Water and Irrigation: Digitization for land inprovement

Felix Reinders
President ICID

INTERNATIONAL COMMISSION ON IRRIGATION AND DRAINAGE

Water and Irrigation: Digitization for land inprovement

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Introduction

International

Irrigation

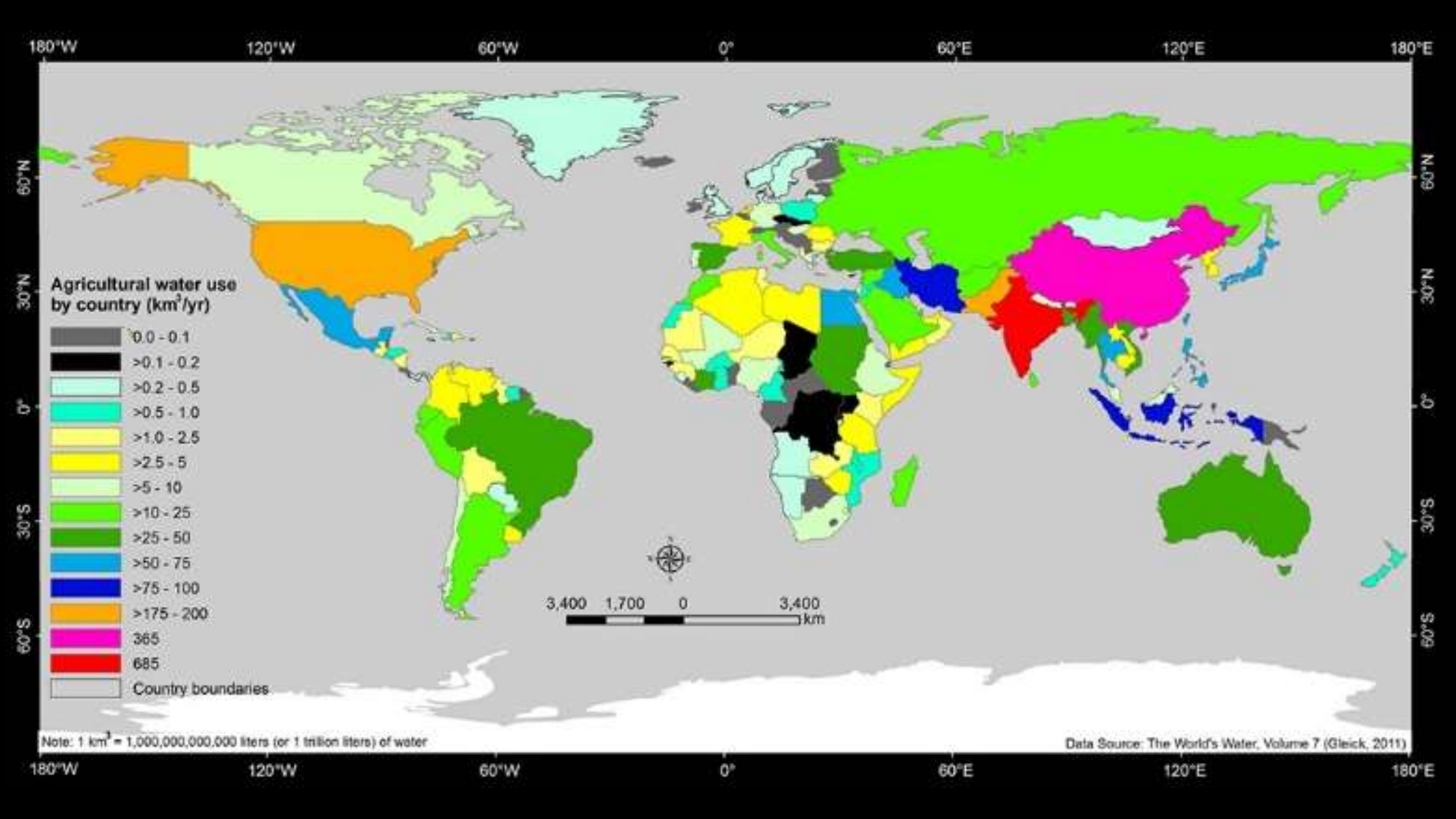
Digitization

Closure

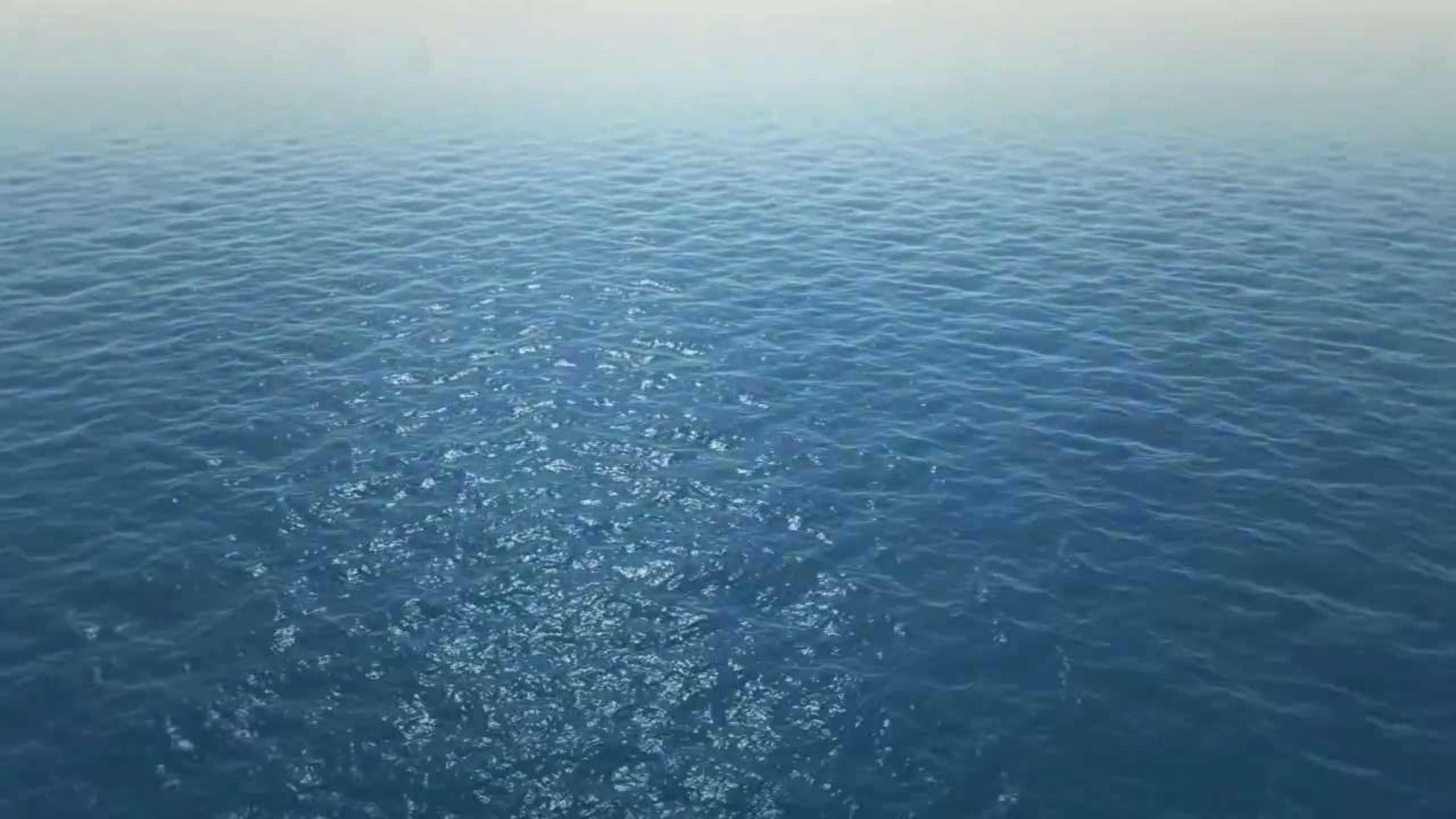
Introduction


ICID
Companies
Producers

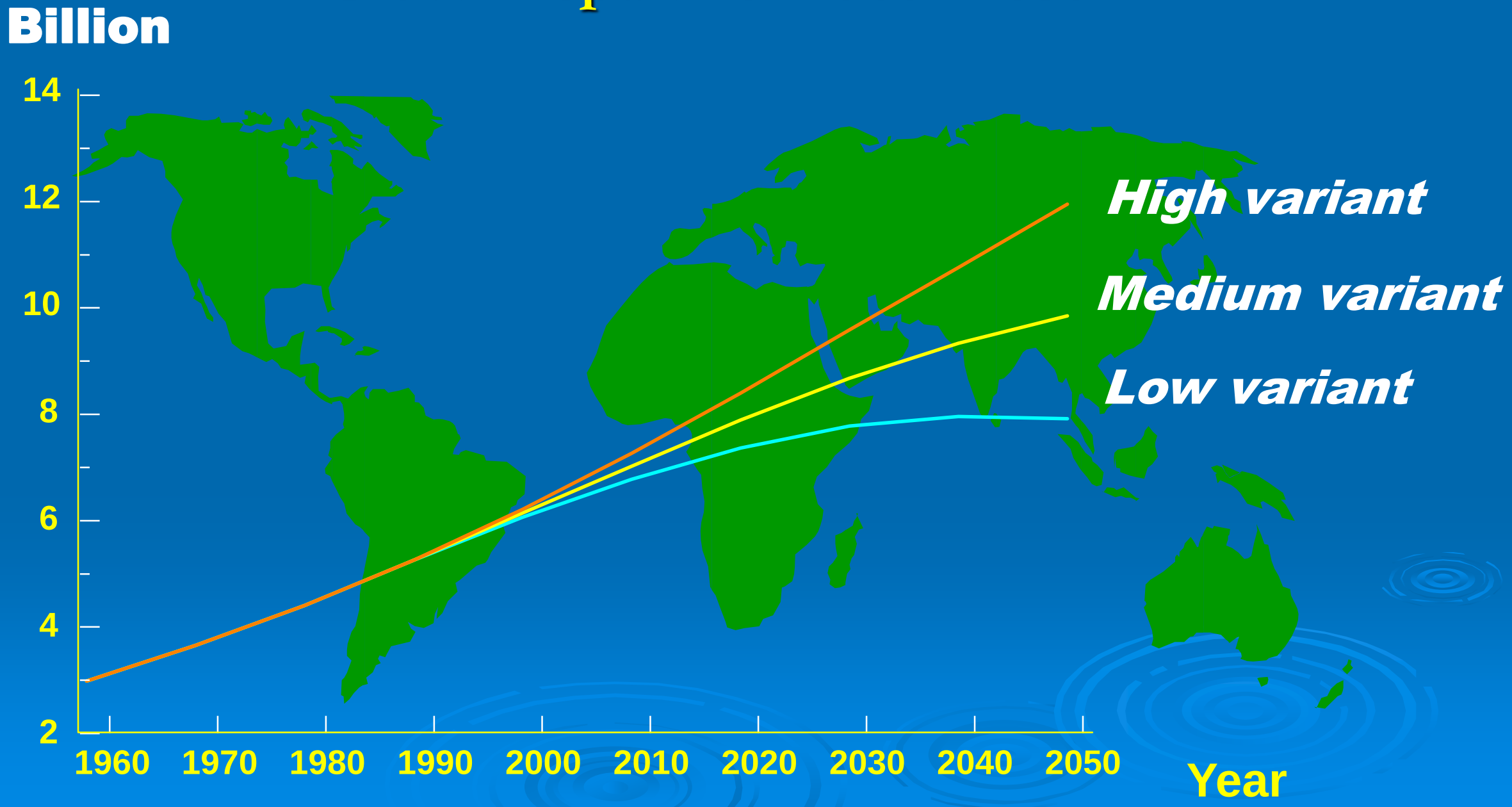

Water


180°W
120°W
60°W
0°
60°E
120°E
180°E
60°N
30°N
0°
30°S
60°S
Agricultural water use by country (km³/yr)
0.0 - 0.1
>0.1 - 0.2
>0.2 - 0.5
>0.5 - 1.0
>1.0 - 2.5
>2.5 - 5
>5 - 10
>10 - 25
>25 - 50
>50 - 75
>75 - 100
>175 - 200
365
685
Country boundaries
3,400 1,700 0 3,400
km
Note: 1 km³ = 1,000,000,000,000 liters (or 1 trillion liters) of water
Data Source: The World's Water, Volume 7 (Gleick, 2011)


When the well is dry,
we will know the worth of water
- Benjamin Franklin



Global Population 1960 - 2050



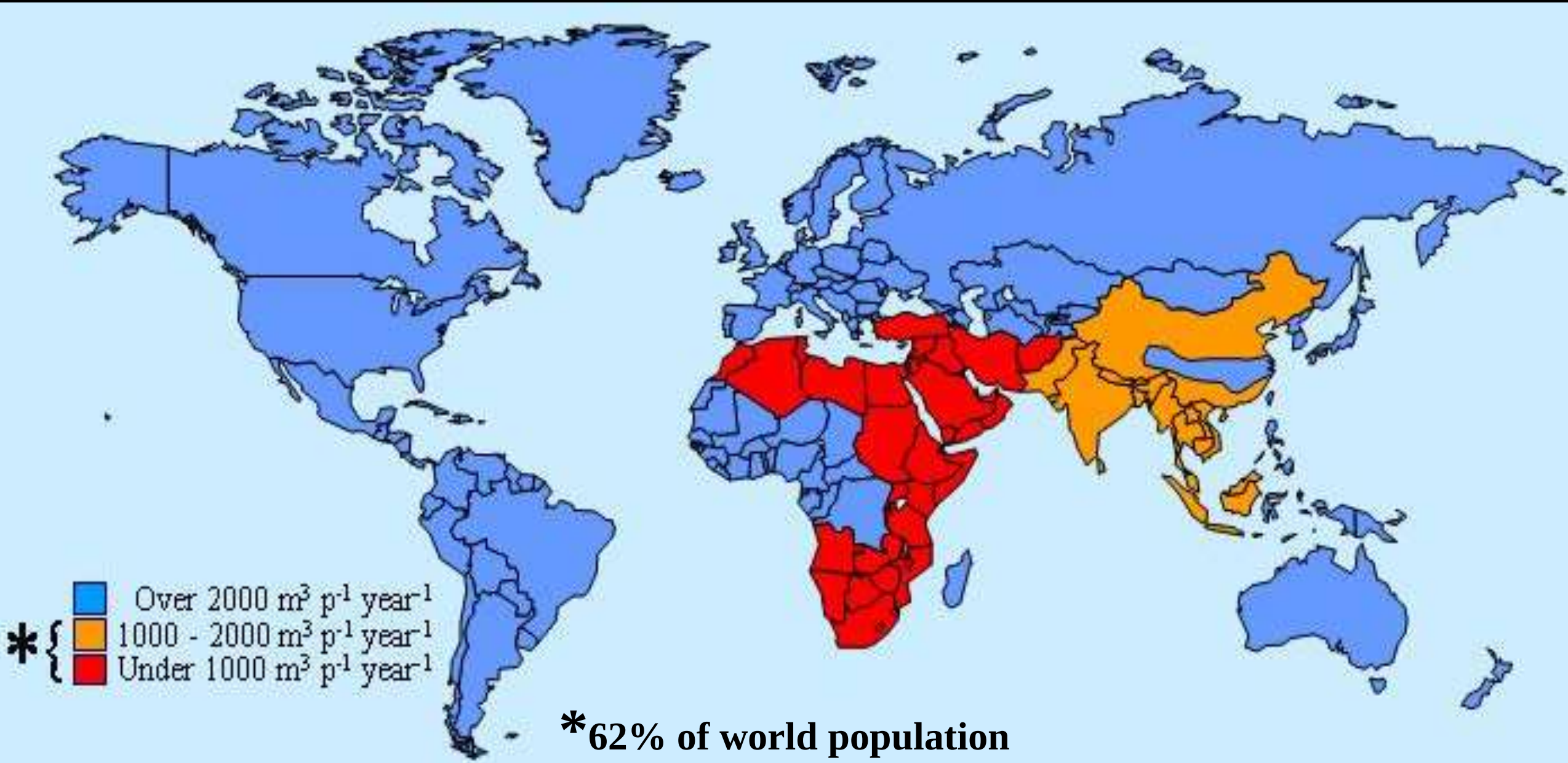
Two thirds of the world's population

WILL BE AFFECTED BY

