Oryana Ventures - an Introduction

The water crisis is real

Water Stress by Country: 2040

ratio of withdrawals
to supply

- Low (< 10%)
- Low to medium (10-20%)
- Medium to high (20-40%)
- High (40-80%)
- Extremely high (> 80%)

Source: UN-Water 2021

Baseline Water Stress
(withdrawals/available supply)

- Low (<10%)
- Low to Medium (10-20%)
- Medium to High (20-40%)
- High (40-80%)
- Extremely High (>80%)
- Arid & Low Water Use

WORLD RESOURCES INSTITUTE
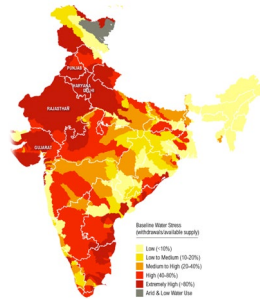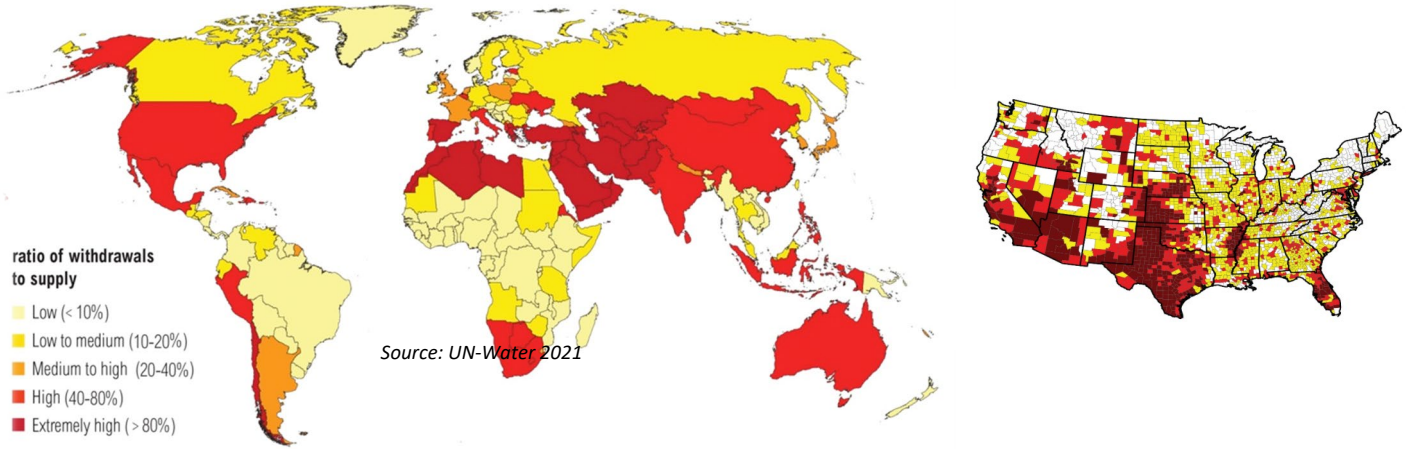
- **2.3 billion people live in water-stressed countries,**

- **Of this 733 million live in high and critically water-stressed countries.**

"Russia is blessed with Water"... but

"Over the past 15 years, the water quality of Kamchatka river has been assessed as 'polluted' or 'slightly polluted'"

"Wastewater from mining, mining and metallurgical industries has a negative impact on water bodies of the Murmansk region"
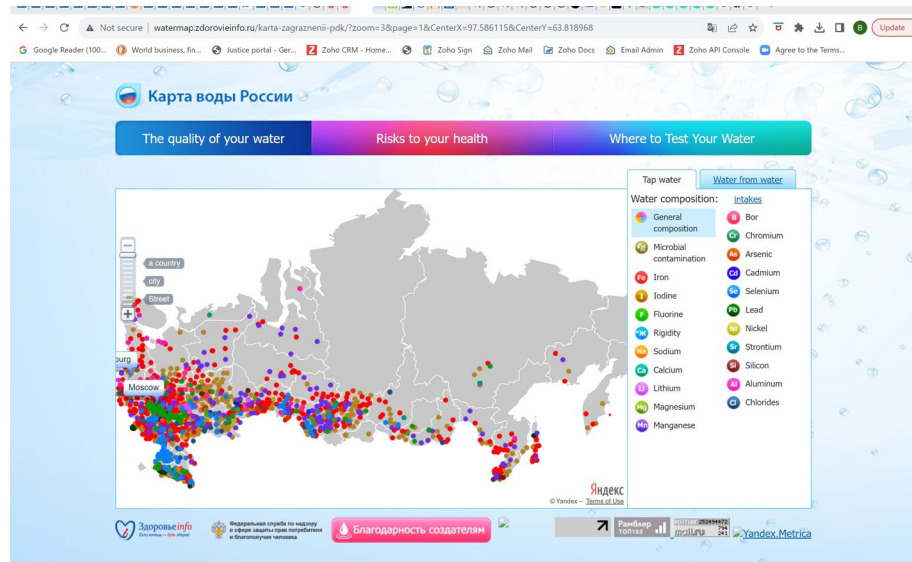
"Pechenga river water remains the most polluted for many years"

