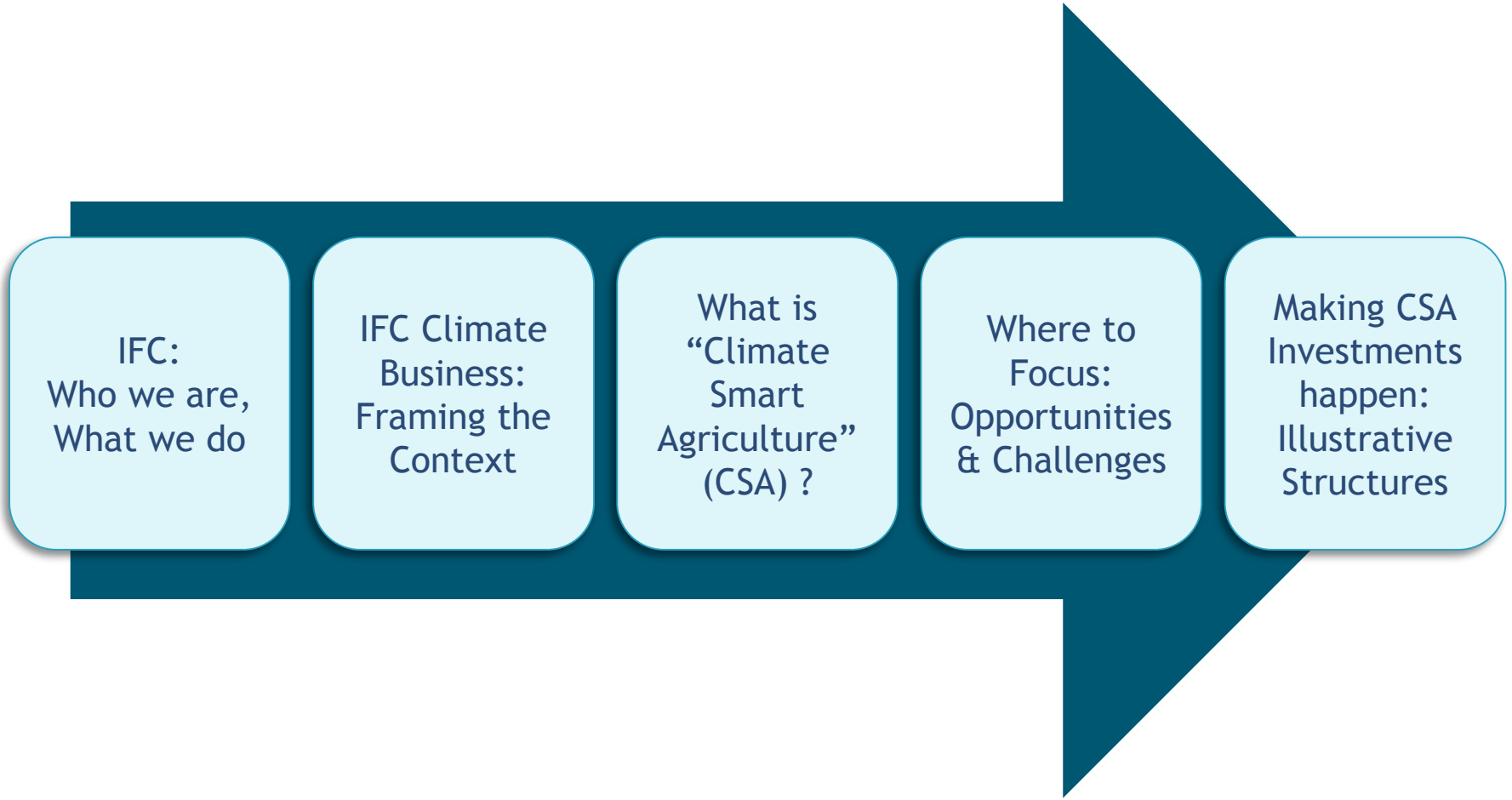
# Building Climate Smart Agriculture Business & Impact

IFC | International Finance Corporation
WORLD BANK GROUP

The Hague

October 28, 2016

# Session Objectives



# IFC's Vision and Purpose

## Our Vision

*That people should have the opportunity to escape poverty and improve their lives*

## Our Purpose

*To create opportunity for people to escape poverty and improve their lives by catalyzing the means for inclusive and sustainable growth through*

- *Mobilizing other sources of finance for private enterprise development*
- *Promoting open and competitive markets in developing countries*
- *Supporting companies and other private sector partners where there is a gap*
- *Helping to generate jobs and deliver essential services to the poor & vulnerable*

# IFC's Strategy

- Maximize development impact, maintain financial sustainability

| FOCUS INDUSTRIES | FOCUS REGIONS | FOCUS CHALLENGES |
|---|---|---|
| Infrastructure | Global Engagement | Fragility and Conflict |
| Agribusiness | Emphasizing Highest-Impact Opportunities in Each Region | Climate Change |
| Financial Inclusion | Global Engagement | Responding to Global Downturn |
| Health and Education | | |

CROSS CUTTING: Disruptive Technologies

SUSTAINABILITY

Strong environmental, social, and governance standards are critical to IFC's business growth and development impact

# What We Do

- Integrated Solutions = Increased Impact

## INVESTMENT

- Loans
- Equity
- Trade and Commodity Finance
- Syndications
- Derivative and Structured Finance
- Blended Finance

## ADVICE

- Combining IFC's Expertise and Tools to:
  - Help Create New Markets
  - Unlock Investment Opportunities
  - Strengthen Clients' Performance and Impact
  - Improve Environmental, Social, and Corporate Governance Standards

## IFC ASSET MANAGEMENT COMPANY

- Mobilizing and managing third-party capital for investment alongside IFC

# IFC's Global Reach

- **104** regional offices present in **98** countries worldwide
- **Over 3,700** staff (60% based outside Washington D.C.)


IFC International Finance Corporation WORLD BANK GROUP

# >US$200 billion Invested in Emerging Markets since 1956

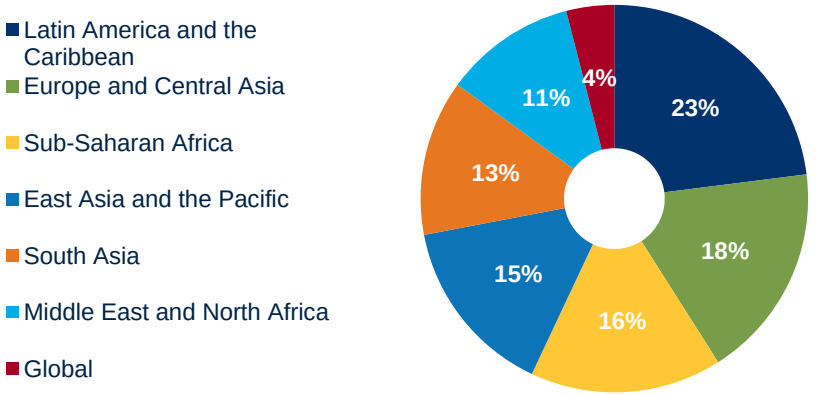
## Overview (FY16)

| | |
|---|---|
| Shareholders | ▪ 184 member countries |
| S&P & Moody's rating | ▪ AAA/Aaa |
| Total Assets | ▪ US$87.5 billion |
| Portfolio | ▪ US$52 billion |
| Long term investments made in FY16 | ▪ US$11 billion own account<br>▪ US$7.7 billion mobilized |
| # of Projects in Portfolio | ▪ 2,033 projects |

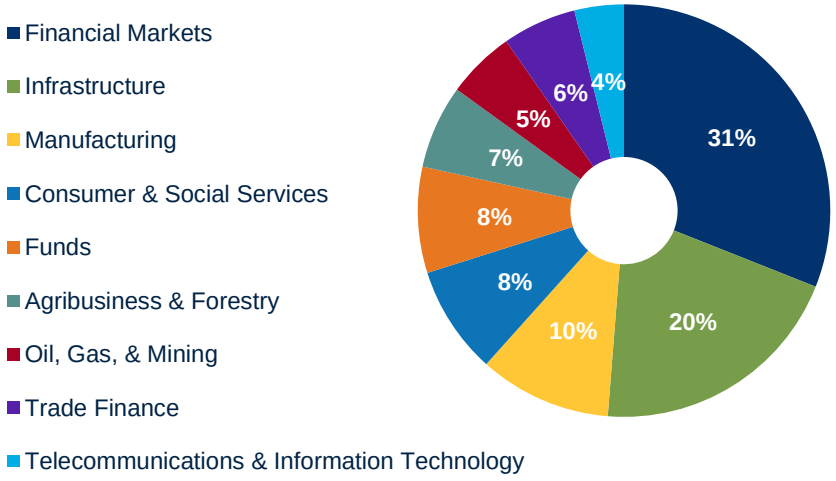
**Largest** development **institution focused** on the **private sector** in **emerging markets**

## Track record (portfolio of $52 billion), as of June 2016)

### BY REGION




### BY SECTOR




IFC International Finance Corporation WORLD BANK GROUP

# The Global Agri Value Chain

FARM → FACTORY → FORK





Value chains are a key framework for understanding how a product moves from the producer to the customer. It is a vehicle for linking small businesses to the market.