WATER SHORTAGES

BY THE YEAR 2030

Global water scarcity - 2030



*62% of world population

The importance of water:

- **Water is the key to food security**
  - without water, crops simply cannot grow.
- **Water is not just for primary production**
  - it plays a vital role at all stages along the agricultural value chain
- **Water for agriculture connects us all together**
  - In times of scarcity we all have a responsibility to use water wisely, efficiently and productively.

We need to be more ‘water smart’.

Land

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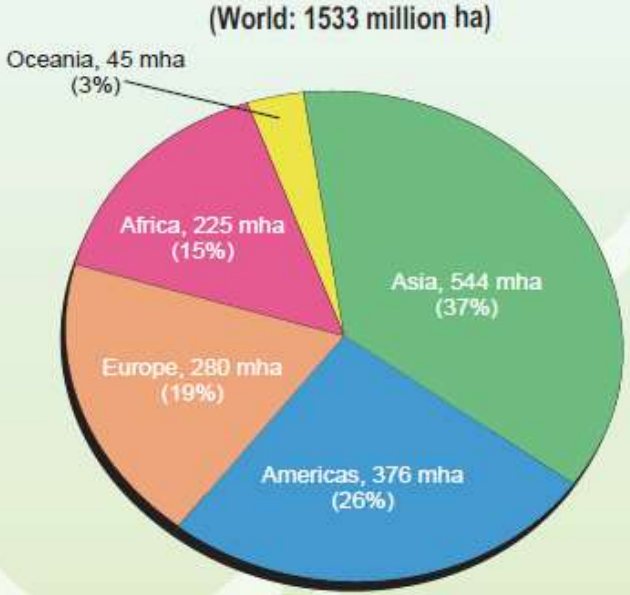
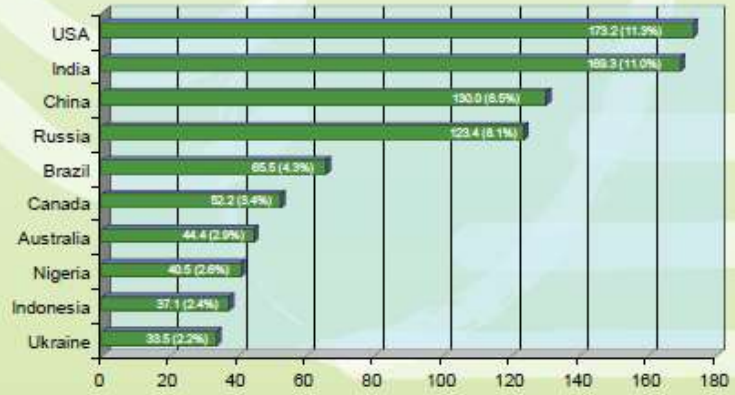
Regionwise Arable and Permanent Cropped Areas of the World



Arable and permanent cropped area (million ha) and its share in the total area (%)
Top 10 Countries



Source : ICID NCs (2010), FAO Stat-FAO Statistics Division (2011

Irrigation

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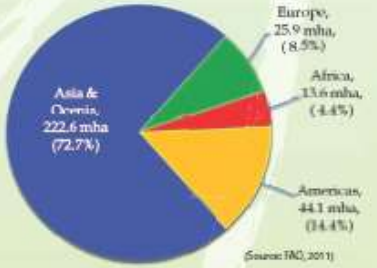
World Irrigation Scenario

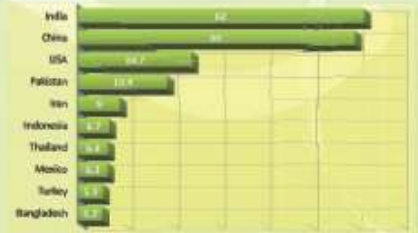
World irrigated area (million ha)

