Aquaculture

"Auaculture Africa"

South Africa, Tanzania, Uganda, Kenya

Business Network project South Africa:

AKVA Group, Optimar, Akvaplan-niva, Nofima, Aquagen and Skretting

- Aquaculture Workshop
  - Showcasing Norwegian aquaculture technology
- Learn from South & East Africa;
  - Opportunities, challenges & success stories

Background and scope

- Innovation Norway ordered an analysis of the status and prospects for commercial aquaculture development in South Africa and East African
- The report aims to identify opportunities for Norwegian suppliers of aquaculture technology and services
- The focus countries in East Africa were Uganda, Kenya and Tanzania
- The report has been prepared by

Peter Britz, Tom Shipton at Department of Ichthyology and Fisheries Science, Rhodes University, South Africa
Gavin Johnson and Willem Schoonbee, Aquaculture Consulting and Management Services, South Africa
Justus Rutaisire, National Agriculture Research Organisation, Uganda

World food outlook

- By 2050 population growth to 9 billion will demand 70% more protein
- Only 6,6% of world food protein is sourced from seafood
- FAO estimates that 50% of global fish consume comes from aquaculture (63 M tonnes)
- Increased demand within 2030 is now increased from 35 to 40 million tonnes
- Fishery stable or negative, -> Aquaculture must fill the gap
- Tilapia predicted to grow from 4 to 8 million tonnes

Source: FAO, 2013

rica Rising

The rise of the African consumer

A report from McKinsey's Africa Consumer Insights Center

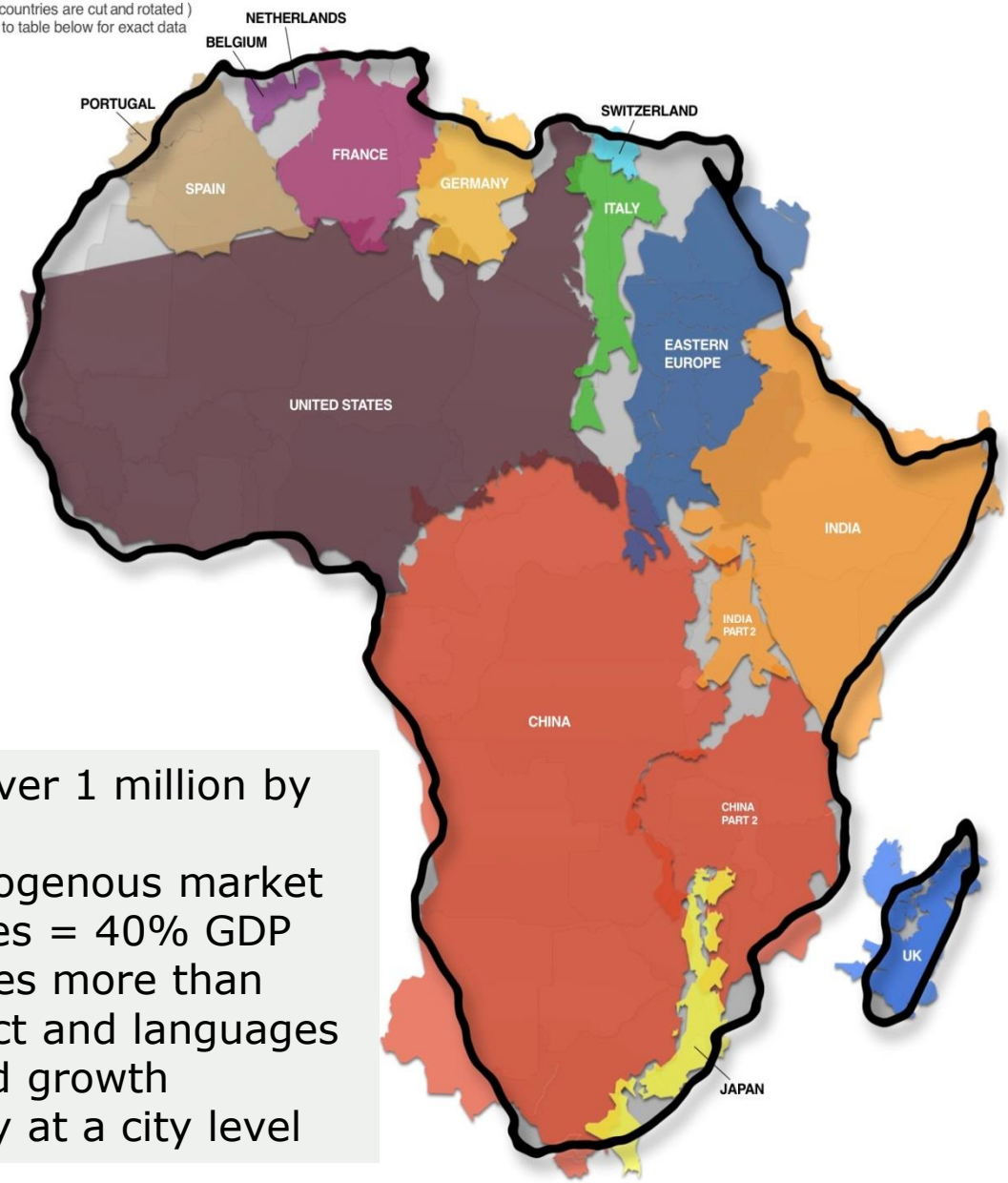
- Urbanisation rapid (40% cf. China 45%, India
- Formalisation of consumption – modernising u retail sector
- Growing disposable income
- R400 billion growth in consumer spend by 20 45% on food.
- Africans exceptionally optimistic about the fut youthful, better educated market