**Agribusiness Strategic Pillars:**

**Enhance Food Security**: focus on production, waste reduction and income enhancement

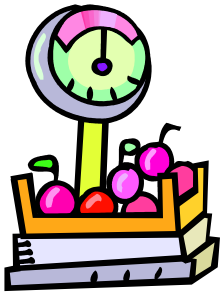
Promote **Inclusive Economic Development**: focus on small farmers, women, and risk management

Make **Environmental & Social Sustainability** a business driver (e.g. irrigation, precision farming)

IFC International Finance Corporation WORLD BANK GROUP

# The Global Agri Value Chain: Key Issues

**FARM** → **FACTORY** → **FORK**



- Yield Improvement
- Farmer Incomes
- Access to Markets
- Access to Finance
- Access to Inputs
- Rural Infrastructure
- Land & Water rights

- Jobs
- Food Safety
- Occupational Health & Safety
- Resource Efficiency
- Waste and Emissions
- Supply Chain Logistics

- Access to Food
- Affordable Food
- Food Safety
- Nutrition
- Increasing demand for meat

# IFC/WBG Solutions Across the Agri Value Chain


| Infrastructure (Ports, Rail, Roads, Storage) | Inputs (Fertilizer, Seeds, Crop Protection, Equipment, Irrigation) | Farming / Production | Processing | Retailing |
|---|---|---|---|---|
| • Private Sector-led infrastructure<br>• Government Agri programs, with conditions for local benefits<br>• Agri-Parks or Special Agri Zones for focused infrastructure development<br>• Storage and Cold Chain PPPs | • Irrigation Program Demand<br>• "Right-Sizing" equipment for local markets<br>• Harmonization of national/regional seed and product registration<br>• Biopesticides and biological pest control options<br>• Innovation/ R&D | • Sustainability criteria included in farm concept development<br>• Small farmer inclusion with commercial farm development<br>• Global Agriculture & Food Security Program (GAFSP)<br>• No-till and low-till practice adoption<br>• Vertical farming | • Rising meat & dairy demand<br>• Food Safety<br>• Vertical integration to capture margins and reduce agri-cycle price risks (e.g., feed+meat)<br>• Nutrition-based formulations<br>• Ready-to-eat foods for urban/ middle classes<br>• Mobile processing | • Sustainable sourcing targets by leading retailers and brands<br>• Organic & Local produce<br>• Nutrition information & product labeling<br>• Quick-service restaurant/ food boom in emerging markets |

# Sectoral Themes Drive Our Agribusiness Agenda

## Water

Global Irrigation Program

Inputs (e.g. seeds)

## Small Farmers

Inclusive supply chains

Global Food Security Program (GAFSP)

## Land

Princ. of Resp. Agri Investment

Africa Hybrid Investments

Scale: Ukraine/Brazil/Argentina

## Urbanization

Safe food processing & efficient supply chains

Food affordability

## Animal Protein

Mitigate impacts of full value chain (e.g., feed efficiency)

