AFRICAN GREAT LAKES CONFERENCE

CONFÉRENCE DES GRANDS LACS AFRICAINS

African Great Lakes Conference
2–5 May 2017
Entebbe, Uganda

Sustainable Fisheries and Aquaculture Management

Convenors:
Richard Ogutu-Ohwayo
Ian G. Cowx

Theme objectives

Sustainable Fisheries and Aquaculture Management

- underlying fishery biology and exploitation patterns
- fishery management and fishing rights/tenure
- livelihoods analysis and adaptation strategies to future changes in the fisheries from environmental and climate change;
- linkages between fisheries and aquaculture development;
- the food security and nutritional contribution;
- future management and adaptation strategies

Handout

African Great Lakes International Conference

Conservation and development in a changing climate

The African Great Lakes International Conference will bring together stakeholders to link science and best practice to solutions for conservation and sustainable development of the African Great Lakes.

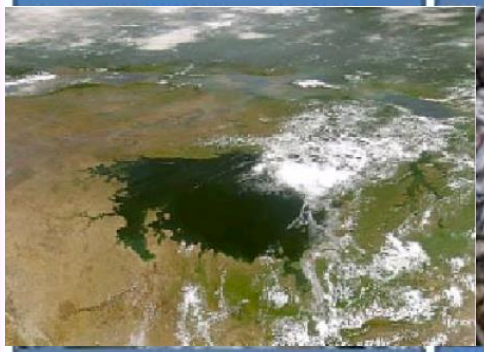
Sustainable Fisheries and Aquaculture Management:

- Contribution of fisheries to SDGs, GDP, livelihoods, food security, nutrition, employment and income among riparian communities and through the value chain to other countries;
- Past trends, current status, and future prospects of capture fisheries and aquaculture, and adaptation strategies to changes in fisheries from the environment and climate change;
- Linkages between fisheries and aquaculture development in the AGL region—drivers, issues, and management responses;
- Fishery management and fishing rights/tenure, equity and access, gender, among small scale fisheries and voluntary guidelines for securing small scale fisheries
- Challenges associated with fisheries and aquaculture policies, legislation and regulation, public, private institutions, and gender roles in development and management of the fisheries.

What are the top one or two issues or challenges facing fisheries and aquaculture management in the AGL?

What the potential actions/solutions for resolving these challenges?






Can fisheries management in the Great Lakes of Africa contribute to achieving the UN Sustainable Development Goals?

Ian G. Cowx & Martin van der Knaap

Hull International Fisheries Institute & FAO, Ghana

Outline

- Inland fisheries and the UN Sustainable Development Goals
- Contribution of African Great Lakes fisheries to society
- Pressures on African Great Lakes fish and fisheries
- Management for sustainable fisheries and aquaculture in AGL

UN Sustainable Development goals

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Aim: to **end poverty**, **protect the planet** and **ensure prosperity for all**

SDG 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Appears that inland fisheries are largely ignored

Inland fisheries as an ecosystem service

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- 11.2 – 41.1 million tonnes of fish caught globally from inland waters : Provide **20%** of all global captured food fish
- 90 percent of global inland fisheries catch **from developing countries**
- Fundamental to nutrition, food security, livelihoods and societal well-being
- 60 million people directly involved in small-scale inland fisheries (30 million of which are women)
- 20 grams of a small river fish contains the daily iron and zinc needs for a child.

Wild & cultured fish, Inle Lake, Shan State, Myanmar

Dependence on inland fish

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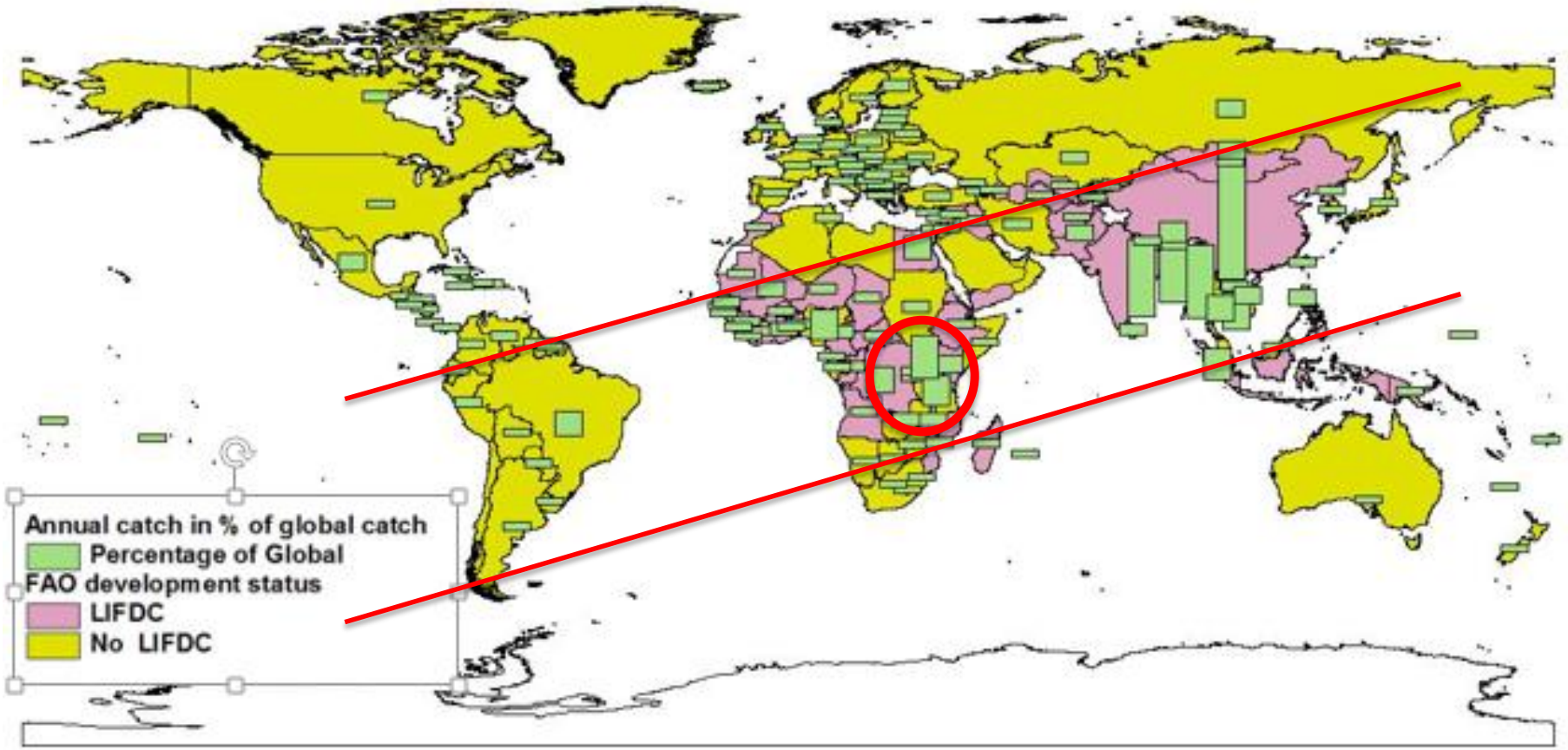
90% of inland fish is caught in developing countries and 65% is caught in Low Income Food Deficient countries.



Source – Van der Graaf et al. (2012)

Importance of Fisheries & Aquaculture in Africa

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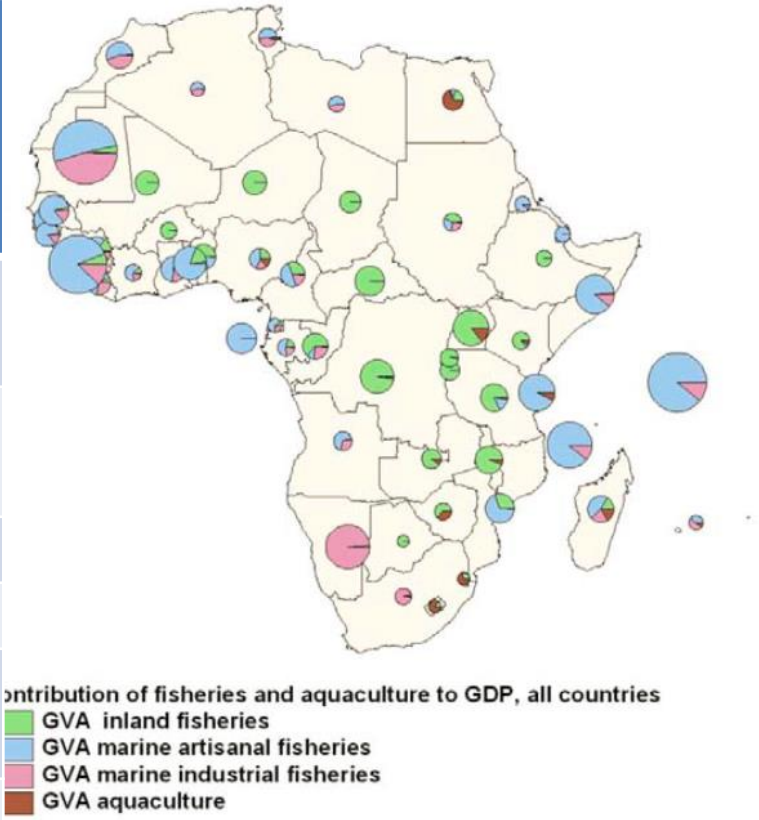
Contribution to GDP

