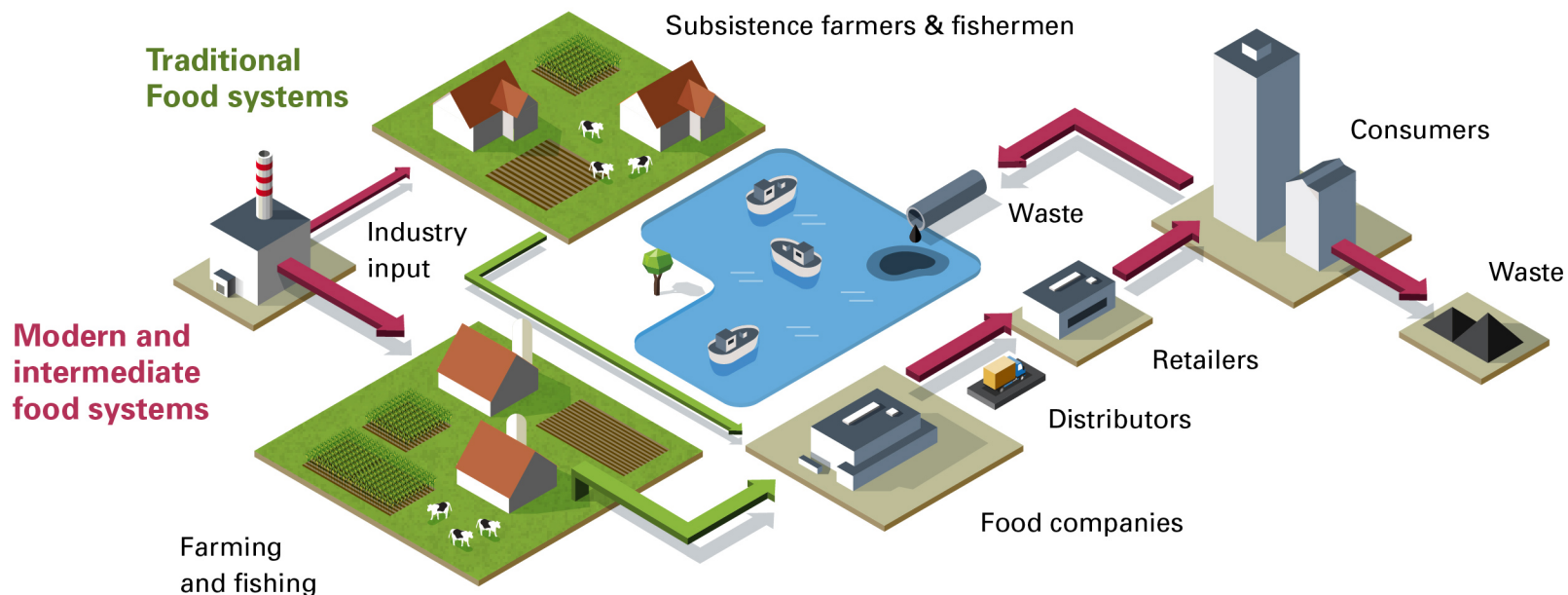


# Building Resource-Smart Food Systems for Sustainable Development

Socio-economic drivers and institutional setting

Food system activities and actors



Food system outcomes:

- Food and nutrition security for all
- Rural and urban livelihoods

## SOURCES & CONTACT

This document highlights findings from the report on "Food Systems and Natural Resources" and should be read in conjunction with the full report.

- References to research on which this infographic is based are listed in the full report: UNEP (2016): Food Systems and Natural Resources.

The International Resource Panel was established in 2007 to provide independent, scientific assessment on the sustainable use of natural resources and the impacts of resource use over the full life cycle.

[www.unep.org/resourcepanel](http://www.unep.org/resourcepanel)

Natural resources:



Land & Soils

Water

Biodiversity

Environmental impacts:



Greenhouse gas emissions

water

Water quality



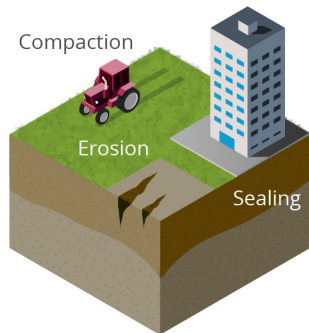
# Natural resources are often not managed sustainably or efficiently

## Renewable natural resources

### Land & Soils

**33%**

of soils is moderately to highly degraded due to:



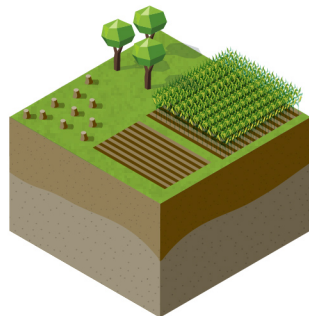
other threats are:

- chemical pollution
- acidification
- nutrient depletion
- salinization

### Biodiversity

**60%**

of global terrestrial biodiversity loss relates to food production; supporting ecosystem services are under pressure.