Seafood

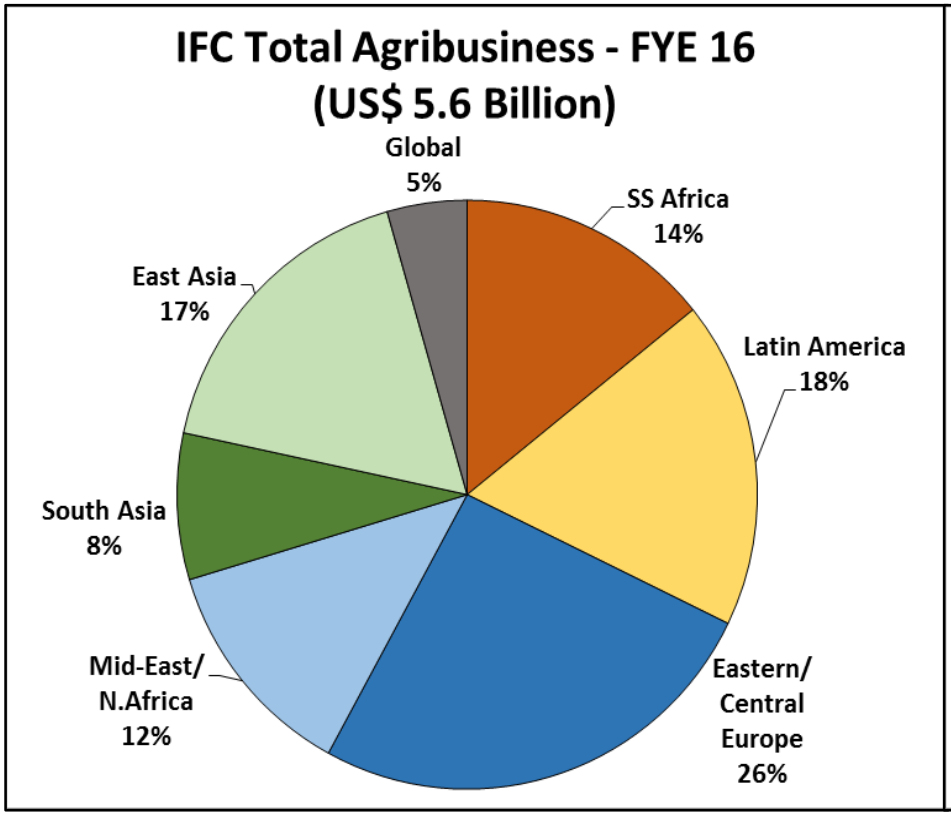
## Nutrition & Innovation

Food ingredients

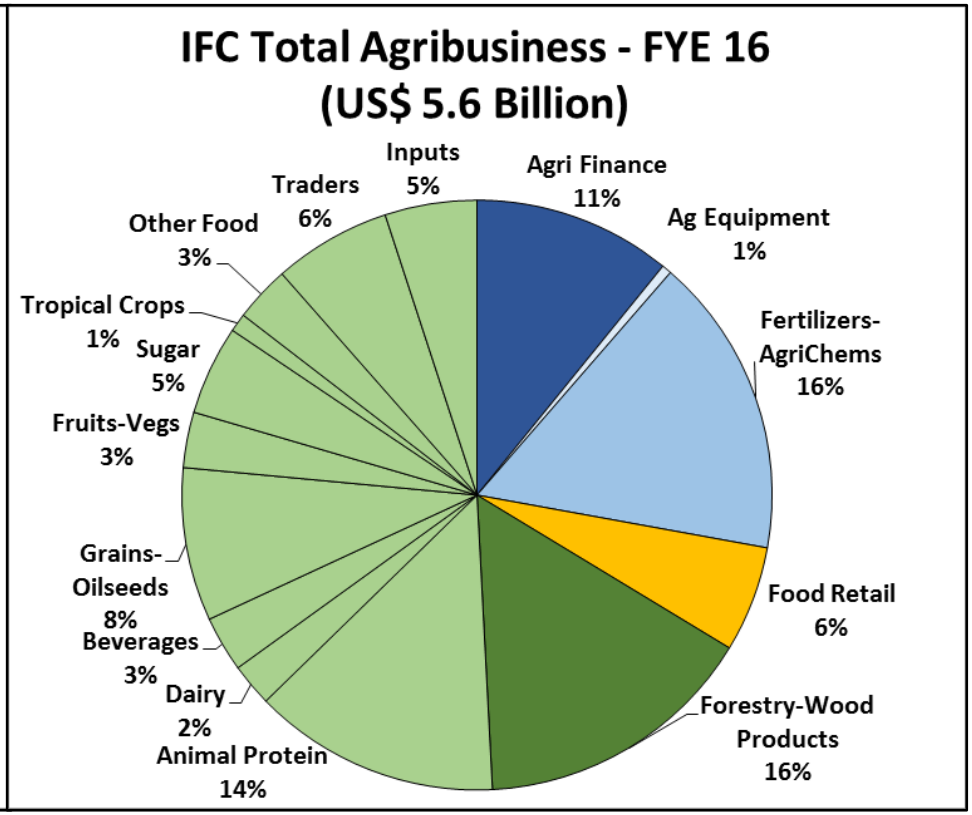
Fortified foods and drinks

# Resulting in a Diversified Portfolio (US$5.6 billion, FY16)

## REGIONAL BREAKDOWN




## SUB-SECTORAL BREAKDOWN



# Agriculture is a Large Source of Global GHG Emissions

**Agriculture, forestry & land use contribute ~24% of Global GHG Emissions (FAO, 2014)**


More droughts, floods, and heat waves are increasing production variability; and under BAU, Climate Change is expected to reduce yields by 10-50% by 2050 (CGIAR)

# A Private-Sector Driven Agenda: It Impacts Their Business

COP21 · CMP11
PARIS 2015
UN CLIMATE CHANGE CONFERENCE

**At the Paris COP, 94% of country submissions included GHG reduction targets for agriculture, forestry, and land use sectors.**


**"Now is the time to meaningfully address the reality of climate change."** Joint Letter from CEOs of 14 Leading Food Companies Call on U.S. and World Leaders to Act.


280 companies made complete or specific commitments to ensure **deforestation free supply chains**.

20 global companies e.g. Starbucks, Unilever and MARS wrote to President Obama to say they rely on the stability of global supply chains for growth and profitability, and **express concerns of severe weather events on their operations.**`

RE 100

69 global companies e.g. Coca Cola, Nestle, and Tetra Pak, have **committed to go 100% renewable**.

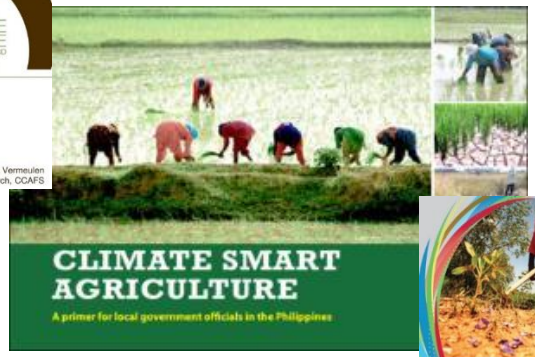
Moody's to use **GHG emission reduction scenarios in their credit assessment.**

IFC International Finance Corporation
WORLD BANK GROUP

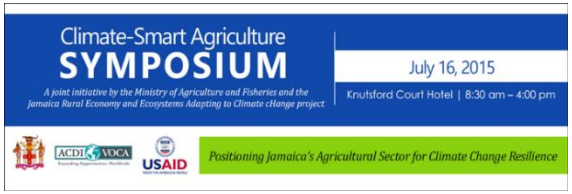
# What is Climate Smart Agriculture?







# What is Climate Smart Agriculture?

**World Bank definition:** Climate-Smart Agriculture (CSA) is an approach to managing landscapes—cropland, livestock, forests and fisheries—that aims to achieve **three "wins"**:

(1) Increased productivity to improve food security and boost farmers' incomes;
(2) Enhanced resilience to drought, pests, disease and other shocks;
(3) Reduced greenhouse gas emissions.

CSA is an integrative approach aimed at increasing productivity sustainably and ensuring food security by building climate resilience and reducing greenhouse gas emissions from agriculture.

**IFC Strategy: Support CSA by providing investments and advisory operations that contribute to one or more of the three pillars of CSA.**

# Climate Smart Agri is now part of IFC's Climate Definitions

## What used to count at IFC:

- ✓ Use of renewable energy / waste to power
- ✓ Energy efficiency (*subject to a 15% savings threshold or reduction of 25,000 tons $CO_2$*)
- ✓ Green Buildings
- ✓ Reforestation / Sequestration (*subject to criteria*) / Avoided Deforestation (REDD +)

- ✓ *Select* Waste Management / Composting
- ✓ No till Agribusiness
- ✓ *Select* water projects
- ✓ Adaptation (case by case basis)

## Comprehensive & revised IFC definition of CSI:

- ✓ Water efficiency / savings
- ✓ **Efficient irrigation**
- ✓ **Irrigation dams and water storage systems**
- ✓ **Appropriate fertilizer use** /crop nutrient management
- ✓ Drought & disease resistant seeds
- ✓ **Storage facilities**
- ✓ **Agricultural intensification**
- ✓ **Improvements to animal productivity**
- ✓ **Reduction in losses**

- ✓ **Switch to less water intensive crops**
- ✓ Improvement to aquaculture productivity
- ✓ Agro-forestry
- ✓ Landscape approach to diversify economy
- ✓ Agricultural research
- ✓ **Agricultural extension services**
- ✓ Training and awareness raising
- ✓ Animal husbandry
- ✓ Improve efficiency of fishing fleet
- ✓ **Invasive species management**

# Keeping our CSA claims practical but credible (no green-washing)

**All projects have a clear link between investment activities and project impact & climate benefits. KPIs are being explored as a proxy for climate impact**

- Milk yield per cow
- Feed to food conversion ratio
- Reduction in post-harvest losses

- Reduction of water used per acre, animal, or ton of crops
- Reduction in fertilizer use per acre or ton of crops
- Increase in crop or feed production per acre

IFC International Finance Corporation WORLD BANK GROUP

# Opportunities & Challenges for Climate Smart Agri

# A Private-Sector Driven Agenda: It Impacts Their Business

COP21 · CMP11
PARIS 2015
UN CLIMATE CHANGE CONFERENCE

**At the Paris COP, 94% of country submissions included GHG reduction targets for agriculture, forestry, and land use sectors.**


**"Now is the time to meaningfully address the reality of climate change."** Joint Letter from CEOs of 14 Leading Food Companies Call on U.S. and World Leaders to Act.


280 companies made complete or specific commitments to ensure **deforestation free supply chains**.

20 global companies e.g. Starbucks, Unilever and MARS wrote to President Obama to say they rely on the stability of global supply chains for growth and profitability, and **express concerns of severe weather events on their operations.**`

RE 100

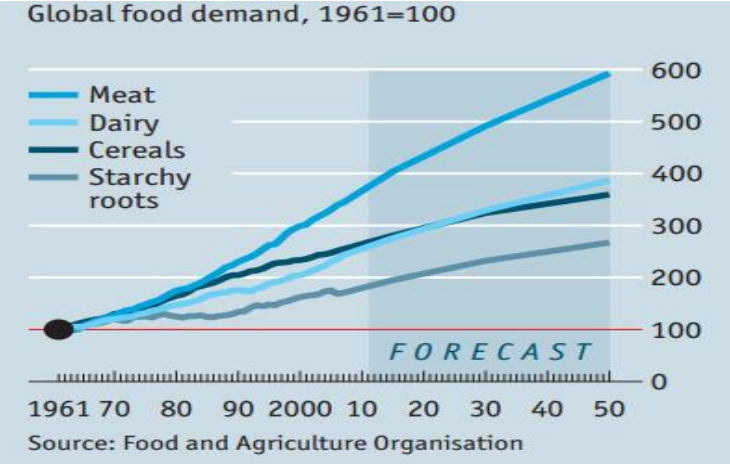
69 global companies e.g. Coca Cola, Nestle, and Tetra Pak, have **committed to go 100% renewable**.