	Gross value added (million USD)	Contribution to GDP (%)
Total GDP African Countries	1,909,514	
Total Fisheries and Aquaculture	24,030	1.26
Inland fisheries	6,275	0.33
Artisanal fisheries	8,130	0.43
Marine Industrial Fisheries	6,849	0.36
Total Aquaculture	2,776	0.15



Fisheries & Aquaculture contribute 6.2% to agriculture GDP

Source: NEPAD/FAO - the Value of African Fisheries, 2014

Importance of Fisheries & Aquaculture in Africa

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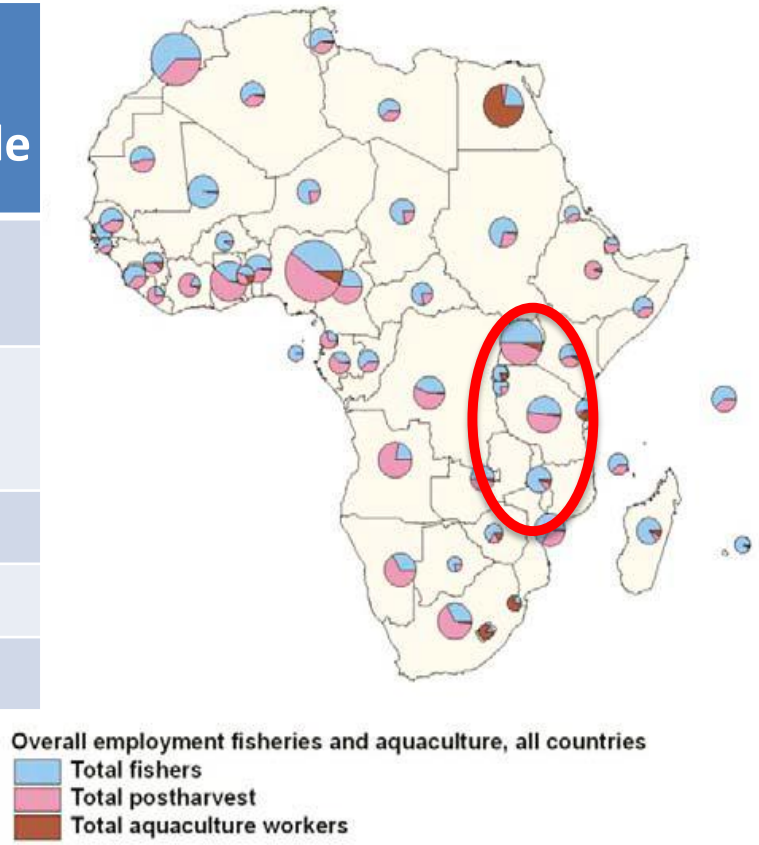
Employment by Subsector

	Number of Employees (Thousands)	Share subsector (%)	% Female
Total Employment	12,269		27.3
Total Inland Fisheries	4,958	40.4	26.7
Marine Artisanal	4,041	32.9	23.8
Marine Industrial	2,350	19.2	43.5
Total Aquaculture	920	7.5	4.8



Source: NEPAD/FAO - the value of African Fisheries, 2014

Inland fisheries as an ecosystem service

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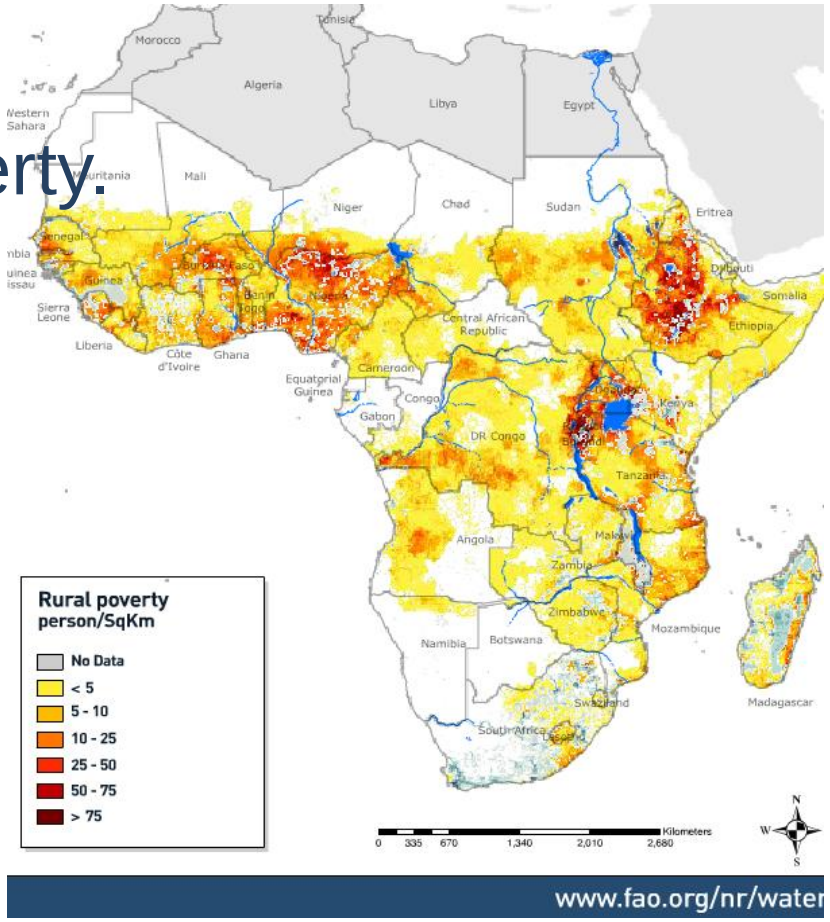
- Places where consumption of fish protein/animal protein ratios greater than 20% are also place with high concentrations of rural poverty.
- Inland fisheries are a last resort when primary income sources fail:
  - economic shifts
  - conflicts
  - natural disasters (floods)



www.fao.org/nr/water

UN Sustainable Development goals

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= fish for livelihoods and food security

= sustainable fisheries

= women in fisheries

= fisheries driving environmental quality

Contribution of fisheries in the Great Lakes of Africa to achieving SDGS

Fisheries of the African Great Lakes

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	VICTORIA	NYASSA / MALAWI	TANGANYIKA	KIVU	EDWARD	ALBERT
Fish diversity	~ 700	~ 1,000	~ 325	28	~ 81	40-55
Fish yield per year (t)	~ 1,000,000	~116,000	165,000-200,000	21,400	~ 16, 900	~ 172,000
Employment	200,000 fishers, 700,000 ancillary	56,000 fishers; 500,000 ancillary	100,000 fisheries-related	500,000 fisheries related	2100 fishers	35,420 fishers
Contribution to nutrition	Protein for 8,000,000 people	Food for 1.6 million people	25-40% of protein needs for 1,000,000	Source of quality animal protein to riparian communities		

Fisheries of the African Great Lakes

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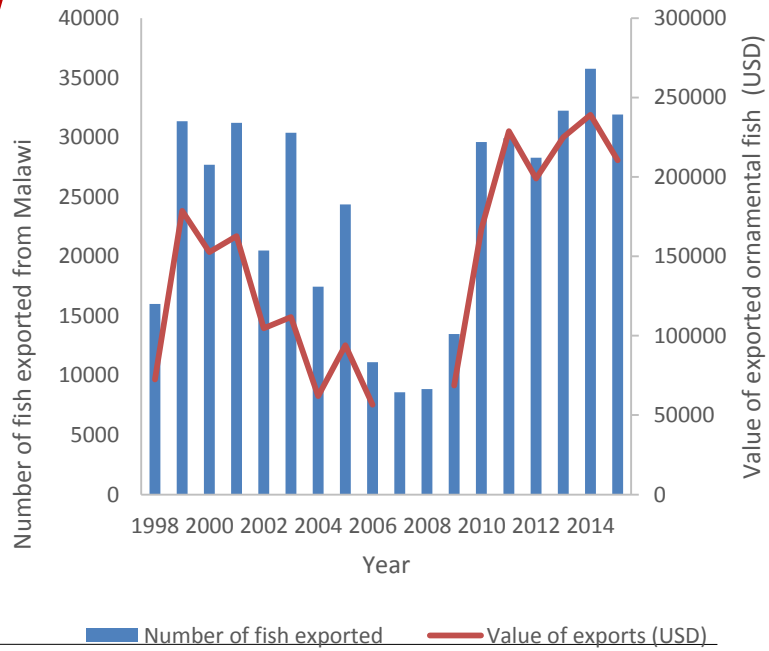
- Estimated catch **1.5 million tonnes**
- Employment for 2+ million people
- Much of the catch consumed directly by households and locally, which does not appear in national accounts
- Explosion of cage culture – but how sustainable and equitable are the ventures
- Support valuable ornamental fisheries



