

Water



Bottled Freshwater Index

\$ 14.50

An Index on the price of Water, tool for measuring the environment and economy in a changing planet.

Empowering the citizens and companies, know and take direct individual actions for a better planet, in a world which 50% of species can be depleted this century.

Water

Nature's currency for the entire economy is: Water

Products

- **A Freshwater price index** .

Differentiation

- An index reference to the price of a bottled main commodity: Water.
- Index can be used for environment, consumers, loyalty plans. supply chains, finance, etc

Advantages

- as the Economy and society are relied on hydrologic stability, an index is:
- Useful for all supply chains in the economy.
- Links economy and environment.
 - Like supply chains, sales, measure ecologic efforts, crypto, promote social causes
- Price referenced to a tangible commodity: Water.
 - Incremental Scarcity: Freshwater demand exceeds freshwater offer each year of this century. Reflects changes in weather climate.
 - Revalue: You can keep it for short or long term and they keep their updated value.
- "Economic growth depends on us getting water for the right purposes."

Business Model:

- Linked to 1 product being sold in the market: Water.
- It's value price will reflect the purified water availability & price.
- Flexible: Products can be linked to the index as ecological commitment, like issue of water bonds, crypto, loyalty plans, as a commodity, etc.
 - Ecological campaign or industry could offer purchases or exchanges of bottles, or equivalent in seeds, trees, water, infrastructure, quality of water in a country.

Units:	coins	Equivalent: 1
1 bottle	1 liter	1 bottle
1 meter cubic	1 meter	1000 bottles
1 water pipe	1 pipe	10 000 bottles
1 Olympic Pool	1 olympic pool	2 500 cubic meters
1 km ³	1 cubic kilometer	400,000 olympic pools. or 1 000 000 000 cubic meters

Why a Water index?

The Economy and society is relied on hydrologic stability:

1) Water Scarcity: The Most Understated Global Security Risk.

“All supply chains and all sectors are increasingly being impacted negatively by water scarcity.”

According to Harvard Law School, National Security Journal, May 2018.

Survey of 1,200 of the world largest companies:

In 2016, companies reported US\$14 billion in water-related impacts this year, a five-fold increase from last year. Over a quarter of companies have experienced detrimental impacts from water this year, and companies expect over half (54%) of the 4,416 water risks they identified to materialize within the next six years

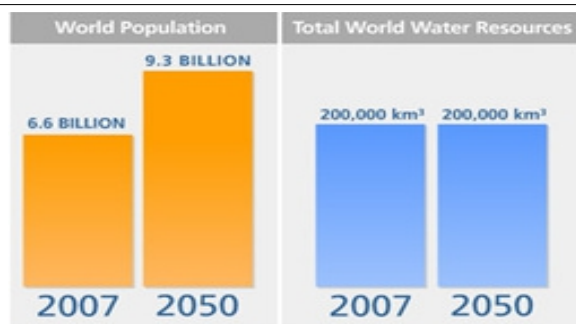
2) Water related events are 4 of the top 5 Global Risks in Terms of Impact, & 3 of the top 5 Global Risks in Terms of Likelihood in the next 10 years.

Events like water crises, extreme weather like drought, natural disasters like floods, and Failure of climate change mitigation and adaptation.

According to Worlwide Economic Forum survey 2018, In a 10 years vision.