Irrigated area as percentage of arable land

Regional spread of irrigated area

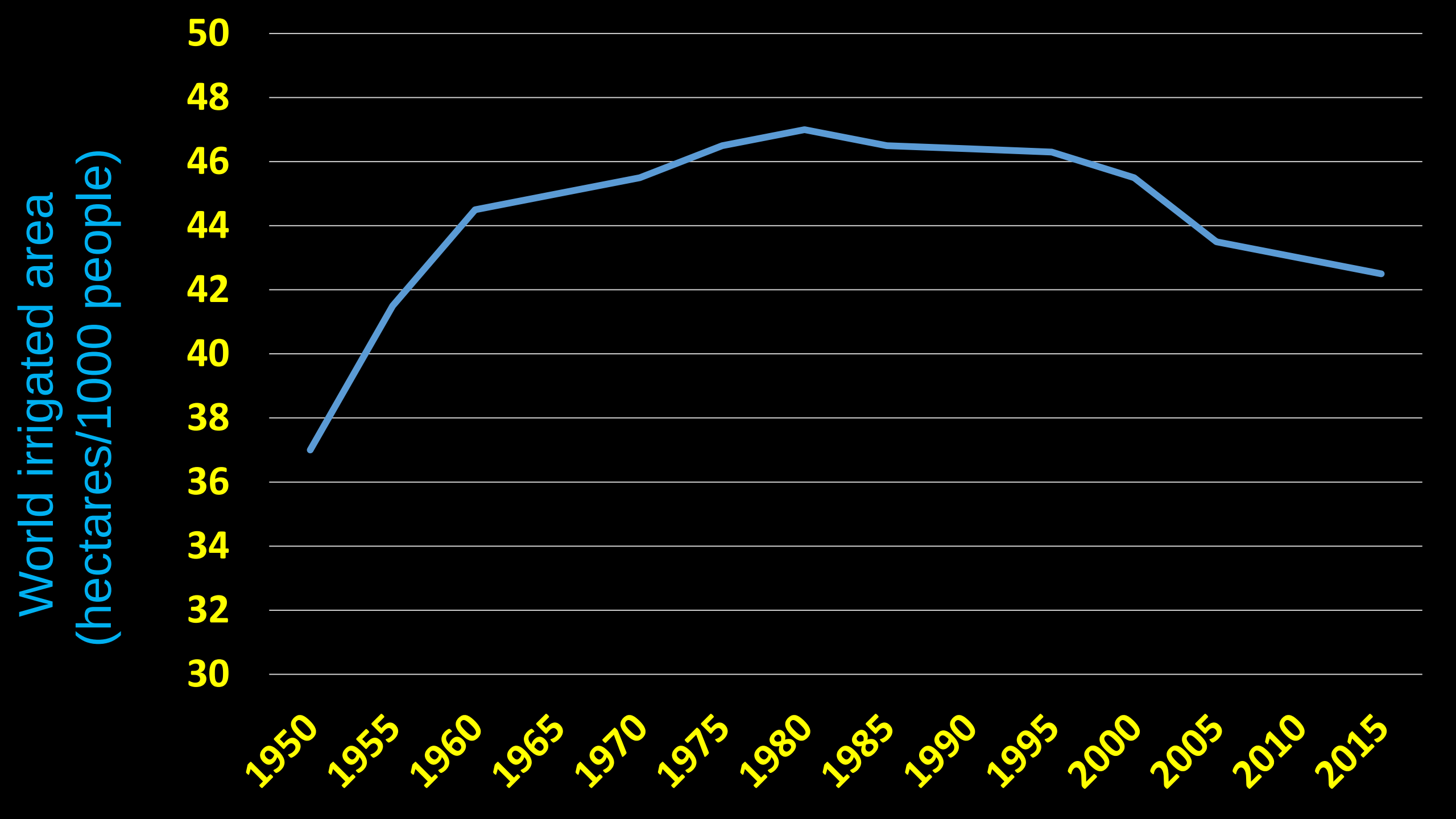


Irrigated area (million ha) - Top ten countries

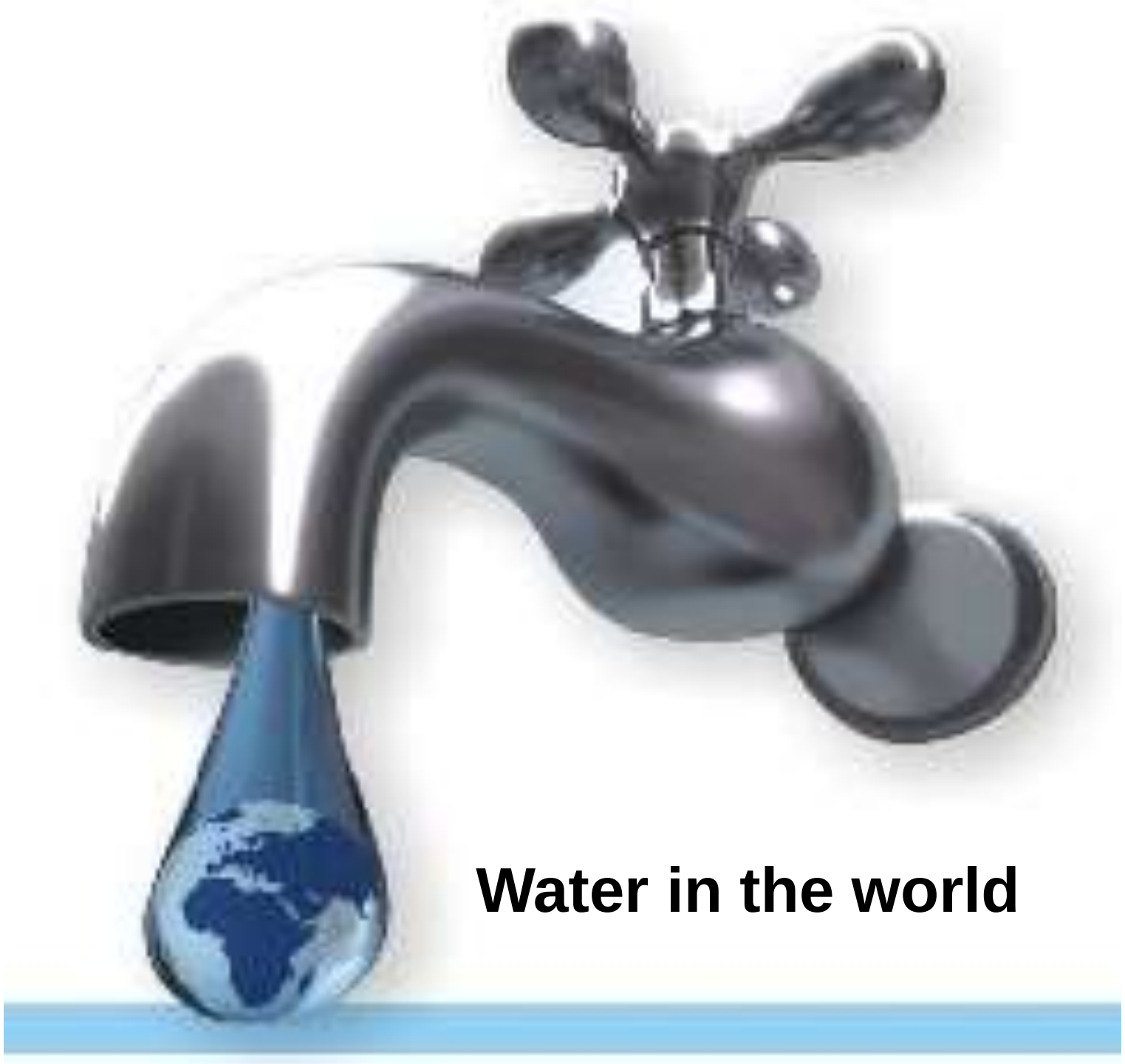


World irrigated area (Hectares/ 1000 people)

(Source: FAO)


World irrigated area
(hectares/1000 people)
50
48
46
44
42
40
38
36
34
32
30
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015