"The main sources of pollution of water bodies of the Volkhov basin are wastewater from numerous enterprises and organizations in the Novgorod and Leningrad regions, and The quality of river water over many years ranged from "polluted" to "dirty""

"Water in the Upper Volga reservoirs in 2008-2018 was assessed as "polluted" "

Source: State report "On the state and protection of the Russian environment" - Ministry of Natural Resources of Russia;
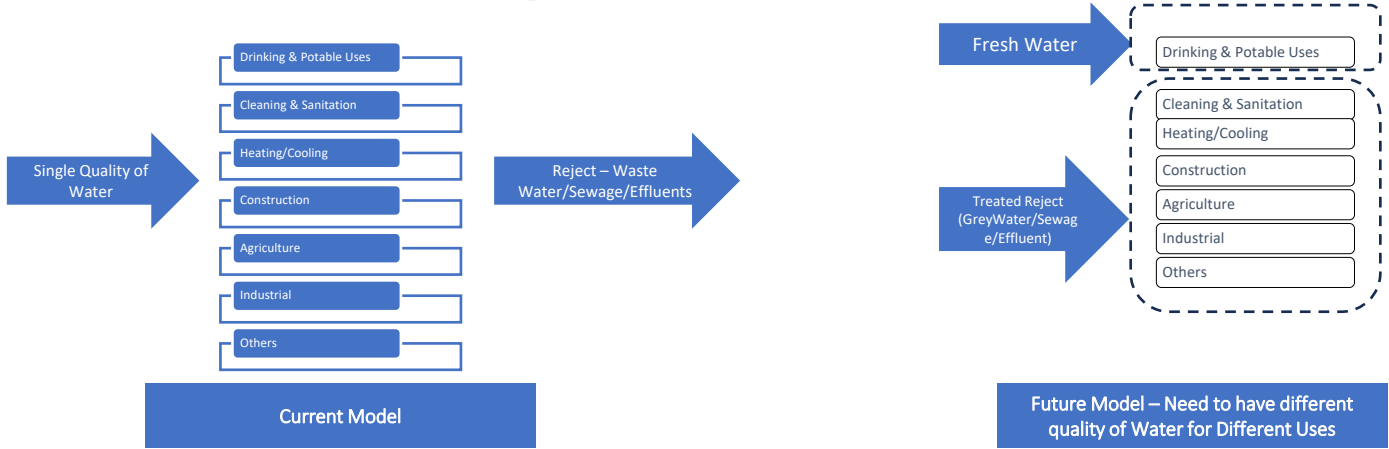
- *Water Pollution remains a major issue for availability of quality water*

- *Water is plenty – but unequal spread of water is an issue. Some regions have high availability, whereas*

- *More Recycling of Treated Water is required*

- *From an Industrial Perspective – move from Treatment to Resource Recovery*

Need to enable Planned Circular Economy

"You don't need fresh/ drinking water for all needs"

Current Model (left flow):

Single Quality of Water →

- Drinking & Potable Uses
- Cleaning & Sanitation
- Heating/Cooling
- Construction
- Agriculture
- Industrial
- Others

→ Reject – Waste Water/Sewage/Effluents

Current Model

Future Model (right flow):

Fresh Water →
- Drinking & Potable Uses

Treated Reject (GreyWater/Sewage/Effluent) →
- Cleaning & Sanitation
- Heating/Cooling
- Construction
- Agriculture
- Industrial
- Others

