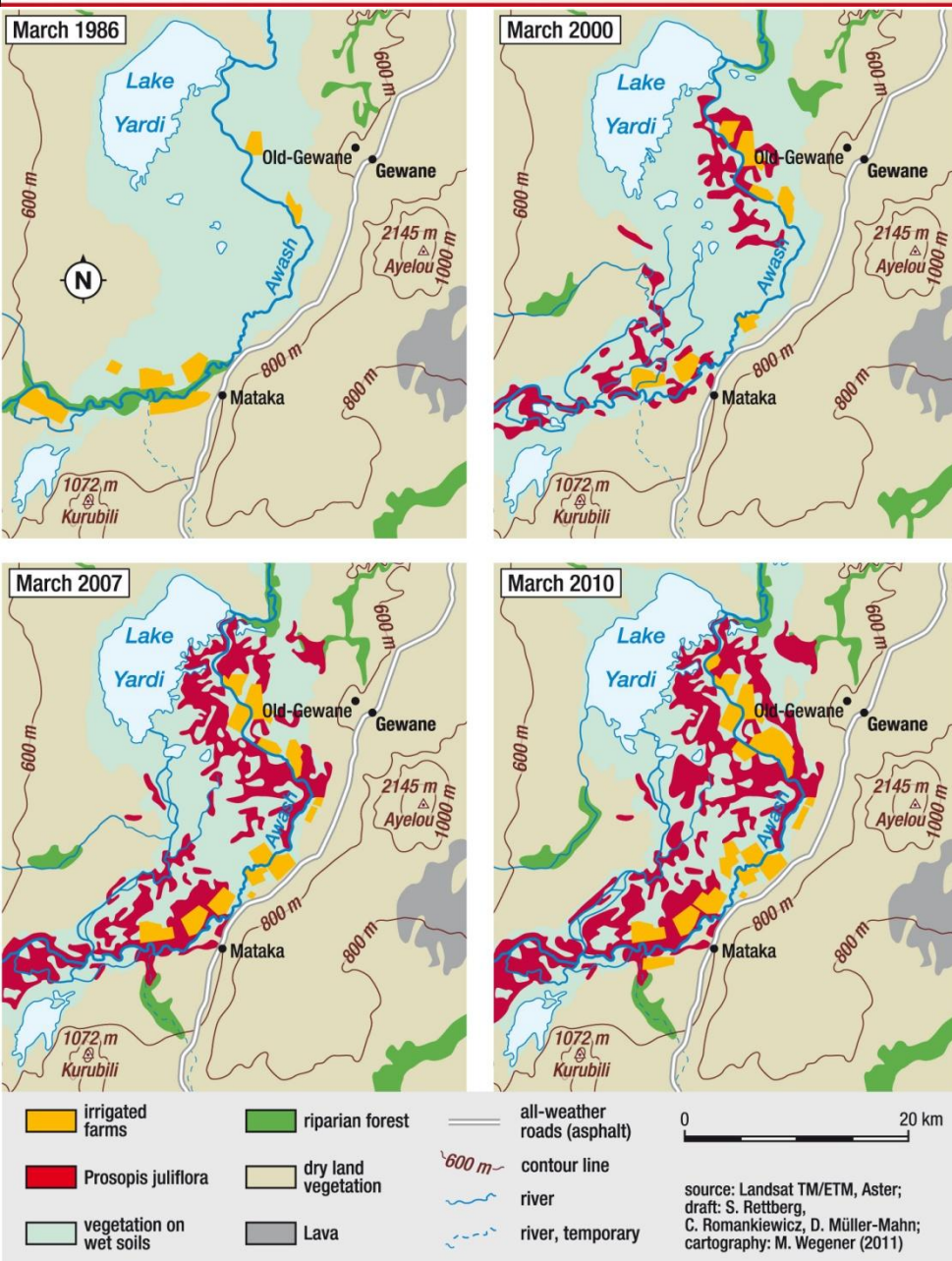
- 1. The spread of Prosopis in historical and spatial context**
- 2. Prosopis within a broader scenario of risks**
- 3. Dealing with Prosopis**
- 4. Conclusion**



Prosopis invaded areas in the Awash basin



Source: adapted from Ayanu et al. (2014)



Spreading patterns 1986-2010

Highly invaded places:

- Wetlands
- Abandoned farms
- roadsides
- settlements

Drivers of invasion:

- Biological dynamics +
- increased invadability

Source: adapted from Rettberg and Müller-Mahn (2012)



The situation in 2013

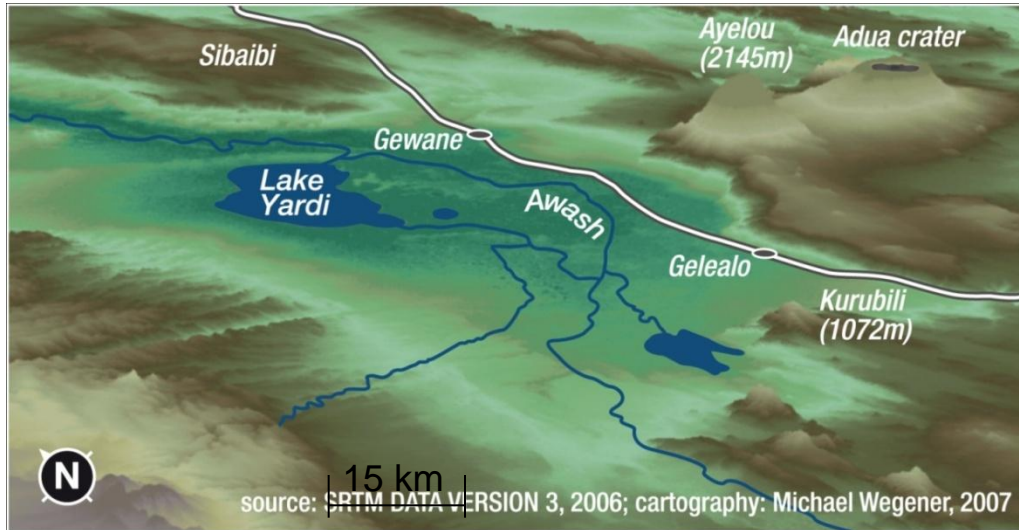
- 40% of wetlands in Baadu invaded (2000: 8%, 2010: 30%)
- Increasingly dryland vegetation affected (2010-2013: fivefold increase) (Ayanu et al. 2014)

Increased pastoral vulnerability:

- Loss of dry season grazing along the Awash River
- Exposure to wild animals
- Constrained access to water points etc.
- New animal diseases like Harmaku
- Increased incidences of Malaria



Socio-ecological change in Baadu



1. spread of *Prosopis Juliflora*
2. Violent conflicts: reduction of mobility and overstocking in Baadu
3. irrigation agriculture: salinification and altered flood regimes

Ecology: Massive disturbance of grasslands and forests along the Awash river

Pastoral livelihoods: from acute to chronic food insecurity





Local perceptions of socio-ecological change

- *„On the one hand the Woyane tree destroys Baadu, on the other hand there is Issa. And then there is the government. ... There is no place to hide. There is no place to go. We can not go to the sky. We can not go into the ground, unless when we die.“ (Ado Biida)*
- Environmental change embedded in discourse of political marginalization and displacement

