

# HELPING AFRICA GROW MORE WITH LESS

**INNOVATION IN CLIMATE SMART AGRICULTURE**  
**Aid & International Development Forum Africa Summit**

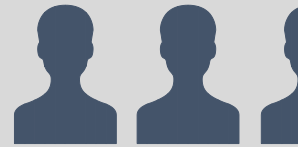
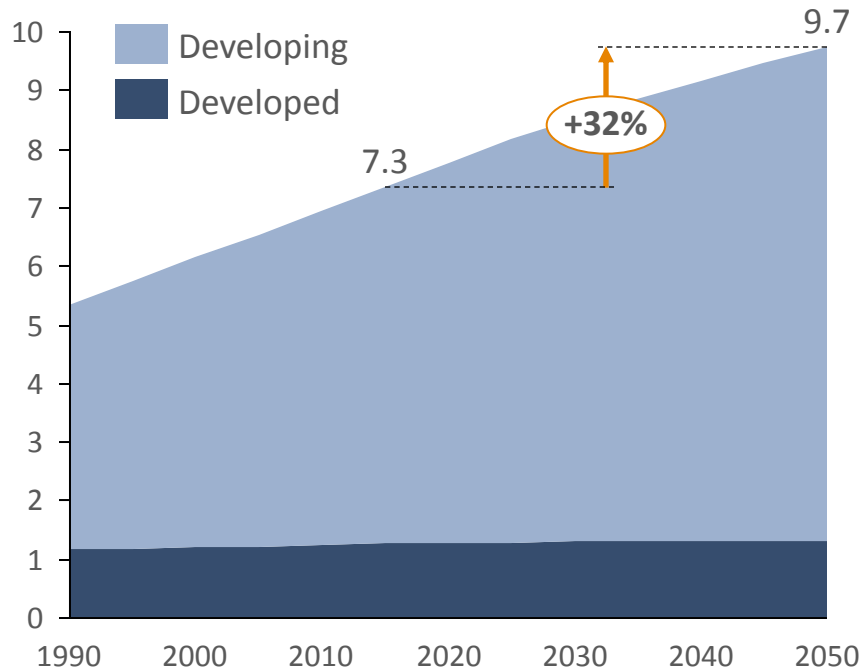
**February 28<sup>th</sup>, 2017, Nairobi, Kenya**

**Naty Barak | Chief Sustainability Officer**



# Demand for food

Global population forecast 2050 (in B)



