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National Intelligence Council Water Research

L E A D I N G I N T E L L I G E N C E I N T E G R A T I O N

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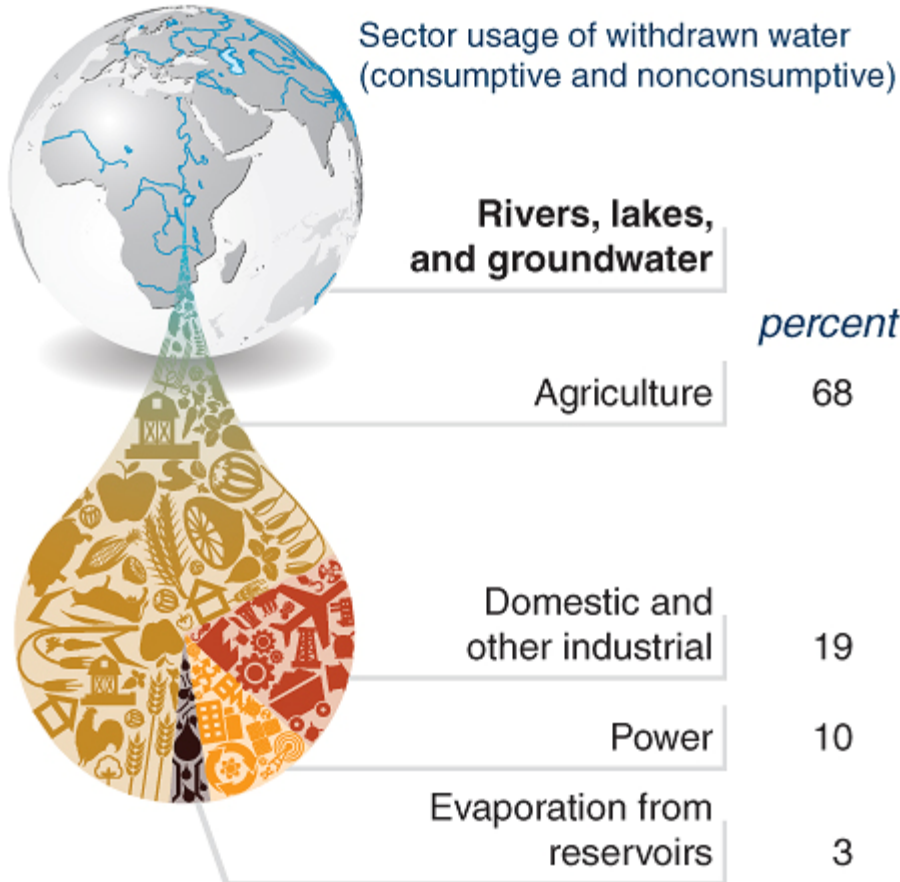
Bottom Line Up Front

Bottom Line: During the next 10 years, many countries important to the United States will experience water problems—shortages, poor water quality, or floods—that will risk instability and state failure, increase regional tensions, and distract them from working with the United States on important US policy objectives. Between now and 2040, fresh water availability will not keep up with demand absent more effective management of water resources. Water problems will hinder the ability of key countries to produce food and generate energy, posing a risk to global food markets and hobbling economic growth.