The **True Size** of **Africa**

A small contribution in the fight against rampant *Immappancy*, by **Kai Krause**

Graphic layout for visualization only (some countries are cut and rotated)
But the conclusions are very accurate: refer to table below for exact data

COUNTRY	AREA x 1000 km²
China	9.597
USA	9.629
India	3.287
Mexico	1.964
Peru	1.285
France	633
Spain	506
Papua New Guinea	462
Sweden	441
Japan	378
Germany	357
Norway	324
Italy	301
New Zealand	270
United Kingdom	243
Nepal	147
Bangladesh	144
Greece	132
TOTAL	**30.102**
AFRICA	**30.221**



- 61 Cities over 1 million by 2017
- Not a homogenous market
- Top 50 cities = 40% GDP
- 53 Countries more than 2000 dialect and languages
- Understand growth opportunity at a city level

Top 100 Countries

Area in square kilometers, Percentage of World Total
Sources: Britannica, Wikipedia, Almanac 2010

		AREA km²	%
1	Russia	17.098.242	11,50
2	Canada	9.984.670	6,70
3	China	9.596.961	6,40
4	United States	9.629.091	6,40
5	Brazil	8.514.877	5,70
6	Australia	7.692.024	5,20
7	India	3.287.263	2,30
8	Argentina	2.780.400	2,00
9	Kazakhstan	2.724.900	1,80
10	Sudan	2.505.813	1,70
11	Algeria	2.381.741	1,60
12	Congo	2.344.858	1,60
13	Greenland	2.166.086	1,50
14	Saudi Arabia	2.149.690	1,40
15	Mexico	1.964.375	1,30
16	Indonesia	1.860.360	1,30
17	Libya	1.759.540	1,20
18	Iran	1.628.750	1,10
19	Mongolia	1.564.100	1,10
20	Peru	1.285.216	0,86
21	Chad	1.284.000	0,86
22	Niger	1.267.000	0,85
23	Angola	1.246.700	0,85
24	Mali	1.240.192	0,83
25	South Africa	1.221.037	0,82
26	Colombia	1.141.748	0,76
27	Ethiopia	1.104.300	0,74
28	Bolivia	1.098.581	0,74
29	Mauritania	1.025.520	0,69
30	Egypt	1.002.000	0,67
31	Tanzania	945.087	0,63
32	Nigeria	923.768	0,62
33	Venezuela	912.050	0,61
34	Namibia	824.116	0,55
35	Mozambique	801.590	0,54
36	Pakistan	796.095	0,53
37	Turkey	783.562	0,53
38	Chile	756.102	0,51
39	Zambia	752.612	0,51
40	Myanmar	676.578	0,45
41	Afghanistan	652.090	0,44
42	Somalia	637.657	0,43
43	France	632.834	0,43
44	C. African Rep	622.984	0,42
45	Ukraine	603.500	0,41
46	Madagascar	587.041	0,39
47	Botswana	582.000	0,39
48	Kenya	580.367	0,39
49	Yemen	527.968	0,35
50	Thailand	513.120	0,34
51	Spain	505.992	0,34
52	Turkmenistan	488.100	0,33
53	Cameroon	475.442	0,32
54	Papua New Guinea	462.840	0,31
55	Uzbekistan	447.400	0,30
56	Morocco	446.550	0,30
57	Sweden	441.370	0,30
58	Iraq	438.317	0,29
59	Paraguay	406.752	0,27
60	Zimbabwe	390.757	0,26
61	Japan	377.930	0,25
62	Germany	357.114	0,24
63	Rep o.t. Congo	342.000	0,23
64	Finland	338.419	0,23