Moody's to use **GHG emission reduction scenarios in their credit assessment.**

IFC International Finance Corporation
WORLD BANK GROUP

# Megatrend: Increasing Demand for Global Agri Commodities

## Global food demand is expected to rise…*




Higher consumption of meat/dairy → increase in demand for grains

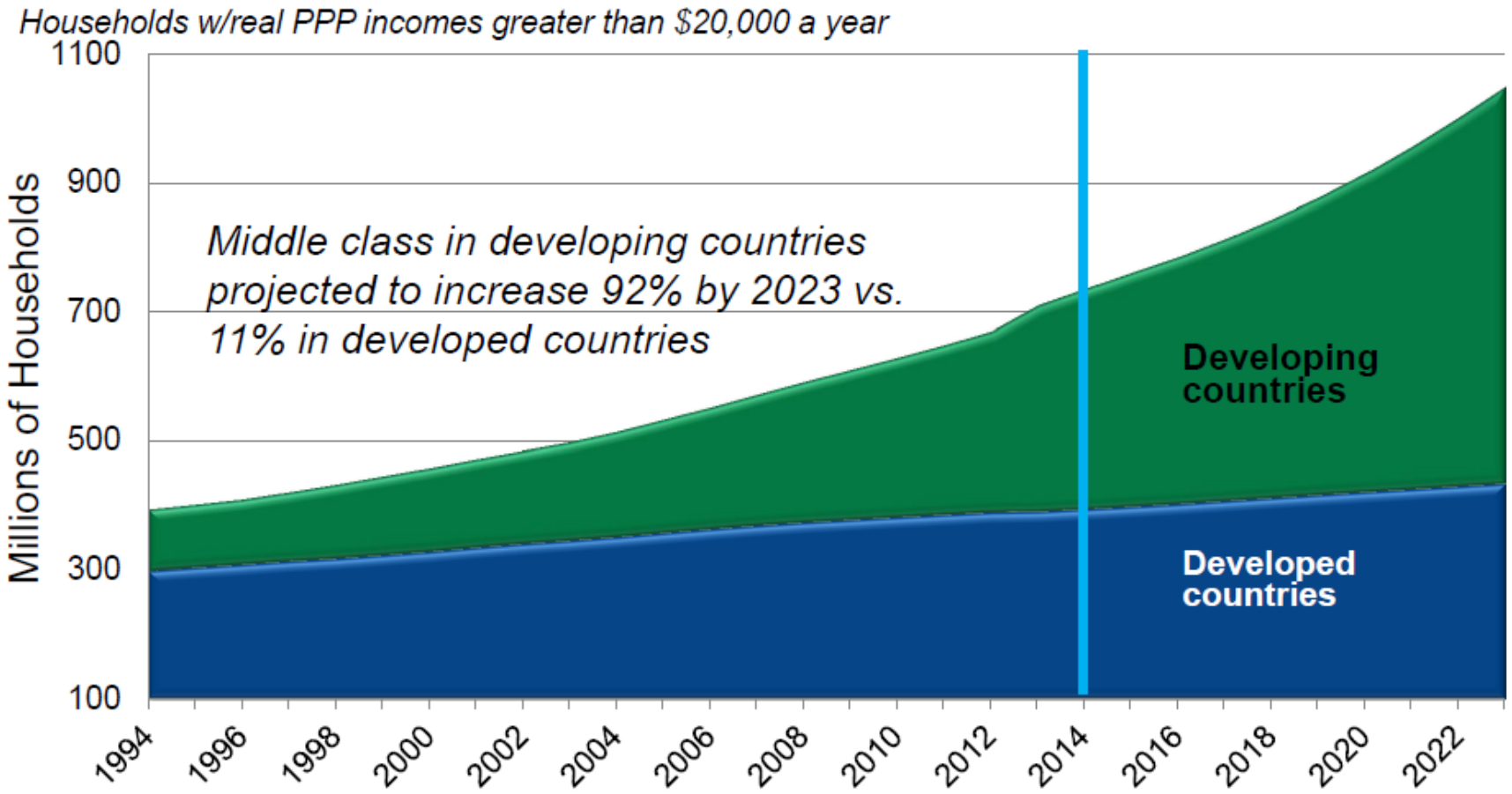
## ….because of growing population, urbanization, and rising income*

| | |
|---|---|
| **9.3 billion** | People by 2050 (from 7.2 bn in 2013) |
| 70% | Urban by 2050 (from 54% in 2014) |
| 4.8 billion | Middle-class by 2030 (from about 1.8bn in 2009) |

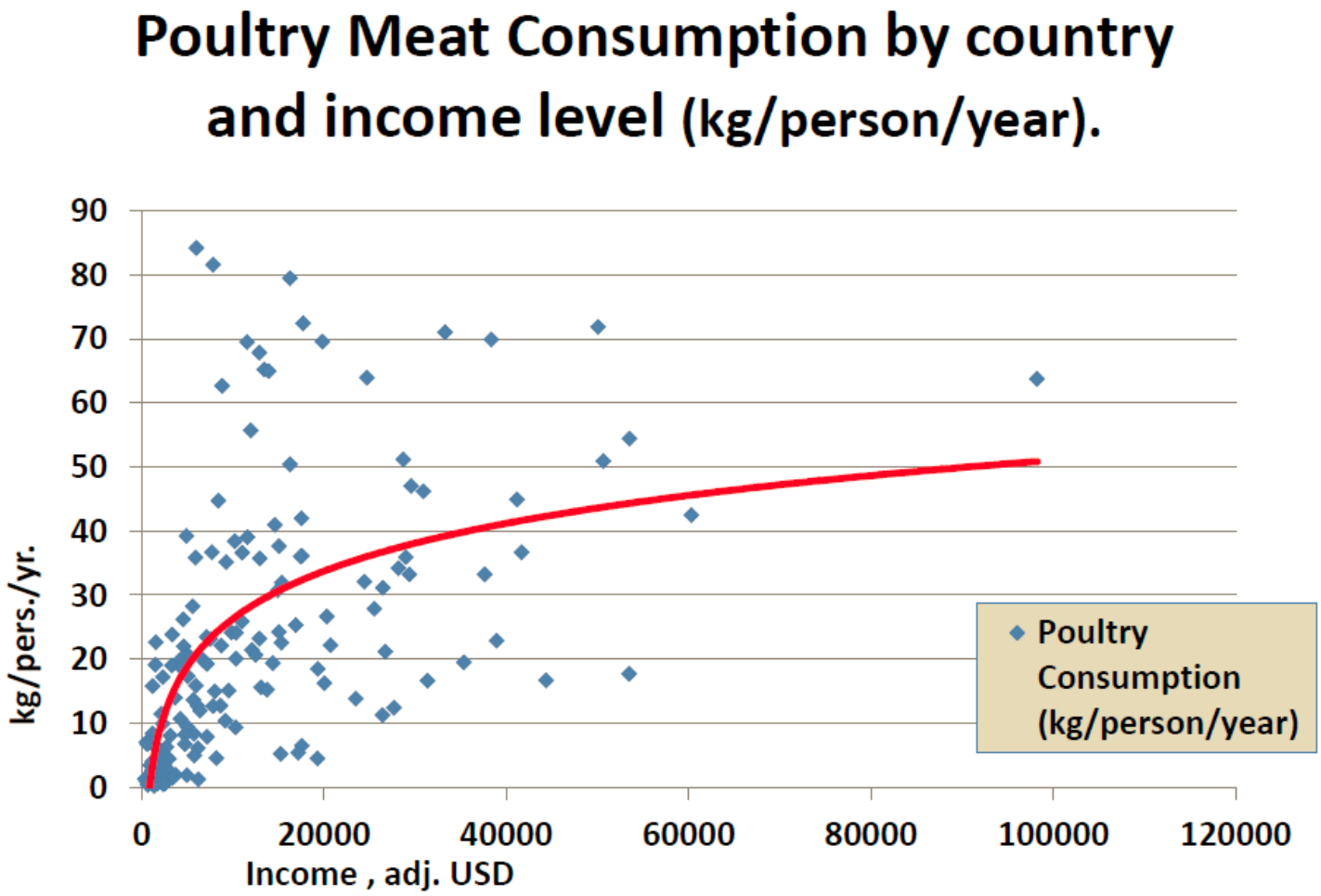
- To meet demand, **food availability must increase by 70% by 2050***
- Growth in production is not in the same geographical locations as demand growth, due to constraints in climate conditions and land/water availabilities
- Global import of corn, soybeans, and wheat expected to grow by over 150 million MT to 465 million MT by 2030
- Investment needed in storage, logistics & processing in major origination countries (e.g. Brazil, Argentina, U.S., Ukraine, Russia) to meet growing demand