Factoids

Freshwater Use

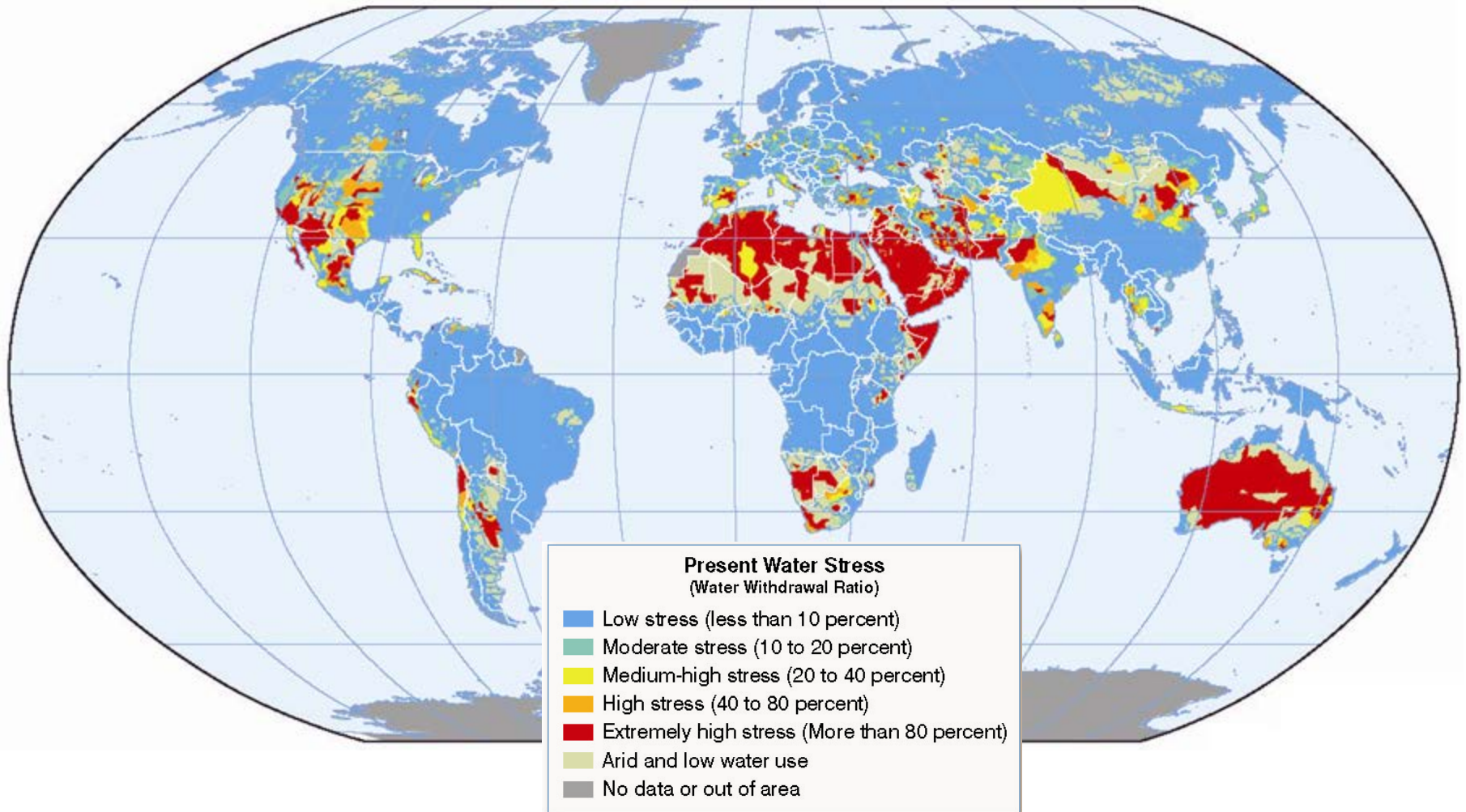


Water Content of Key Food Products

- Maize 900 m³/ton
- Wheat 1,300 m³/ton
- Rice 3,000 m³/ton
- Chicken 3,900 m³/ton
- Pork 4,900 m³/ton
- Beef 15,500 m³/ton