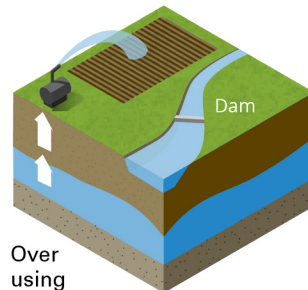


Increasing genetic uniformity narrows the genetic base of crops and livestock.

### Water

**20%**

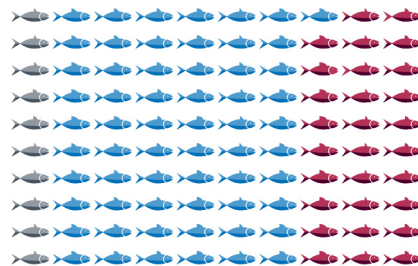
of the world's aquifers are overexploited; many surface water regimes have been substantially altered and/or contaminated.



Over using aquifer

**61%**

of all 'commercial' fish populations are fully fished



**29%**

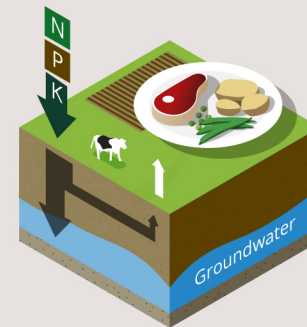
are overfished

## Non-renewable natural resources

### Minerals

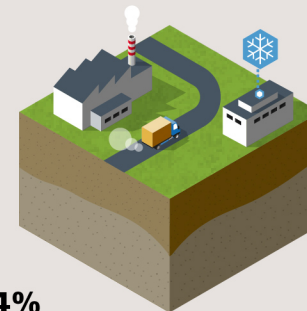
**15-20%**

of the total input of nitrogen and phosphorus as fertilizers is embedded in the food that reaches the consumers' plates.



### Fossil fuels

Modern food systems are dependent on fossil fuels for transport and cooling; and for the production of fertilizers.



**24%**

of total global greenhouse gas emissions are related to food systems: CO<sub>2</sub> from fossil fuel use and land use; methane and nitrous oxide from animals and fields.

## SOURCES & CONTACT

This document highlights findings from the report on "Food Systems and Natural Resources" and should be read in conjunction with the full report.

- References to research on which this infographic is based are listed in the full report: UNEP (2016): Food Systems and Natural Resources.

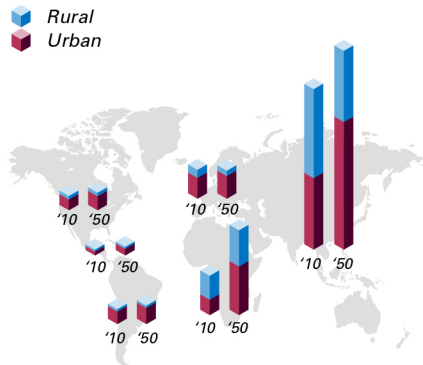
The International Resource Panel was established in 2007 to provide independent, scientific assessment on the sustainable use of natural resources and the impacts of resource use over the full life cycle.

[www.unep.org/resourcepanel](http://www.unep.org/resourcepanel)



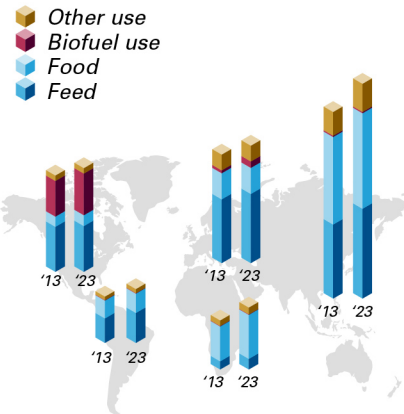
# Trends show: higher pressure on natural resources is expected

