2nd World Congress on Water, Agriculture and Climate 23-26 November 2023

Climate change, water and food security

SUSANA NETO

APRH | University of Lisbon | University of Western Australia

Territorial integration
Context
Resilience
Water crisis
Food security
Population growth
SDGs
Water allocation
CLIMATE CHANGE
INCREASED RISKS
Water for food
Water efficiency
Water Governance
Trust
Capacity building
Integration at scales
FOOD SECURITY
Water-Energy-Food Nexus
Ecosystem services
Water quality
Community development
Policy integration
Global food demand
System harmonisation

United Nations (2015)

2020 SDG Report: SDG6

- The coronavirus crisis has brought to the fore the critical importance of water, sanitation and hygiene for protecting human health.
- Despite progress, billions of people around the globe still lack these basic services. Immediate action to improve access to water, sanitation and hygiene services is required to prevent infection and contain the spread of COVID-19.
- Water is essential not only to health, but also to poverty reduction, food security, peace and human rights, ecosystems and education.
- Nevertheless, countries face growing challenges linked to water scarcity, water pollution, degraded water-related ecosystems and cooperation over transboundary water basins.
- In addition, funding gaps and weak government systems hold many countries back from making needed advancements.

“UNLESS CURRENT RATES OF PROGRESS INCREASE SUBSTANTIALLY, GOAL 6 TARGETS WILL NOT BE MET BY 2030.”

SDG 6 - Effective and Transparent Governance

- Understanding the local context
- Cross sectoral integration
- Increasing coordination

GWP, 2014

Water Governance

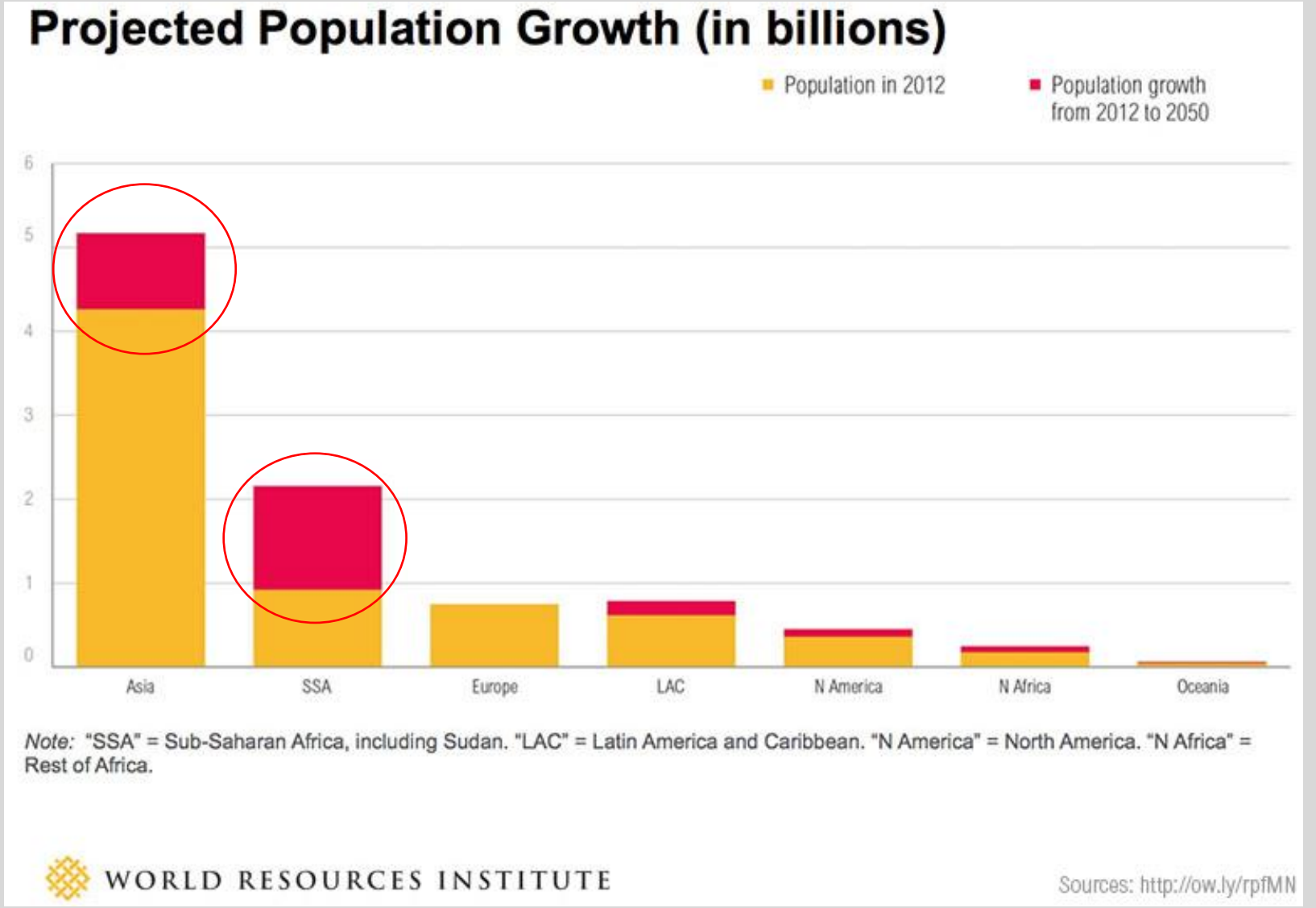
- **Intersectoral Cooperation**
- **Public awareness and dialogue**
- **Long term vision**
- **Political willingness**
- **Effective policy integration at local, regional, and national level**

