

# The 3 Most Important Human Requirements



# FOOD/ENERGY/WATER

February 2020

**Papa Pump**<sup>®</sup>

Venturo<sup>™</sup>

seradis<sup>™</sup>

**SUREFLOW**

 **Water Powered**  
Technologies  
*We are Water!*

**But we cannot keep taking them for granted!**

**ISSUES**

# ISSUES

FOOD/ENERGY/WATER

**The World will consume more food  
in the next 40 years than  
during the past 8,000 years! <sup>1</sup>**



<sup>1</sup> Source: Unilever (Paul Polman)

Competition for water resources is expected to increase in the future with particular pressure on agriculture. Source: World Bank



# ISSUES

FOOD/ENERGY/WATER

**Efficient food production relies on effective irrigation and livestock water supplies.**



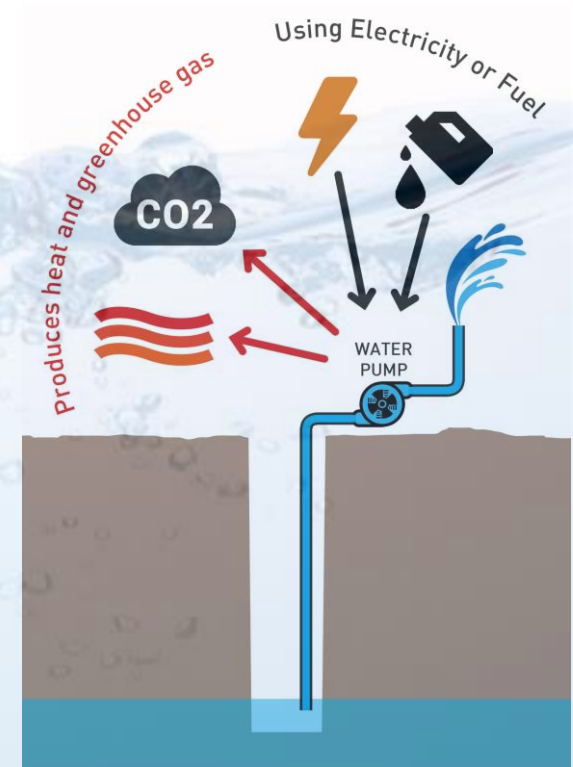
25,000 litres of water is used to grow food for a family of four, for one day.

Source: Siemens

# ISSUES

FOOD/ENERGY/WATER

**Current irrigation is 43% reliant on deep groundwater abstraction. The use of electricity or fuels to withdraw increases the production of greenhouse gases and heat into the atmosphere.**

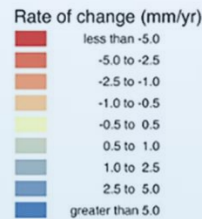


60.9% of emissions from irrigation are caused by groundwater pumping. Source: Research Gate

# ISSUES

FOOD/ENERGY/WATER

The world's groundwater reserves are being depleted.



21 of the 37 largest aquifers have passed their sustainable tipping points. Source: NASA

# ISSUES

FOOD/ENERGY/WATER

**Many of the traditional food production regions are suffering from prolonged periods of drought.**



More than 80% of economic damage caused by drought between 2005-2015 was related to crops, livestock and fisheries in developing nations. Source: NRDC

# ISSUES

FOOD/ENERGY/WATER

**Low and reduced agricultural production have a negative social impact on communities.**



There is abundant evidence for correlations between agricultural productivity increases and economic growth. Source: Handbook of Agricultural Economics



# ISSUES

FOOD/ENERGY/WATER

**Regions of reliable rainfall  
have previously not  
recognised the need  
for irrigation.**



Complementary Agricultural Water Management under prevailing rainfall variability  
have long term beneficial impacts on all crops, staples, livestock, fisheries and forestry.