## The global population will grow



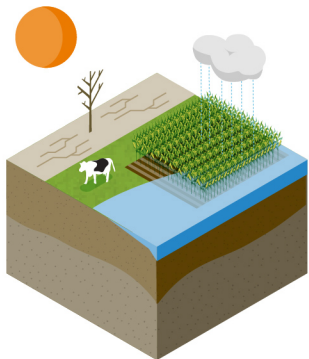
## Cereal use increases:

more people, more cereals needed for animal production; more biofuels



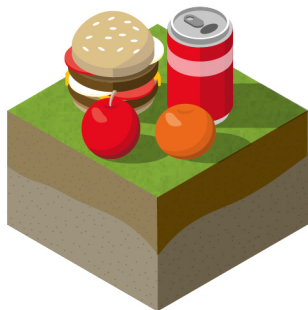
## Climate change:

will impact on average weather conditions and extremes, and thus the natural resources needed for food system activities.



## Changing diets:

towards higher consumption of meat, dairy, fruits and ultra-processed products



## Supermarketization:

people will buy more food in supermarkets, leading to changes in consumption patterns.



## SOURCES & CONTACT

This document highlights findings from the report on "Food Systems and Natural Resources" and should be read in conjunction with the full report.

► References to research on which this infographic is based are listed in the full report: UNEP (2016): Food Systems and Natural Resources.

The International Resource Panel was established in 2007 to provide independent, scientific assessment on the sustainable use of natural resources and the impacts of resource use over the full life cycle.

[www.unep.org/resourcepanel](http://www.unep.org/resourcepanel)



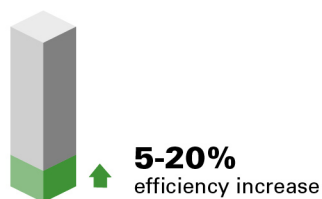


# Options towards Resource-Smart Food Systems

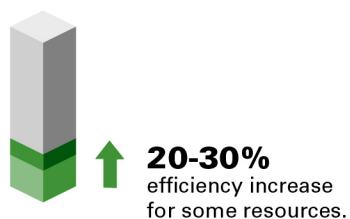
## What is are Resource-Smart Food Systems?

They are food systems in which the environmental basis is not compromised to deliver food security, livelihoods and human health for future generations. This implies sustainable use of renewable resources based on efficient use of all resources and low environmental impacts.

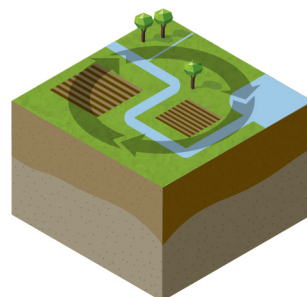
### Individual options could lead to



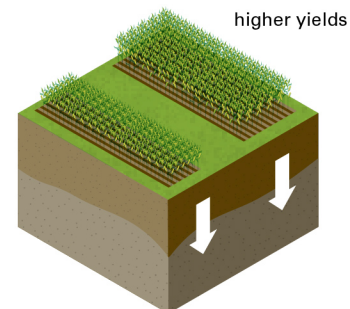
### Combined options could lead to



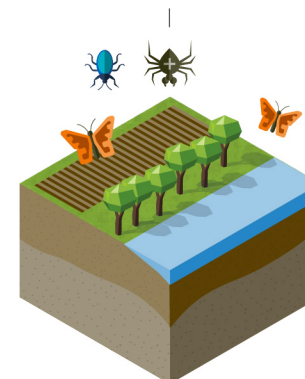
**1** Sustainable land and water management: to ensure future productive use.



**2** Sustainable intensification of crop production: higher yields without increasing the environmental impact.



**3** More effective use of ecosystems services.



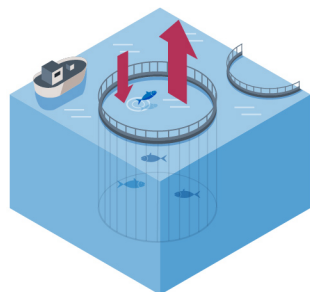
*integrated pest management to reduce pesticide use*

**4** Higher nutrient and energy efficiency along the food chain.

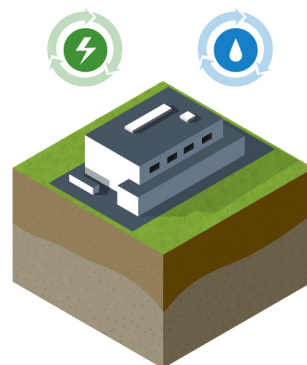


*better recycling of minerals in animal manure and city wastes, use of food wastes as compost, etc.*