Future Model – Need to have different quality of Water for Different Uses

"All water is re-used, there is no new Water"

"Israel recycles 80% of its sewage"

"95% of water that enters the home goes down the drain daily"

"Singapore's wastewater recycling plant uses advanced membrane techniques to produce water that is clean enough to be bottled as drinking water and used in manufacturing beer"

"2019, Chennai hit DAY ZERO. To set up new plants to treat 20% of Sewage"

4

Sources, Availability and Infrastructure – A quick Analysis

Sources of Water- →	Fresh Water/ Ground Water	Sea Water	Treated Effluent, Grey Water and Sewage
Availability	Depleted Sources	Abundantly Available, but relatively Expensive Largely limited to coastal areas	Under utilized
Infrastructure Status	Crumbling outdated infra in urban areas combined with poor & inadequate coverage in non-urban/rural areas	Inadequate	Inadequate
Prognosis	• Infrastructure build is likely in Rural Centres (example – JJM in India) • Upgradation based on AI/Data in Urban centers (Non Revenue Water) • Technology for new sources of water • Policy initiatives over Watershed Mgmt, Rainwater Harvesting, River Management etc are crucial.	• Linked intrinsically to energy costs and advancement in Treatment technologies. • Infrastructure (Desal) build out likely in suitable areas.	• Use of treated water for non-potable uses is a great way to meet demand. • Infra for recycling is poor – needs build out • Demand for greater decentralized plants

About Oryana

Oryana Ventures is an Investment Company managed by Badri Narayanan and Investments from a Singaporean Family (Financial Investor – 60%).

Oryana's unique structure allows greater flexibility in dealing with long term investments without time constraints.

Our strategy is to acquire controlling stakes in Mid-market companies, preferably distressed presenting unique turn around opportunities and potential for higher returns.

Oryana acquired Jaldhara Technologies ("GreyWater") in 2017

"We are a technology based organization focused on building a platform that deliver relevant, sophisticated and technologically advanced environment management products and solutions that exceeds the expectation of our clients".

Our Solutions – Grey Water

GREYWATER

Water & Waste Water Treatment	Pre Treatment Systems	De-Mineralising Systems	Ultrapure Systems	UF/RO Systems
	Effluent Treatment Systems	Sewage Treatment Systems	Desalination Systems	ZLD Systems
Solid Waste Management	Solid Waste Management		Waste to Energy Systems	

EPC	BOOT / BOO / PPP	O & M Services	Metering & Monitoring Services	De-Centralised Systems

Our Product Offering – Grey Water

GREYWATER

Sewage & Waste Water Treartment

Grewa-R-S
- Single tank, SBR based, sewage and wastewater treatment product
- Capacity: 10 - 10,000 kld

Grewa-R
- Single tank SBR based sewage / wastewater treatment
- Capacity: 10 – 10,000 kld

Grewa-RR
- Single tank SBR based sewage treatment systems for community toilets
- Capacity: 5 – 30 kld

Grewa-B
- MBBR based sewage / wastewater treatment
- Capacity: 10 – 10,000 kld

Water Treatment

Grewa-O
- Compact, reverse osmosis module

Grewa-U
- Ultrafiltration system for tertiary treatment

Add-on Modules

- Grewa-F (Multi-grade sand filter)
- Grewa-S (Softener)
- Grewa-C (Granular activated carbon)
- O3Nator – Ozone Systems

