Crop Production Intensification as a user of environmental statistics

Mike Robson(*), Plant production and protection division, FAO, Rome

EGM / FDES, New York, 9 November

(*) with assistance of many colleagues at FAO, but notably Bill Settle

outline

- the challenge of crop intensification
- sustainability of resource use by farmers
- monitoring
  - role of farmers
  - role of policy makers
- DPSIR
- conclusions

1. the challenge:

- crop intensification is needed to feed 9bn
- intensification comes from farmers as custodians of natural environment
- the resource base is degraded; competition for resources (water, land)
- farming has a role in mitigating and adapting to climate change
- national policy makers have an enabling role

Farming may be less sustainable…

…or more sustainable

…farmer decisions include

- choice of varieties
- how to grow them
- irrigation (how, when, how much…)
- how and when to harvest, store and process

Monitoring by farmers

Monitoring: policy makers review at aggregate level

Point based observations are often not representative.

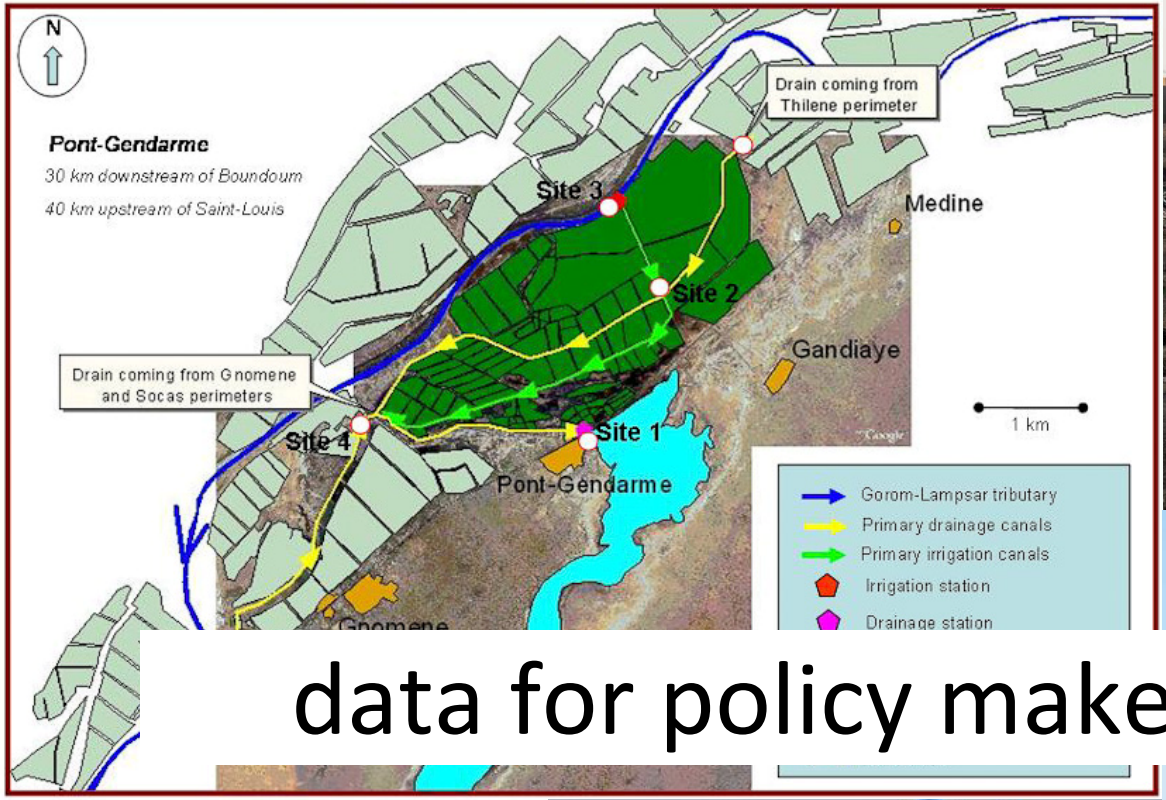
To make policy needs meaningful proxies which "sample" health of both agro-ecosystems, and neighbouring unmanaged ecosystems - examples:

- water quality
- diversity, and quantity of pollinators and other species (predatory insects, soil organisms…)
- other proxies?

An example - water quality can indicate:

- over-use of fertiliser (nitrate and/or phosphate levels)
- use of pesticides (residues)
- soil erosion (sedimentation)
- other area characteristics (pH, salinity)

But water quality may change daily – need tools for cumulative sampling



data for policy makers - Senegal

policy makers can use such information…

- Zoning – where agriculture is practised and how
- Regulate and monitor
- Appropriate input levels (transition subsidies)
- Investments in knowledge generation
- Investments in rural infrastructure

DPSIR can be a tool (for analysis? for communication?)

Drivers	Pressures	States	Impacts	Responses
Need to grow more, for: - **more people** - **changing diets** - **biofuel** - **fibre** *In the light of competition for water and land resources*				

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Drivers	Pressures	States	Impacts	Responses
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conclusion

- to farm sustainably, farmers need:
  - real time simple robust monitoring tools
  - adapted knowledge

- policy makers need:
  - proxies for state of agro-ecosystem health
  - and an understanding of impact of agriculture on neighbouring ecosystems

Thank you