Key dimensions of water governance - OECD

- Effectiveness: the contribution of governance to define clear sustainable water policy goals & targets at all levels of government, to implement those policy goals, & to meet expected targets
- Efficiency: the contribution of governance to maximise the benefits of sustainable water management & welfare at the least cost to society
- Trust and Engagement: the contribution of governance to building public confidence & ensuring inclusiveness of stakeholders through democratic legitimacy & fairness for society at large

(OECD, 2015)

Increasing Population



Changing consumption patterns

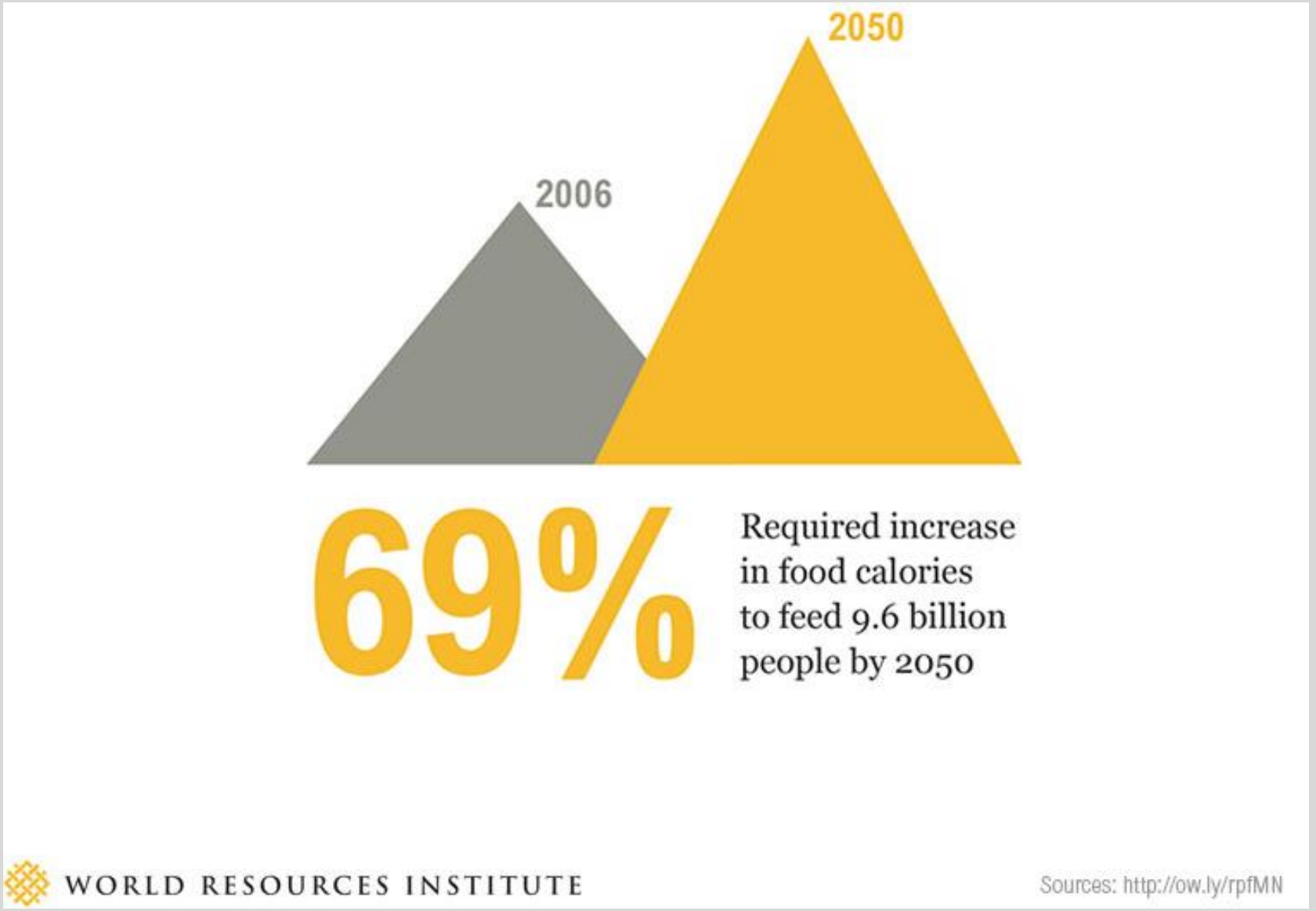
Global Consumption of Meat and Milk Products

REGION	LIVESTOCK (KCAL/PERSON/DAY)			BEEF AND MUTTON (KCAL/PERSON/DAY)		
	2006	2050	% CHANGE	2006	2050	% CHANGE
European Union	864	925	7%	80	75	-6%
Canada & USA	907	887	-2%	117	95	-19%
China	561	820	46%	41	89	116%
Brazil	606	803	33%	151	173	15%
Former Soviet Union	601	768	28%	118	156	32%
Other OECD	529	674	27%	64	84	31%
Latin America (ex. Brazil)	475	628	32%	59	86	45%
Middle East and North Africa	303	416	37%	59	86	45%
Asia (ex. China, India)	233	400	72%	24	43	79%
India	184	357	94%	8	19	138%
Sub-Saharan Africa	144	185	29%	41	51	26%
World	**413**	**506**	**23%**	**50**	**65**	**30%**