65	Vietnam	331.212	0,22
66	Malaysia	330.803	0,22
67	Norway	323.802	0,22
68	Côte d'Ivoire	322.463	0,22
69	Poland	312.685	0,21
70	Oman	309.500	0,21
71	Italy	301.336	0,20
72	Philippines	300.000	0,20
73	Burkina Faso	274.222	0,18
74	New Zealand	270.467	0,18
75	Gabon	267.668	0,18
76	Western Sahara	266.000	0,18
77	Ecuador	256.369	0,20
78	Guinea	245.857	0,17
79	United Kingdom	242.900	0,16
80	Uganda	241.038	0,16
81	Ghana	238.539	0,16
82	Romania	238.391	0,16
83	Laos	236.800	0,16
84	Guyana	214.969	0,14
85	Belarus	207.600	0,14
86	Kyrgyzstan	199.951	0,13
87	Senegal	196.722	0,13
88	Syria	185.180	0,12
89	Cambodia	181.035	0,12
90	Uruguay	176.215	0,12
91	Suriname	163.820	0,11
92	Tunisia	163.610	0,11
93	Nepal	147.181	0,10
94	Bangladesh	143.998	0,10
95	Tajikistan	143.100	0,10
96	Greece	131.957	0,09
97	Nicaragua	130.373	0,09
98	North Korea	120.538	0,08
99	Malawi	118.484	0,08
100	Eritrea	117.600	0,08
	TOP 100 TOTAL	132.632.524	89,34

Fishery Demand and Supply Projections 2030 – World Bank

TABLE E.1: Summary Results under Baseline Scenario (000 tons)

	TOTAL FISH SUPPLY		FOOD FISH CONSUMPTION	
	DATA 2008	PROJECTION 2030	DATA 2006	PROJECTION 2030
Capture	89,443	93,229	64,533	58,159
Aquaculture	52,843	93,612	47,164	93,612
Global total	142,285	186,842	111,697	151,771
Total broken down by region as follows				
JAP	4,912	4,702		7,447
SEA	20,009	29,09		
SAR	6,815	9,9		
IND	7,589	12,731		0,054
MNA	3,518	4,680	3,604	730
AFR	5,654	5,936	5,947	7,759
ROW				208

"Per capita fish consumption in Sub-Saharan Africa is projected to decline at an annual rate of 1 percent to 5.6 kilograms during the 2010–30 Period."
But 'due to population growth total food fish consumption demand would grow substantially (by 30 percent between 2010 and 2030)"

Growing Production Deficit 1823 million tonnes

But African data on fish supply and demand very poor!

How can we meet growing national demand for fish?

Imports	---
Enhanced fishery production	+--
Commercial aquaculture	+++

Natural resources

East Africa

- The great lakes region has major opportunity for freshwater aquaculture development particularly cage culture in Lake Victoria, Albert, Kivu, Tanganyika.
- Tanzanian coastline offers ideal environmental conditions for tropical marine finfish aquaculture, but regional demand is low for high priced marine fish -> thus export

South Africa

- The environmental conditions for both marine and freshwater aquaculture in South Africa are marginal, limiting aquaculture development to a few high-value niche species.