Threats to AGL fisheries

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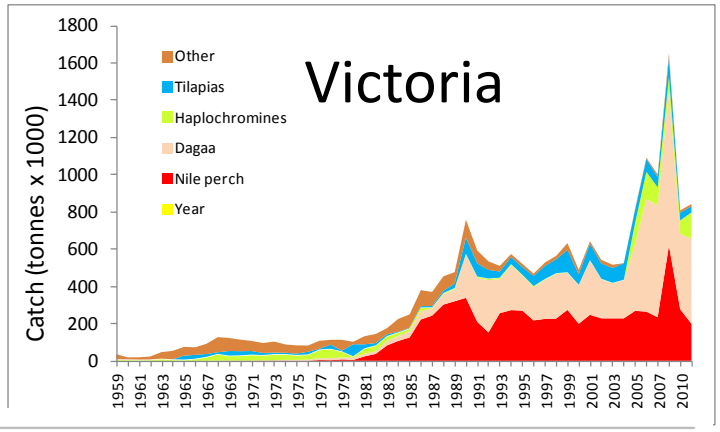
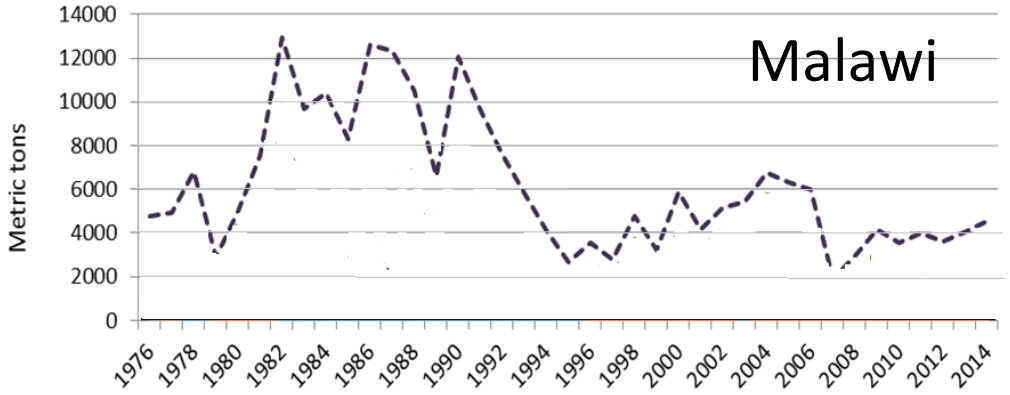
Fisheries assessment & exploitation

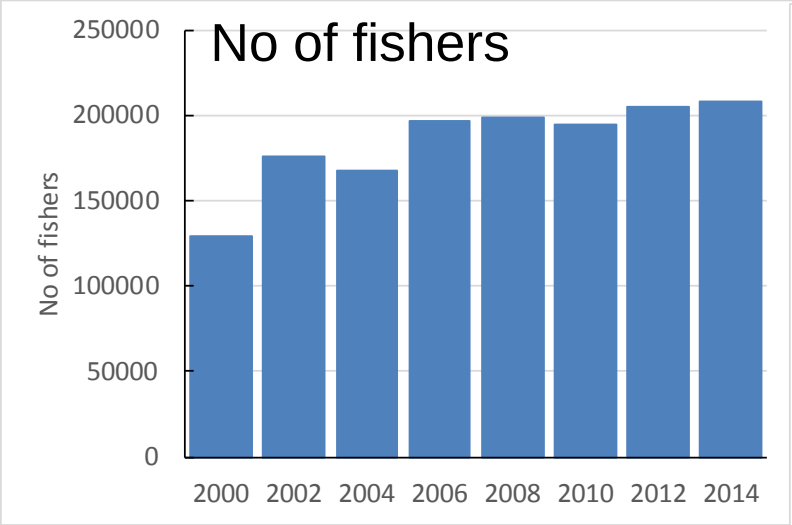
Fisheries assessments suggest declining fisheries or change in species contribution to less valuable species – but how reliable is the information?