Source: Science Direct

# ISSUES

FOOD/ENERGY/WATER

**Flooding often follows periods of drought – creating additional issues of soil erosion and damage to infrastructure.**



Project work has shown that soil losses from grassland can be as high as 1.3 t/ha and from arable crops up to 30 t/ha. Source: ADAS

What are the

**SOLUTIONS?**

# SOLUTIONS

FOOD/ENERGY/WATER

**Effective irrigation, even in regions of relatively high rainfall can increase food Production by up to 400%.<sup>2</sup>**



<sup>2</sup> Source: FAO (United Nations)

# SOLUTIONS

FOOD/ENERGY/WATER

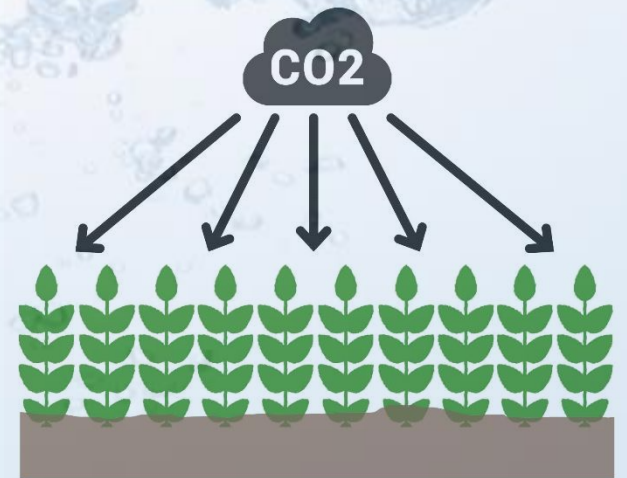
**Increased production also increases agricultural incomes with associated positive social impacts.**



# SOLUTIONS

FOOD/ENERGY/WATER

**Higher production increases the rate of CO<sub>2</sub> absorption by crops positively influencing the environment.**



# SOLUTIONS

FOOD/ENERGY/WATER

**Increased production reduces the need for new arable land and associated deforestation.**



If the deforestation of the Amazon Rainforest continues at its present rate, it is estimated that 27% of the Amazon Biome will be without trees by 2030.

Source: World Wildlife Fund

# SOLUTIONS

FOOD/ENERGY/WATER

**Greater storage during high rainfall  
Provides an irrigation  
buffer and water retention  
to reduce flooding.**

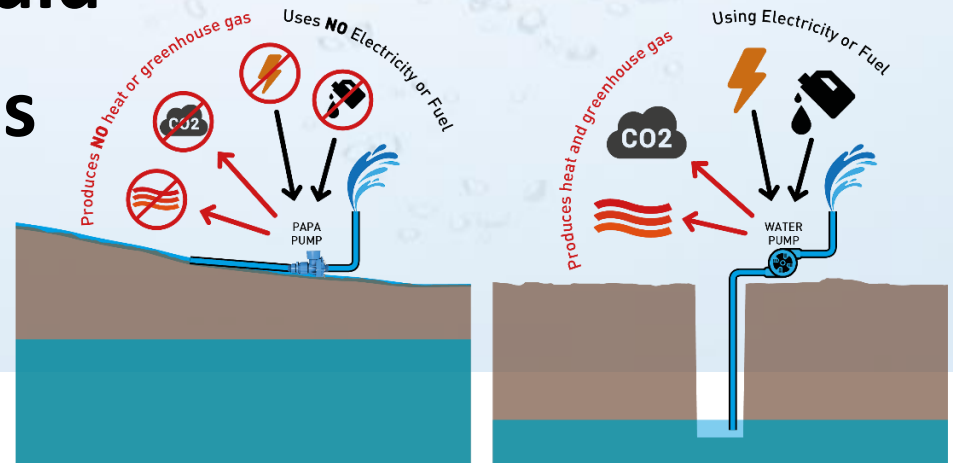




# SOLUTIONS

FOOD/ENERGY/WATER

Moving and storing water without using electricity or fuels would reduce greenhouse gas emissions and heat.



