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# Transforming agriculture and resource use: Solutions for a changing world.

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# Getting agriculture “right”.



# Why does agriculture matter?

## 1 NO POVERTY



## 4 QUALITY EDUCATION



## 5 GENDER EQUALITY



## 6 CLEAN WATER AND SANITATION



Agr

By increasing poor economic growth in rural development areas. Entrepreneurship across crop, rural and food sectors can generate employment and trip growth.

## 7 AFFORDABLE AND CLEAN ENERGY



## 8 DECENT WORK AND ECONOMIC GROWTH



## 12 RESPONSIBLE CONSUMPTION AND PRODUCTION



## 13 CLIMATE ACTION



## 15 LIFE ON LAND





# But first, we have to deal with some serious issues...

## Inability to provide for all

- Since 1960: global food production grown by 145%, outpacing population growth.<sup>1</sup>
- Still, 870 million people suffering from chronic undernourishment in 2010-12 (FAO).
- 1/3<sup>rd</sup> of the food produced globally every year – 1.3bn tonnes – gets wasted (UNEP).

## Unsustainable practices

- Conventional agri. is resource intensive – e.g. water & fossil fuels to make fertilisers.
- Soil erosion, nutrient runoff, waterway sedimentation, GHGs, pesticide poisoning.<sup>2</sup>
- Externalities don't affect only food security, but limit ability of future generations to meet their requirements.



<sup>1</sup>Hazell and Wood (2008) | <sup>2</sup>Pretty (2008)

Picture 1: [africacartoons.com/damien-glez-food-waste/](http://africacartoons.com/damien-glez-food-waste/)

Picture 2: [wwf.panda.org/what\\_we\\_do/footprint/agriculture/impacts/soil\\_erosion/](http://wwf.panda.org/what_we_do/footprint/agriculture/impacts/soil_erosion/)



# Where should we look for solutions?

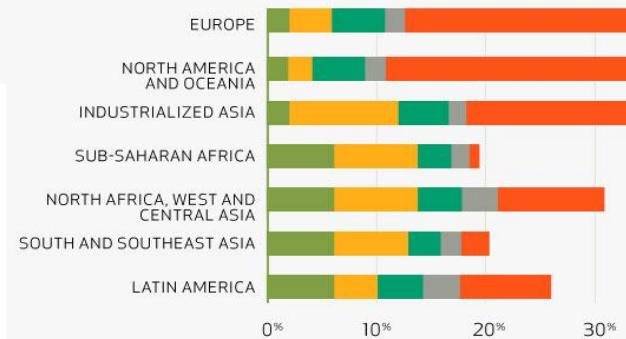
Given equal access to resources as men, women would achieve the same yield levels, boosting total agricultural output in developing countries by

2½-4%

This additional yield could reduce the number of undernourished people in the world by  
**100-150m**  
OR 12-17%

## FOOD WASTE BY REGION

■ AGRICULTURE ■ DISTRIBUTION  
■ POST-HARVEST ■ CONSUMPTION  
■ PROCESSING



## INVESTMENT

Investment in agricultural extension services yields **80% annual rates of return** and can help farmers to **double** their crop yields.

80%

ANNUAL RATES OF RETURN

2X

CROP YIELD INCREASE



# What should we be doing instead?

## Food Security:

- Strengthening policy and infrastructure to improve food access.
- Increasing small farmers' access to crop & market information through technology.
- Building capacity for on-farm storage and improving transport infrastructure to avoid waste.
- Targeting policies towards small farms: 525 million small farms produce 70% of global food.<sup>1</sup>

## Protecting Ecosystems:

- Changing incentives to ensure long-term sustainability of our eco-agri-food systems complex.
- Stopping fertiliser subsidies: 30-80% of nitrogen escapes to contaminate water and air.<sup>2</sup>
- Stopping water subsidies: Lead to inefficient water use, causing logging & salinisation.<sup>3</sup>
- Green Farming: Reduces need for external inputs & subsidies; increases yield by 79% on avg.<sup>4</sup>