**+2.4B** people (+32%)



Urbanization will increase from 54% to  
**66% (+2.5B people)**



Calories consumption per capita will  
increase from 2950 to **3130**

**Changes in diet:**

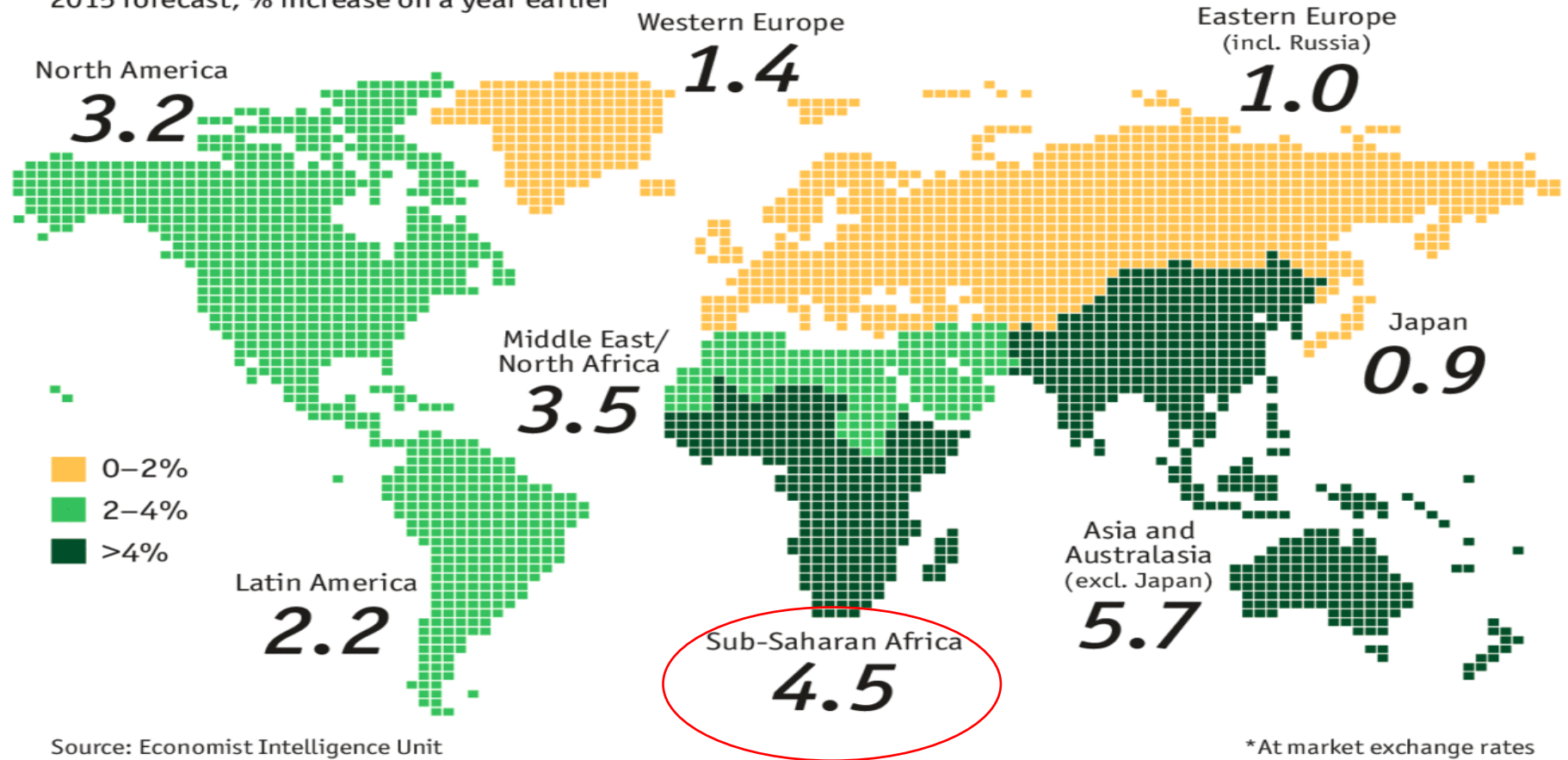
- Shift to vegetables & fruits
- More livestock products (meat, dairy)

**To feed the world, food production will need to increase by >50% till 2050  
Almost all the demand growth will come from Africa and Asia**