# Global “Middle Class” to Exceed 1 Billion Households by 2013

*Most of the increase will be in developing countries, particularly in Asia*

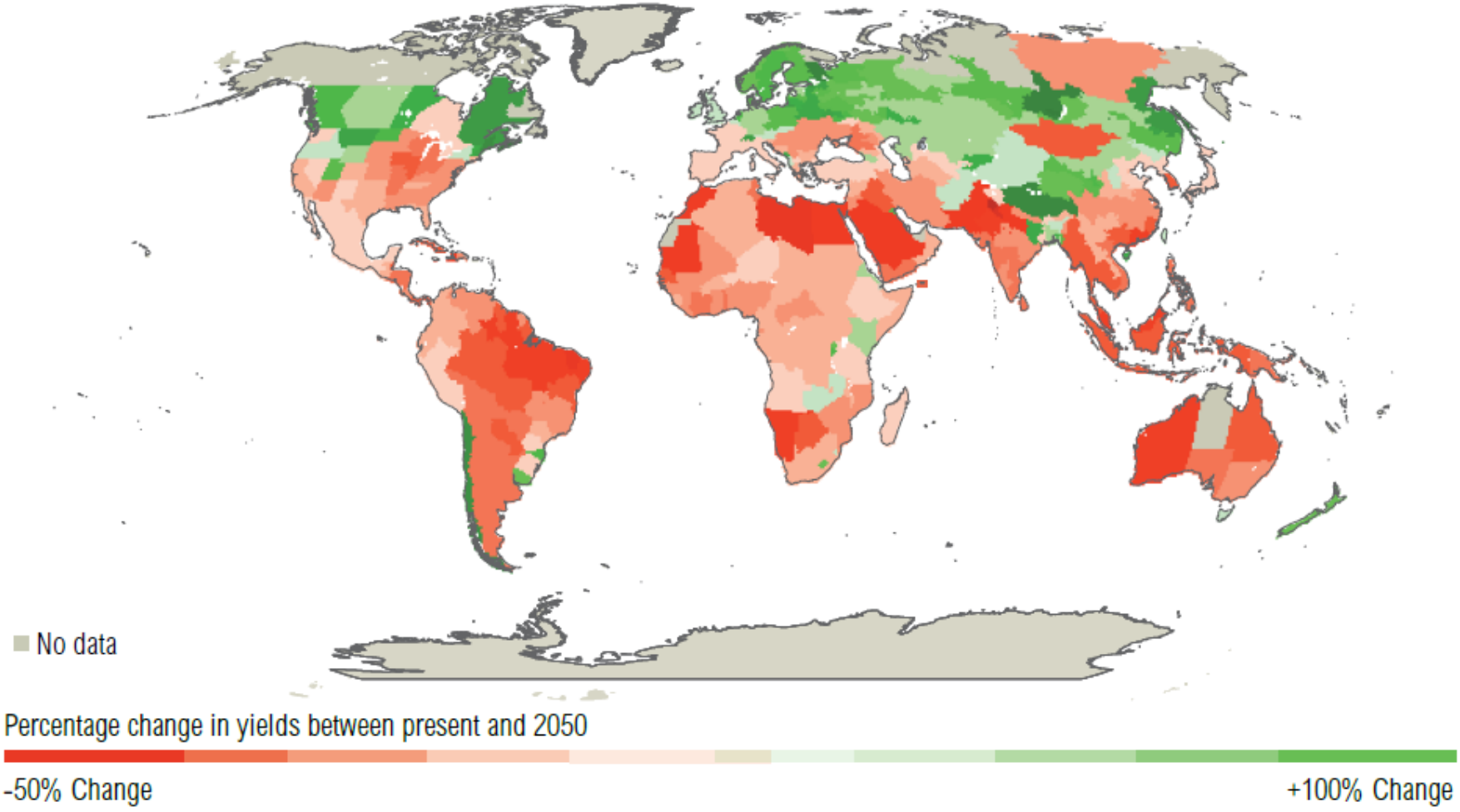


# Demand for Meat & Dairy rises with Per Capita Income



# Long-Term Challenges (1):
## Already constrained agri lands further limited by climate impacts

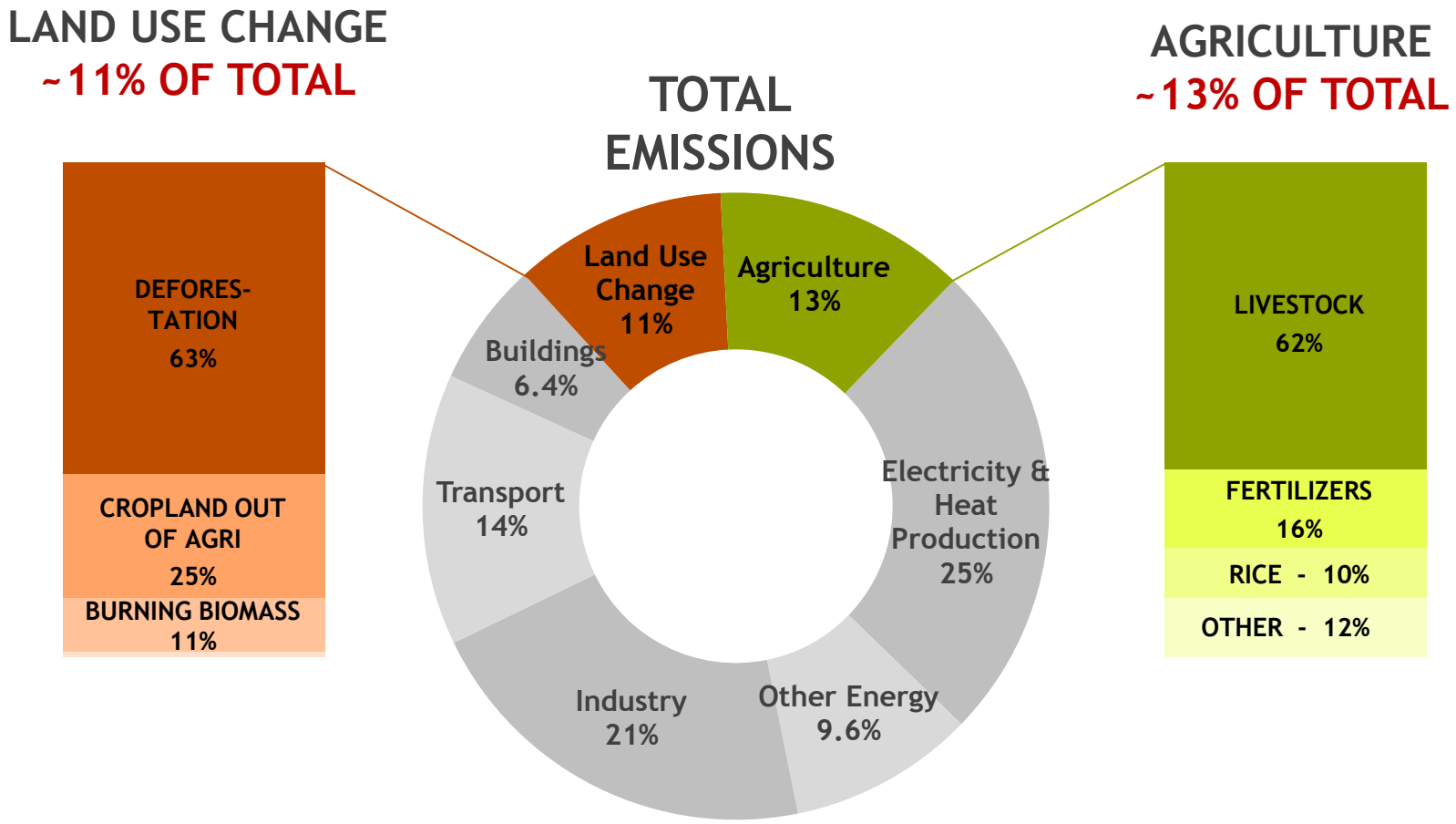
***Agri supply chains are under great pressure in the short-, medium- and long term.***