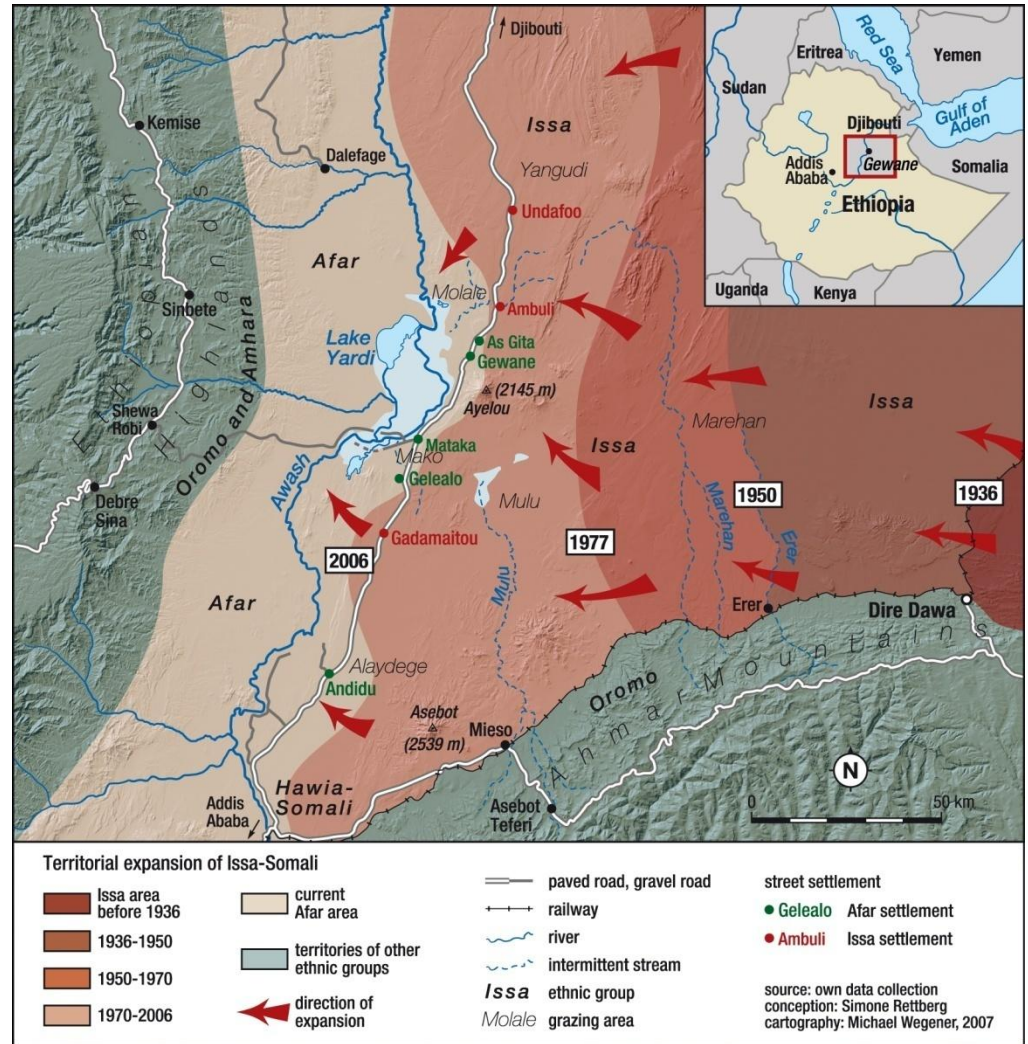




1. Invasion of 'Woyane'
2. Invasion of Issa pastoralists



3. Blaming the government
 - Risk ranking 2014: No 1 environmental problem is decreased volume of Awash river!



Source: adapted from Rettberg (2009)

