VIETNAM'S GROWTH AND SUCCESS COMES WITH CHALLENGES FOR WATER RESOURCES

THOUGH GROWTH HAS PRODUCED VAST BENEFITS, IT HAS ALSO PLACED UNRELENTING PRESSURES ON WATER RESOURCES, WHICH IN TURN LEAD TO ECONOMIC STRESSES

Vietnam faces multiple challenges – that require urgent and immediate action:

There is an emerging **mismatch between water supply and demand** in certain locations and seasons, with consequent water stress that inevitably cascades through the economy.

As the economy grows and water development continues unabated, **competition between** needs is intensifying tradeoffs that call for greater scrutiny of the way water resources are managed and allocated.

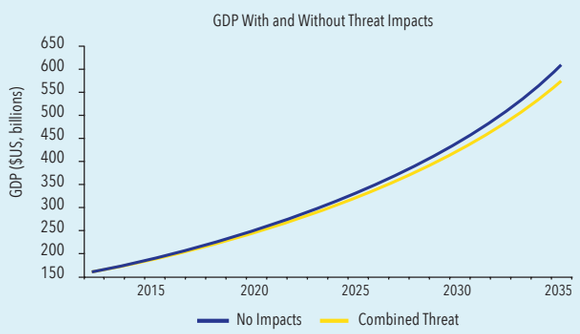
There is a significant **gap between the potential and actual value that can be derived from each drop of water.** Agriculture could produce much more value through greater efficiency, water productivity and targeted crop choices and improved value chains, which are essential to boost farmers' incomes and agricultural value added.

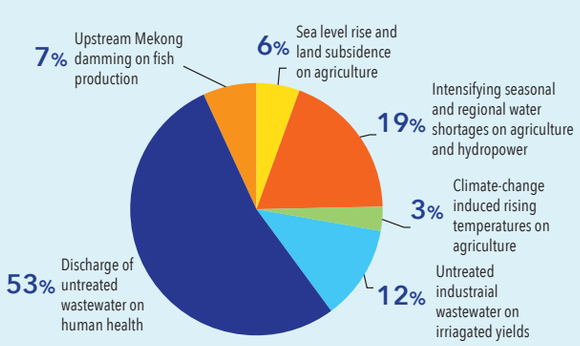
There is a **deterioration in water quality, and pollution loads are mounting**. Pollution is fouling surface and groundwater. Very little municipal and industrial wastewater is treated, and most sewage, industrial effluent, and solid waste find their way into watercourses. Some rivers - once clean - in and around round major cities have turned into contaminated streams.

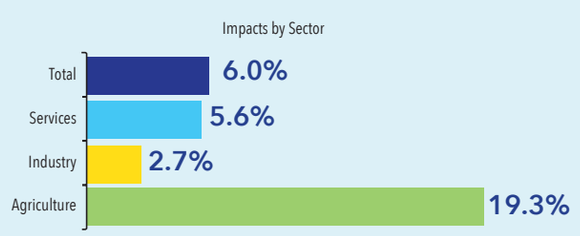
Climate change is increasing the risks and costs from droughts and floods, with recent disasters revealing infrastructure gaps and low levels of resilience.

These vulnerabilities are heightened by **obstacles and shortcomings in institutions, management, and infrastructure**, constraining water services and forfeiting value through suboptimal allocation and use of water.

The rising level of water-related threats could reduce GDP by 6 percent by 2035 against a scenario in which steps are taken







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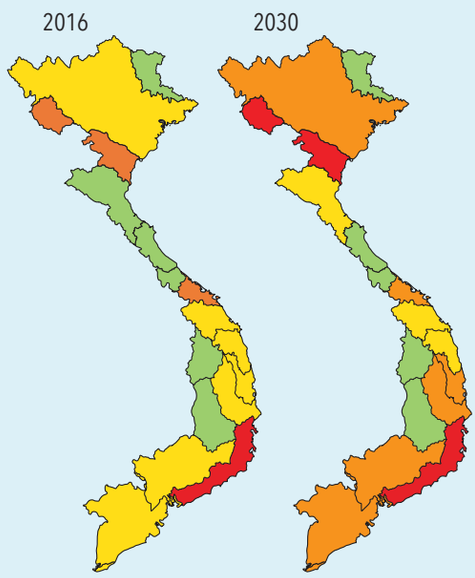
IN VIETNAM, SOUND WATER DEVELOPMENT APPROACHES YIELD POSITIVE BENEFITS

TOO LITTLE – RISING DEMAND AND THE NEED TO INCREASE "DONG PER DROP"

Water stress levels in the dry season in 2016 and 2030, excluding hydropower storage

Basin	2016	2030
Bang Giang - Ky Cung	1%	2%
Red - Thai Binh	19%	27%
Ma	35%	44%
Ca	9%	12%
Gianh	2%	3%
Thach Han	5%	6%
Huong	23%	28%
Thu Bon & Vu Gia	11%	15%
Tra Khuc	13%	16%
Kone	19%	23%
Ba	19%	24%
Dong Nai	19%	28%
SERC	41%	58%
Sesan	<1%	1%
SrePok	5%	6%
Mekong	19%	22%

Dry Season Water Exploitation Index (WEI)



Rapid increases in demand are projected to **bring water stress to 11 out of 16 basins in Vietnam by 2030**. Vietnam's four key river basins, where 80 percent of Vietnam's GDP is produced, are already facing water stress in the dry season today - If nothing changes this is projected to deteriorate even further by 2030.

Within 25 years, the **population in urban areas** is expected to require **twice the daily water supply** that current systems can provide.

