

GENDER WATER AND AGRICULTURE

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AGRICULTURAL RESEARCH COUNCIL



GENDER IN SA AQUACUTURE

In South Africa Women's limited access to water also often coupled limited access to land; the two are often linked

Aquaculture farming of plants & animals controlled water environment

OPERATION PHAKISA 'HURRY'

Industrial Policy Action Plan,
National Development Plan

• **INTERVENTIONS SUCH AS **Operation Phakisa**

HEADLINES 2019: South African economy reaps the rewards of Operation Phakisa

"... to aquaculture in South Africa has shown strong growth in 5 years, with production from 2014 up 5 fold to 20,000 tonnes ..."

"... The aquaculture sector in South Africa now **employs 15,000 people in direct and full-time jobs** ..."

"Jobs in aquaculture sector seen as **quality jobs, improving livelihoods in rural communities** ..."

"... experts estimate the **revenue contributed by aquaculture to South Africa's economy to be as much as ZAR 3 billion** ..."

"... exciting momentum built in Operation Phakisa evidenced by **aquaculture's inclusive growth** ..."



Aquaculture is a sector that presents a good opportunity to diversify fish production

-  Satisfy local demand
-  Contribute to food and nutritional security
-  Create sustainable job opportunities
-  Foster economic development
-  Capitalise on export opportunities
-  Stimulate rural development and livelihoods
-  Attract foreign direct investment
-  Safeguard sustainable environmental integrity
-  Create SMMEs and wealth generating opportunities through Aquaculture

URCE: DAFF National Aquaculture Strategic Framework

SMME's - Small, Medium & Micro Enterprises PHAKISA

FEMALE EMPLOYMENT AQUACULTRE

snapshot of Employment breakdown (Figure) from 10 Operation Phakisa farms in 2015 , 78% of workforce aquaculture industry is male and 22% female or 2:1 ratio , similar one Agriseta reported in agriculture

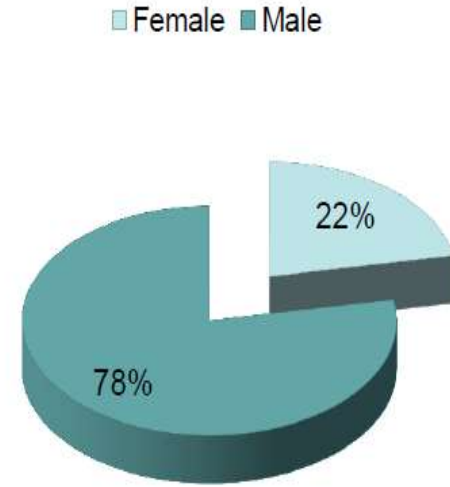
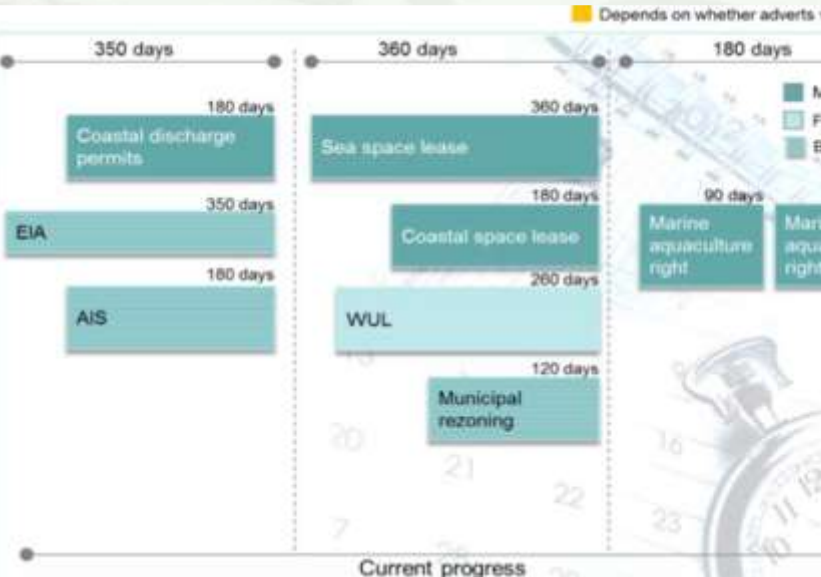
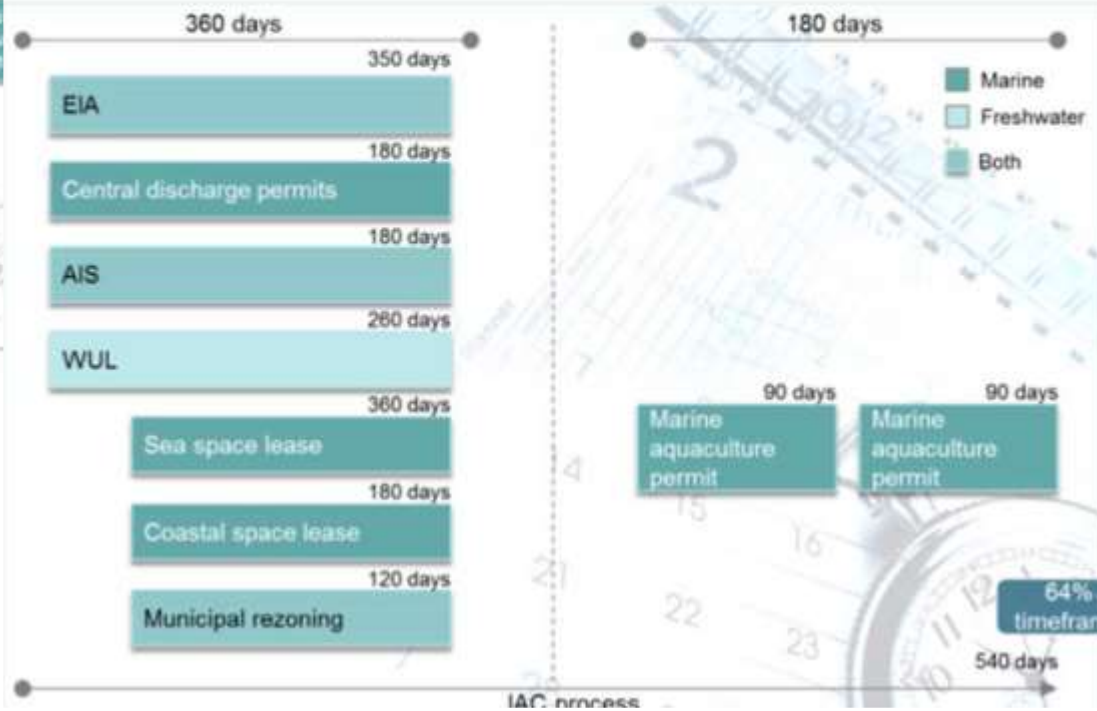