Electronics & IOT

- Smart Water Meters
- Smart Technology for Remote O&M
- Smart Lighting

Solid Waste Management

- Grewa-K (Commercial Kitchen Waste Crusher)
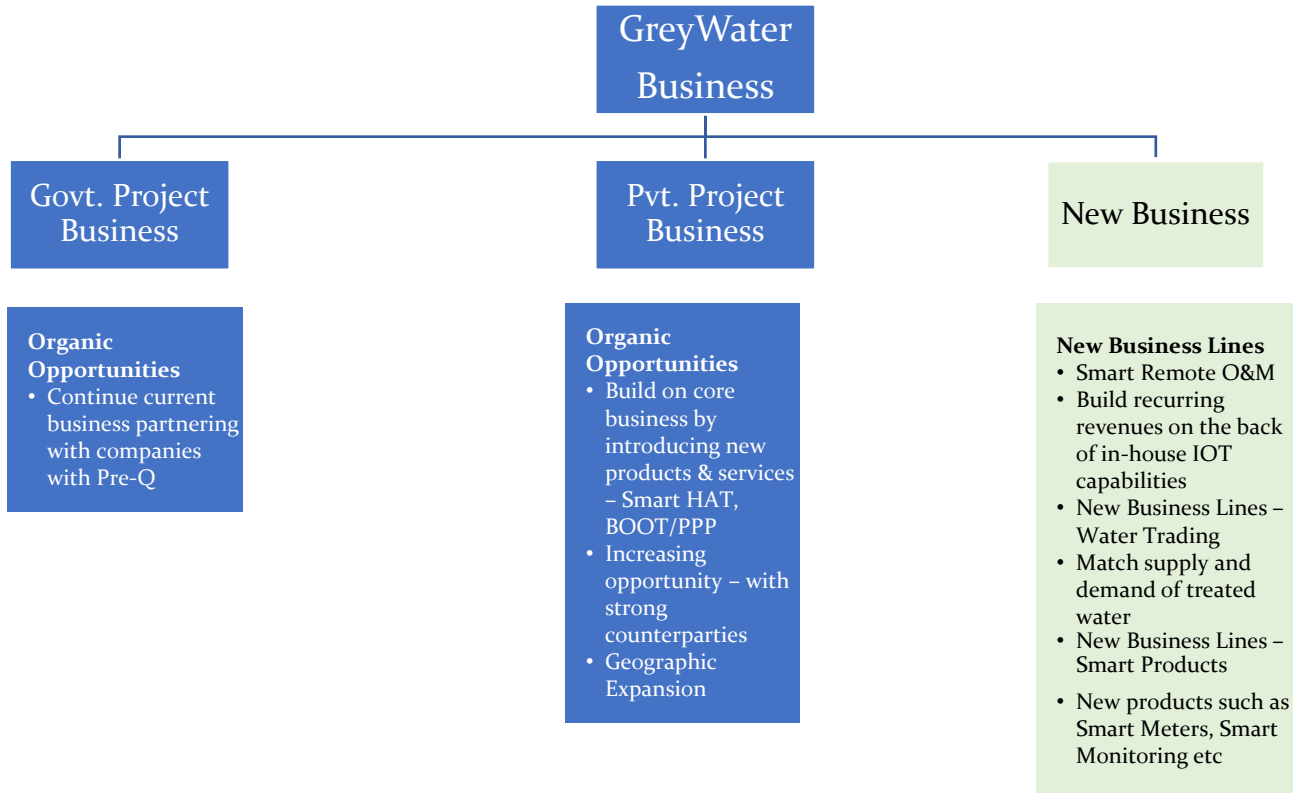- Grewa-KS (SinkMaster)

Water Business -Our Major Client List

GreyWater – Presence in India

GREYWATER

Delhi
Sales Office

Assam
Project Office

Bihar
Project Office

Gandhinagar
Project Office

Mumbai
Jaldhara Reg. Office

Pune
Engineering Office

Hyderabad
Sales Office

Bangalore
Oryana Reg. Office

Chennai
Head Office

Kochi
IOT Development team

Growth Strategy for Water Business

GREYWATER

GreyWater Business

Govt. Project Business

Pvt. Project Business

New Business

Organic Opportunities
- Continue current business partnering with companies with Pre-Q

Organic Opportunities
- Build on core business by introducing new products & services – Smart HAT, BOOT/PPP
- Increasing opportunity – with strong counterparties
- Geographic Expansion

New Business Lines
- Smart Remote O&M
- Build recurring revenues on the back of in-house IOT capabilities
- New Business Lines – Water Trading
- Match supply and demand of treated water
- New Business Lines – Smart Products
- New products such as Smart Meters, Smart Monitoring etc

Water Business – Milestones post acquisition

Order Book
Increased orderbook significantly, which will be executed over next 3-4 years

1

Strategic Focus on Digital Water
2 Minority Investments in IOT platform with a focused strategy to increase stake to 75%+ over next 3 years

Team
Built a successful and well qualified water team around the core team of Jaldhara. Key hires include CFO, Sales team, Proposal & Products teams.