World Population increases, but World Water are limited resources, constant



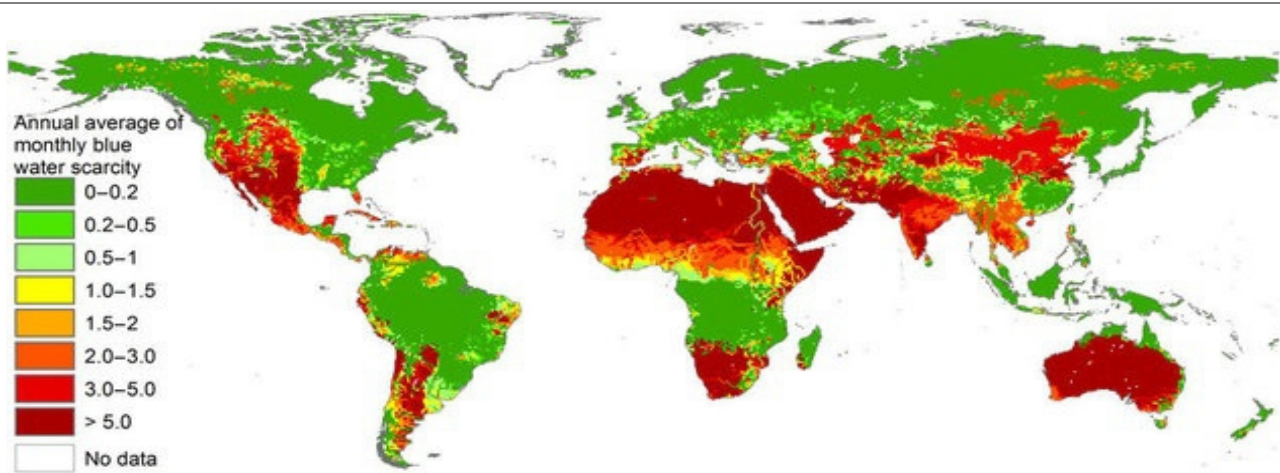
Total Water and Freshwater distribution

Glacier ice is the largest reservoir of freshwater on the Earth (69%).

- The 99% of glacier water is in **Antartic, Artic, and Asian glaciers**.
 - Greenland Glacier can provide water needs for 2 billion people per year.
- The great ranges of central Asia, including the Himalayas, contain the third-largest deposit of ice and snow in the world.
- Melted glaciers on Artic and Antartic where freshwater mixes with saline sea water, or evaporates.

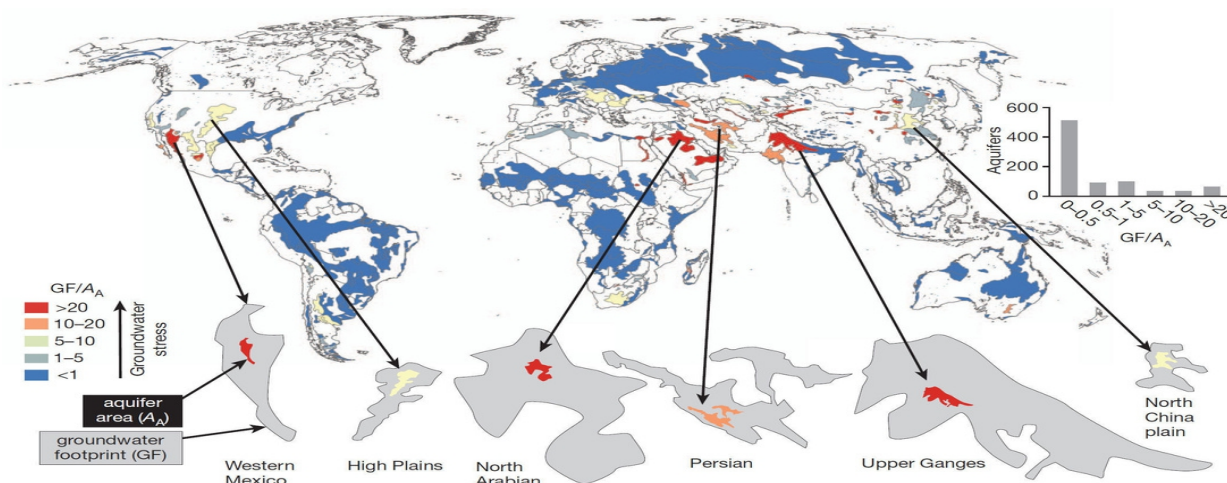
All lakes, rivers and swamps combined only account for a small fraction (0.3%) of the Earth's total freshwater reserves.