Figure 8: Aquaculture gender representation from: Snapshot of Employment breakdown of 10 Operation Phakisa farms in 2015, provided by DAFF

WATER LICENCE PERMITS



890 days to 240 days!



Schematic diagram of the aquaponics system

CLIMATE CHANGE CHALLENGES

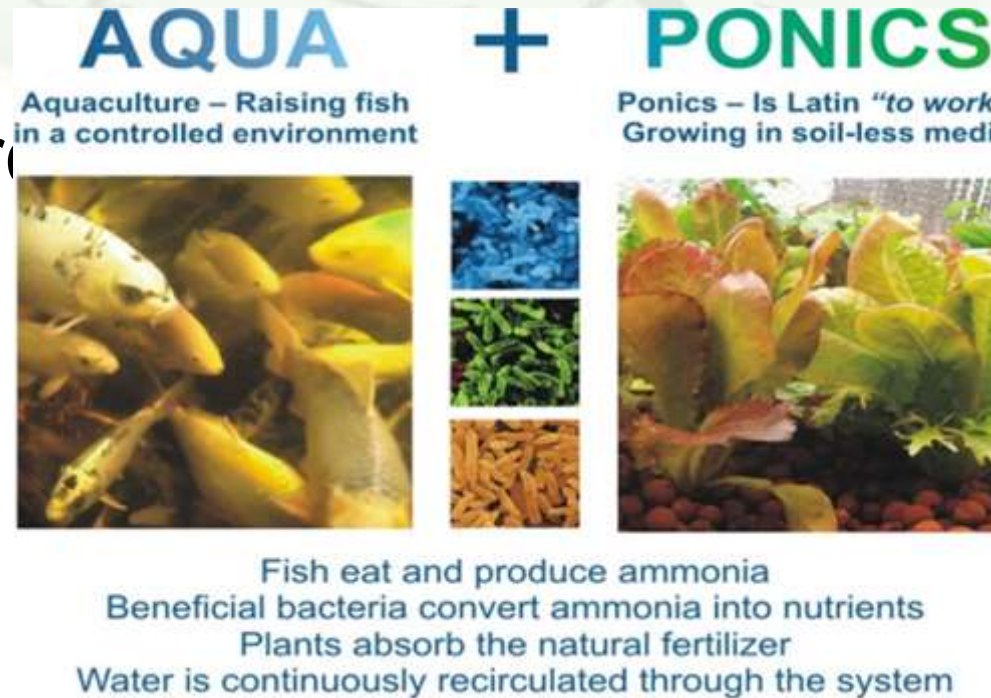
- South Africa dry :drought; low rainfall; high evaporation rates,
- Farming in controlled water environment
May seem like a **“really bad idea”**
- in this context , aquaponics may be more sustainable alternative challenges presented above while still satisfying the objectives of Operation Phakisa.