# Developing Countries Lead World's Growth

## World GDP\*

2015 forecast, % increase on a year earlier

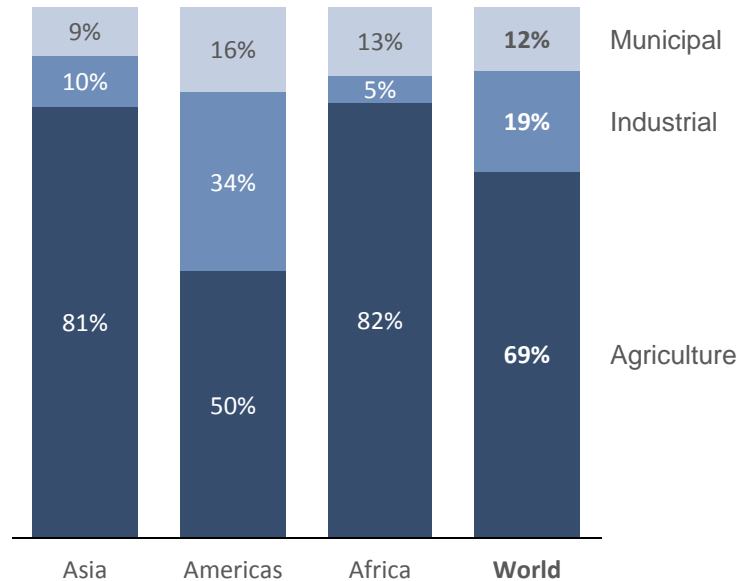


Source: Economist Intelligence Unit

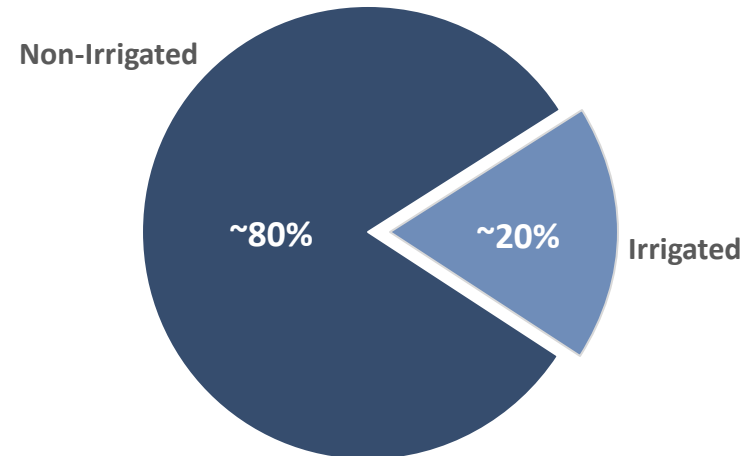
[Economist.com/graphicdetail](http://Economist.com/graphicdetail)

# Water usage by agriculture

**70% of global water withdrawal  
is used in agriculture**



**Which is used to irrigate only ~20%  
of the global arable land**



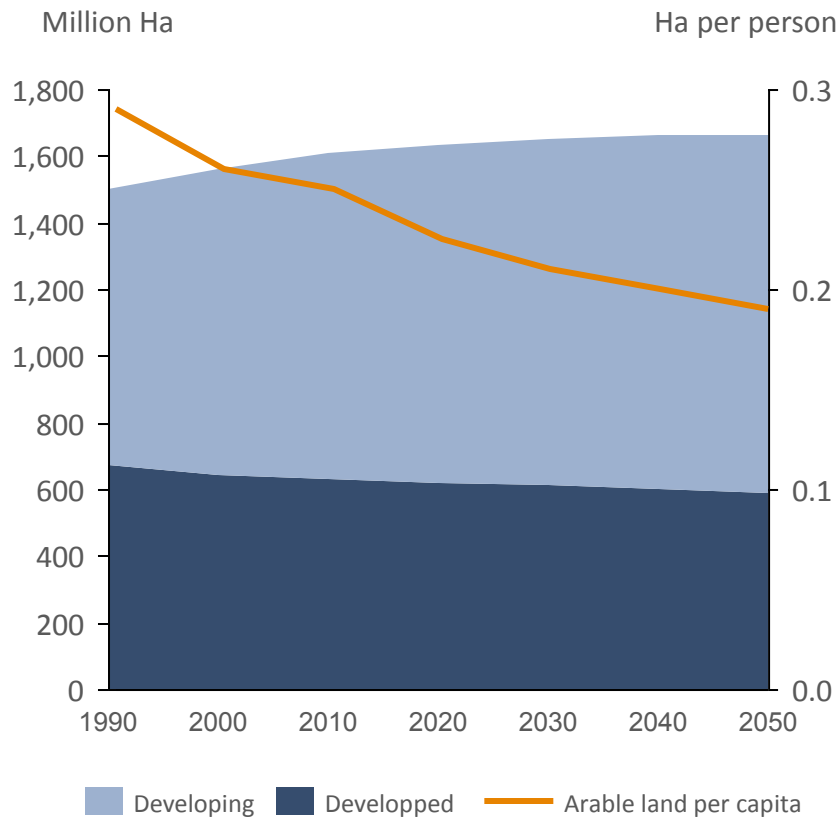
**Irrigated agriculture is more efficient –  
Despite only 20% of the land  
it is producing 40% of the food**

**Water efficient solutions are required to save water in  
agriculture and to enable to irrigate more land and grow more**