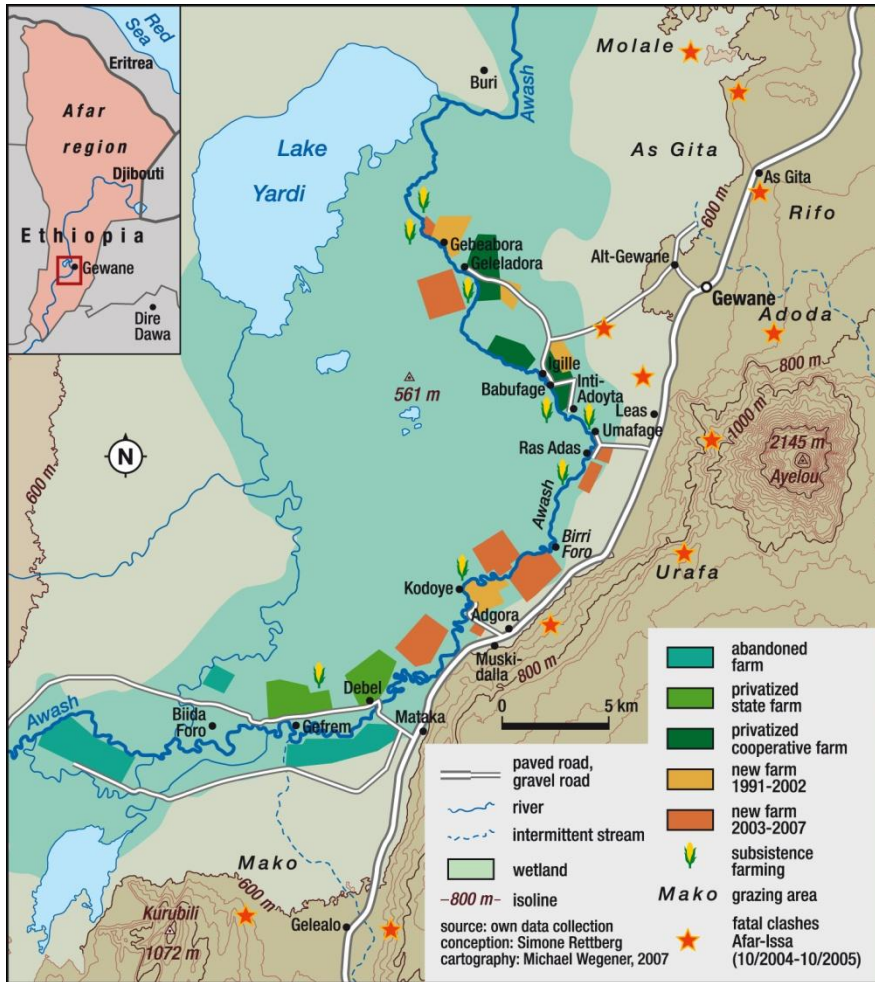


Shifting management regimes

	Ethiopian government	Afar pastoralists
1980s	Active promotion: Top-down introduction for rehabilitation of 'degraded' drylands	Enforced planting of seedlings by Afar agro-pastoralists around farms and houses
1990s	Negative effects of Prosopis become evident	abandonment of invaded areas Change of migration and settlement patterns
2000s	No clear policy Studies and pilot projects Call for controlled management But lack of institutional responsibility	Increased clearing of for irrigation agriculture and charcoal trade Common call for eradication



Prosopis as trigger for land use change

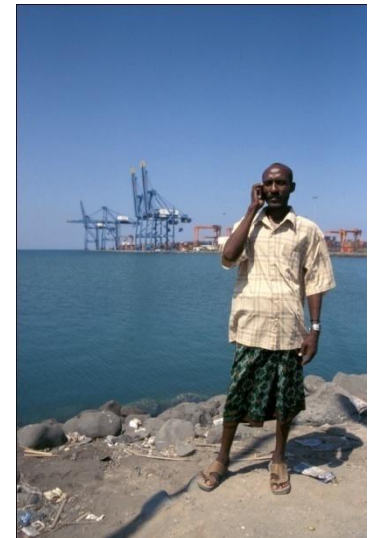
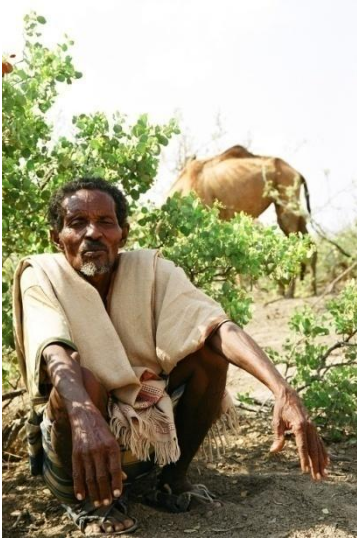


Use of invaded dry season pastures :

- leasing of communal clan land to private investors
 - Increasing small-scale agriculture
 - Charcoal trade
- Shift from charcoal and irrigation cooperatives towards individual activities
- change of land tenure regimes



Socio-spatial livelihood diversification



Complementary livelihood strategies geared towards protection of:





The flip side of land commodification

Socio-political

- ⇒ so far only few benefit from use of Prosopis
- ⇒ Weakened social capital
- ⇒ Contested land rights and conflicts between Afar clans

Ecological

- ⇒ Widespread deforestation and destruction of riverine forests
- ⇒ Further degradation of wetlands
- ⇒ Salinification and water pollution

- ⇒ Creation of new risks for pastoralists



Conclusions

- Invasive spread driven by natural and socio-political factors
- Environmental management of pastoralists embedded into complex risk scenario: trade-offs between various risks
- A cultural and ecological sensitive management of Prosopis should integrate controlled used through small-scale agriculture and rangeland development
- Research needs concerning spreading patterns: impact hydrological changes/conditions, biogeographical boundaries?





Thanks for your attention!

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Photographies: taken by Simone Rettberg