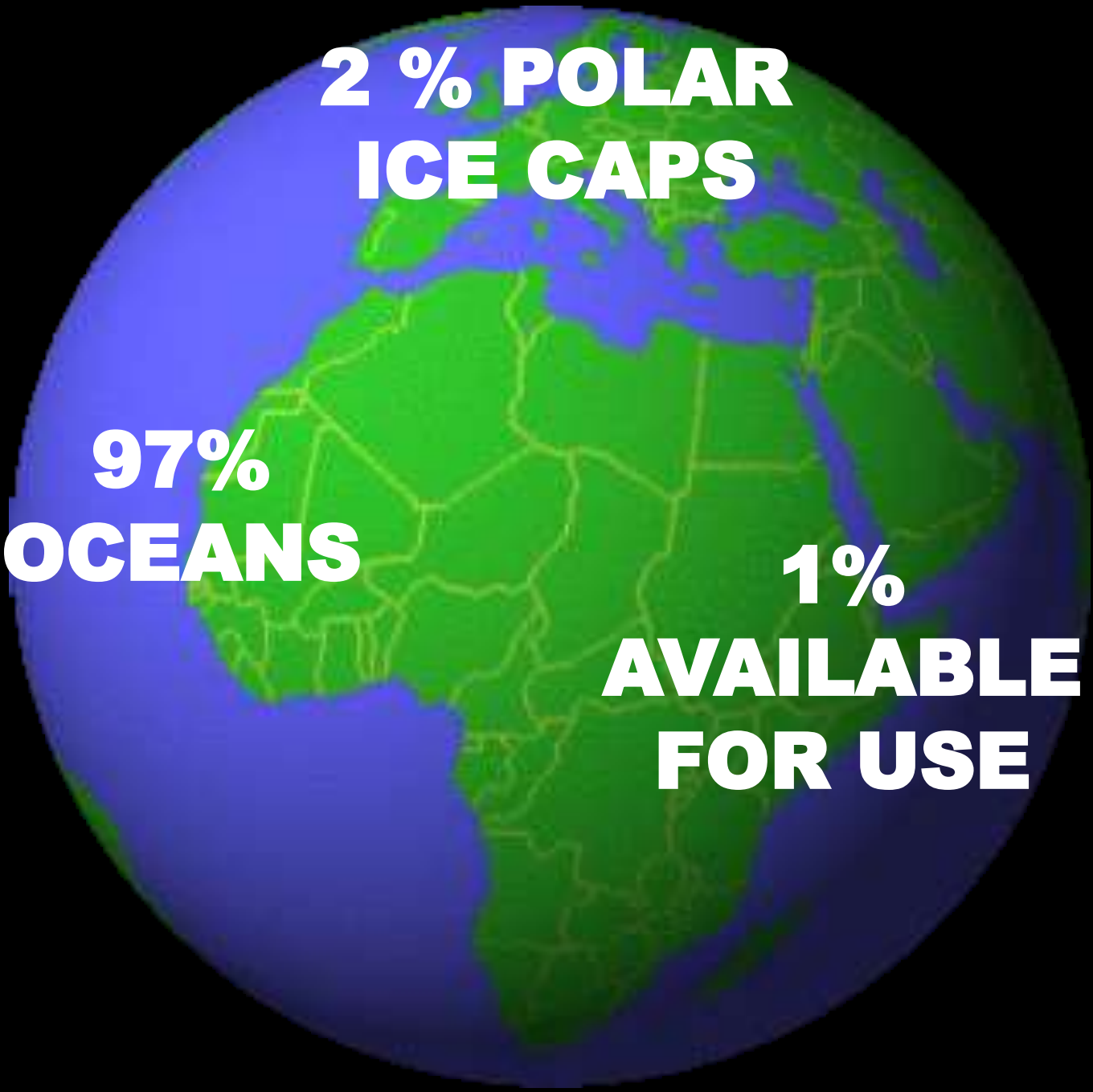
International



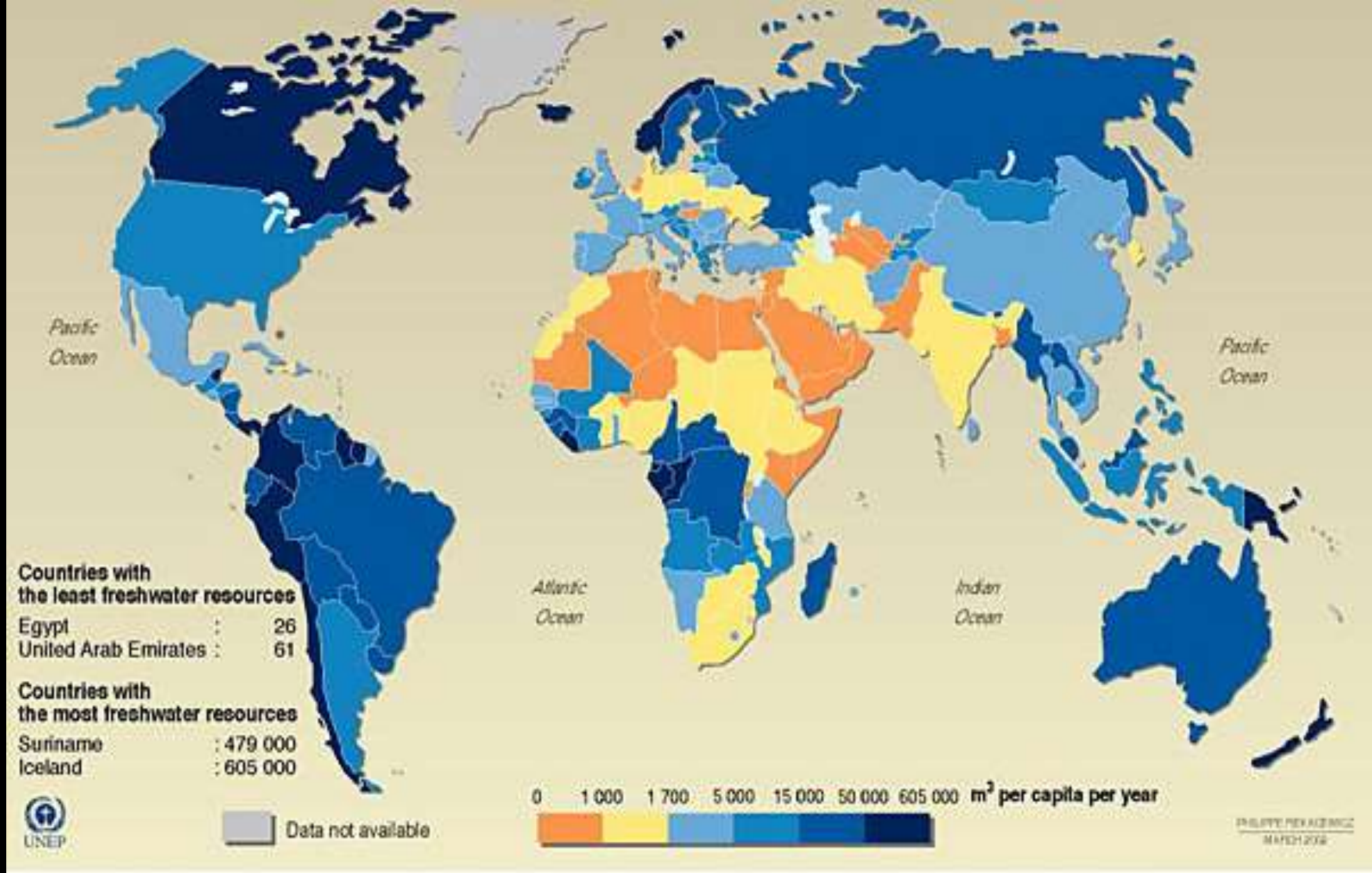
Water in the world


WATER

WATER

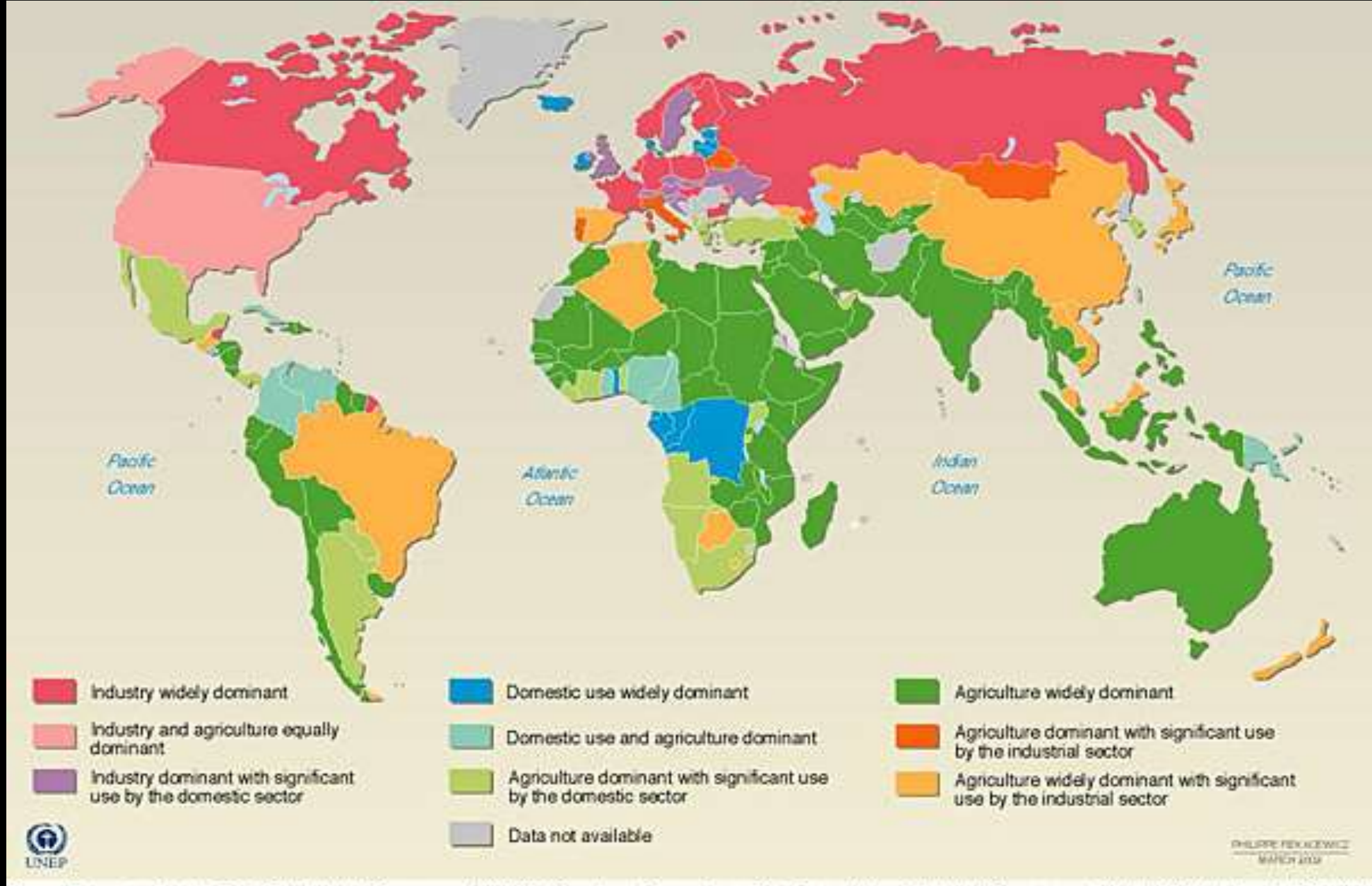


Availability of Fresh water



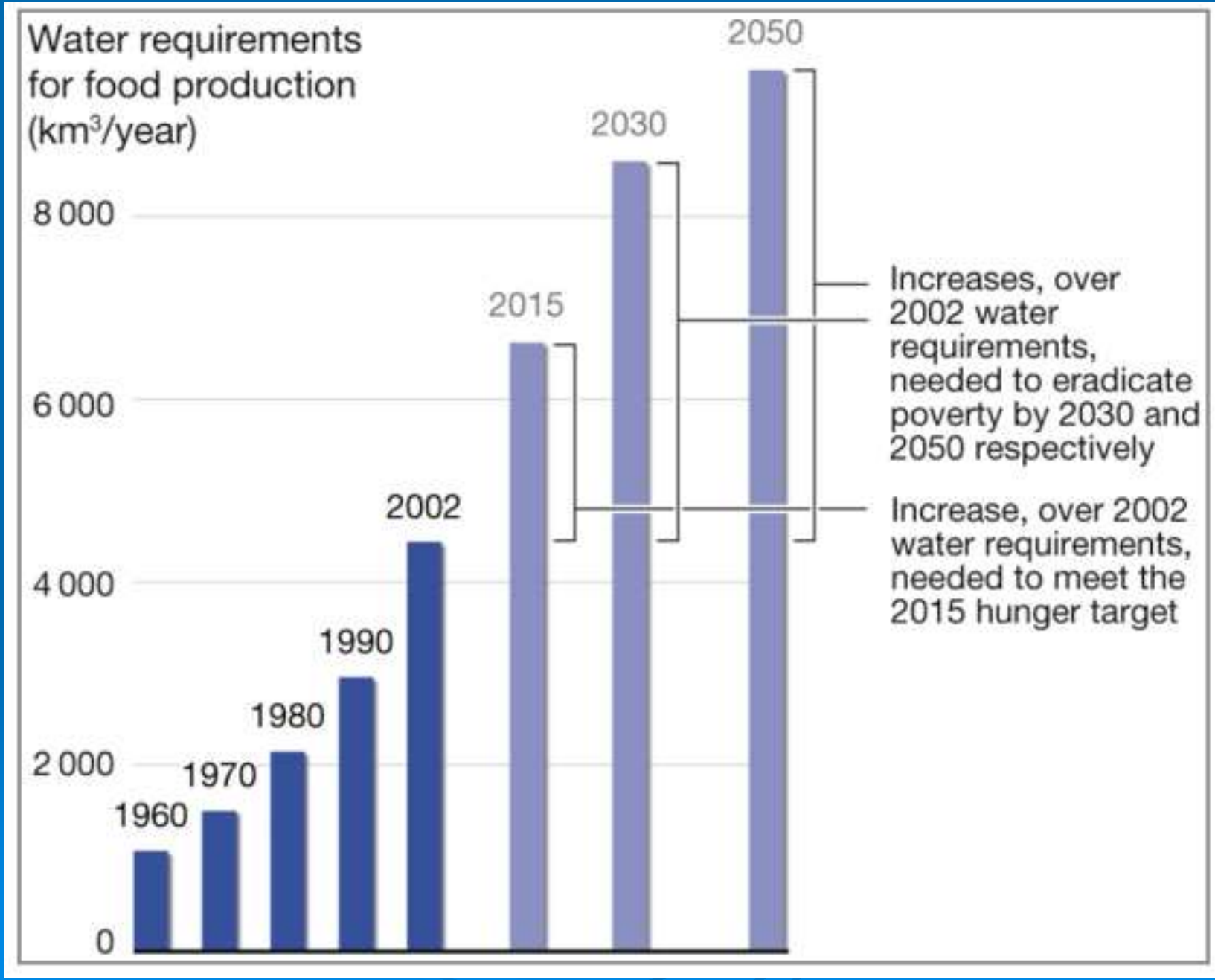
Source: *World Resources 2000-2001, People and Ecosystems: The Fraying Web of Life*, World Resources Institute (WRI), Washington DC, 2000.

Global Freshwater withdrawal



Source: Based on data fromTable FW1 in *World Resources 2000-2001, People and Ecosystems: The Fraying Web of Life*, World Resources Institute (WRI), Washington DC, 2000.

Water requirements for food production 1960-2050

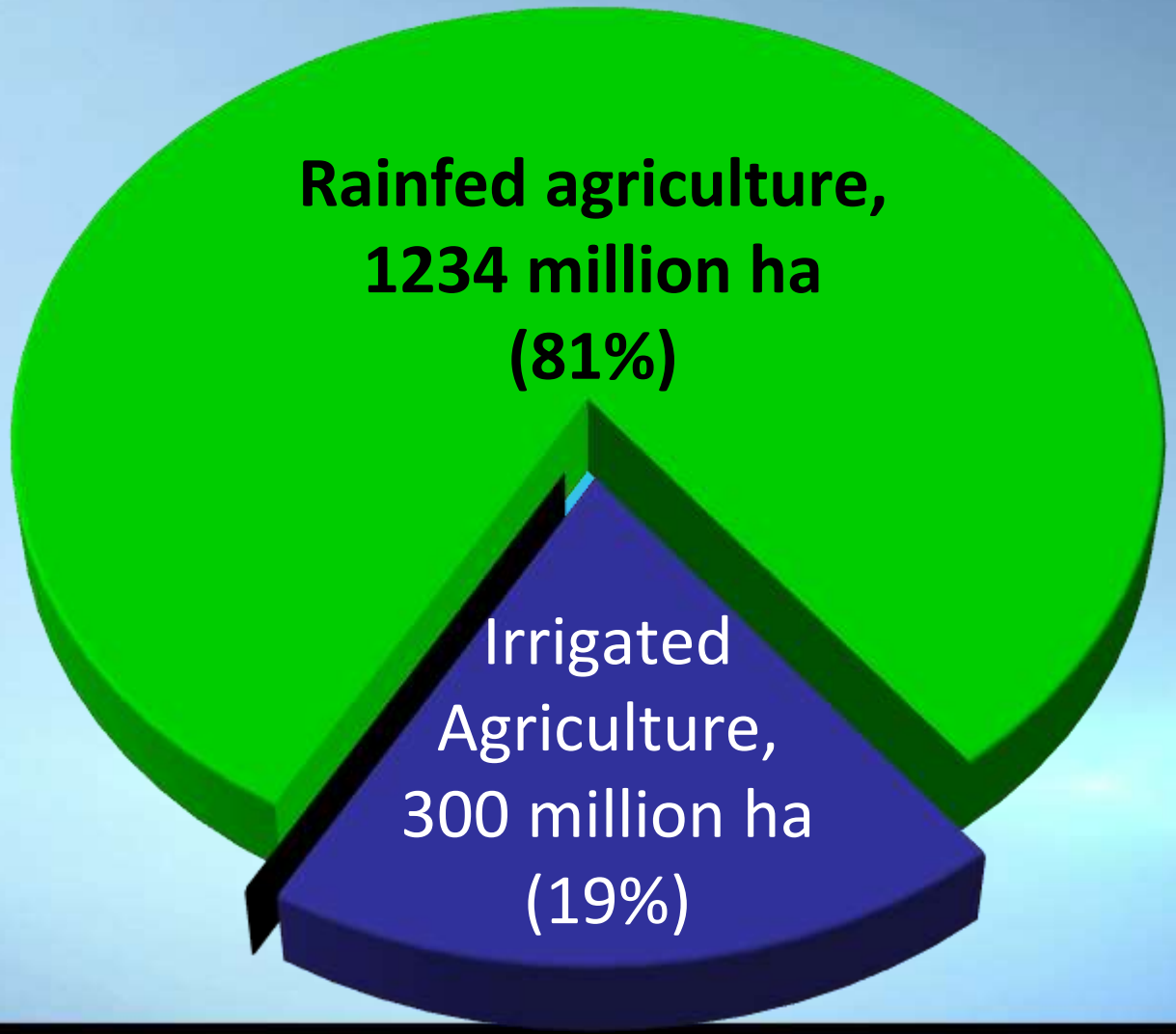



Irrigation

Water dependant

Rainfed Agriculture 1234 million ha