# Limited supply factors - Scarcity of arable land and water

## Global arable land forecast



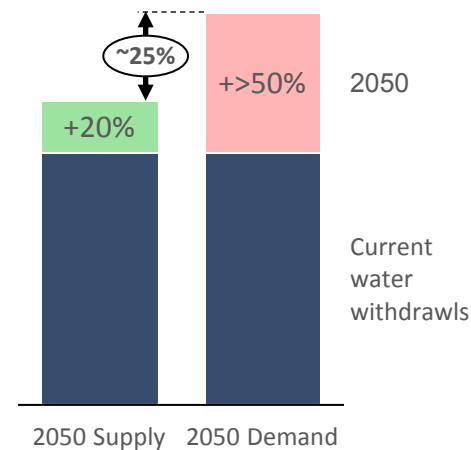
## Water demand and supply forecast

### Demand:

- Demand is expected to **grow by over 50%**

### Supply:

- Supply is expected to **grow by 20%**
- Fresh water **unevenly distributed** - many areas are under severe water scarcity
- 20% of global groundwater **already overexploited**



### By 2050:

**4 Billion people** are projected to live under **severe water stress**

# NETAFIM - 50 YEARS OF SHAPING THE FUTURE OF AGRICULTURE

## Founded in 1965 by Farmers for Farmers

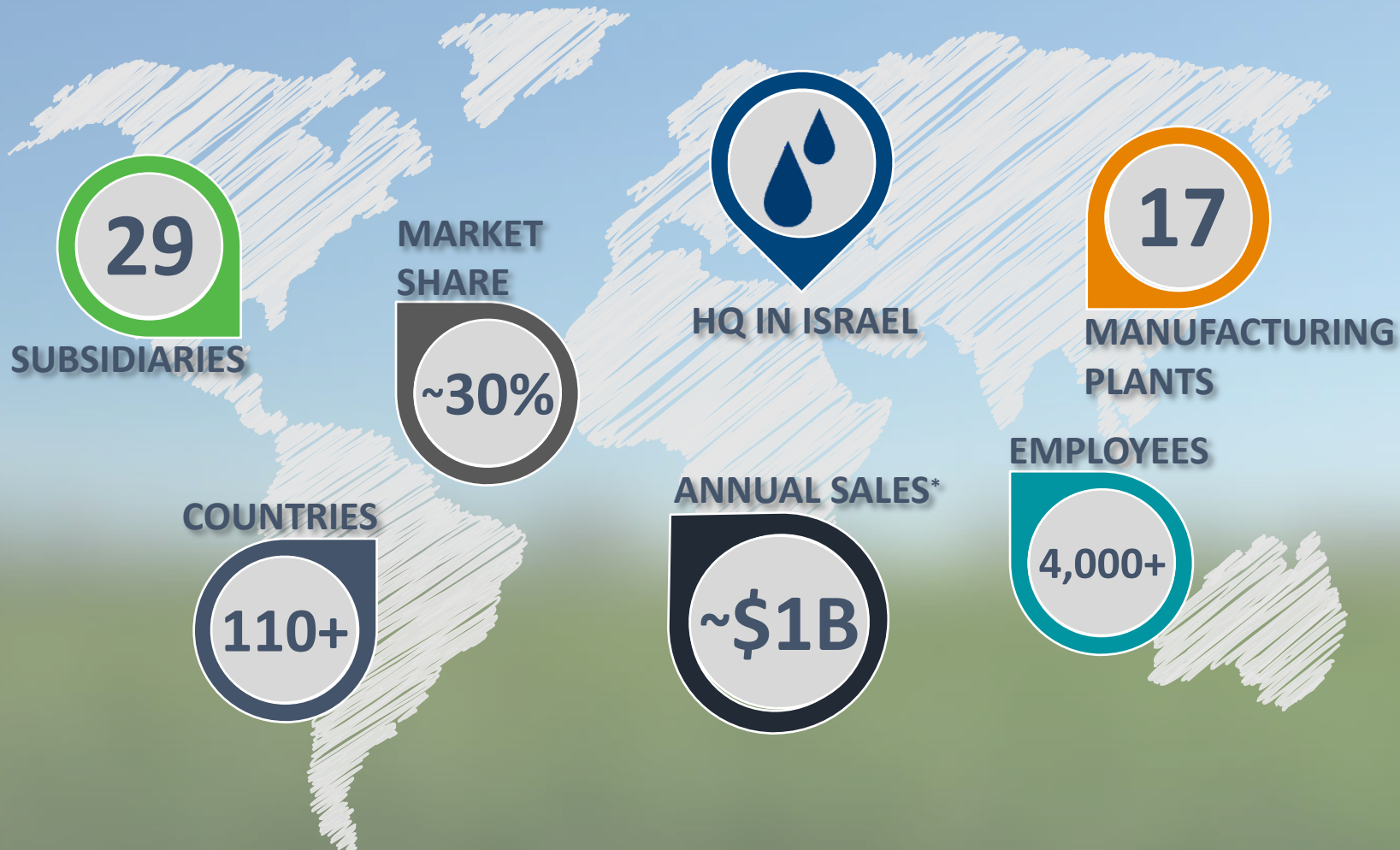
In the desert area of kibbutz Hatzerim, which suffered from a severe lack of water, introducing Drip Irrigation to the world