Water Scarcity 2016 over one month

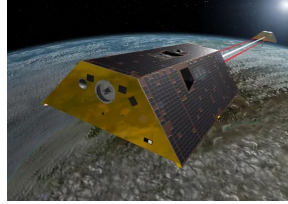


Groundwater is the 30% of the World's Freshwater

Groundwater Depletion:



2018: Measuring Groundwater from Space:

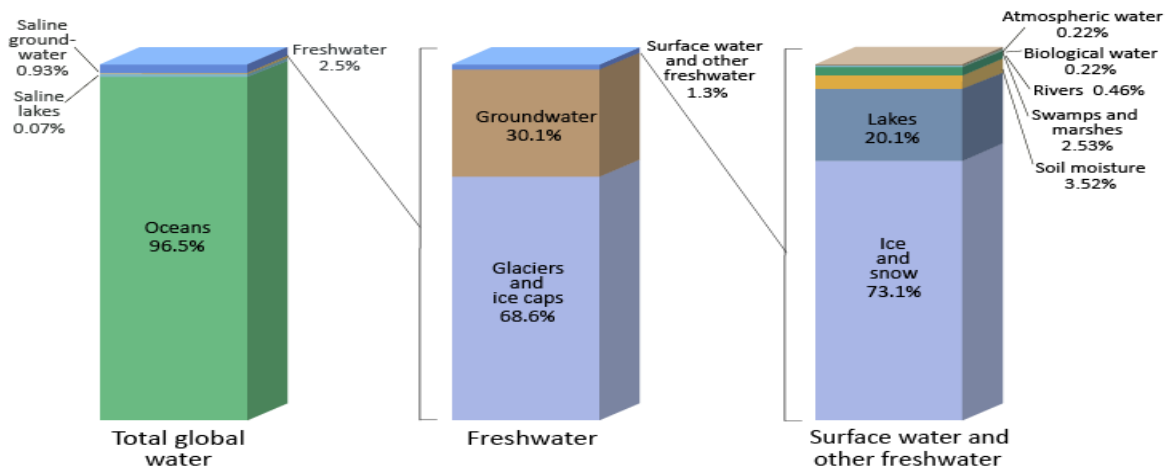


"Any large body of water will generate gravity and that gravity can be picked up by GRACE."

GRACE shows that:

- A lot of that **groundwater is not being replenished,**"
- **"freshwater is disappearing from Greenland and West Antarctica faster than any other place on Earth as ice caps melt"**.
- **We can see a lot of the impacts of climate change that was predicted decades ago; we can see them now.**

Distribution of Earth's Water



Source: Igor Shiklomanov's chapter "World fresh water resources" in Peter H. Gleick (editor), 1993, *Water in Crisis: A Guide to the World's Fresh Water Resources*.

Year 2025	Year 2030	Year 2050	Year 2100
60% of the world will live in "water-stressed" conditions.	Humanity's "annual global water requirements" will exceed "current sustainable water supplies" by 40%	5 billion people (52% of the world) will be affected by fresh water scarcity. China's glaciers starts to melt this decade.	Asian glaciers reduces to one third. Everest glaciers could be completely eradicated. Water evaporates, without reaching near drought crops. Canada glaciers shrink by 95% 70% of Swiss Alps melted
Total water resources: <200,000 km ³	Total water resources: <200,000 km ³	Total water resources: <200,000 km ³	Total water resources: <200,000 km ³