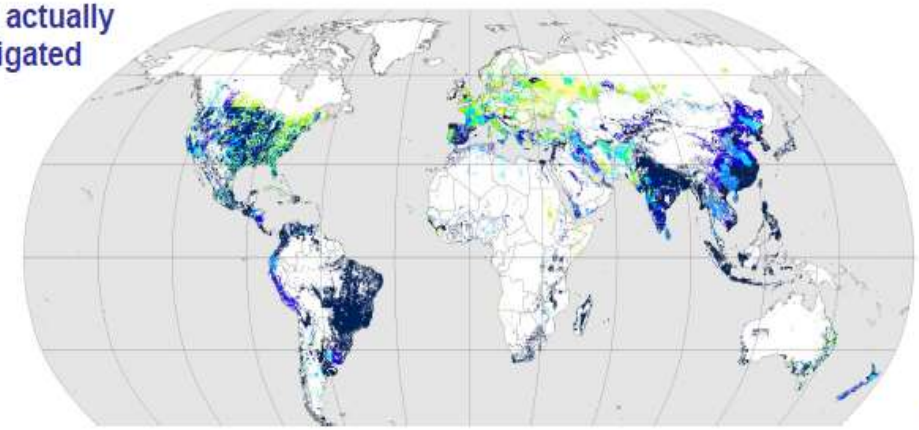
Irrigated Agriculture 300 million ha


Rainfed agriculture,
1234 million ha
(81%)
Irrigated
Agriculture,
300 million ha
(19%)

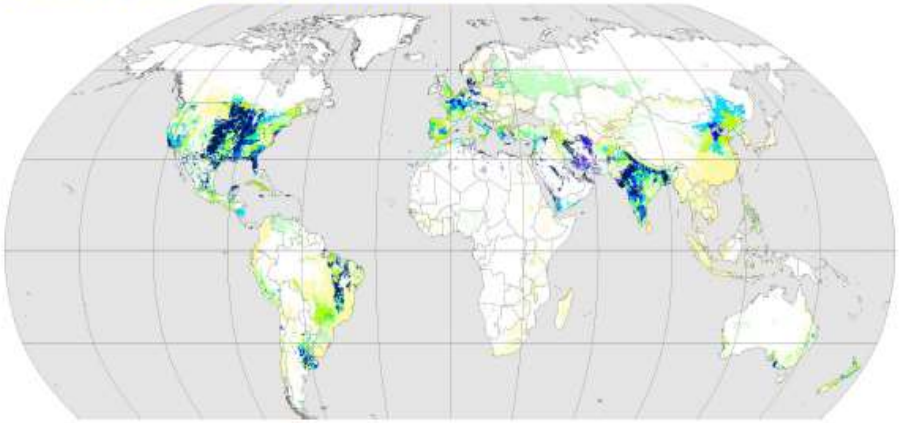
The digital global map of irrigation areas

October 2013

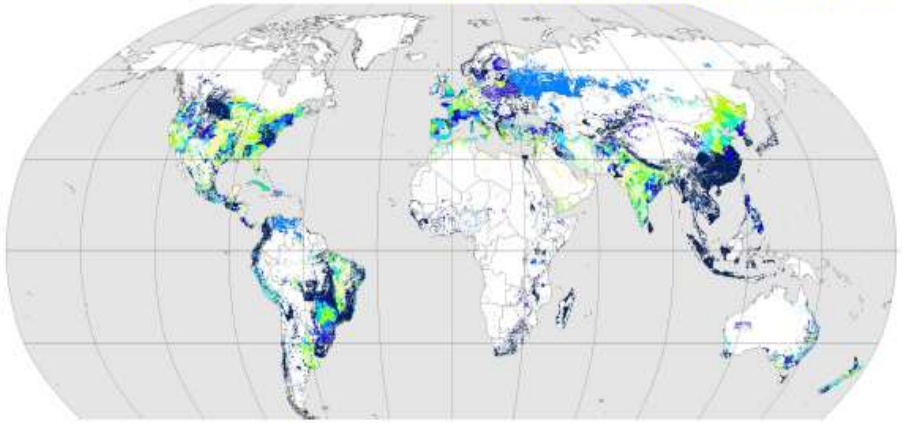
Area actually irrigated



Area irrigated with groundwater



Area irrigated with surface water



Percentage of area equipped for irrigation (AEI)

No AEI	60 - 70
< 10	70 - 80
10 - 30	80 - 90
30 - 50	90 - 100
50 - 60	

The maps show the percentage of area equipped for irrigation that is actually irrigated, irrigated with groundwater or irrigated with surface water. For the majority of countries the base year of statistics is in the period 2000 - 2008.