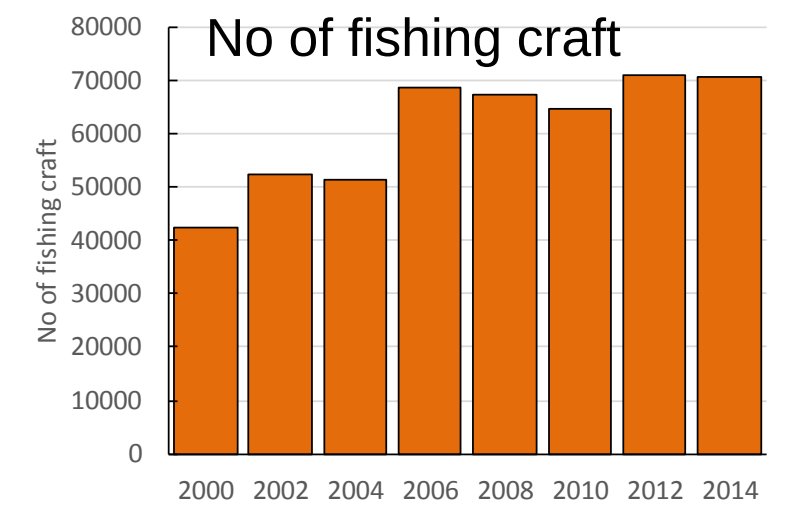


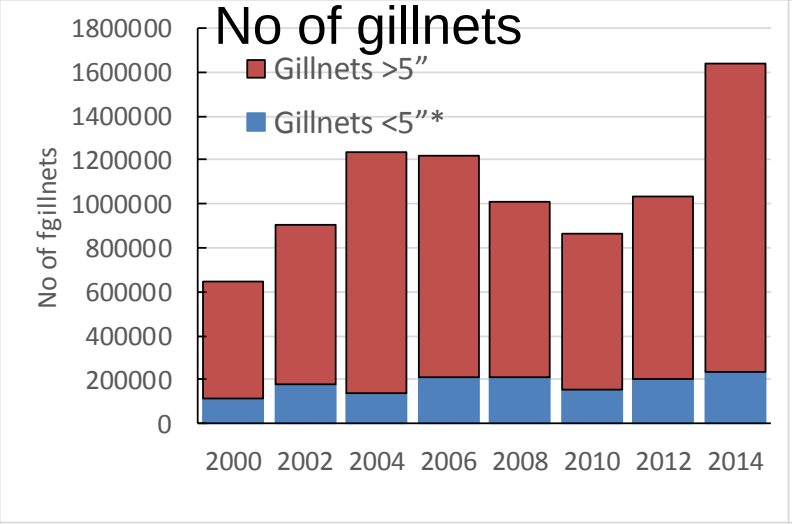


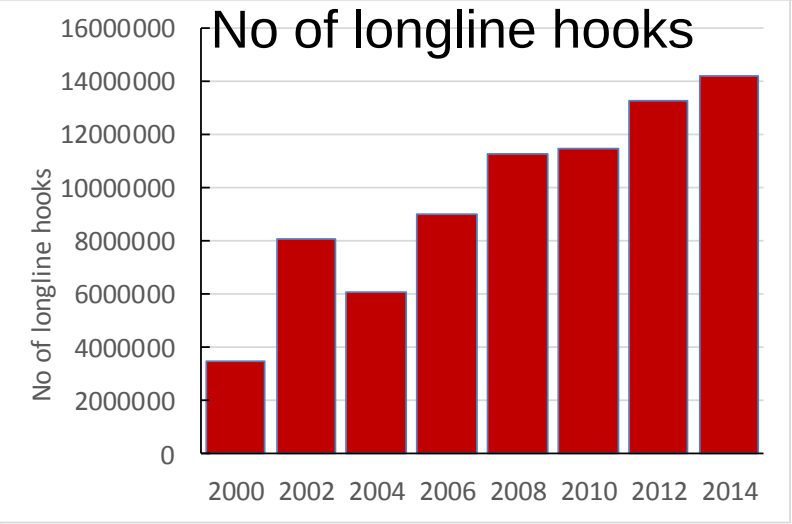
Fisheries assessment & exploitation

Lake Victoria Frame Survey results









External Pressures on AGL Fisheries

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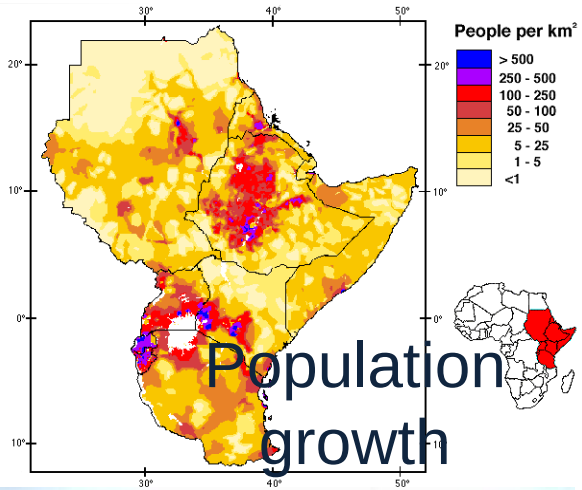
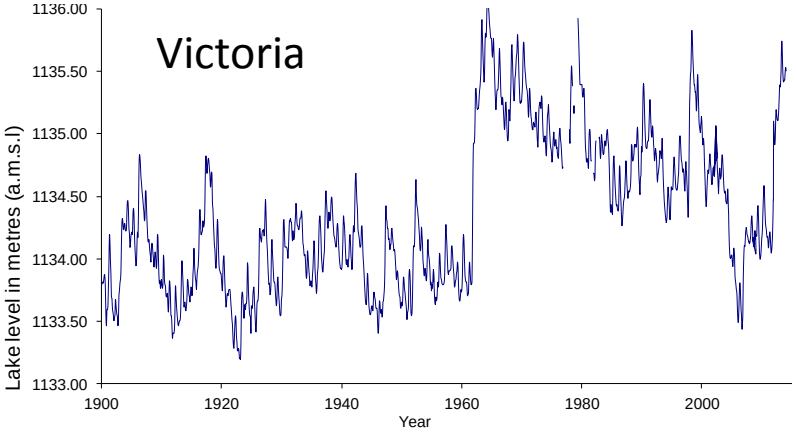
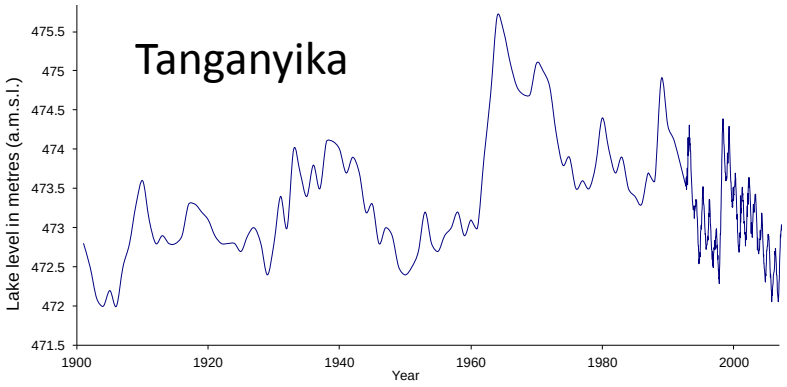
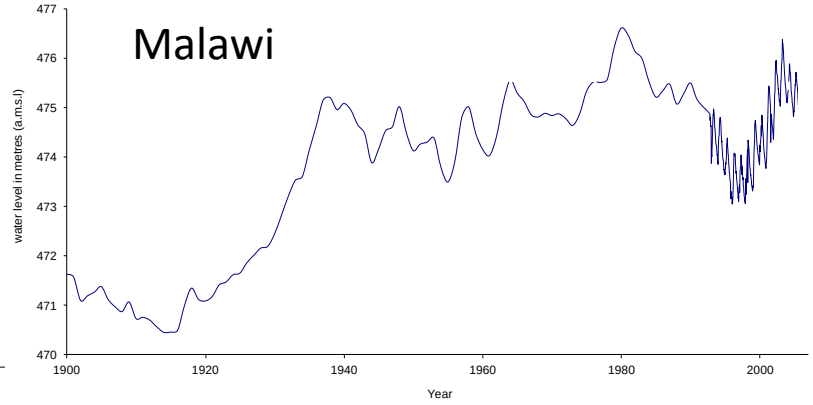


CLIMATE CHANGE

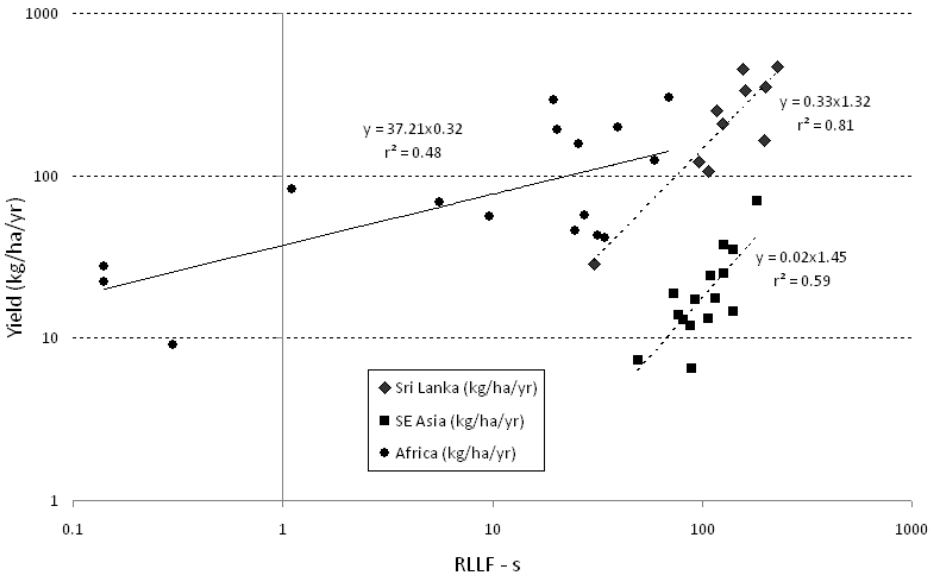
Lake level variability







Standardized annual yield (kg/ha) against seasonal relative lake level for lakes and reservoirs (Source Kolding et al. 2012)



Lake level variability

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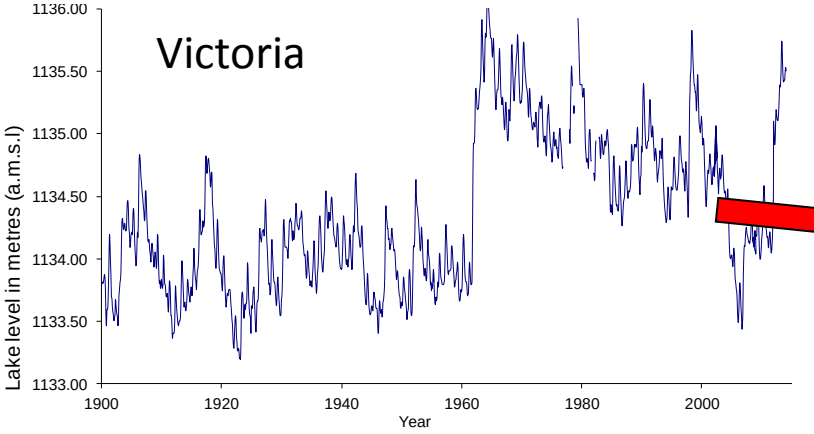