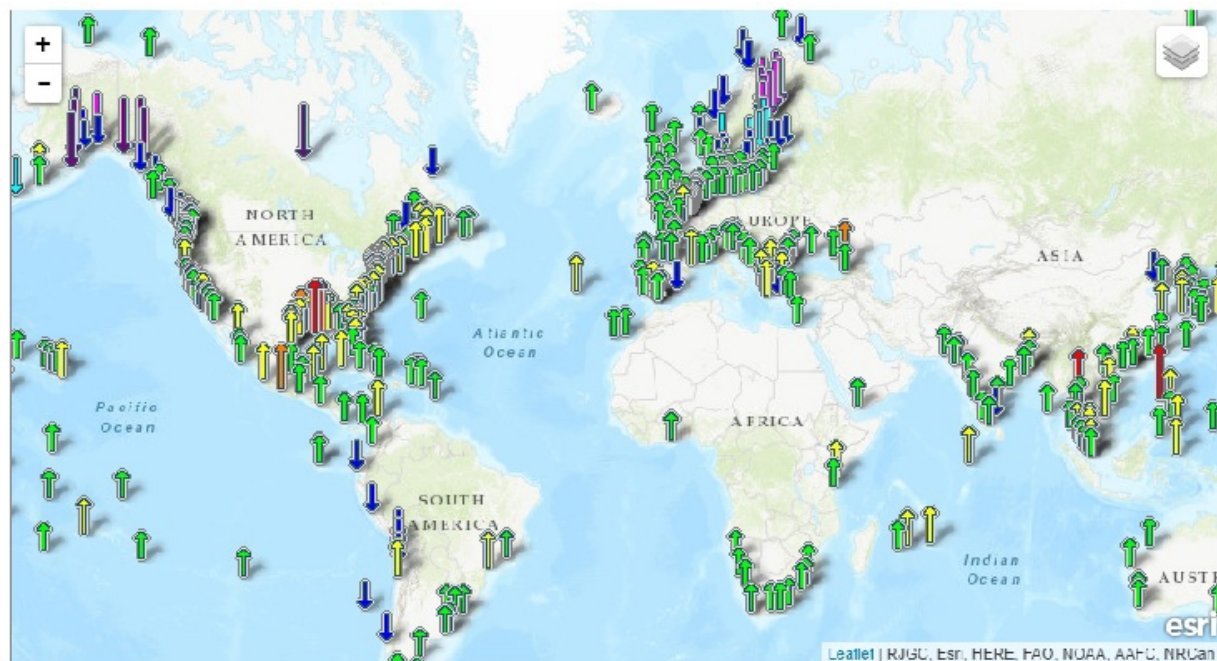
Population: 8.1 billion	Population: 8.5 billion	Population: 9.7 billion	Population: 11.2 billion
		Lack of water and not the lack of land will be the major constraint on food security. (U.N.)	
People live longer this century: Increasing 13-17 years of water consumption per capita:			
73 years			80-90 years

Sea Level trends

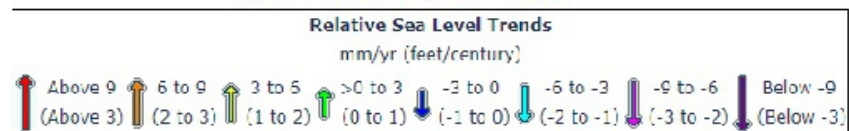
Sea levels alter glaciers, water availability and needs of freshwater worldwide.


Sea Level Trends today

In some places like Acapulco, Mexico sea level raises 1 meter in 2100.




The map above illustrates relative sea level trends, with arrows representing the direction and magnitude of change. Click on an arrow to access additional information about that station.