Is there an

# ENABLING TECHNOLOGY

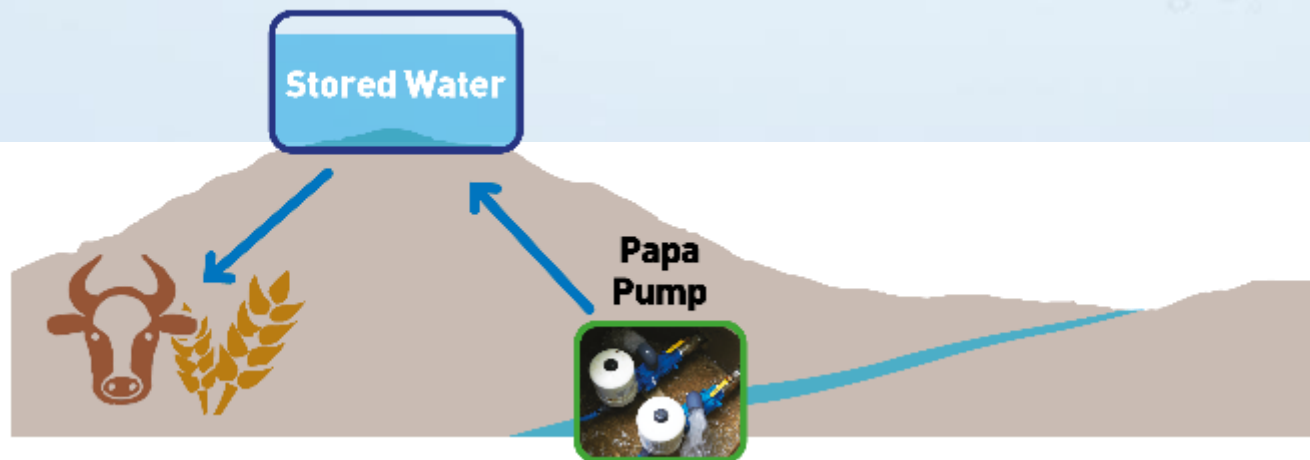
to achieve these solutions?

# YES!

# ENABLING TECHNOLOGY

FOOD/ENERGY/WATER

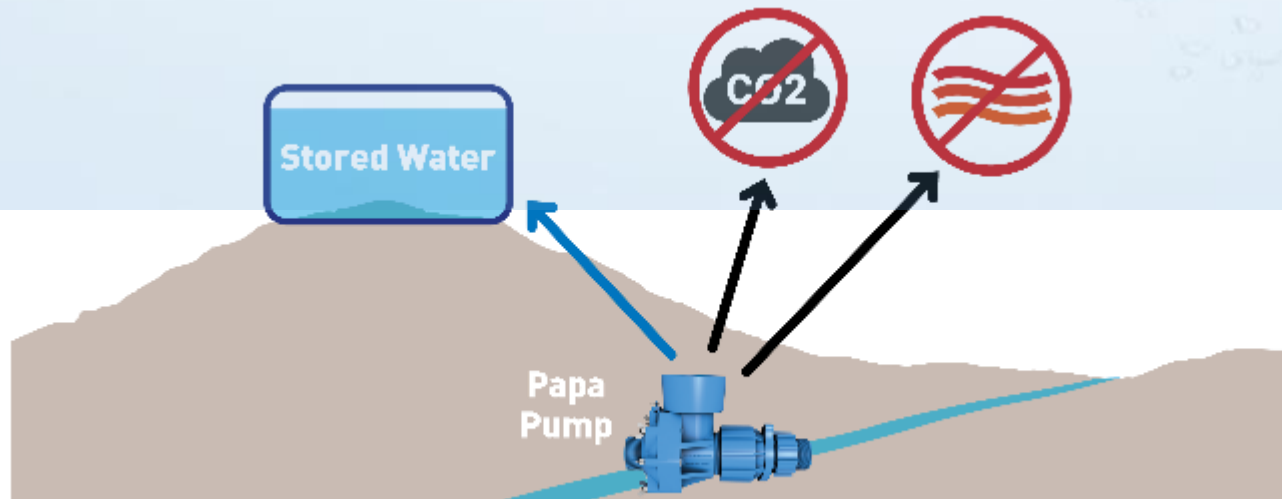
Pumping using only the power of flowing water can be used to water livestock, irrigate crops – as well as many other uses.