Projection: Robinson
Resolution: 5 arc-minutes

http://www.fao.org/nr/water/aquastat/irrigationmap/index.stm

Stefan Siebert, Verena Henrich (Institute of Crop Science and Resource Conservation, University of Bonn, Germany) and Karen Frenken, Jacob Burke (Land and Water Division, Food and Agriculture Organization of the United Nations, Rome, Italy)

universitätbonn

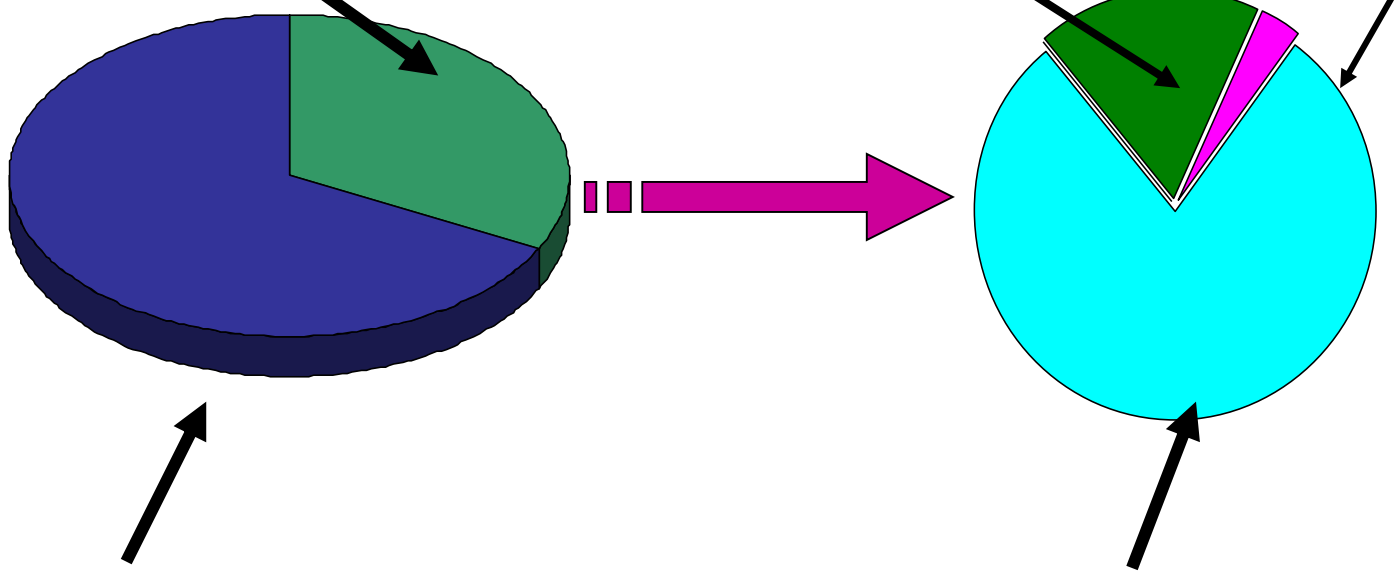
World-wide Coverage of Irrigation

Total irrigated area = 300 Mha

Rice irrigated Area
102 Mha, 34 %

Sprinkler,
38 Mha, 13%

Micro irrigation,
14 Mha, 5%



Irrigated area of other crops
198 Mha, 66 %

Gravity irrigation,
248 Mha,82%

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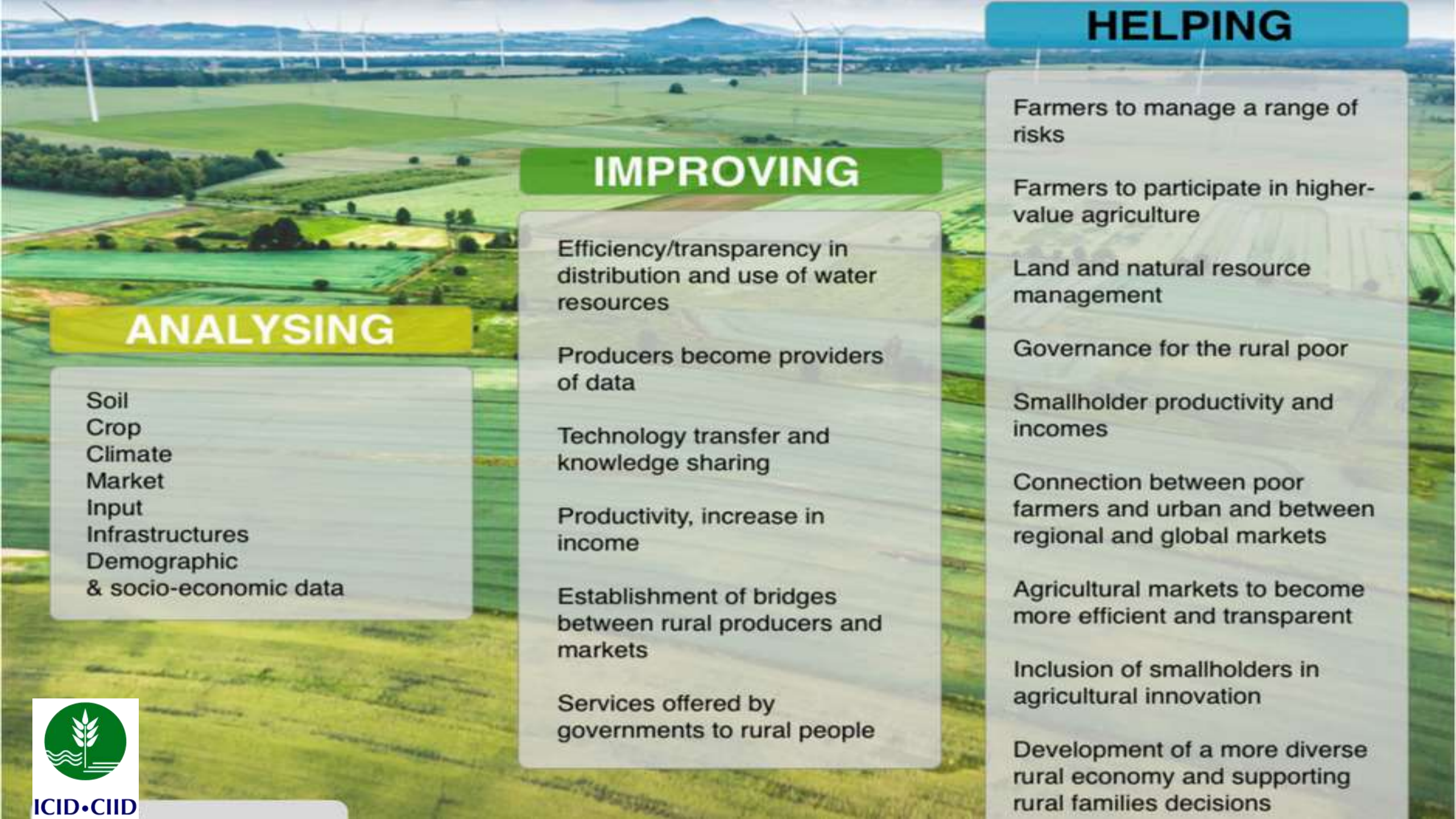
Digitization

Digitization is the process of converting information into a digital (i.e. computer-readable) format, in which the information is organized into bits.

The result is the representation of an object, image, sound, document or signal (usually an analog signal) by generating a series of numbers that describe a discrete set of its points or samples.

Digitizing simply means the conversion of analog source material into a numerical format; the decimal or any other number system that can be used instead.



ANALYSING

Soil
Crop
Climate
Market
Input
Infrastructures
Demographic
& socio-economic data

IMPROVING

Efficiency/transparency in distribution and use of water resources

Producers become providers of data

Technology transfer and knowledge sharing

Productivity, increase in income

Establishment of bridges between rural producers and markets

Services offered by governments to rural people

HELPING

Farmers to manage a range of risks

Farmers to participate in higher-value agriculture

Land and natural resource management

Governance for the rural poor

Smallholder productivity and incomes

Connection between poor farmers and urban and between regional and global markets

Agricultural markets to become more efficient and transparent

Inclusion of smallholders in agricultural innovation

Development of a more diverse rural economy and supporting rural families decisions