IFC International Finance Corporation WORLD BANK GROUP

# Long-Term Challenges (2):
## Growing Food Is a Big Part of the Climate Problem- and the Solution

Addressing land use change and reducing agriculture's GHG footprint is vital



# IFC's Key Climate Smart Agri Focus Areas: (1) Animal Protein

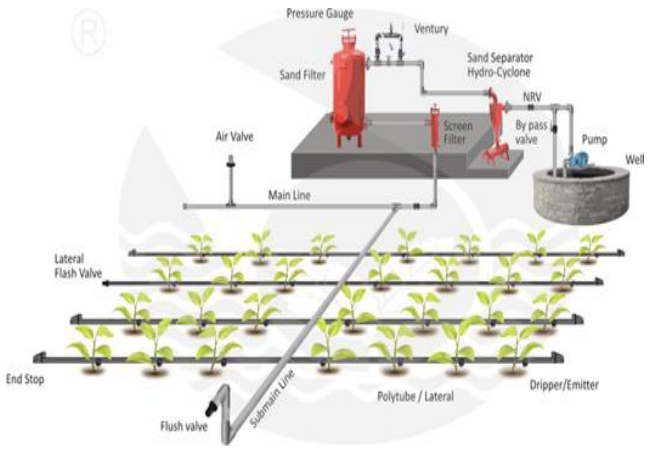
- Increasing productivity sustainably is climate smart. **There is a direct correlation between increased yield per ha or kg of meat & milk and GHGs reduced.**
- Levers contributing to this include:
  - ✓ Improved animal health
  - ✓ animal husbandry
  - ✓ manure management with bio-digesters
  - ✓ confined stalls
  - ✓ better feed production
  - ✓ better feeding practices / improved nutrition
  - ✓ Cold chain
  - ✓ Improved aquaculture productivity

# IFC's Key Climate Smart Agri Focus Areas: (2) Land & Crops

- **Precision farming** is a farm management system that is information and technology based, and site specific. These technologies include:
  - ✓ Higher yielding seed varieties
  - ✓ Efficient irrigation
  - ✓ Soil testing
  - ✓ Laser soil leveling
  - ✓ GPS equipped farm equipment
  - ✓ Remote sensing and sensors
  - ✓ Integrated pest management
  - ✓ Reduced/no till agriculture
  - ✓ Appropriate use of fertilizers

  …and technologies that help farmers adopt the above

- **Examples:** Bioparques




# IFC's Key Climate Smart Agri Focus Areas:
# (3) Reduce Losses

- **~30% of the food grown is wasted**
- **An important objective of CSA and theme for IFC is to reduce post-harvest losses**
- This includes:
  - ✓ Investments in storage facilities (including cold chain) to reduce losses.
  - ✓ Investing in green buildings (EDGE tool).
  - ✓ Renewable energy.
  - ✓ Upgrading trucks and equipment to reduce losses and fuel consumption.
  - ✓ Improving transport logistics (including relocating warehouses or storage facilities) to reduce fuel consumption.

# Challenges of “scalable” climate interventions / programs

| | |
|---|---|
| 1 **Interventions inherently small ( $ capex – wise)** | ▪ Tend to be one part of a larger corporate investment program / IFC financing<br>▪ Need to aggregate – via financial institutions, distributors |
| 2 **Climate Smart Interventions at Farmer Level** | ▪ Lack of knowledge & risk aversion of farmers to adopt new technologies<br>▪ Who takes farmer credit risk?<br>▪ IFC mainly works with aggregators – traders, processors |
| 3 **Align Incentives** | ▪ Large vendors / food companies have scale but are often unwilling to have “skin in the game”; have access to competitive financing |
| 4 **Need a Business Case** | ▪ Acceptable payback required for clients to take commercial financing – if not we need donor money (such as GAFSP) to de-risk & motivate |
| 5 **What are we measuring?** | ▪ how to capture concepts of agri intensification (higher productivity / yield)<br>▪ not practical or possible to measure GHG savings at farm level |

# Some Questions for Discussion

- What do you view as the best opportunities?
  - by region, sector or technology
  - addressable by the IFC – sound investment thesis
  - how to go from small to big (business + impact)
- How can IFC best leverage GAFSP and other partners?

# STRUCTURING CLIMATE SMART AGRI INVESTMENTS

# Case Study: IFC's Global Irrigation Program

## Efficient irrigation can save up to 50% of water compared to traditional food irrigation

**Food irrigation (gravity flow)**

Water use efficiency (WUE): 50%


**Efficient / pressurized irrigation**

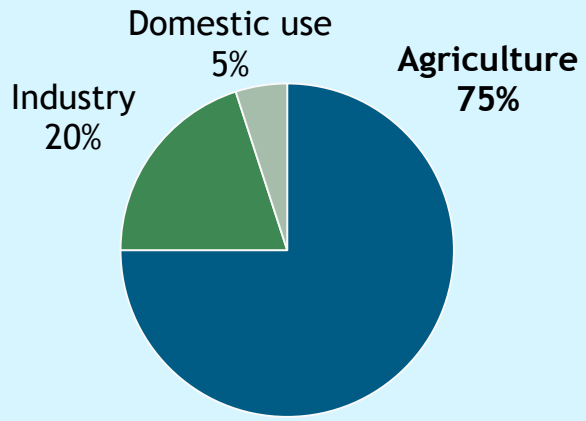
Water use efficiency (WUE): 85-95%




**…but adoption of efficient irrigation in EMs is very low (<10%)**

# Agriculture uses 75% of all fresh water

**Global water consumption by sector**




Food demand to increase by 40% by 2030

Limited availability of agricultural land

Water withdrawals to exceed fresh water availability by more than 40% under business-as-usual scenario

Agricultural growth has to come from **higher yields** from the **same area of land** with **more efficient use of water** and other inputs

# Efficient irrigation makes business sense

**40% of all food production comes from the 20% of farmland that is irrigated**

## Benefits of efficient irrigation

- Higher and consistent yields
- Reduced water use
- Increased farmer revenue
- Reduced energy, fertilizer and chemicals use
- Lower GHG
- Short payback period

## Rates of adoption in select countries

| | Irrigated area (Mha) | % of cultivated area | % of which irrigated via drip/ sprinkler |
|---|---|---|---|
| USA | 24.7 | 15% | 57% |
| France | 2.9 | 15% | 51% |
| Turkey | 5.3 | 22% | 12% |
| Morocco | 1.7 | 18% | 12% |
| China | 59.3 | 48% | 8% |
| India | 60.9 | 36% | 8% |

Source: National Committees, FAO

**Irrigated land is 1-4x more productive than un-irrigated land**

# IFC tried to address the barriers to farmer adoption

## Barriers

- **Lack of access to financing**
  - Size and speed of sales, security, familiarity with the sector
- **Lack of farmer knowledge**
  - Cost of wasted inputs, potential for increased yield
- **Lack of infrastructure**
- Inappropriate or lack of pricing of water and other natural resources