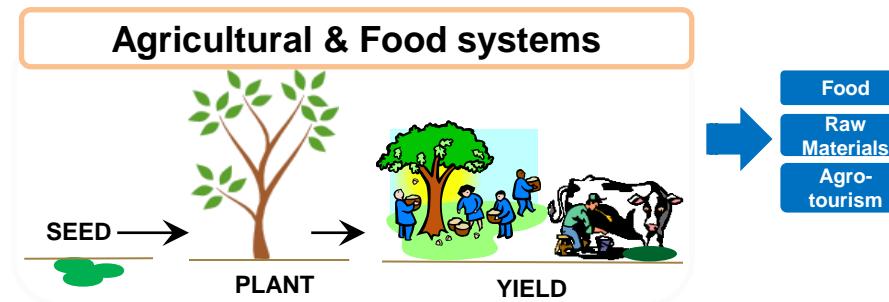
<sup>1</sup>[www.sustainabledevelopment2015.org/index.php/uncsd-official-docs/sdgs-news/1322-draft-inputs-from-the-food-and-agriculture-cluster-of-the-ngo-major-group-2](http://www.sustainabledevelopment2015.org/index.php/uncsd-official-docs/sdgs-news/1322-draft-inputs-from-the-food-and-agriculture-cluster-of-the-ngo-major-group-2)

<sup>2</sup>Pretty (2008) |<sup>3</sup>Leach (1976), Stout (1998) |<sup>4</sup>Pretty et al. (2006)



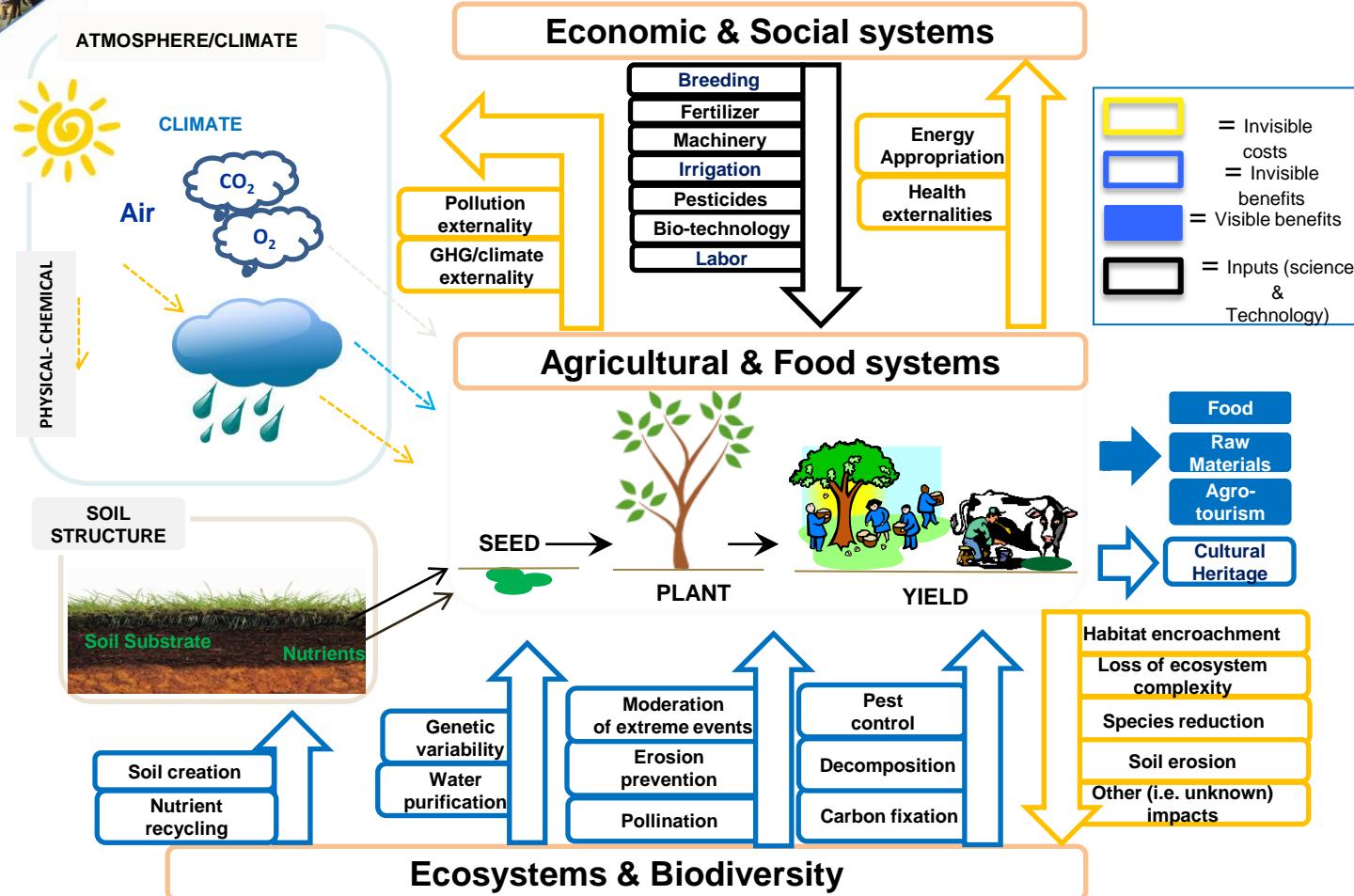
# Agricultural & Food Systems: Layperson's view