## The Largest Irrigation Company in the world

Leading the Drip Irrigation revolution,  
Offering end-to-end smart irrigation  
solutions

# GLOBAL LEADER WITH BROAD GEOGRAPHICAL COVERAGE



\* Estimate for 2016



# DRIP IRRIGATION

## IRRIGATE THE PLANT, NOT THE SOIL

- Optimizes moisture and aeration conditions
- Ensures precise quantities of water and nutrients directly to root zone
- Reduces release of gases to atmosphere due to imprecise fertilizer usage
- Increases yields and enhances productivity per unit of soil and water
- Modular design fits smallholder plots
- NUTRIGATION™





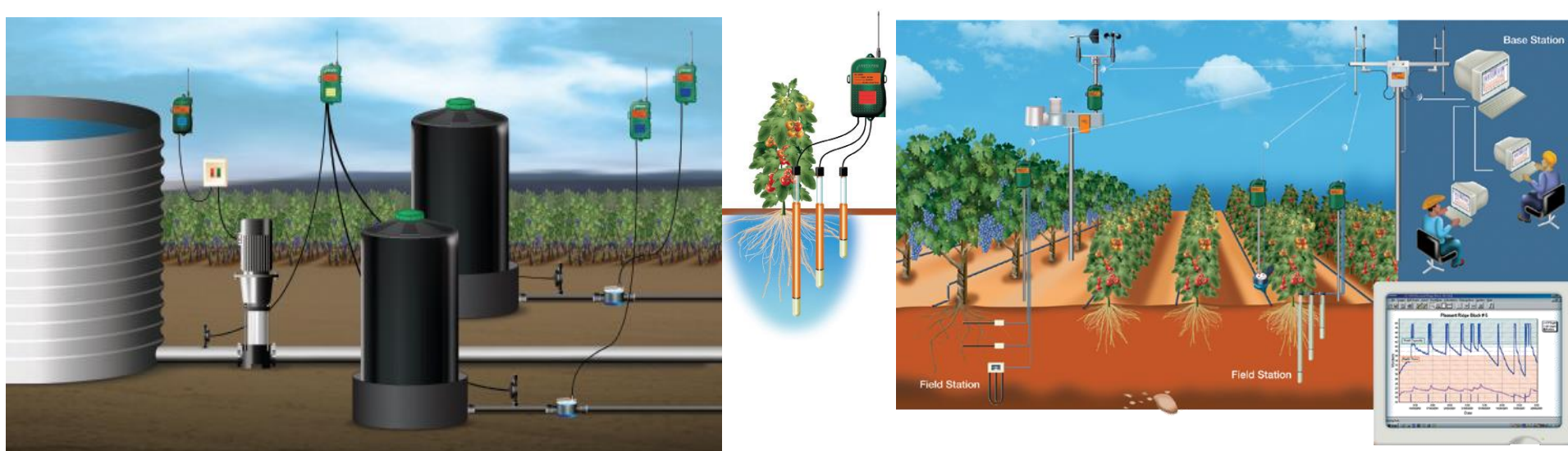
# THE COMPETING TECHNOLOGY: FLOOD IRRIGATION

- Water source depletion and contamination, excessive use of chemicals
- Greenhouse gases emitted to the environment, thereby boosting a warming trend