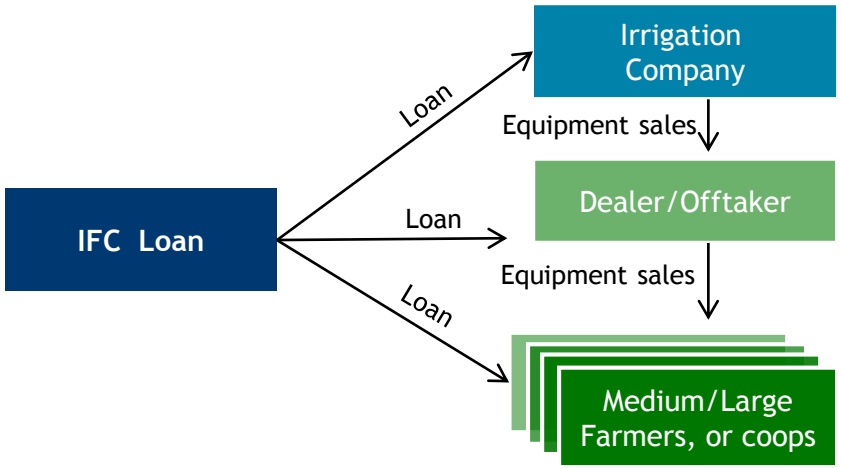
## Global Irrigation Program (GIP)

- ✓ Access to finance for farmers, including Blended Finance
- ✓ Advisory role: disseminate technical knowledge to farmers and dealers
- ✓ Supports WBG focus on Climate-Smart Agriculture
- ✓ Demonstration effect

**IFC-led financing platform directed to facilitate the sale of efficient irrigation equipment, systems and related services to farmers in the emerging markets**

# IFC's Key Climate Smart Agri Focus Areas:
# (1) Animal Protein

## Project structure

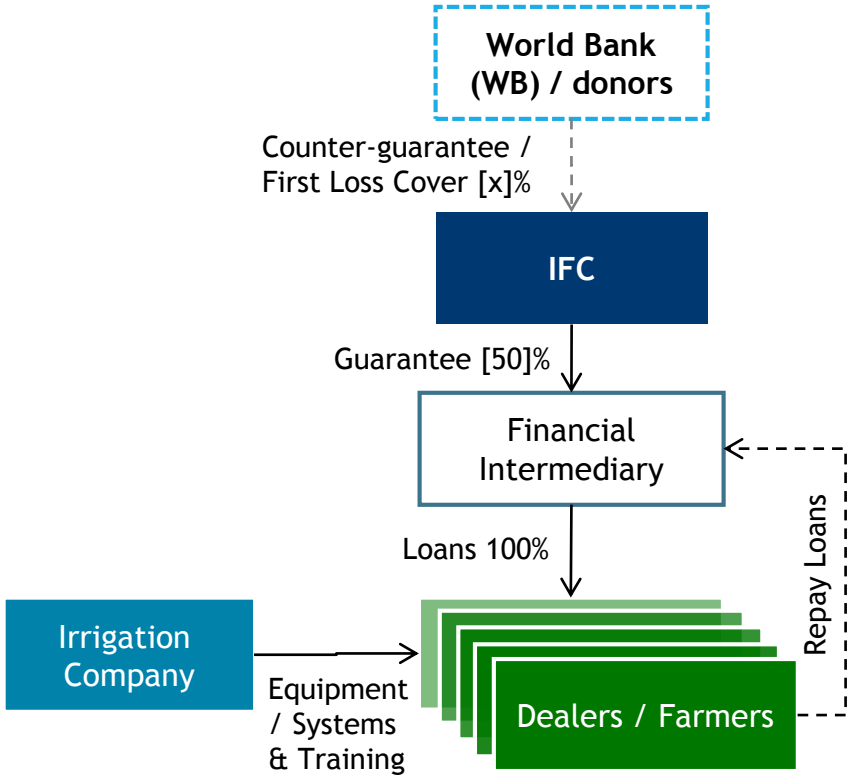



## Overview

- IFC's traditional direct interventions
- Corporate / project finance with recourse to borrower / investee company
- Project size typically above US$[5-10] million
- For irrigation companies / dealers / offtakers
- Purpose of financing:
  - purchase of irrigation equipment and ancillary services and infrastructure
  - capex needs, e.g. establishing irrigation equipment production facilities in EMs
  - enable dealers to facilitate sales

# Aggregation requires financial intermediation

## Project Structure



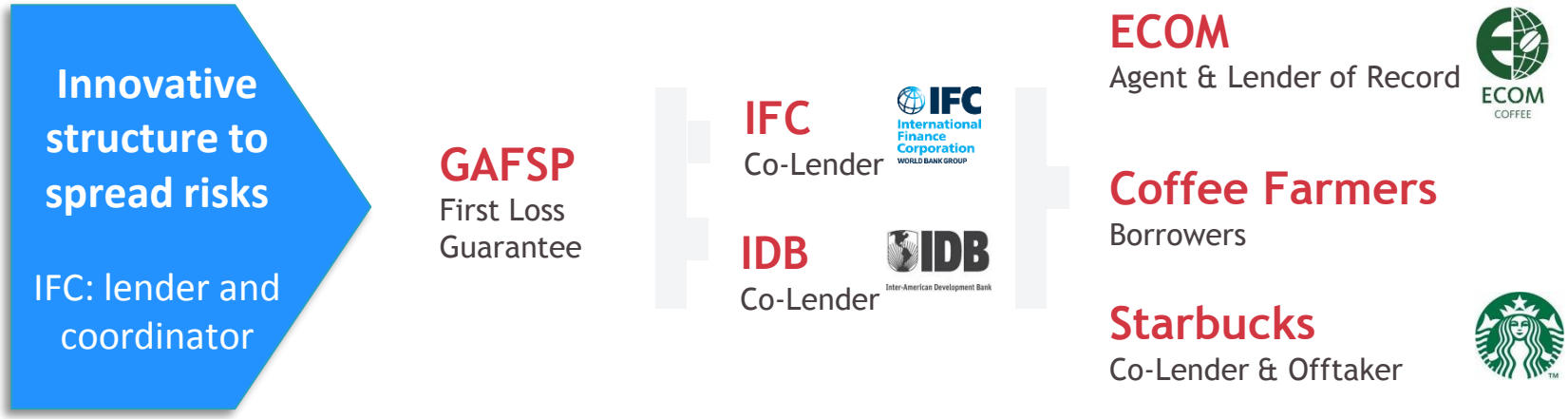

## Overview and risk profile

- Financial Intermediary (Bank, Financial Institution, Off-taker with track-record in farmer lending/ advances) provides loans to Dealers / Farmers
- Dealers/ Farmers use credit to buy irrigation equipment from Irrigation Company ("IC")
- IC provides capacity building to farmers
- Dealers/ Farmers repay loans over [1-5] years
- Financial Intermediary collects from farmers
- If farmers default, Financial Intermediary makes claim to IFC for X% of each defaulted loan; IFC makes claim to WB/ donors (for up to [x]% of portfolio)


* Counter-guarantee / first loss could also potentially be provided by IC

# Case Study: Roya Renovation Facility in Nicaragua

- US$30 million Risk Sharing Facility provides working capital loans to help farmers replant & renovate coffee crops affected by Roya fungus
- Project mitigates climate change related risks through planting rust resistant coffee varieties; and monitoring shade, nutrition, weeding, use of fungicides
- IFC provided a US$12 million loan. Importantly, ECOM and Starbucks were part of the financing solution, along with the IDB and GAFSP.



# Case Study: Rubber Renovation Facility in Liberia

- Firestone buys rubber from farmers in Liberia. **IFC provides financing to Firestone farmers in collaboration with a local bank in Liberia** so farmers can rehabilitate & replant rubber trees.
- **First loss** provided by GAFSP and BioCarbon Fund (the World Bank).
- **Extensive advisory services** are planned for both farmers and the local bank
- **Firestone commits off-take agreements** with individual farmers.
- IFC is providing assistance to local bank on **E&S risk screening** process.