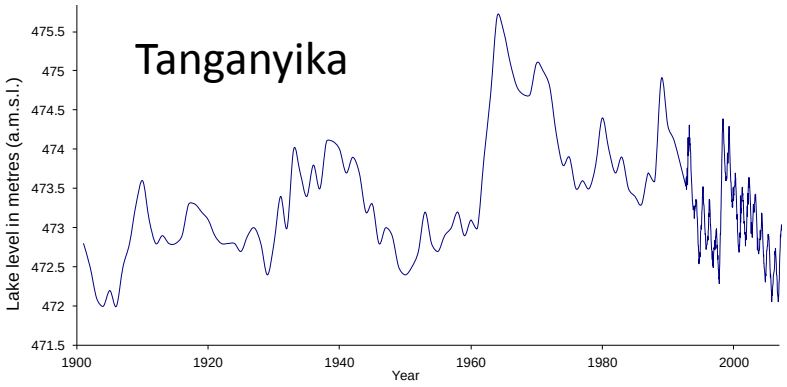

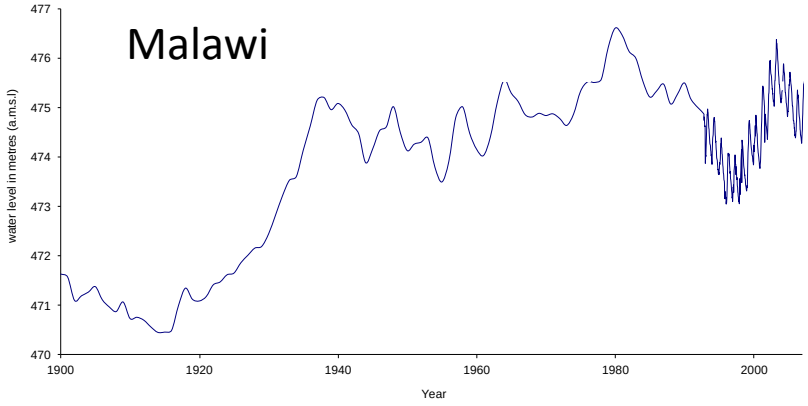

Water level management

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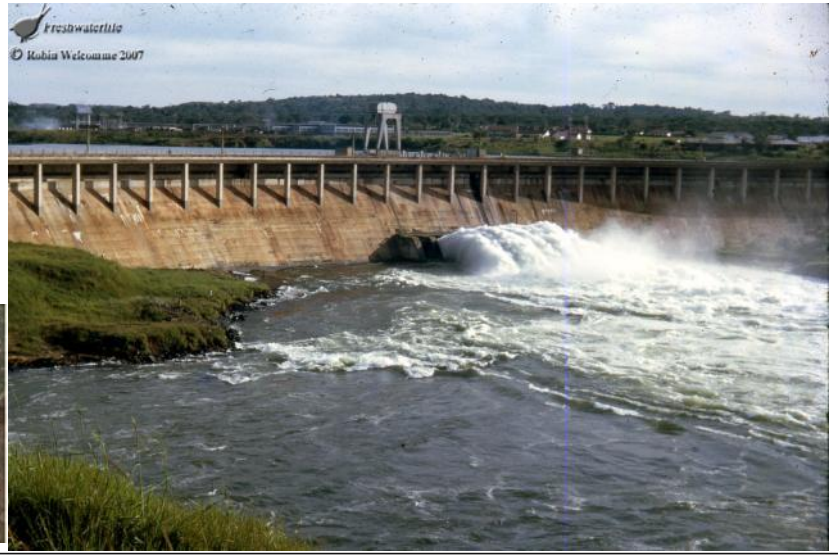
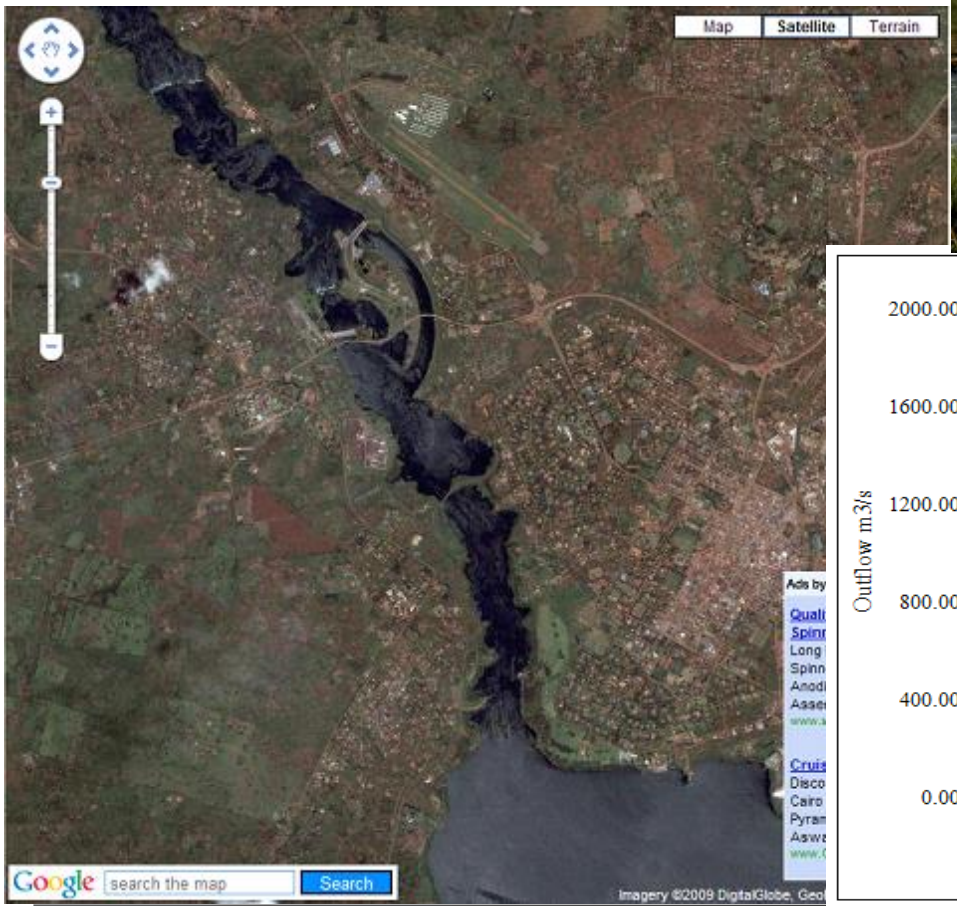
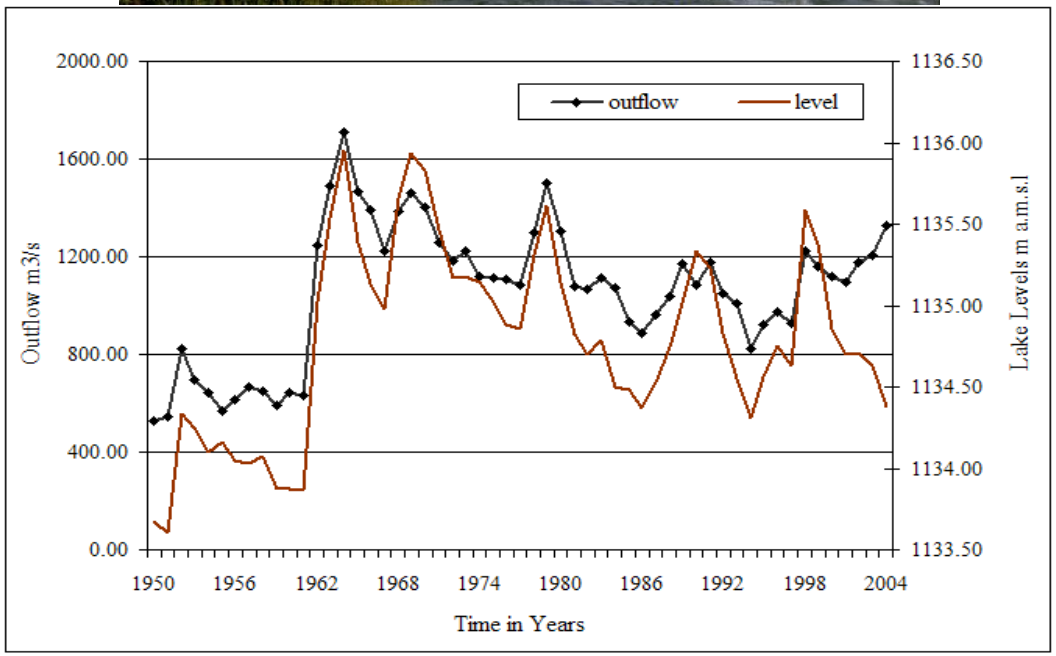
River Nile Outflow







Affluence v Poverty

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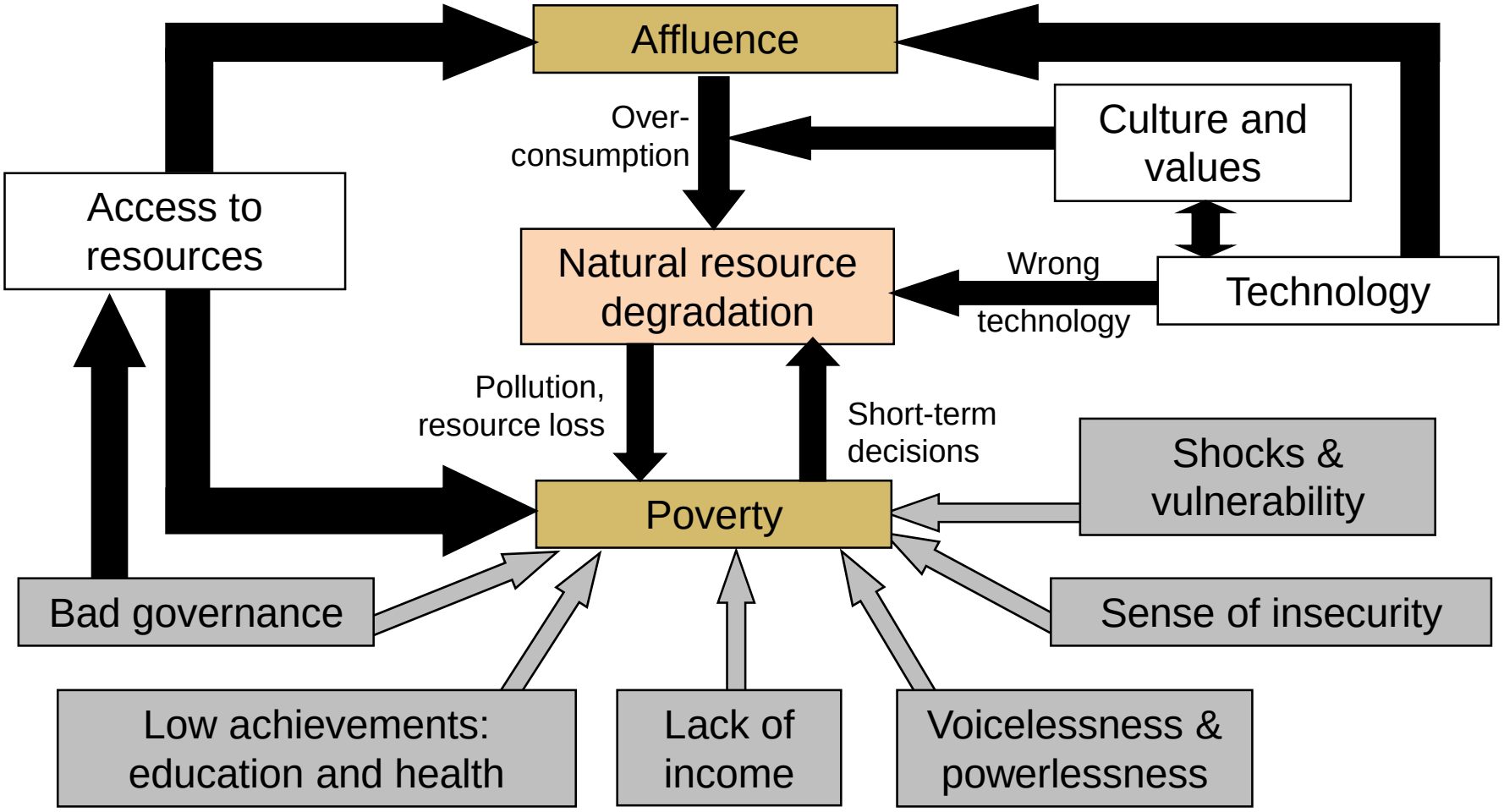
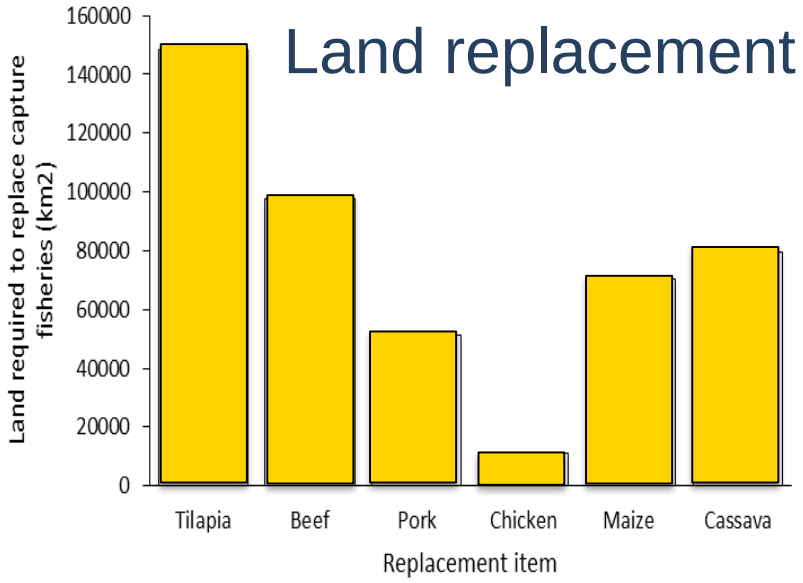
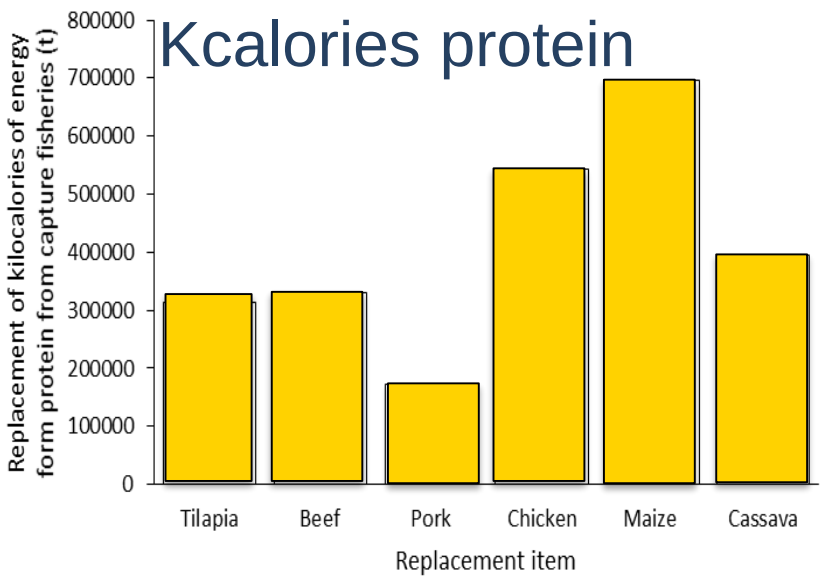
Link between poverty and ecosystem degradation