# CMT (CROP MANAGEMENT TECHNOLOGY)

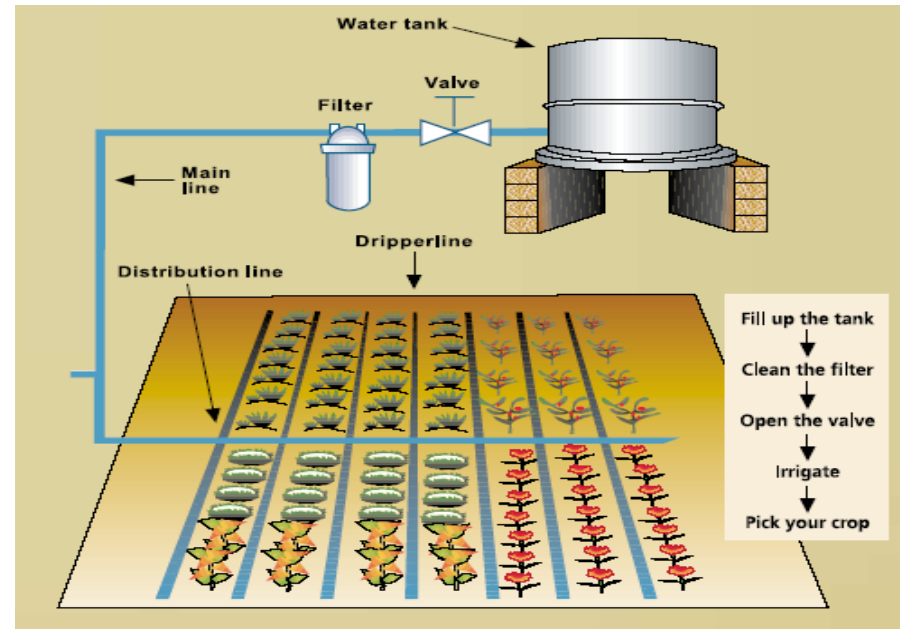
- A computerized decision support system for improved crop management.
- Enables the grower to track production from planting time to arrival on the supermarket shelf
- Integration of intelligent planning, managerial and maintenance practices to reach the best irrigation and fertigation processes
- Valuable, real-time field data result in solutions that benefit farmers, letting them better control and manage their crops
- A platform for management, water savings and increased yields