Advisory Services

IFC International Finance Corporation WORLD BANK GROUP

3. Loan credited to Borrower's account

Advisory Services

Afriland Bank

7. Balance will be credited to Borrower's account

1. Estimated loan amount will be reported to IFC

2. Disbursement

6. IFC's Collection Account will receive the repayment

4. Rubber output

IFC International Finance Corporation WORLD BANK GROUP

GAFSP

First Loss

First Loss

WORLD BANK

Off-take Agreement

5. payment

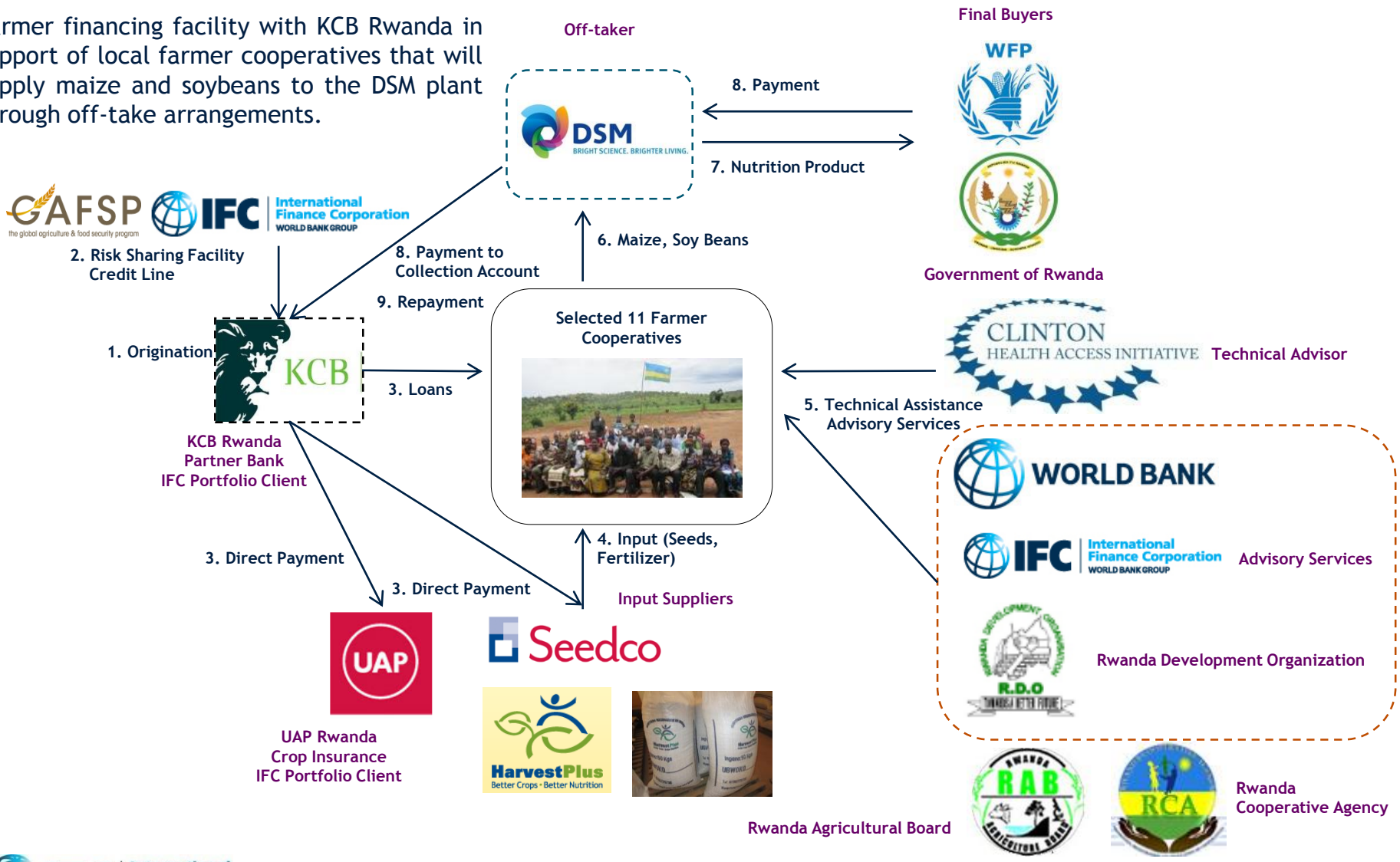
Carbon Finance Unit
THE WORLD BANK

Firestone

IFC International Finance Corporation WORLD BANK GROUP

# Case Study: Rwanda Farmer Financing Facility

Farmer financing facility with KCB Rwanda in support of local farmer cooperatives that will supply maize and soybeans to the DSM plant through off-take arrangements.



# Financing Projects – Some Things IFC Looks For

- ✓ Reputable counterparties
- ✓ Competitive player / track record in the industry
- ✓ Fit with IFC Strategy & Role
- ✓ Environmental & Social performance
- ✓ Sound IFC investment thesis
- ✓ Alignment of interests
- ✓ Ideally scalable / replicable

# ANNEXES

# Food companies are setting “Climate Smart” targets

| Company | Greening / Climate Smart Targets Description |
|---|---|
| Nestlé | ▪ Reduce overall CO2 emissions by 5% by 2018 |
| Unilever | ▪ By 2020, reduce GHG from manufacturing by 40% from 2008 levels<br>▪ Double use of renewable energy which should become 40% of total energy consumption by 2020 |
| Coca-Cola | ▪ Reduce carbon footprint of each product by a third from 2007 to 2020<br>▪ Source 35% of energy from renewable / low-carbon sources by 2020 |
| pepsi | ▪ 20% improvement in energy efficiency in manufacturing facilities by 2015, compared to 2016 |
| Mondelēz International | ▪ Reduce GHG emissions by 15% by 2015, compared to 2010<br>▪ Reduce water consumption by 15% by 2015, compared to 2010 |
| MARS | ▪ Goal of eliminating fossil fuel energy use and GHG emissions from operations by 2040<br>▪ Short-term: 25% reduction in fossil fuel use, 25% reduction in GHG emissions, 25% reduction in water use, and zero waste to landfill during 2007 to 2015 period |
| Kellogg's | ▪ 15-20% reduction in GHG emissions, energy use, water use, and waste from 2005 levels |
| Associated British Foods | ▪ Reduce energy consumption from 2008 by 7.5% by 2023 |
| General Mills | ▪ Reduce GHG emissions by 20% by 2015, compared to 2005 |

# Agribusiness sectors present climate business opportunities

| | | |
|---|---|---|
| **Annual Crops**<br>Oilseeds, grains<br>Horticulture<br>Vegetables | Cleaner Production | No/minimum till to minimize GHG emissions from soil; precision application of fertilizers & chemicals |
| | Renewable energy | Crop residues can be used as biofuel (e.g. in boilers) |
| | Recycling | Bio-fertilizer |
| | Water | Appropriate irrigation (e.g. drip irrigation) |
| **Perennial Crops**<br>Sugarcane, Palm<br>Rubber, Coffee<br>Cocoa, Fruit | Cleaner Production | Precision application of fertilizers & chemicals |
| | Renewable Energy | Crop residues can be used as biofuel (e.g. boilers) |
| | Recycling | Bio-fertilizer |
| | Water | Appropriate irrigation (e.g. drip irrigation) |
| | Sequestration | Woody crops can be a "carbon "sink" |
| **Animal & Fish Production**<br>Hog, Cattle<br>Dairy, Chicken<br>Fish, Shrimp | Energy Efficiency and Renewable Energy | Insulation and better technology for heating, cooling lighting of buildings<br>Anaerobic digestion of manure/animal waste & methane capture; use of solar collectors on livestock buildings |
| | Recycling | Waste |
| | Water | Efficient water use |
| **Primary & Secondary Processing**<br>Primary: Meat, Fish, Palm, Sugar, Grains, Oilseeds, Dairy<br>Secondary: Sugar & Oil Refining, Cocoa grinding, Coffee roasting, Confectionary | Energy Efficiency (All) | Improved heating and cooling systems, (e.g. boilers, steam, systems, refrigeration) |
| | Renewable Energy | Methane capture from anaerobic digestion of processing wastes; use of biogas |
| | *For Secondary Only* | Use of agri residues (biomass) as fuel; production of bio-fuels (e.g. ethanol from sugar cane and biodiesel) |
| | Water (All) | Efficient water use |

IFC International Finance Corporation WORLD BANK GROUP