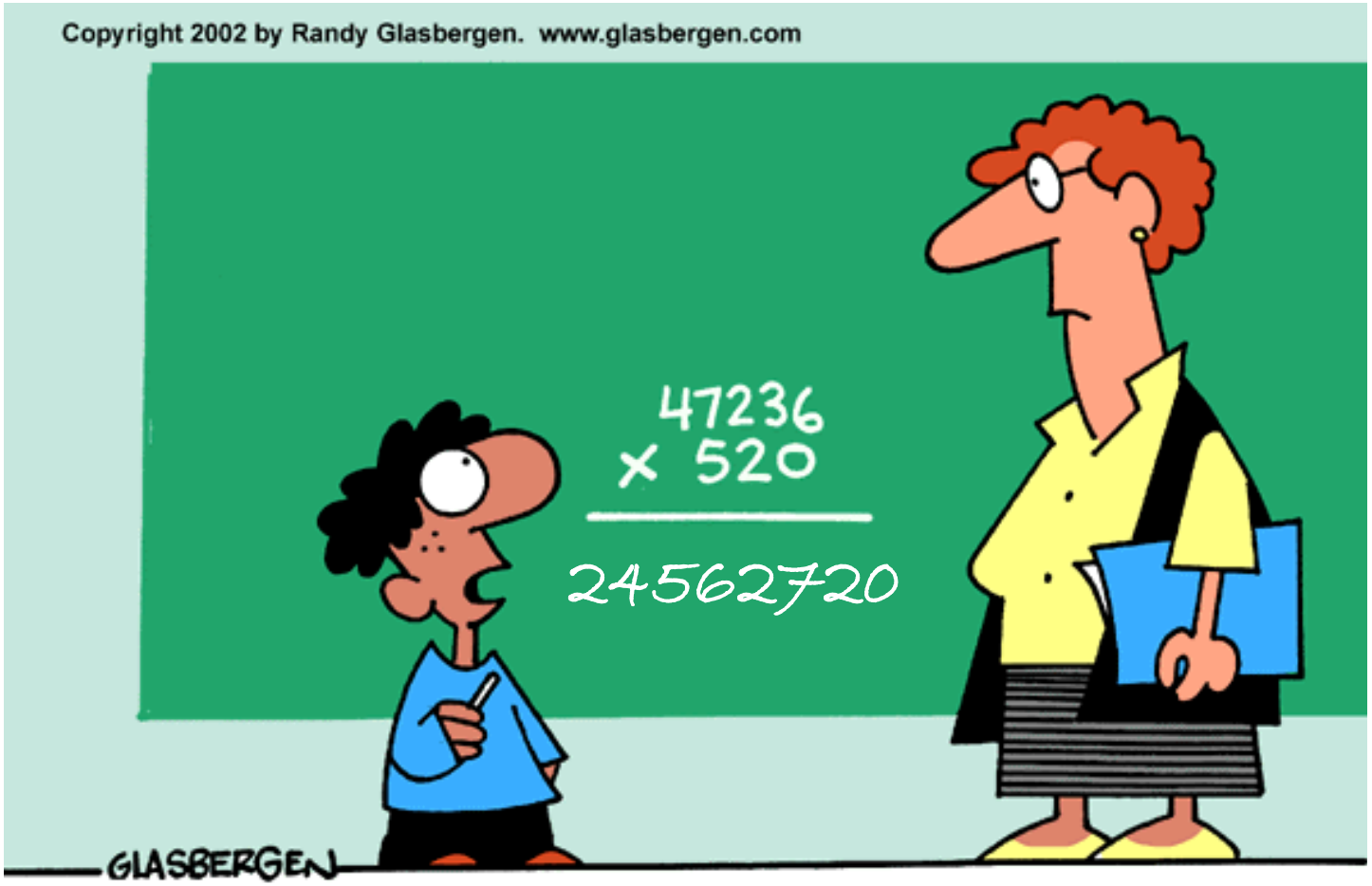
Protein replacement – Lake Victoria





- Livestock has high water cost (98% for feed production).
- Increased livestock production would lead to pasture degradation, soil erosion and carbon release.
- Replacement protein sources not as high in micronutrients
- Dietary transition and increased dependence on energy rich food

Potential solutions/strategies?

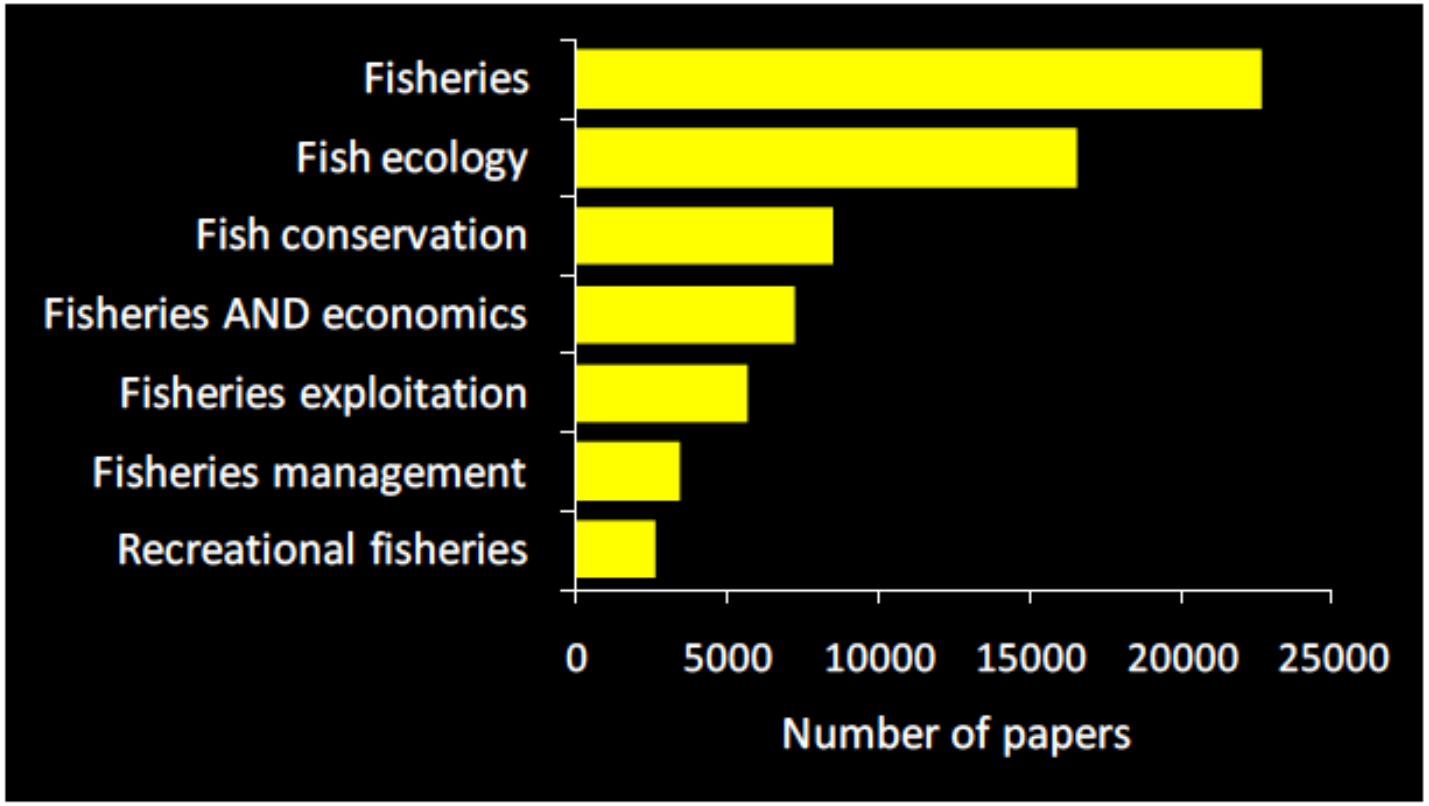


"AREN'T THERE ENOUGH PROBLEMS IN THE WORLD ALREADY?"

