

### Seed Money Project: Kenya: Recirculation Aquaculture Systems (RAS) in Kenya

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TEAMS; 13.12.2022



Pond farm in Busia, Kenya, visited on 19.11.2022

New option with RAS (System 2)



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### Main aim, approach, consortium

**The main aim:** To prepare for scaling the use of solar based Recirculation Aquaculture Systems (RAS) in Kenya among small scale fish farmers

**Approach description:**

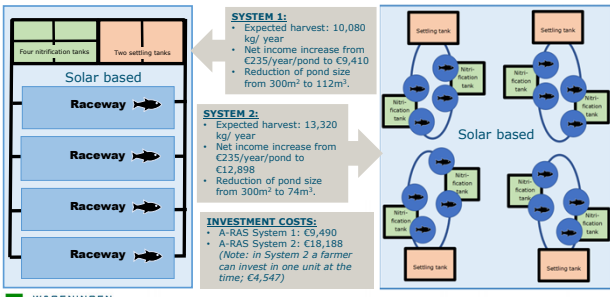
- Developing Dutch business models for providing affordable RAS in co-creation with local initiatives
- Reducing investment costs of RAS to around 10% of present price of about €100,000
- Applying a circular economy approach, aiming for a series of SDGs
- Reducing the water use with at least half of present use by the pond fish farmers
- Ensuring carbon-free production by use of solar panels
- Increasing small scale fish production by 40 times/ m<sup>2</sup>
- Target the low-income consumers in informal settlements to enhance food security of thousands of people

Consortium	Organisation
Dr. Katrine Soma/ Dr. Sander van den Burg	Stichting WR
Bert Schuilenburg Bouke Kappers	AquaFarmingConsult Agri Concepts Wageningen
Nyamu Wambugu	EKAS Technologies
Michael Baragu	Nyeri Fish Farmers Cooperative S. (LTD)
Charles Mbauni	FOSPA-Africa
Benson Obwanga	Laikipia University
Dr. Mary Opiyo	KMFRI



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### Result 1: Two versions of new affordable RAS constructions



**SYSTEM 1:**


- Expected harvest: 10,080 kg/year
- Net income increase from €235/year/pond to €9,410
- Reduction of pond size from 300m<sup>2</sup> to 112m<sup>2</sup>.

**SYSTEM 2:**

- Expected harvest: 13,320 kg/year
- Net income increase from €235/year/pond to €12,898
- Reduction of pond size from 300m<sup>2</sup> to 74m<sup>2</sup>.


**INVESTMENT COSTS:**

- A-RAS System 1: €9,490
- A-RAS System 2: €18,188
- (Note: in System 2 a farmer can invest in one unit at the time; €4,547)


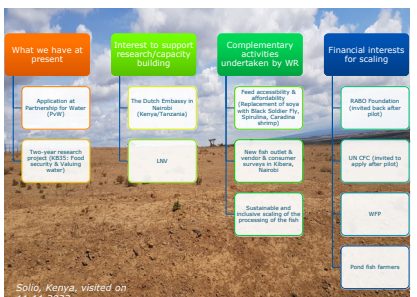


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### Result 2: New consortium & application



Water put, Solo, Kenya, visited on 11.11.2022

Solo, Kenya, visited on 11.11.2022

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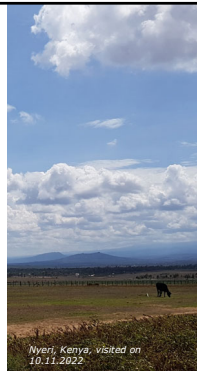
### Most important conclusions

We have proved that this game changer will work:


- Developed a Dutch business models for providing affordable RAS in co-creation with local initiatives, in accordance with the properties listed under the approach (Slide 2)

**Critical elements with positive results:**

- Fish productivity with the affordable solar based RAS Systems 1&2 - higher than earlier estimates
- Profitability of business models better than expected
  - Business models developed for Systems 1&2 are credible, given loan and interest
  - Return on Investment (ROI) is credible - payment after one 1.5 years
- Water use reduction up to 75% compared with present use by fish pond farmers.




Nyeri, Kenya, visited on 10.11.2022





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### The next steps



School visit, Solo, Kenya, visited on 11.11.2022





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### How did the SMP assist in this project?


**Main contributions:**

- New partnership established:
  - Dutch businesses & WUR
  - Dutch businesses & Kenyan partners
- Trust establishment with Kenyan partners, and *vice versa*
- Translation of in-depth knowledge of large scale RAS – now developed to small scale needs
- New business approach – from “how to maximise Dutch profitability” to “How to develop viable and sustainable businesses in co-creation with Kenyan partners”



**Common goal**

- Increase food & nutrition security through value-creation and strengthening of small-scale farm business models (resiliency)



Kibera, Kenya, visited on March 2020

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### Questions?



Nyamu farm visit on 08.11.2022


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