# FAMILY DRIP SYSTEM (FDS™)

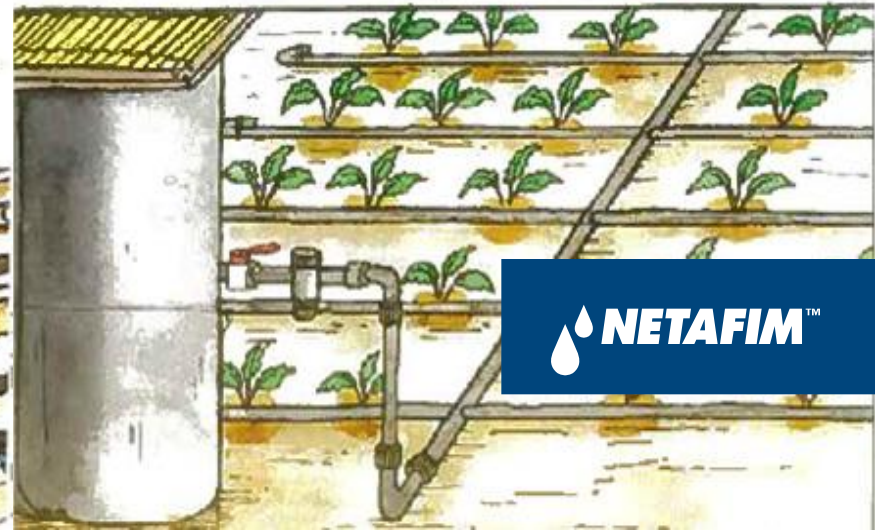
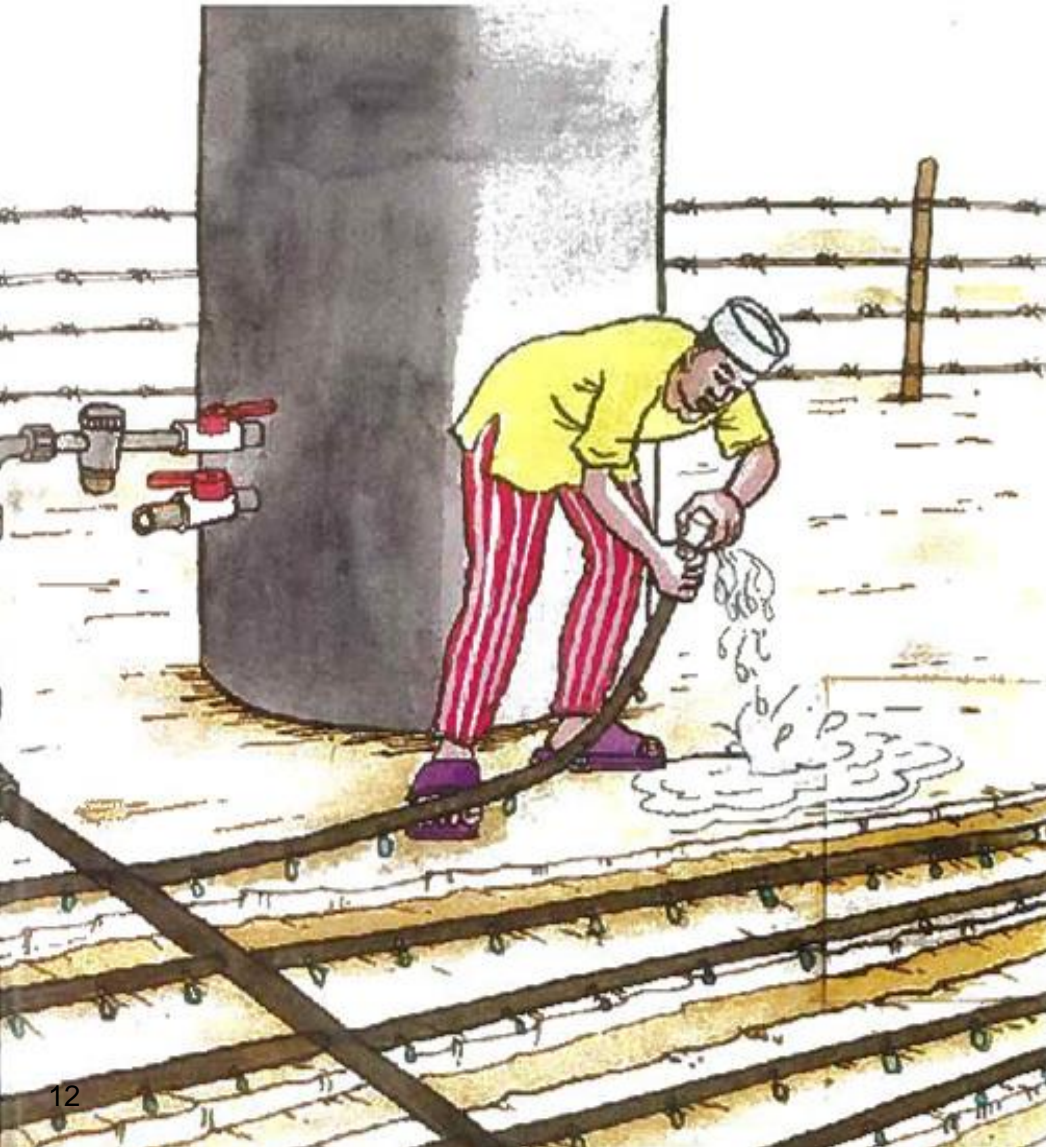
- Innovative, comprehensive & affordable gravity-based drip irrigation system developed for smallholders in developing countries
- Provides growers with the know-how and means for self-sufficient agricultural production
- Economical and easy to operate
- Maximizes productivity using existing resources
- Requires no additional investment in infrastructure
- Incorporates planning, training, technical and agronomic field support





# FAMILY DRIP SYSTEM (FDS™)

## EASY OPERATION & MAINTENANCE



# TRAINING & CAPACITY BUILDING

- Part of technology
- Essential for sustainable productivity
- More than just technology transfer; capacity building covers many areas
- Treating participants as an equal













# KITUI, KENYA

- Family Drip System (FDS™)
- Kamale and Wingoo water catchments zones in Nzambani Districts, the semi arid Eastern province of Kenya
- 200 poor small scale vegetable growers
- Mostly women and old people that cannot continue irrigating with buckets from the wells
- One local primary school
- A group of women HIV positive