Fisheries management interventions

Mismatch between fisheries academia and fisheries development needs

Breakdown of papers in Web of Science 1990-present



Fisheries management tools

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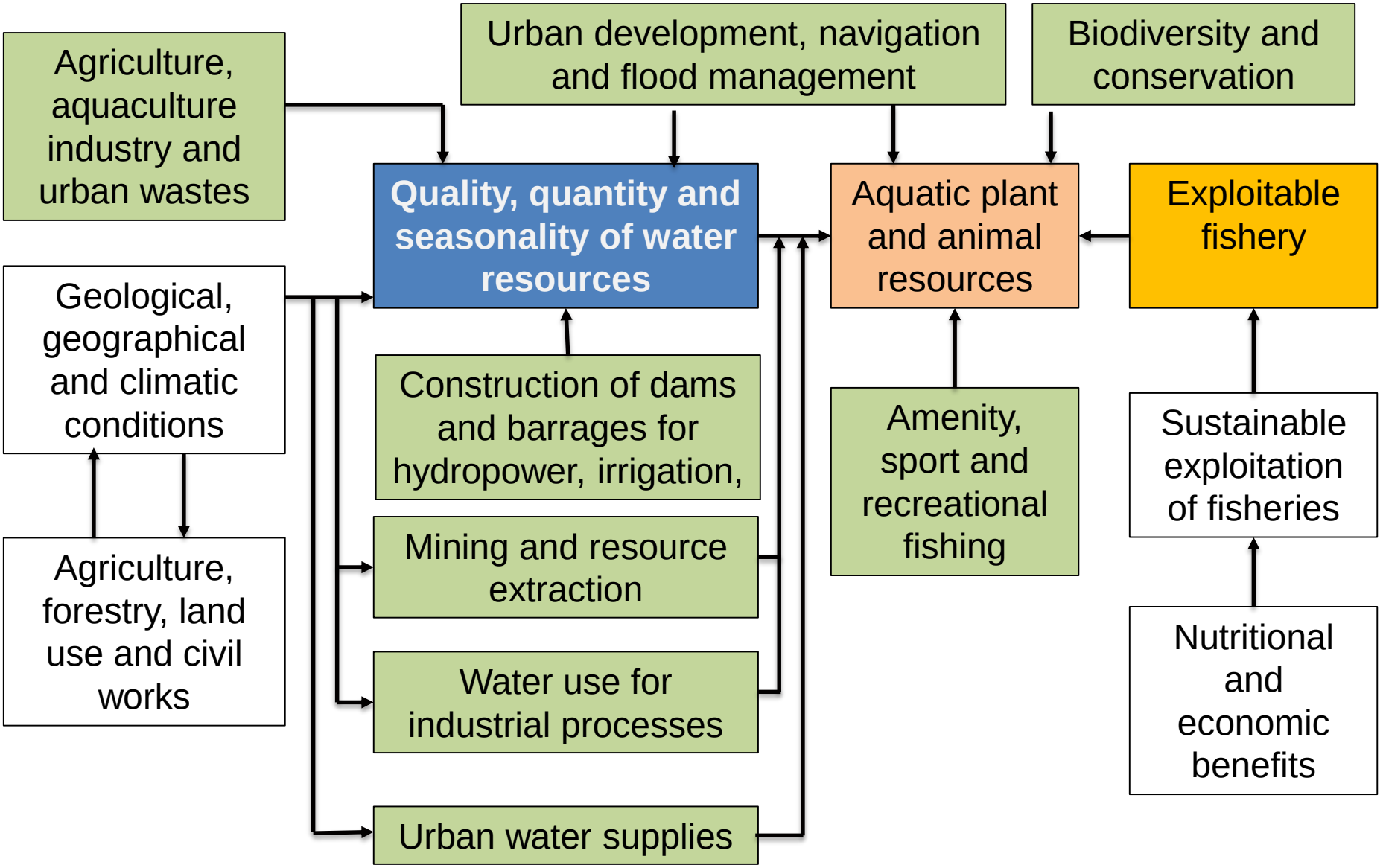
Regulation of exploitation and pro[illegible] f fisheries

Regulatory technique	Stock size	Broodsto[illegible] pro[illegible]	[illegible]	Fish welfare
Closed areas	*			
Close seasor				*
C[illegible]				
Fis[illegible] pres[illegible]				
Type [illegible] gear				*
Size of fi[illegible]				*

Marine-orientated management tools

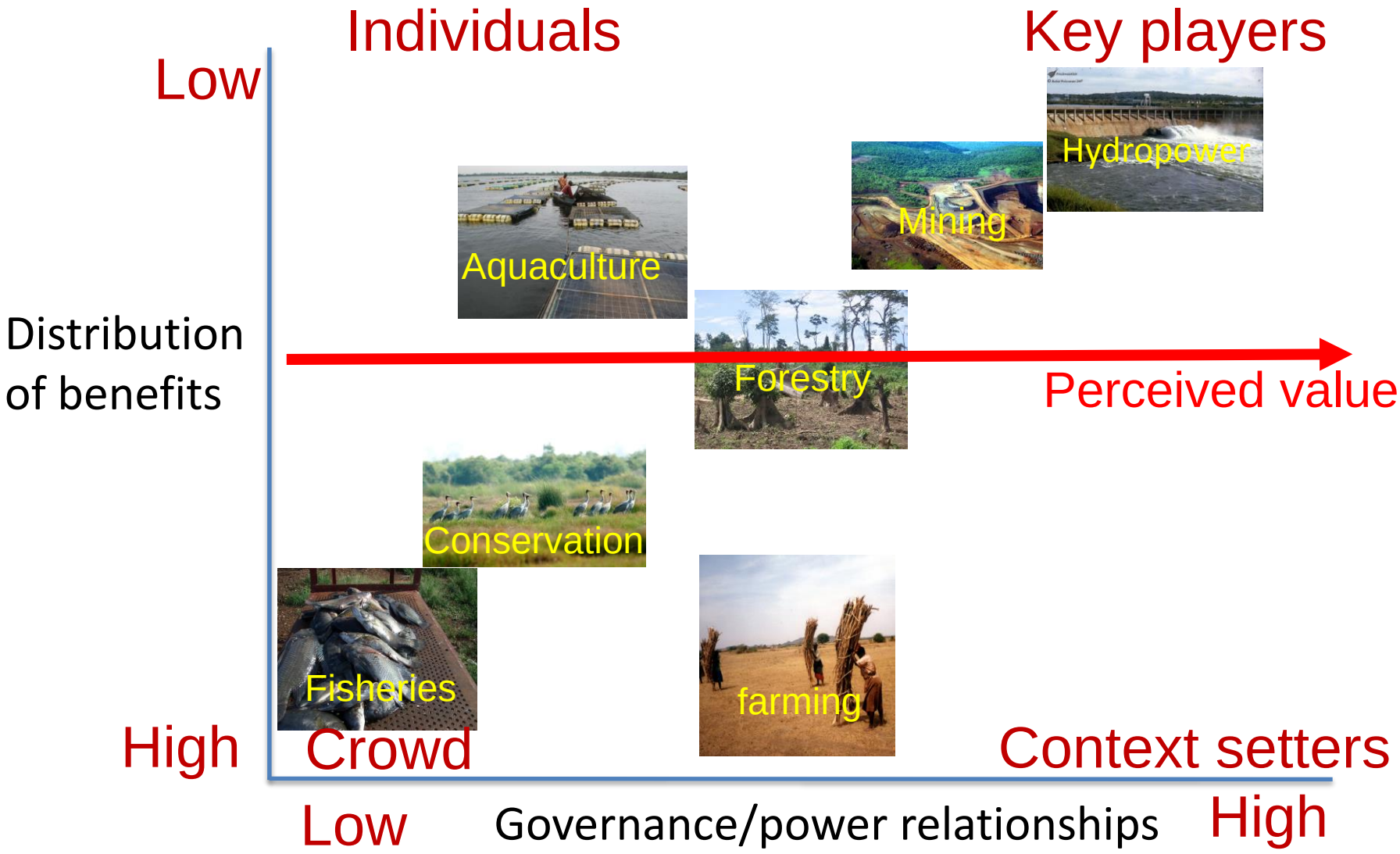
Are they appropriate for AGL fisheries ?