WORLD RESOURCES INSTITUTE

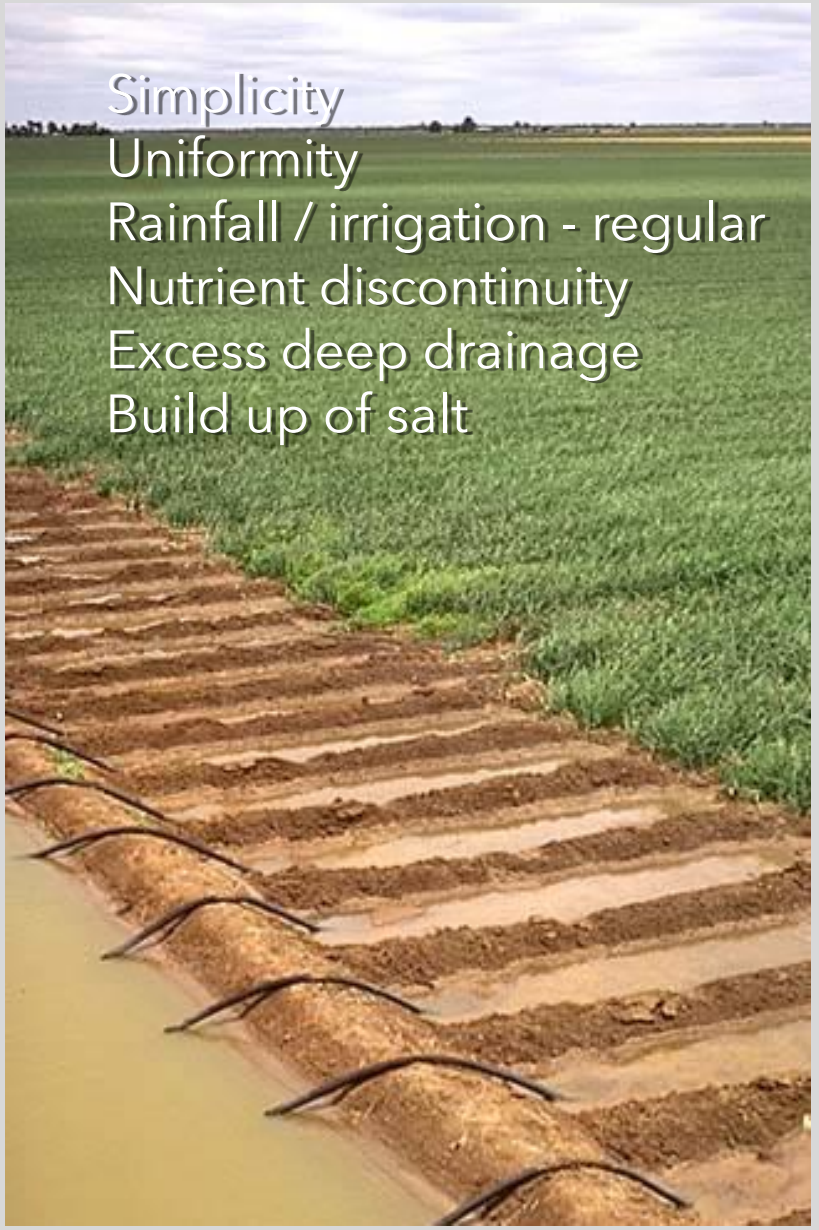
Sources: http://ow.ly/rpfMN

We have a food gap



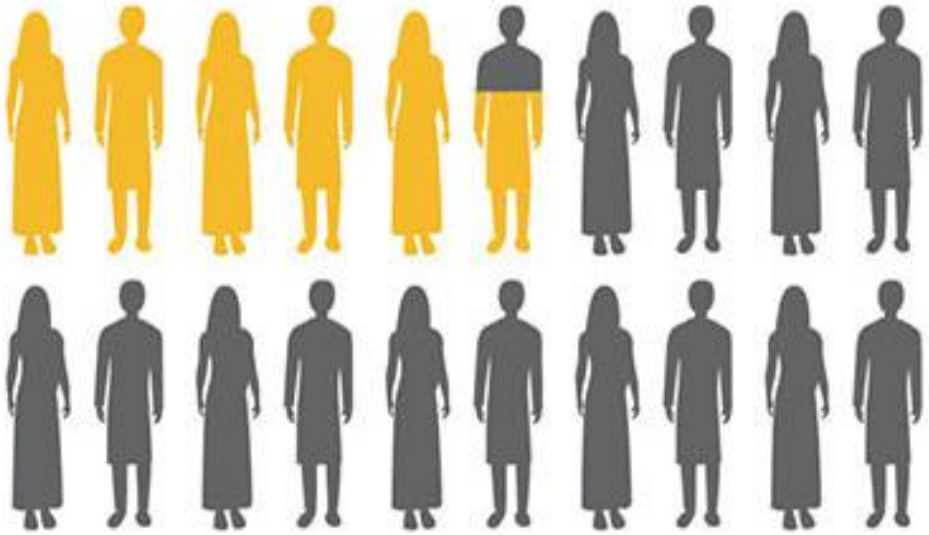
Natural systems

Irrigated systems



Bristow, 2004

But agriculture is critical to food, the economy and society



28% Global population directly or indirectly employed by agriculture

WORLD RESOURCES INSTITUTE

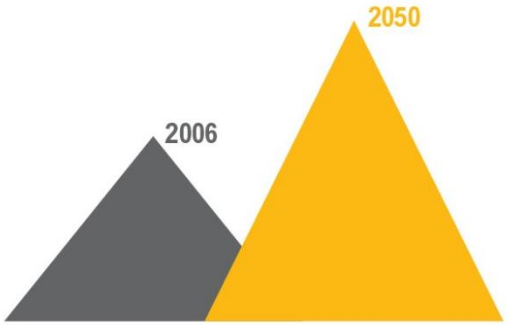
Sources: http://ow.ly/rpfMN

Three critical needs

THE GREAT BALANCING ACT

The world must achieve a "great balancing act" in order to sustainably feed 9.6 billion people by 2050.
Three needs must be met at the same time.

CLOSING THE FOOD GAP



69% Required increase in food calories to feed 9.6 billion people by 2050

SUPPORTING ECONOMIC DEVELOPMENT

28% Global population directly or indirectly employed by agriculture

REDUCING ENVIRONMENTAL IMPACT

WORLD RESOURCES INSTITUTE

Key criteria for a sustainable food future

In *Creating a Sustainable Food Future*, the World Resources Institute identified five key sustainability criteria:

- **advancing rural development**
- **generating benefits for women**
- **protecting ecosystems**
- **reducing greenhouse gas emissions**
- **avoiding overuse and pollution of freshwater**