# RESULTS

- 140% increase of harvested yield, 200% increased income
- 80% increase in vegetable growing capacity and knowledge (through pre-post learning training impact test tool)
- Other basic farm management related knowledge increased of 65% (through pre-post learning training impact test tool).
- Moving from bucket irrigation to drip saves around 60% water





# **BEST PRACTICE: FAMILY DRIP SYSTEM (FDS™)**

## **NIAMEY-NIGER, 900 FARMERS, 500 M<sup>2</sup> EACH, VEGETABLES**



# REVENUE & YIELD INCREASES – FDS™ NIGER

## COST OF EACH SYSTEM – US\$ 200

Crop	Conventional		FDS		Revenue Increase	
	Yield (Kg)	Revenue (\$)	Yield (Kg)	Revenue (\$)	%	\$
Tomatoes	2000	1215	7,200	6171	400	4956
Melons	2000	999	2950	1685	68	686
Eggplants	3000	1392	8150	4657	234	3265
Lettuce	2000	928	7800	5013	440	4085
Cabbage	3000	1070	11200	4800	348	3730

Yield and revenue from five vegetable species, each planted in a 500m<sup>2</sup> plot and irrigated (1) conventionally and (2) with a Family Drip System (FDS) in Niamey, Niger

Values are the total of two (June-Oct. and Nov.-April) production seasons per year

# BEST PRACTICE: SOUTH TO SOUTH SUGAR CANE, SWAZILAND

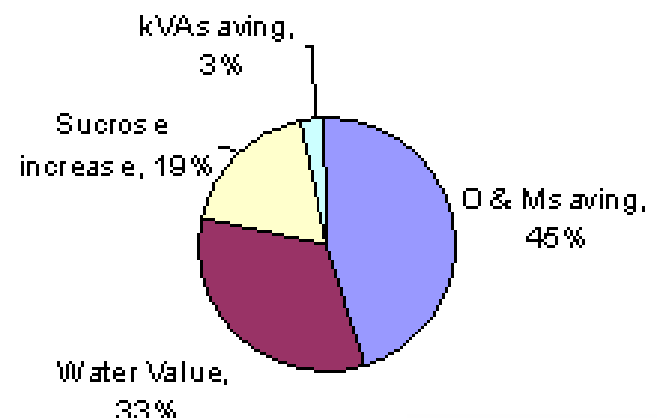




# BEST PRACTICE: SOUTH TO SOUTH SUGAR CANE, SWAZILAND

- 11,600 Ha. Sugar Cane at the Simunye Sugar Estate
- *A cost analysis of seven different irrigation options was undertaken and the one that offered the best return was conversion of the dragline sprinkler system to subsurface drip*
- *A post investment audit confirmed a sucrose increase of 15% and water saving of 22% compared to the sprinkler system, better than originally expected. Further analysis revealed even better figures*

Relative value of project benefits



# BEST PRACTICE: South to South SugarCane, Swaziland





# SDI (SUBSURFACE DRIP IRRIGATION) IN RICE

## (And other commodity crops...)

- Rice is the last frontier explored with drip irrigation
- Since 2005 we study the application of SDI on rice
- We see economical, agronomical, technical, environmental and health implications
- We currently experiment with the following topics: Suitability of varieties to SDI, plant population, Water quantities and irrigation scheduling, Nutrification, Weed and nematode control and more



# SUMMARY

- Climate Smart Agriculture is a must. Israeli innovations in water technology in general, and Netafim in particular, are in the forefront of providing answers to global challenges
- Drip irrigation touches most of the SDGs: Eliminating poverty and hunger, combating the negative effects of climate change, investing in women and girls, improving health, wellbeing and education, ensuring availability of clean water and sanitation and delivering inclusive economic growth.
- In Africa adopting drip irrigation, combined with know-how, can lead to real change among rural poor by creating a more knowledgeable agricultural community
- Awareness is important. Private Public Partnerships are needed. Collaboration will bear fruits





A close-up photograph of a person's hands planting a small green seedling into the soil. The person is wearing a green long-sleeved shirt. The soil is dark brown and rich. A black drip irrigation line is visible in the foreground, running horizontally across the frame. The background is slightly blurred, showing more of the soil and the person's clothing.

**THANK YOU**