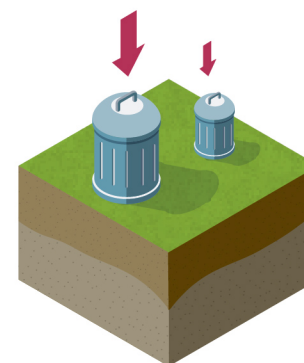
**5** More efficient aquaculture systems, with lower nutrient losses and less impact on coastal systems;



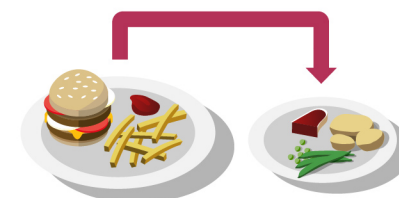
**6** More energy- and water-efficient food processing;



**7** Reduced food losses at farms; reduce food waste throughout food chain;



**8** Reduced overconsumption and changed unhealthy dietary patterns.



*shift in affluent societies to more plant-based diets*

## SOURCES & CONTACT

This document highlights findings from the report on "Food Systems and Natural Resources" and should be read in conjunction with the full report.

► References to research on which this infographic is based are listed in the full report: UNEP (2016): Food Systems and Natural Resources.

The International Resource Panel was established in 2007 to provide independent, scientific assessment on the sustainable use of natural resources and the impacts of resource use over the full life cycle.

[www.unep.org/resourcepanel](http://www.unep.org/resourcepanel)





# Key actors and what they can do



## What Governments can do

1. Eliminate distorting subsidies (e.g. fossil fuel subsidies);
2. Create adequate legal frameworks to secure property rights, land tenure and access to natural resources and services;
3. Regulate environmental impacts from food systems (e.g. nutrient losses, especially from livestock);
4. Invest in technology and research for locally suitable seeds and breeds
5. Attract investments in rural infrastructure, small enterprise development (e.g. inputs, local storage and processing facilities, logistic and transport);
6. Invest in practices and research to enable effective use of biodiversity and ecosystem services
7. Facilitate collaboration between food system actors (e.g. agreements among retailers to establish marketing codes of conduct);
8. Stimulate local or regional sourcing and investment in sustainable local supply chains;
9. Create incentives for cities to become innovation incubators of sustainable food systems (e.g. urban farming, etc.);
10. Adopt consumption-oriented policies (e.g. stricter rules for unhealthy food, stimuli for healthy and sustainable diets);
11. Create adequate monitoring systems of natural resources and environmental impacts;
12. Create education programmes on the links between natural resources, consumption patterns and health.

## What Private actors can do

1. Pay farmers and fishermen for better management of natural resources
2. Help smallholder farms and small agri-food businesses in developing countries invest in more sustainable activities
3. Make healthy and sustainable food choices easier for consumers.
4. Retailers and food companies in developing countries: invest in local supply chains; assist farmers to increase production sustainably.
5. Food companies: reduce the impact on environmental costs and obesity-related diseases.

## What Civil society can do

Challenge and stimulate government, private actors and consumers to move towards Resource-Smart Food Systems.

## SOURCES & CONTACT

This document highlights findings from the report on "Food Systems and Natural Resources" and should be read in conjunction with the full report.

► [References to research on which this infographic is based are listed in the full report: UNEP \(2016\): Food Systems and Natural Resources.](#)

The International Resource Panel was established in 2007 to provide independent, scientific assessment on the sustainable use of natural resources and the impacts of resource use over the full life cycle.

[www.unep.org/resourcepanel](http://www.unep.org/resourcepanel)



## Critical shifts



Reconnect rural and urban, invest in regional supply chains and improve the position of smallholders.



Reform policies on land and water rights.



Reconnect urban consumers with how their food is produced and how it reaches their plates.



Research and innovate, to decouple food system activities from resource use and environmental impacts.



Revalue the pricing of environmental externalities, reinforce legislation to prevent pollution.



Reinvigorate investment in rural infrastructure, education, training, technology, knowledge transfer.



Research the current functioning of the local, national or regional food systems and their impact on national resources.



Rebuild feedback loops by creating monitoring and reporting systems for countries and companies.