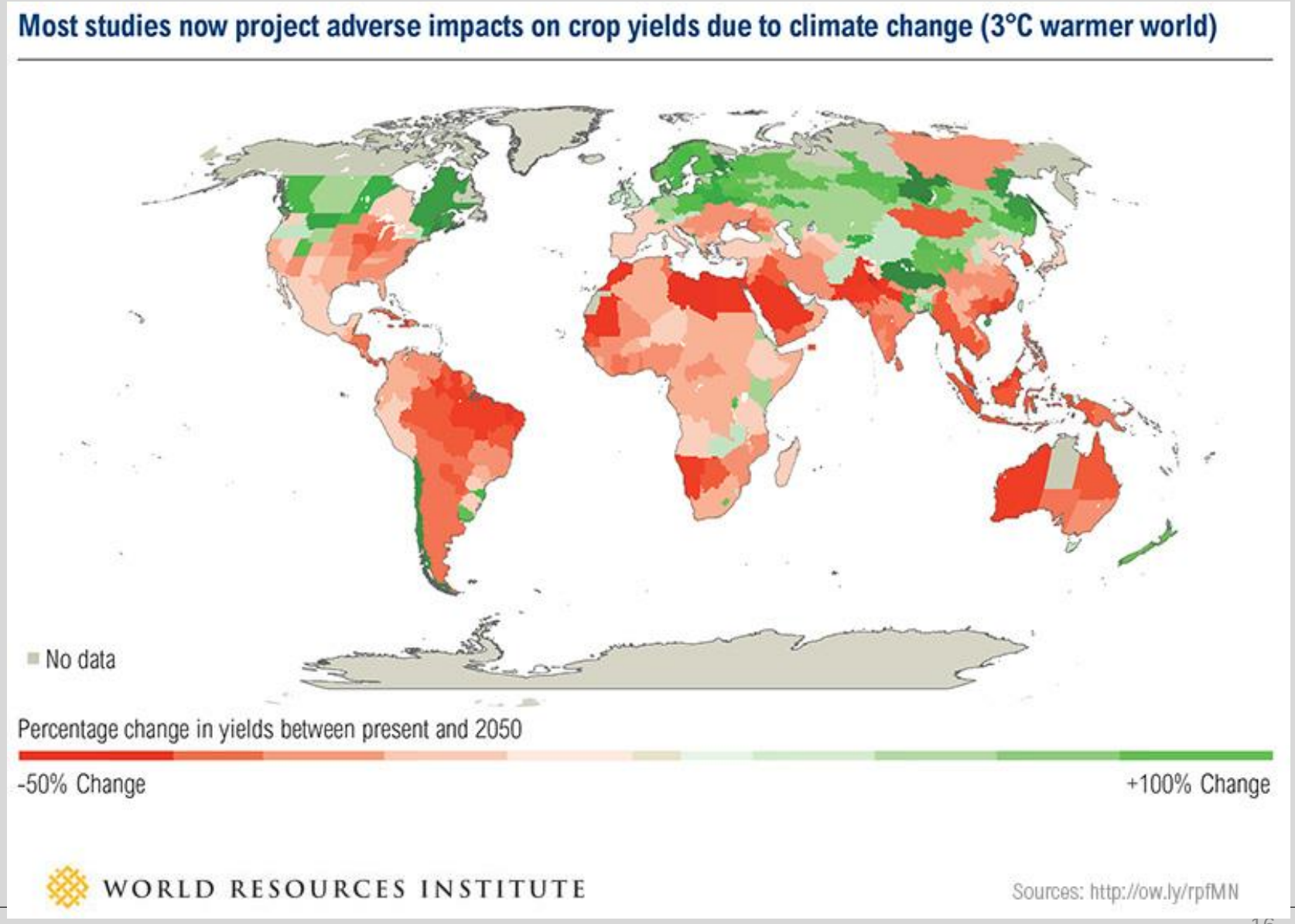
WRI, 2013

Multi-level integrated governance is critical

- Water's intrinsic characteristics make it highly sensitive to and dependent on multi-level governance
- Water connects across sectors, places and people, as well as geographic and temporal scales. Hydrological & administrative don't match
- Its management is both a global and local concern, involving numerous public, private and non-profit stakeholders
- The water sector is highly capital-intensive and monopolistic, with important market failures where coordination is essential
- It is inherently complex and strongly linked to domains that are critical for development, including health, environment, agriculture, energy, spatial planning, regional development & poverty alleviation
- Complex, resource-intensive responsibilities are allocated to sub-national governments, resulting in interdependencies across levels of government that require co-ordination to mitigate fragmentation

OECD, 2015

Climate change exacerbates the problem



Climate change: Coping with Risks

- **Awareness**
- **Preparedness**
- **Adaptation capacity**
- **Resilience**

What does good policy integration look like?

- Water development and management considers the various uses of water and range of people's water needs
- Stakeholders are given a voice in water planning and management, with particular attention to securing the involvement of women and the poor
- Policies and priorities consider water resource implications including two-way relationship between macroeconomic policies and water development, management and use
- Water-related decisions made at local and basin levels are consistent with, or at least do not conflict with, the achievement of broader national objectives
- Water planning and strategies are incorporated into broader social, economic, and environmental goals.

GWP, accessed online 3/2/2014

Water Governance and Policy Integration

- **Vertical and horizontal policy integration**
- **Reference to the socio-ecological context in the river basin**
- **Consultation and participation of the communities**
- **Involvement of all stakeholders in the decision-making process**
- **Inclusive and equitative policies**
- **Synergetic and intersectoral approaches**
- **Climate adaptation and risk assessment**

THANK YOU VERY MUCH FOR YOUR ATTENTION

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