AQUAPONICS ROLE CIRCULAR ECONOMY

Ecosystem water re-use efficiency of 95–99%.

Reduces waste to Environment (one unit is input to second)

Reduces CO₂ footprint : year round local quality fresh veggies and high protein city consumers



AQUAPONICS LEAPFROG TECHNOLOGY

- Aquaculture in SA depends on government funding for large procurement plans (slow growth)
- Can aquaponics considered form of leap frog technology
- ARC -University of Kwa -Zulu Natal(UKZN) promoting viable, sustainable unconventional food production system: food security and local economic development in South Africa

MODULAR AQUAPONICS ENTRY LEVEL

This community entry level modular aquaponics system it is a backyard system:

impractical places in urban peri-urban areas :

- flat roof tops,
- developmental sites,
- abandoned factories, schools, housing estates and underutilized areas.



MODULAR AQUAPONIC ENTRY LEVEL

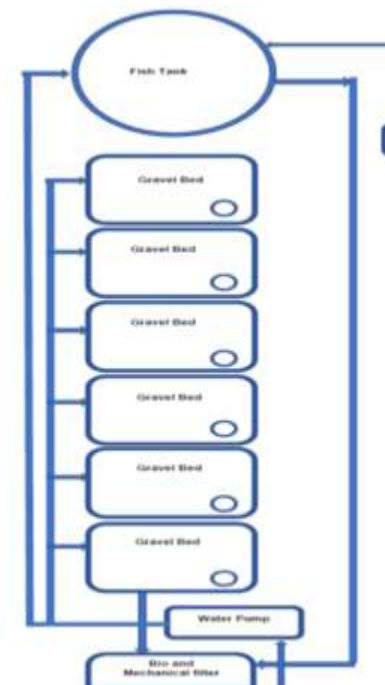
- The system consists of a 10 000l fish tank and growing media containers made from a barrel/Jojo/IBC tank (or equivalent tank) affordable from hardware stores



Invented by Travis Hughey of
Faith and Sustainable Technologies (FAST)
Uses readily available, cheap 55 gallon barrels

MODULAR AQUAPONICS ENTRY LEVEL

- The fish tanks connected to a plant culture system comprising of six halved 10 000L flowbins (IBC) tanks where (lettuce, spinach, chilli, pepper, tomatoes basil and other herbs) seedlings are grown in each container using gravel or media bed design system



MODULAR AQUAPONICS

REVENUE

This aquaponics system production capacity of about 300 kg food fish and 15 kg vegetables per production cycle. both ornamental (Koi & Gold fish) and food fish (Tilapia, catfish & carp) integrated with common vegetable crops (spinach, basil, lettuce and peppers). PhD study economically viable

ITEM	throughput/Cycle	INPUTS		INCOME	Profit per cycle	PROFIT	
		Cost/cycle	throughput/year				Cost/System/year
3 Vegetable cycles sales per year	Lettuce Spinach Basil Pepper Tomatoes Other herb (total 15kg vegetables)	1 st cycle is R40 000 2 nd and 3 rd R8 000	Lettuce Spinach Basil Pepper Tomatoes Other herbs (total 30kg vegetables)	R120 000	R57 000	1 st cycle (R57 000- R40 000 = R17000) 2 nd & 3 rd cycles (57 000 -8000) = R49 000 each	(R17 000 +R49 000 +R49 000) R115 000
2 Fish cycle Sale per year	1 000 fingerlings/cycle (total 270kg fish 10% mortality)	R10 000	2000 fingerlings/year (total 540 kg fish 10% mortality)	R20 000	R29 700	R9 700 (29 700 – 20 0000)	R9 700

POTENTIAL FEMALE FARMER KZN

- After the looting incident in South Africa (Kwa-Zulu Natal) I received Female
- She watched our living land show: wanted aquaponics model for own food production



THANK YOU



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