# ENABLING TECHNOLOGY

FOOD/ENERGY/WATER

**Pumps propelled by water do not produce any greenhouse emissions or heat.**



# ENABLING TECHNOLOGY

FOOD/ENERGY/WATER

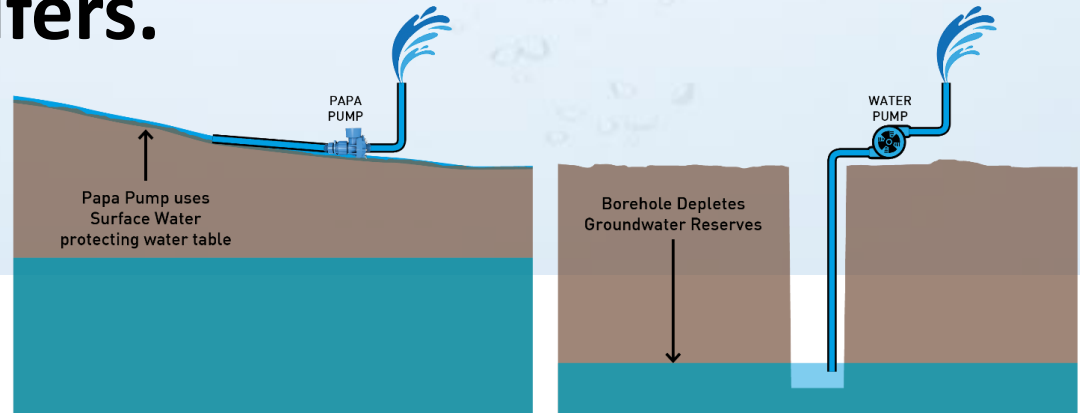
**This additional water pumping and storage can reduce damaging soil erosion and flooding.**



# ENABLING TECHNOLOGY

FOOD/ENERGY/WATER

**Greater utilisation of natural water flows reduce the need to abstract from diminishing groundwater aquifers.**



# ENABLING TECHNOLOGY

FOOD/ENERGY/WATER

**Stored water can be used for on-demand hydro power to offset greenhouse gases and the costs of alternative Fuel powered generators.**



# ENABLING TECHNOLOGY

FOOD/ENERGY/WATER

**Cost savings generated by not using fuels can be utilised to excavate or install water storage reservoirs and tanks.**

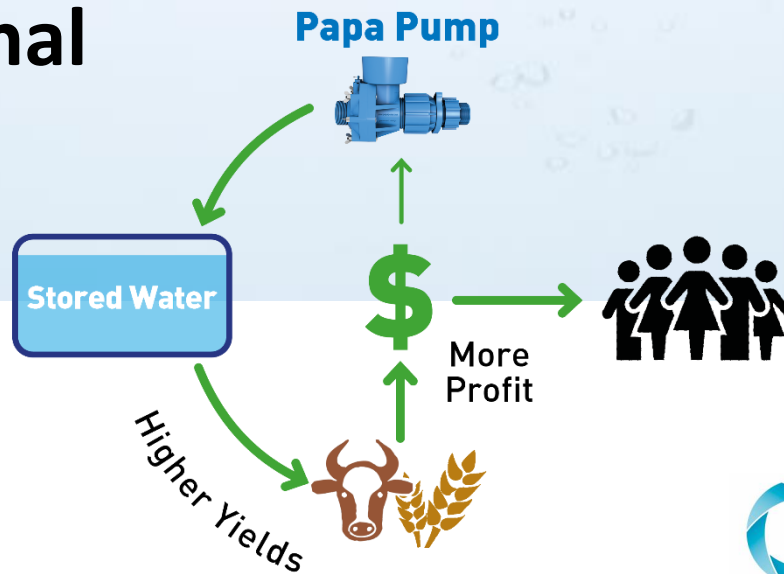




# ENABLING TECHNOLOGY

FOOD/ENERGY/WATER

Communities can produce more food at lower cost thereby improving net incomes and providing additional social impacts.



# ENABLING TECHNOLOGY

FOOD/ENERGY/WATER

**Water storage reservoirs can also be utilised to provide valuable additional food and incomes by facilitating aquaculture.**





# delivering our future Food/Energy/Water Solutions

**Papa Pump**



Each pump delivers up to  
26,000 litres  
per day

without using any fuel  
or electricity.

**Venturo**



Each pump delivers up to  
3,240,000 litres  
per day

without using any fuel  
or electricity.