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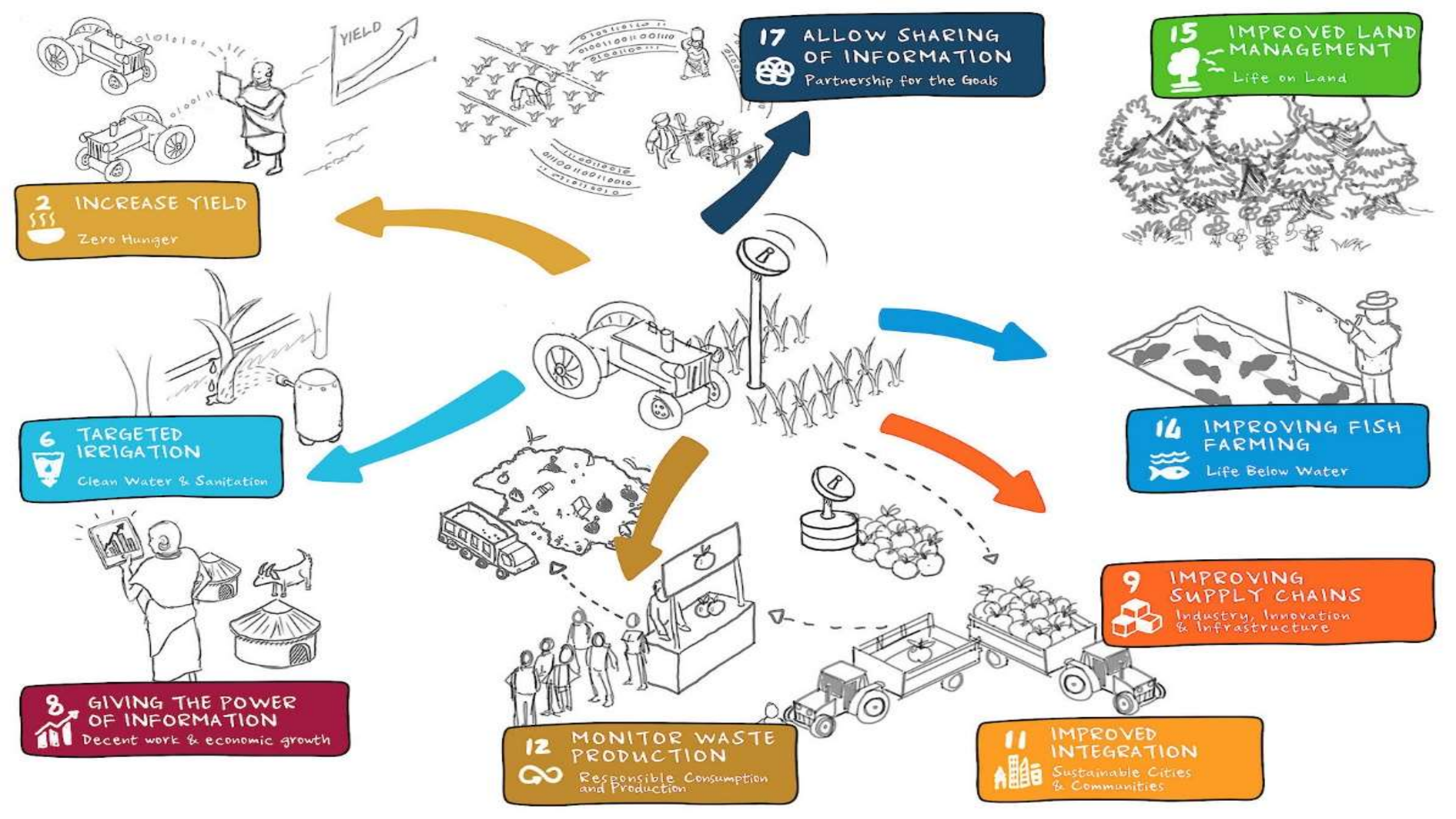
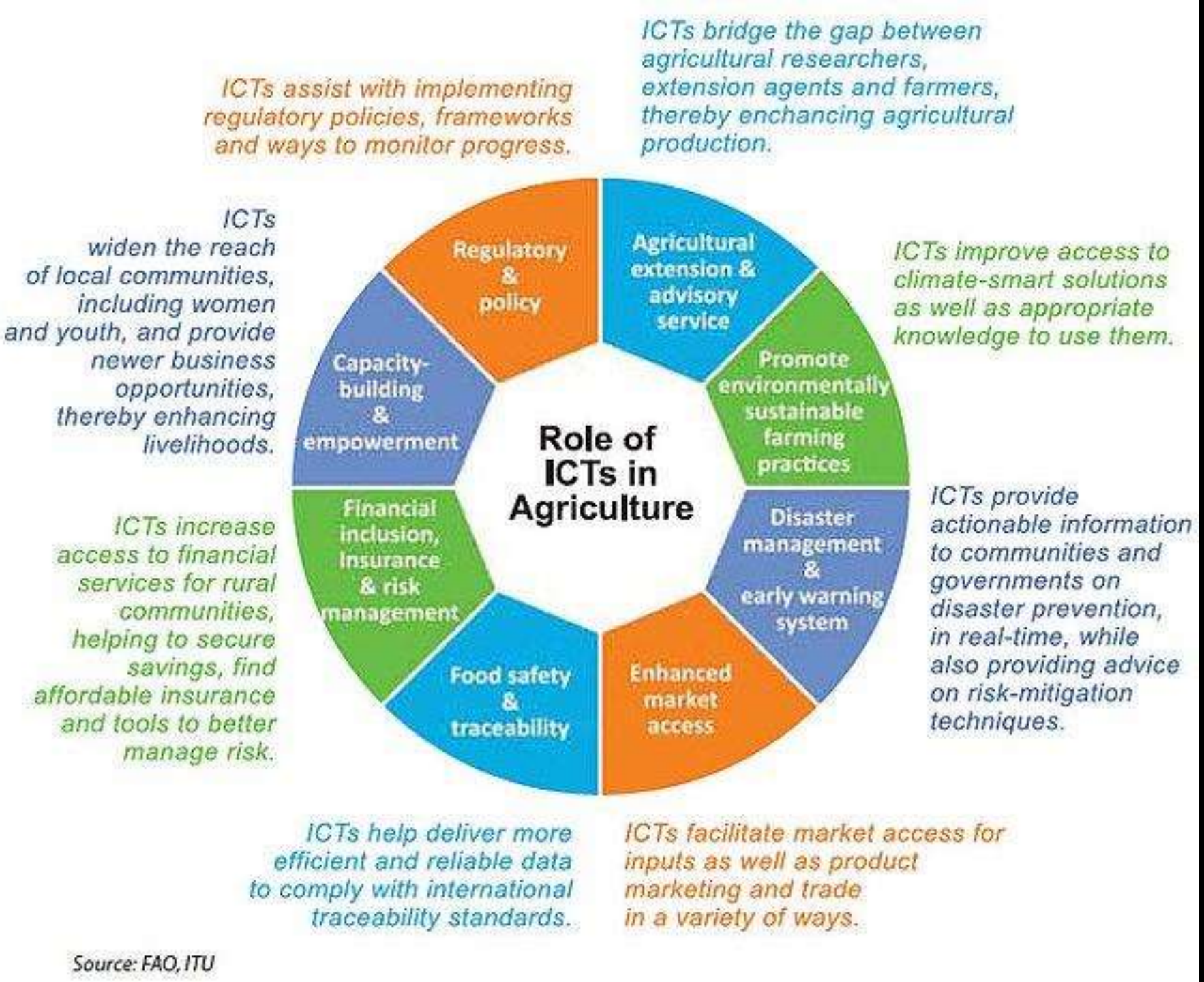
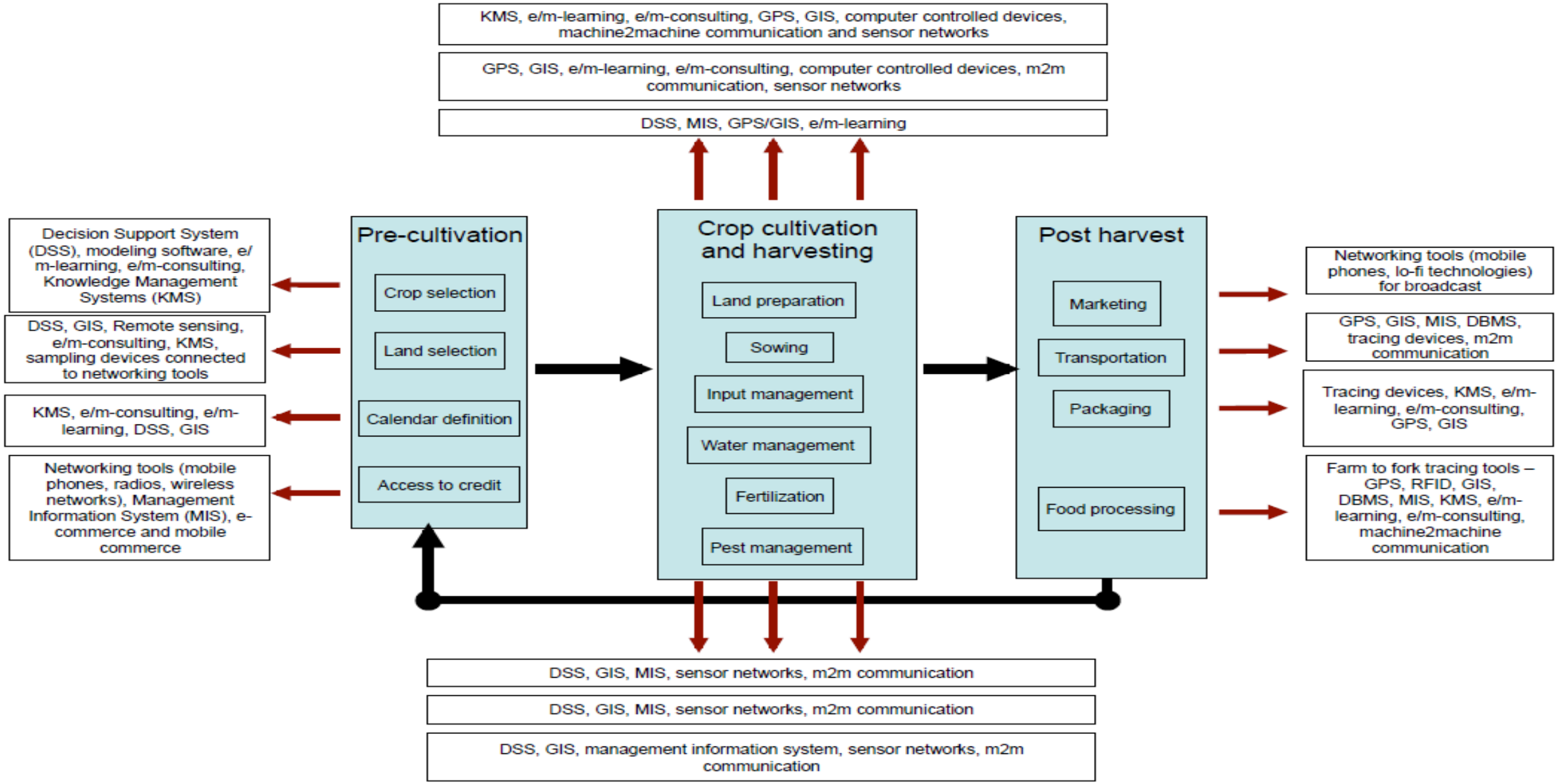