3

Strong Transparent Culture
4 Built a strong corporate governance culture, with strong Board presence and a strong auditor - Sharp & Tannan

Processes for Growth
Entire Water business running on Cloud architecture with a complete focus on Enterprise architecture. Backend for growth

5

New Business Lines

Product Development Philosophy

Innovative Products

-taking into account human behaviour

Decentralised Solutions

-Can be implemented both at a large and small scale

Ecosystem

-Can be scaled up through a business model
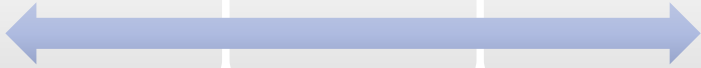
New Business Lines

I. Smart IOT based Products
- Smart Remote O&M
- Smart Meters, Smart Lighting, Remote Monitoring etc

II. Agriculture 4.0 – Smart Agriculture
- AI, ML and Data Analytics integrated with IOT to develop Agriculture 4.0

New Business Line - Smart IOT Products

Digital Water - A Partnership Approach

- *Depending on the Product – either we manufacture in-house, or we have partnerships based on equity holdings – full service provider in the Digital Water space*

Smart Meters – Water Metering

Unique Selling Proposition

Our solutions work on the combination of following techniques.

- A RF based MESH network to connect various IoT enabled utilities and transfer the data to a local gateway. This eliminates the need to have wired connections.

- A cloud based data analytic platform and decision support systems, that could be customized to support various domains.

Our Models

- **Type A** smart meters with remote monitoring and billing for individual houses, villas etc.

- **Type B** smart meters with monitoring, billing and local display for Commercial buildings, hospitals, institutions.

- **Type C** smart meters with RF mesh for Apartments and residential communities.

- **Type D** smart meters with multiple inputs for centralized water management

Smart Metering

Data Analytic Platform
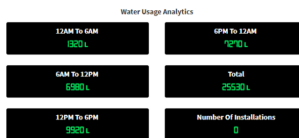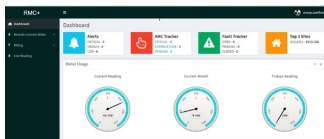
Salient Features

- RF based mesh network to interconnect water meters.
- Adaptable to work with multiple input lines to apartments
- Can be appended to existing meters
- Real-time connectivity without internet/GPRS
- No huge monthly recurring charges
- Cloud based software to monitor from any part of world
- Detailed report for cumulative analysis of water consumption
- Reduce water consumption at least by 35%.

A typical installation would have

- A smart RF enabled water meter that could be connected to each unit
- Appropriate distributed piping method to attach and prepare the delivery lines to each unit. It can be also done on the terrace of a unit itself. This reduces maintenance cost in future.
- A GPRS based data communication device to transfer the data to cloud data centers.
- Remote connectivity to interrupt any attempts to tamper or malpractice of any kind and to address leakage in any unit.
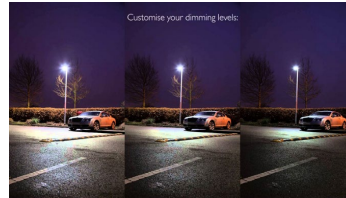
Technology & Infrastructure

IoT enabled Utilities in a RF Mesh based network
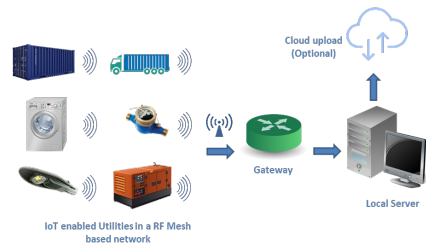
Smart Lighting

A network of street lights that can communicate from pole to pole and can behave intelligently with remote instructions

- Smart LED street lighting with RF Mesh control
- Priority based light intensity adjustments based on intelligent algorithm
- Power up and power down at the right time
- Requirements based programmable lighting adjustments and remote assets listing
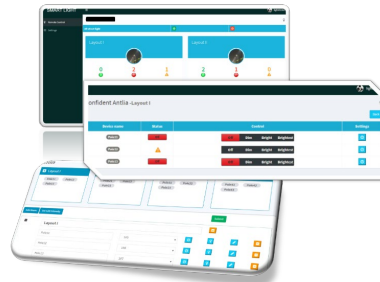- Software tools to monitor Energy Consumption, Operating status etc.