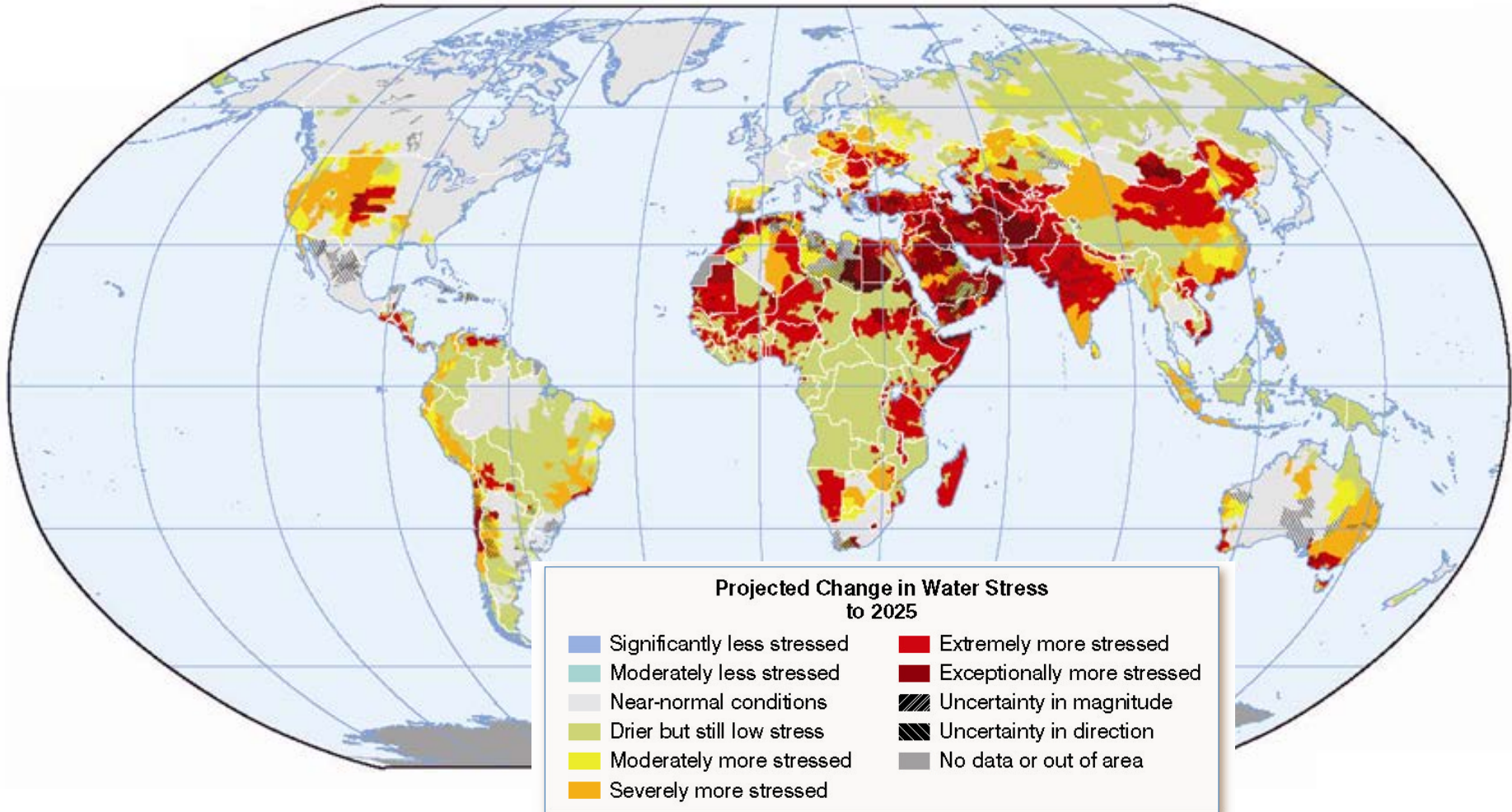


Global Water Picture (today)





Global Water Picture (2025)





ICA Key Judgment A

- During the next 10 years, water problems will contribute to instability in states important to US national security interests
 - Water issues by themselves are unlikely to result in state failure
 - Water problems—when combined with poverty, social tensions, environmental degradation, ineffectual leadership, and weak political institutions—contribute to social disruptions that can result in state failure



ICA Key Judgment B

- Water-related state-on-state conflict is unlikely during the next 10 years
 - Historically, water tensions have led to more water-sharing agreements than violent conflicts
- However, beyond the next 10 years...
 - Water used as leverage
 - Water used as a weapon (terrorists)
 - Water related conflict is plausible



ICA Key Judgment C

- During the next 10 years depletion of groundwater supplies in some agricultural areas—owing to poor management—will pose a risk to both national and global food markets.
 - Nearly all countries in the Middle East and North Africa have over-pumped their groundwater
 - Over the long term, without mitigation actions,
 - Exhaustion of groundwater sources will cause food production to decline
 - Food demand will have to be satisfied through increasingly stressed global markets



ICA Key Judgment D

- From now through 2040 water shortages and pollution probably will negatively affect the economic performance of US trading partners.
 - Economic output will suffer without sufficient clean water
 - Generate electrical power
 - Maintain and expand manufacturing and resource extraction.
 - Hydropower is an important source of electricity in developing countries
 - More than 15 developing countries generate 80 percent or more of their electrical power from hydropower—and demand for water to support all forms of electricity production and industrial processes is increasing



ICA Key Judgment E

- From now through 2040, improved water management will afford the best solutions for water problems
 - Pricing, allocations,
 - Use of “virtual water” via trade
 - Investments in water-related sectors
 - Agriculture
 - Power
 - Water treatment

Because agriculture uses approximately 70 percent of the global fresh water supply, the greatest potential for relief from water scarcity will be through technology that reduces the amount of water needed for agriculture.



ICA Key Judgment E (continued)

- Simple and inexpensive water management improvements in agriculture are often the most straight forward way to compensate for increased demand and stretch existing water supplies
 - Improved irrigation practices
 - Land-leveling (to obtain an even distribution of water)



Risks and Opportunities

- **Risks:** Engineering solutions to water shortages are becoming increasingly common
 - Threaten to raise tensions between organizations implementing these solutions and those harmed by them
 - Risk creating unintended consequences on the freshwater systems being altered



Risks and Opportunities

- **Opportunities:** The developing world will look to the United States to lead the global community toward the development and implementation of sound policies for managing water resources at the local, national, and regional levels
 - Make water a global priority, support legal and institutional arrangements that resolve water disputes or advance cooperative management of shared waters
 - Support major development projects, (including through financial assistance)
 - Improving water management techniques, disseminate satellite and other remote sensing data and hydrological modeling tools that allow users to better understand and manage their resources.
 - Encourage trade of products with high water content



Other Insights

- From an intelligence perspective:
 - Accurate hydrological models are not available for areas of national security interest
 - Within the US Government technical expertise to construct such models exists
 - Data is often insufficient
 - The impact of future climate change on hydrological systems often is not modeled



Other Insights

- The IC examines state stability as a critical part of determining potential threats to US interests and considers water, food, energy scarcity, and other factors in making such assessments
 - A structured approach that provided integrated natural resource assessments would be valuable for
 - National security assessments
 - Prioritizing development aid to achieve US foreign policy goals

Panel Discussion

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