 = Visible benefits





# Agricultural & Food Systems: “TEEB-Ag-Food” view





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# Decoupling resources from growth.



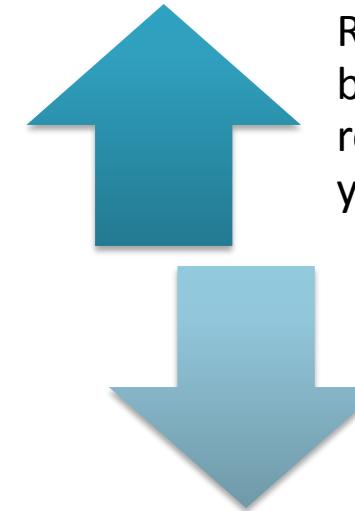
# Resource-led growth...





# Example: Resource taxation in Ireland

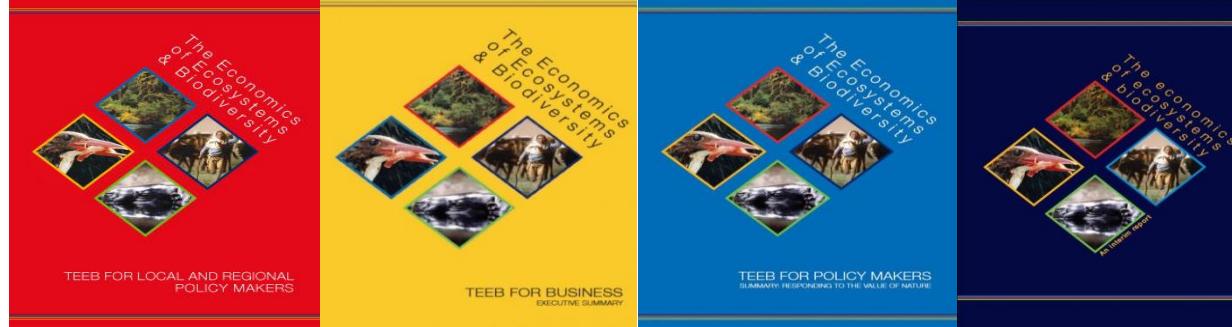
- In 2010, Ireland levied a carbon tax on use of **fossil fuels** by homes, offices, vehicles, and farms; purchase taxes and yearly registration fees on **automobiles**, and per-weight taxes on **residential garbage**.



Raised almost \$1.3 billion in new revenue over 3 years.

- "We ... set up a price signal that raised significant revenue and changed behavior. Now, we're smashing through the environmental targets we set for ourselves."* – Eamon Ryan, Irish Energy Minister (2007-11)

Reduced emissions by 15% between 2008 and 2012.



# Thank You!

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