YIELD
17 ALLOW SHARING OF INFORMATION
Partnership for the Goals
15 IMPROVED LAND MANAGEMENT
Life on Land
2 INCREASE YIELD
Zero Hunger
6 TARGETED IRRIGATION
Clean Water & Sanitation
14 IMPROVING FISH FARMING
Life Below Water
8 GIVING THE POWER OF INFORMATION
Decent work & economic growth
9 IMPROVING SUPPLY CHAINS
Industry, Innovation & Infrastructure
12 MONITOR WASTE PRODUCTION
Responsible Consumption and Production
11 IMPROVED INTEGRATION
Sustainable Cities & Communities

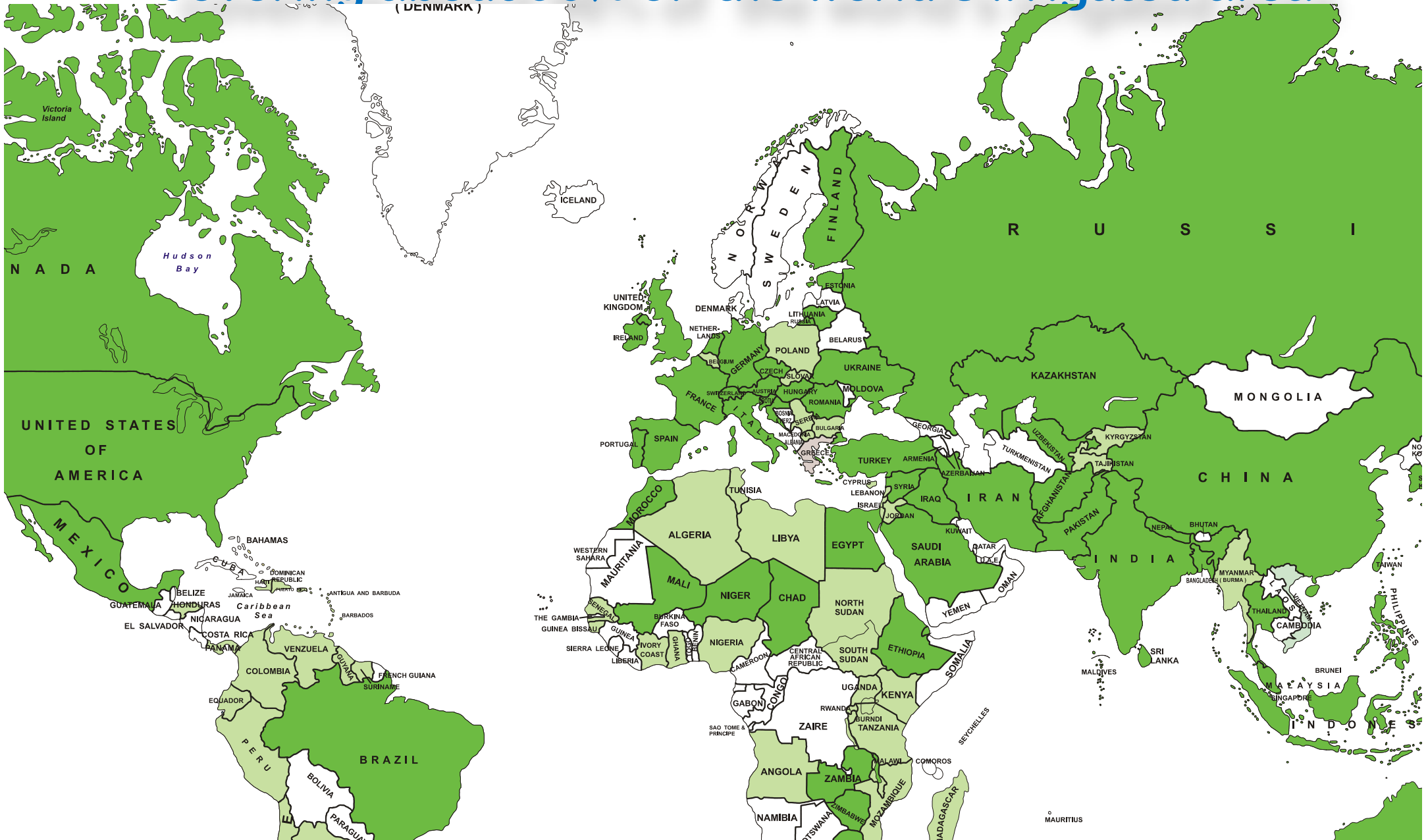

ICTs bridge the gap between agricultural researchers, extension agents and farmers, thereby enchancing agricultural production.
ICTs assist with implementing regulatory policies, frameworks and ways to monitor progress.
ICTs widen the reach of local communities, including women and youth, and provide newer business opportunities, thereby enhancing livelihoods.
ICTs improve access to climate-smart solutions as well as appropriate knowledge to use them.
Role of ICTs in Agriculture
Regulatory & policy
Agricultural extension & advisory service
Capacity-building & empowerment
Promote environmentally sustainable farming practices
Financial inclusion, Insurance & risk management
Disaster management & early warning system
Food safety & traceability
Enhanced market access
ICTs increase access to financial services for rural communities, helping to secure savings, find affordable insurance and tools to better manage risk.
ICTs provide actionable information to communities and governments on disaster prevention, in real-time, while also providing advice on risk-mitigation techniques.
ICTs help deliver more efficient and reliable data to comply with international traceability standards.
ICTs facilitate market access for inputs as well as product marketing and trade in a variety of ways.
Source: FAO, ITU

Digitization in Agriculture using Information Technology




INTERNATIONAL COMMISSION
ON IRRIGATION AND
DRAINAGE
XII
2018
1950

ICID Membership network spreads over 100 countries covering about 96% of the world's irrigated area



A ROAD MAP TO ICID VISION 2030

A WATER SECURE WORLD
FREE OF POVERTY AND HUNGER

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INTERNATIONAL COMMISSION ON IRRIGATION AND DRAINAGE

Roadmap to ICID Vision 2030
Vision and Mission

Vision

Water secure world free of poverty and hunger through sustainable rural development

Mission

Working together towards sustainable agriculture water management through inter-disciplinary approaches to economically viable, socially acceptable and environmentally sound irrigation, drainage and flood management

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ICID Vision 2030
Organisation Goals

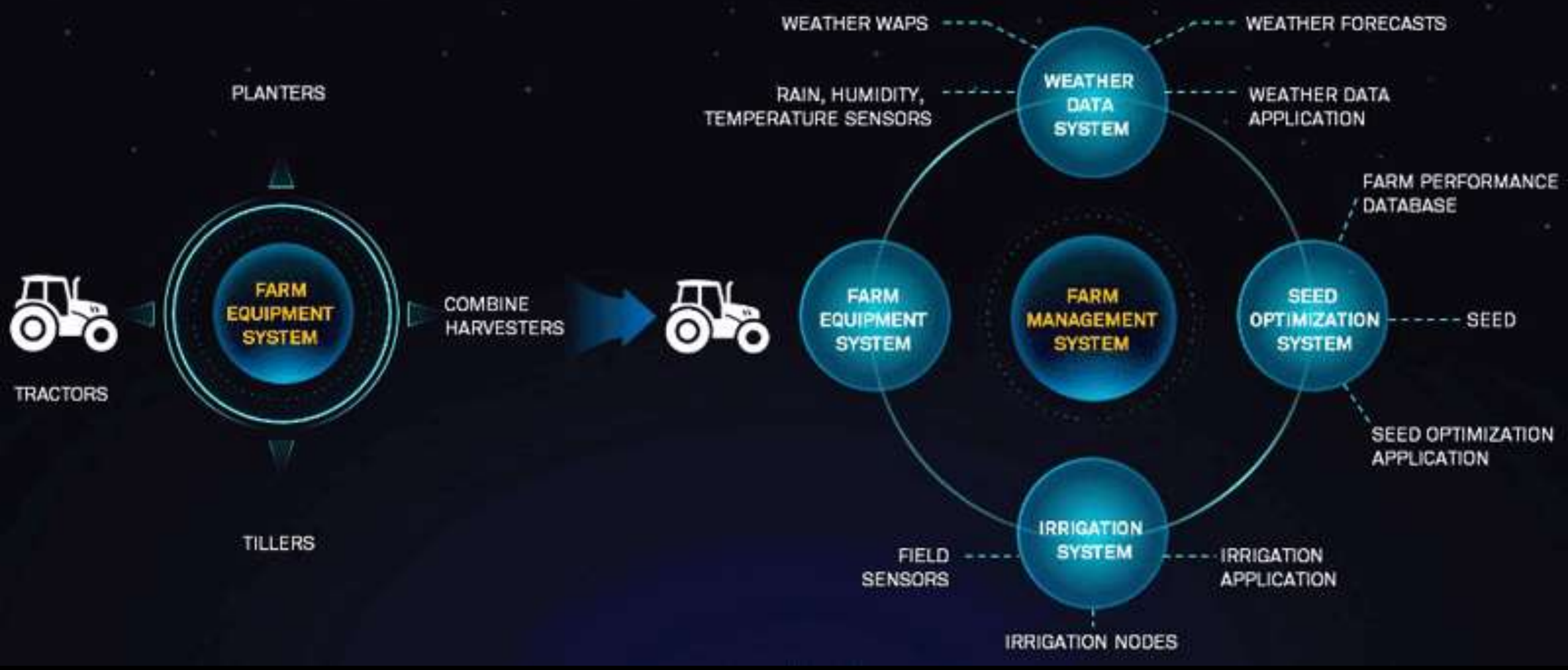
In Closure

Water and Irrigation

- Water is the key to food security
- Water is not just for primary production
- Water for agriculture connects us all together

We need to be more ‘water smart’.

Digitization is the future to process information into a digital format by generating a series of numbers that can be used for land improvement.




Welcome
Baltic Regional Conference
Digitization
for
land improvement activities and opportunities
of the
future development