Customise your dimming levels:

The intelligent power saving algorithm controls the brightness level according to climate situations, day light intensity and time of the day
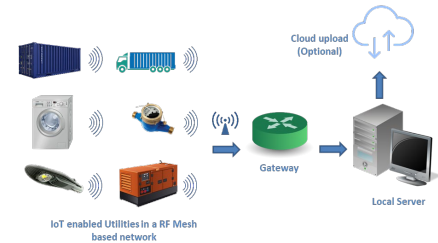
Features

- Automated dusk to dawn operation

- Wireless RF mesh network to adjust the intensity of each light.

- The intelligent power saving algorithm controls the brightness level according to climate situations, day light intensity and time of the day

- Control the lighting for layouts or streets from a web-based platform.

- Define timetable or profile to manage the behavior of each light and group the lights based on profile.

Upto 43 % Savings in Energy Costs

Cloud Based Platform

Technology & Infrastructure

Cloud upload (Optional)

Gateway

Local Server

IoT enabled Utilities in a RF Mesh based network

New Business Line - Agriculture 4.0

ORYANA

Oryana Technologies

We are close to the point of no return

Earth has lost a third of arable land last 40 years. We are not at tipping point yet, but we need to do something about it.

Soil Erosion

Every 5 seconds, we are losing 1 soccer field of arable land due to erosion.

Drought

Every minute, we lose 23 hectares of arable land worldwide to drought

Use of pesticides

Prolonged usage of pesticides Has depleted soil quality & completely bleached the nutrients

Climate change

For every 1°C change in temperature, crop yield declines by whopping 4%

By 2050:

Population shall reach 10 billion & resources will remain limited

Food demand is expected to increase from 68% to 90%

Agriculture produce must increase by 50% to eradicate food poverty

Continued fall in share of working age population employed in agriculture will come down to 9% from the present 22%

Our Solutions – Sustainable Smart Farms

ORYANA
Oryana Technologies

INTELLIGENT DOSER & AFD

Intelligent nutrient dosing based on feedback from automated visual inspection Adaptive Flood & Drain Pots (AFD) for farming

FARMING ROVER

Visual inspection of farm & plants Provides feedback to dosers Automated pesticide & foliar spray Reduces the work load of agronomists.

INTELLIGENT DOSER & AFDP

FARMING ROVERS
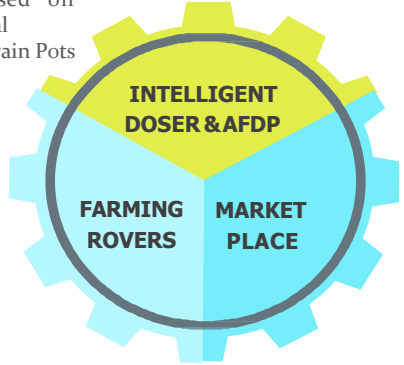
MARKET PLACE

MARKET PLACE

Addressing the gap between market price & production cost with, Green
premium –points based on production quality water premium – points based on water savings

Optimize nutrient composition and fertigation cycles to improve yield & reduce the nutrient wastage

AI & M L will help enhance productivity by managing the CEA components

Reducing food wastage by matching demand & supply. Integrate crop cycles to meet seasonal demand.

Improve yields with the help of robotics & computer vision. Reduce human intervention using farming rovers.

Pesticide-free yields
Crop residue management to produce bio fertilizers & bio energy

Our Technology

Adaptive flood & draining

- Regulates water flow & timing maintains ph level, water level & holding interval facilitates reuse of water
- Simplifies the installation and maintenance

Green Rewards & eSales platform

- Blockchain based green rewards to support farmers
- eSales platform to connect buyers & producers

Intelligent nutrient dozer

- Automate macro & micro nutrient dosing
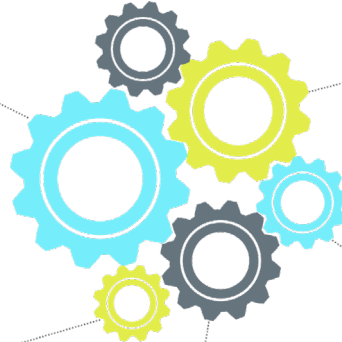- Optimises supply based On plant, stages of growth, climate & location

Climate monitoring & control

- Monitors light intensity, temperature, humidity, water flow, water temperature etc
- Interphase to interact with control systems

AI & Robotics

- Feed back system for doser
- Monitors plant growth using rover
- Optimise nutrient dosing
- Monitor pest attack & deceases

Our Proprietary Technology - Adaptive Flood & Drain System (AFD)

- Improved soil-less farming technique **developed** by **us**

- Control the water input/output, nutrient level, water holding interval & circulation time using AI driven systems

- Simplify the system installation & maintenance

- Flexible modular pots to reduces capital & operating costs Saves water & electricity compared to other techniques Farming Robots for visual inspection & growth management

Water Business Team

Shalabh Rawat – GM South & West

Shalabh is in charge of the sales and operations for the southern and western region

He has had notable success in achieving revenue, profit and business growth objectives within turnaround & rapidly changing business environment.