Water productivity is low:

Vietnam produces just US$2.37 of GDP against a global average of US$19.42 – almost 10 times as much

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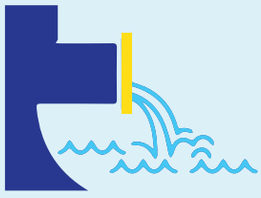
TOO DIRTY - HIGHEST POLICY PRIORITY IS NEEDED TO REDUCE THE DEVASTATING LEVELS OF POLLUTION

Rapid urban development, industrialization and low levels of pollution control has led to rising water pollution.

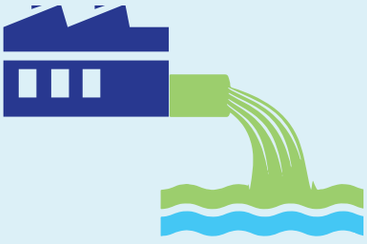
Of all water-related threats modelled, the study identifies pollution as the greatest threat that could cost Vietnam 3.5 percent of GDP annually by 2035.

Much of Vietnam's wastewater remains untreated before being discharged into water bodies creating public health hazards, compromising ecosystem services.

Only **46%** of urban households have connections to drainage systems.



Only **12.5%** of municipal wastewater treated before discharge into water bodies.



Around **2/3** of industrial wastewater from industrial zones is treated, while only 9.4% of industrial clusters have centralized wastewater treatment facilities and most wastewater discharged by the 5,000 craft villages, some industrial factories outside of industrial zones and local hospitals and private clinics remains untreated.

Water pollution from agriculture is growing. Agriculture produces vast quantities of waste from fertilizers, pesticides, pathogens, and pharmaceuticals fed to animals.

- About 80 million of the estimated **84 million tons of livestock waste generated each year enter the environment untreated**, carrying nutrients, pathogens, and volatile compounds that compromise water and air quality and damage soils .
- With crop farming intensifying, pollution from fertilizers and pesticides has also surged. **Only about 45–50 percent of fertilizer is used effectively**; the rest is washed out in runoff. Over the past ten years (2000-2011) the number of pesticides registered and used in Vietnam has increased tenfold. The current mix of pesticides is also found to be highly toxic, with 31% of the pesticides used by farmers in the Red River Delta being categorized within the WHO classification as 'highly hazardous', while 54% were categorized as 'moderately hazardous.
- **Aquaculture, too, is highly polluting.** This sector has developed rapidly, especially in the Mekong Delta. Regulation has failed to stem the high levels of pollution due mainly to discharge of untreated wastewater into local water bodies. Food safety concerns have affected sales but are also beginning to drive improvements in standards

Solid waste from municipalities poses another threat to surface waters. Illegal dumping, unsanitary and badly managed dump sites near waterways, and a lack of solid waste collection allow solid waste to reach waterways. Though Vietnam has 660 operating landfills, only 203 are sanitary. The remainder do not collect and treat leachate—the liquid that drains from landfills and pollutes soil and water. Reliable municipal solid waste collection rates are difficult to track down, but they were estimated to be 86 percent in urban areas in 2018, while 2004 figures suggest rates below 20 percent in rural areas and among the urban poor.

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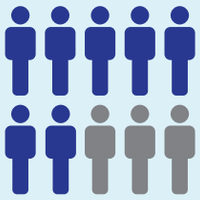
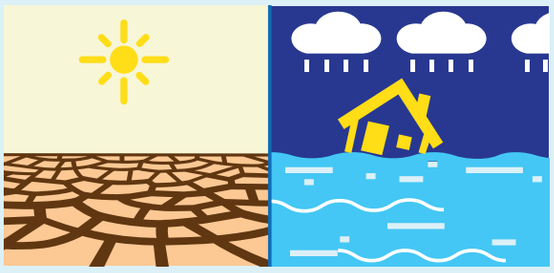
TOO MUCH - MANAGING WATER-RELATED RISKS AND BUILDING RESILIENCE

Vietnam is one of the most hazard-prone countries in East Asia and the Pacific region.



More than **70%** of the population



is exposed to one or more types of water-related natural hazards – ranging from droughts to floods.

Climate change is increasing the risks and costs from droughts and floods, with recent disasters revealing infrastructure gaps and low levels of resilience.

Vietnam depends on international rivers, with more than

60%

of the total average yearly surface water discharge generated outside of the country.

Economic losses, currently estimated at 1.5 percent per year, are predicted to rise sharply:

predicted to rise to

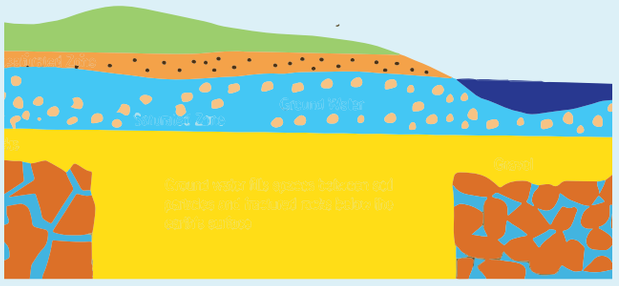
3% by **2050**

and to much as

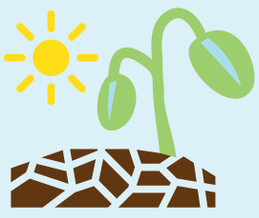
7% by **2100**

among the highest in the world.

Unregulated abstraction of groundwater, resulting in mining of the resource, coupled with rising sea levels and declining river have led to groundwater depletion, intrusion of saltwater into surface- and groundwater and land subsidence



Environmental flows are dwindling. These shortfalls have exacerbated the impact of recent droughts.



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