Position of inland fisheries



Multiple uses of aquatic resources

Position of inland fisheries



Future scenarios

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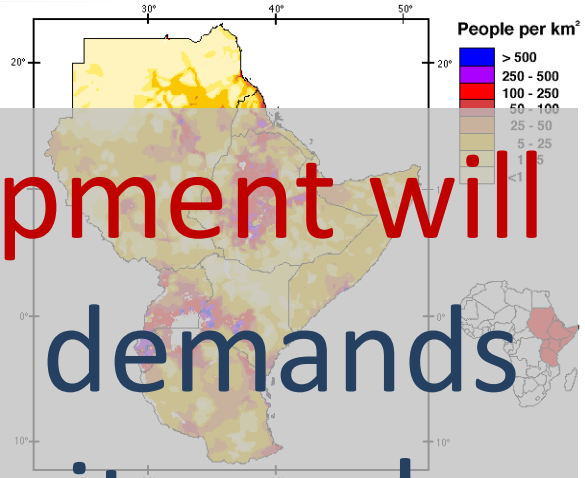
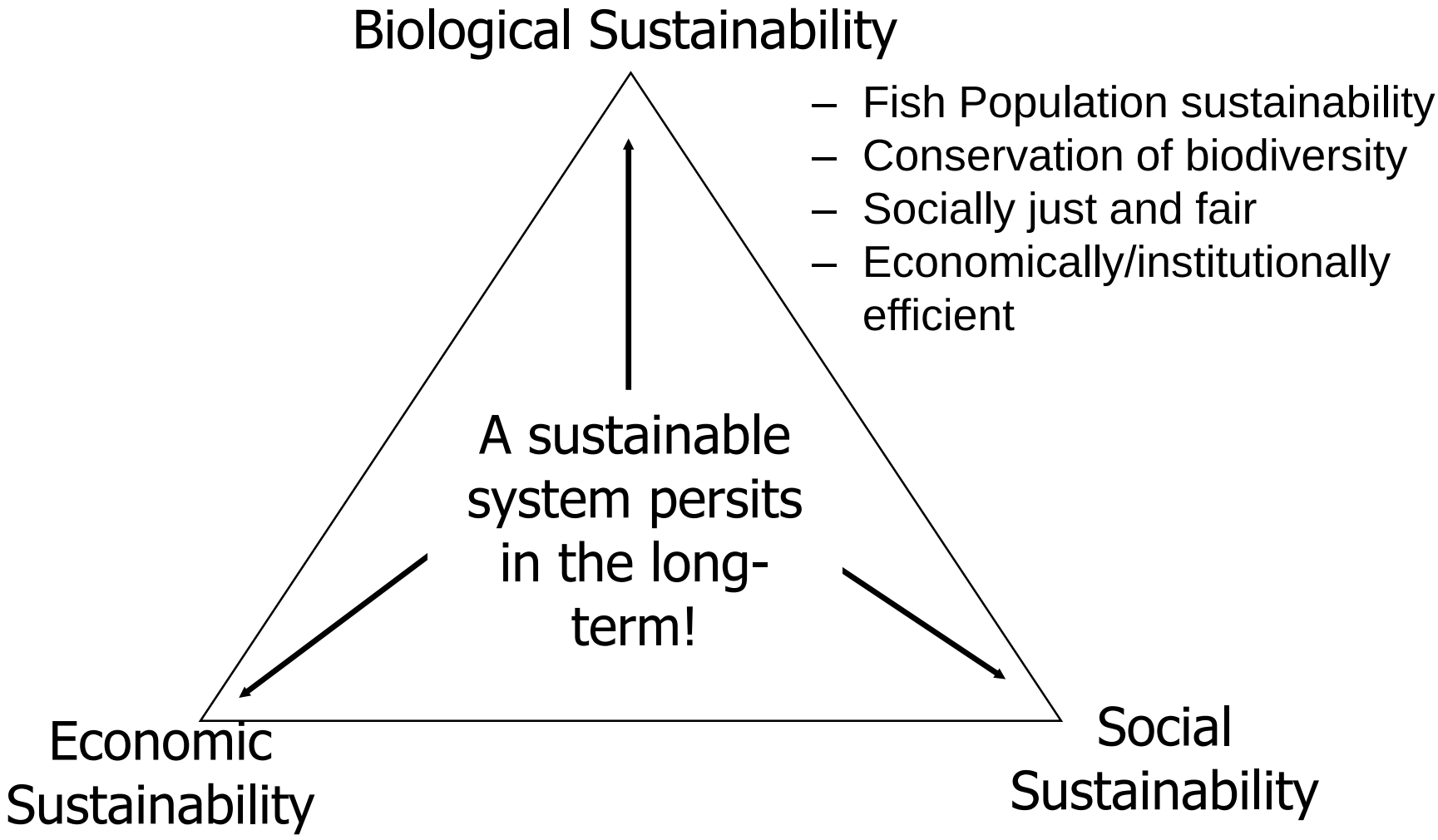


FIRST recognise development will occur to meet societal demands for energy, food security and improved livelihoods

But how to minimise impact?

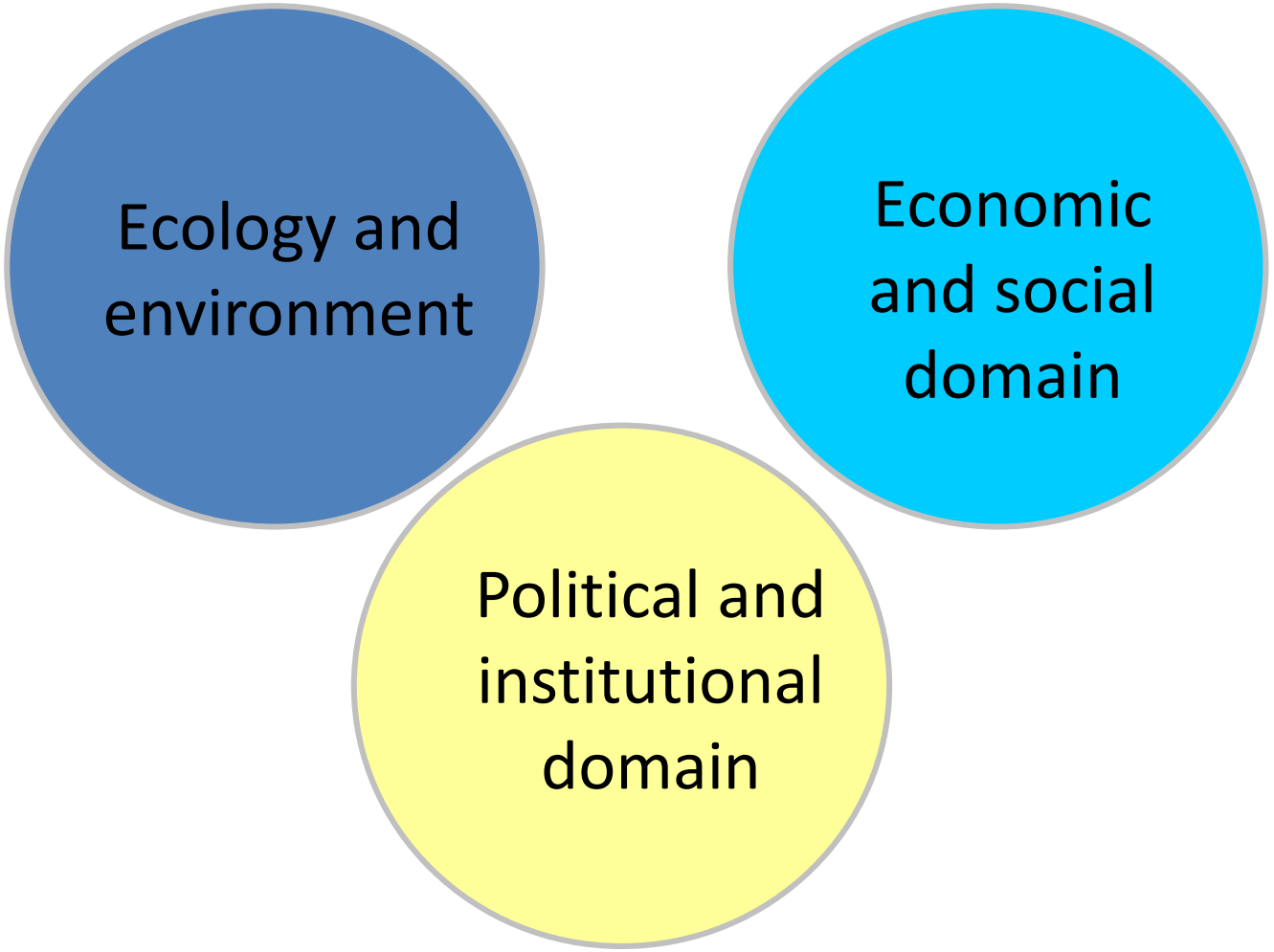
CLIMATE CHANGE

Sustainability as a process



Sources: Charles (1994); Costanza & Patten (1995); Arlinghaus,Mehner & Cowx (2002)

Need to integrate ecological and economic objectives of fisheries within political frameworks



Integrating ecological and economic objectives

Allows the opportunity to promote the concept of Ecosystem Services to achieve SDGs

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domain

Minimise negative interactions

Need to understand motives and drivers of each sector

Summary

- Shift fisheries science from data-driven outputs to engage with policy and development needs
- Fisheries management is just one tool in a suite of measures to support fisheries
- Acknowledgement that developments (including cage farming) will go ahead - focus research on optimisation of resource use
- Improve mechanisms to communicate importance of fish conservation and fisheries to livelihoods, local economies and food security (and to SDGs) and influence decision making – use ecosystem services approach