African Aquaculture Development
A history of false starts

Historic public sector/ donor focus on subsistence farming

Lack of development policy support for commercial sector – expected to develop itself

Non-commercial pond culture, Malawi. Farmer: Mr. T

Commercial Aquaculture is coming

Pioneer farms
- Ideal sites
- Few local services
- Imported technology, feed, skills
- Economy of scale issues
- Vertically integrated
- $5-10 million investment

Established value chains
- SME development
- Diversified local service sector

Infrastructure is weak

- Poor infrastructure of most African countries places a severe constraint on commercial aquaculture development
- Lack of or instable supply of electricity
- Road quality, but still fairly good around cities. Very slow traffic during rush hours.
- Landlocked countries are handicapped in regards to long distance transportation

Excisting aquaculture

- Commercial aquaculture industries are yet to be established in central, eastern and southern Africa
- Commercial production is limited to a small number of 'pioneer' farms
- Absence of local service and supply industries made pioneer farms obligated to vertically integrate and do everything themselves (hatchery, grow-out, processing, distribution and marketing, and even fee
- Capital intense pioneer farms with limited political and market influence are very vulnerable to externalities and unforeseen events

The opportunity in Tilapia

- Well established as a food resource and preferred in the market
- Easy to breed, feed and farm
- Fits natural conditions and robust to variations
- Vegetarian that can tolerate feed variations
- Processing of bigger fish possible

- Scalable
- Investable

Uganda

- Huge natural resource endowment of lakes (167 km)
- Commercial production initiated
- Large supply deficit, and proximity to regional markets DR Congo, Rwanda, South Sudan, Kenya
- Basics of supply chain in place e.g formulated feeds. Agricultural sector support base.
- Established fish processing sector
- Supportive government policies and strategies
- Cost of doing business comparatively lower than neighbours
- Infrastructure Constraints – electricity supply, transport network, port access

Kenya

- Significant lakes, rivers and coast (600 km)
- Growing demand
- Government policy mainly focused on rural small-scale farmer development (most catfish and tilapia pond culture)
- Commercial production base not established
- Sector development support poorly coordinated, not commercially focused
- Poor physical and technical infrastructure
- Cost of doing business relatively higher (imported inputs)

Tanzania

- Significant lakes and coast (1400km)
- Fresh water very rudimentary, - small farmer focused govt./donor driven
- No commercial scale aquaculture
- Government policy and aquaculture directorate, tertiary education but low human capacity
- No coherent policy and plans for commercialization

- Mwanza development node opportunity – diversify from Nile Perch processing to tilapia culture

The value chain

- The value chain that is going to pay for the supply of goods and services is not well established
- Even though fry supply is available, it comes from small hatcheries and cannot support industry scale cage farming
- Distribution and sales are not well developed. Ability to place large volumes in the market is not present. Market becomes «soft» with little over-supply.
- Cold chain capacity is very low

Knowledge

- The skills how to do practical farming are not widely present
- Nearly all of the interest shown for aquaculture comes from investors, business people, consultants and governmental sector
- Where is the «marine» expertise? Where are the fishermen and the farmers?

- Less Masters and PhD’s - More practical and vocational training is needed.

Risk – prepare for surprises

- Political instability - although Norway is a friend
- Logistics – delays
- Becoming your own supplier
- Demand is high but market is soft
- Cold-chain distribution absent or at best unpredictable
- Bureaucracy government and banking
- Corruption
- Taxation
- Currency (and lack of hedging instruments)

- All known risks can be mitigated

Conclusions and recommendations

- A historic opportunity is available for Norwegian technology and service sector
- The great lakes regions points out as a favourable location to start
- The need is very basic both in terms of expertise and technology. Back-step to the Norwegian eighties.
- Private – public initiatives should go together to hedge risk
- The most likely node for tilapia aquaculture in East Africa is Uganda


ocea
feeding

Thank you for the attention!

Tilapia from Lake Tanganyika (Oreochromis tanganicae)