He holds an MBA from Pune University

Deepak Kumar – GM North & East

Deepak is in charge of the Sales and operations in the Northern region.

He has significant experience in establishing, sustaining and growing business with new customer, OEMs , EPC contractors.

He holds an MBA from Delhi University.

Aditya Krishnakumar – GM New Business

Aditya Krishnakumar is responsible for the deployment of SMART technologies and solutions, in the built-environment.

He has extensive national & international experience in Strategic Project Management, Stakeholder Engagement and Business Development initiatives

He holds a Masters in Chemical Engineering from University of Southern California, Los Angeles

Badri Narayanan – Founder & MD

Badri till recently was a **Senior Investment Professional** at the **Oman Investment Fund**, the Sovereign Wealth Fund of Oman. Prior to his role at the OIF, Badri held Positions with the **Citigroup**.

During his 18 years' experience, Badri has invested in various sectors, and sat on the Board of 6 companies in Singapore, Vietnam, UK, India and Australia for more than 10 years. During this period, he has also setup a Green Field Projects in Oman.

Badri has completed his CFA Level III exams, MBA from the Coventry University, UK, and his B.Com from RKM Vivekananda College, Chennai.

Badri has now founded **Oryana Ventures Private Limited**, and has raised capital to invest in the Water Sector in India.

Mentors

<u>Roger KP Chia – Investor & Mentor</u>

- Roger Chia Kim Piow is the Founder and Chairman of the Rotary Group of Companies, Singapore.
- With more than 50 years of experience, he is instrumental in developing the Group into a multinational turnkey engineering design and construction group.
- His impeccable leadership led Rotary Engineering to be prized Enterprise of the Year at the Singapore Business Award 2008.
- He was awarded Chief Executive Officer of the Year at the Singapore Corporate Awards 2009, Businessman of the Year at the Singapore Business Awards 2011, and conferred the Public Service Medal by the President of Singapore in 2010 in recognition of his community services.
- Roger KP Chia Family is a 60% shareholder of OVPL.

S Gopal – Mentor & Board Member

- Gopal retired as Managing Director of Chemplast Sanmar Ltd. and head of all Chemical Businesses of Sanmar Group in India.
- Prior to the leadership role in Chemicals, Gopal was responsible for 5 Joint Ventures for sophisticated light engineering products catering to Oil & Gas, Power, Refinery, Fertiliser, Nuclear, Chemical etc. industry segments.
- S Gopal holds an Engineering Degree in Electronics from IIT Madras and an MBA from IIM, Ahmedabad. Over a 40 plus years span, he has held leadership positions in Marketing, Projects and General Management. Gopal has set up Green Field and Brown Field Projects in different Industry Segments in India and abroad.
- Gopal was Regional Chairman - South of Indian Chemical Council, President of Madras Management Association and President of IIT Alumni Center - . an initiative across all IIT's for fostering collaboration between alumni, academia and industry. He has served on many State and National Committees.
- He is active in TiE Chennai and in IIT Alumni activities including the IIT Madras Incubation Centre. He is passionate about supporting startups and mentors a few startups in IIT Madras Incubation Centre.

Oryana Ventures Private Limited
ISO 9001:2015 certified company

Registered Office – Oryana Ventures Private Limited

Prakruthi Crystal No 4144, 4th Floor, Giri Nagar 4th Phase, Bengaluru 560 085

www.oryana.in

Chennai Office

No 47, 4th Main Road,
Gandhi Nagar,
Adyar, Chennai 600 020

Pune Office

No 5, Swami Vivekanand
Society, Aundh, Pune 411 045

Mumbai Office

3B/38, Highland Corporate
Centre, Kapurbawadi, Thane
400 607

Gujarat Office

Plot No B/179, Sector 25,
GIDC, Gandhi Nagar, Gujarat