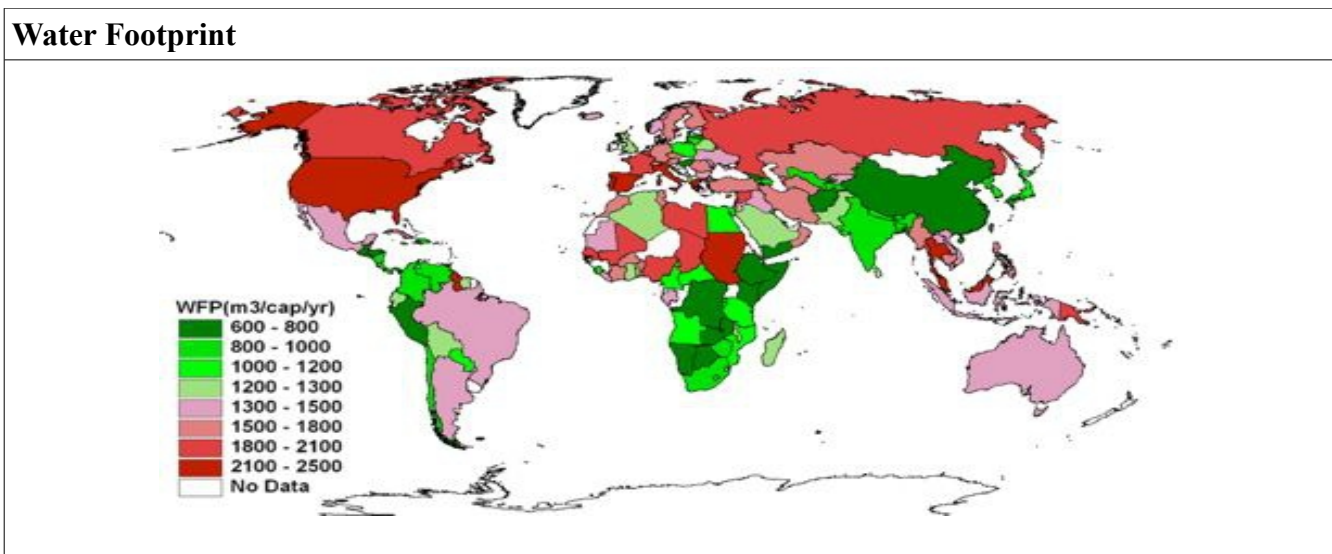


Climate in Mexico is warmer and dryer:			
In the past 17 years, The planet set 15 of 17 historical new records of warmest years.	Tropics are bigger at 100 km in past 30 years, and warmer	Hardiness Zone in USA is moving 20 km North per decade	The 100 th Meridian has moved 230 km to the East increasing dry area over wet area or west. Mexico is in the Dry area
	Mexico and Sahara are fully inside Tropic of Cancer	Sahara grows at 10% since 1902. Sahara moved 131 km to the South between 1980-1990.	Tornado in USA have moved 800 km to the East in 30 years. Rain increases in Tabasco Area


Availability of water:	Absolute scarcity annual water supplies below 500 m3 per year per capita. (North - West of Mexico)	water scarcity: annual water supplies drop below 1,000 m3 (Central Mexico)	water stress: annual water supplies drop below 1,700 m3 per capita. (South Mexico)
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Climate Change		
Year 2050	Year 2080	Year 2100
Soybeans crops in the Amazons drop 44 percent	Many of the world plants and animals decrease 50%.	Year Global Temperature increases by up to 3.7 C
Optimistic Scenario: Global temperature increases by up to 2C	With te mperature increases 3-4 C agricultural production and global food security seee negative impacts so large scale they can not be adapted to.	A rise greater than 4C degrees will likely bring decreased agricultural production, loss of critical ecosystem functions, & extinction of many animal & plants species.
China glaciars starts to melt around year 2060. 30% of Swiss alps have melt. Colorado skiing area reduced 50%	Largest coral reefs & 9,000 thousand of marine species in extinction. Colorado sking areas reduced 80-90%	Amazonas, largest lung of the world & rainfall, in Northern Brazil looses 22% of its anual rainfall. California's greenforest dissappear.
		With higher amounts of warming, Coffee farming virtually impossible in Southeastern Brazil


Water footprint.	
Is the net amount of water used to grow or make something , be it a cellphone, or glass of wine or an orange. Water footprint says only the amount of fresh water used, not about the result pollution, waste, pollution prevention, or benefits.	
1 liter of drink soda	175 liters of water are used to produce and package it. Mainly by the bottle, and sweet flavor, than by the soda it self. Some bottlers taken measures to reduce the liquid footprint.
Water an American uses per day	7 786 litres of water per person per day.
Water an American uses per year	1 Olympic pool's worth of water annually = 2 842 cubic metres



Total Global Reserves by Fossil Fuel, 2018, BP Statistical Review of World Energy			
Fossil Fuel	Coal	Natural Gas	Crude oil
amount	1 139 billion tonnes	187 trillion cubic meters	1 707 billion barrels
Exhausted in	Year 2169	Year 2068	Year 2066
Hydrogen could cover		10-18% of world demand between 2050-2100	
		Including up to 25% of transport demand	

Global Bottled Market :		
2016	2023	
\$113 Billion USD (+7.4%)	\$215 Billion USD	

Bottlers promoting bottled water:		
PepsiCo	<p>Bottled water's success is partly the result of a decades-long campaign against tap water. (Denver post)</p> <p>The biggest enemy is tap water," said a Pepsi VP in 2000. (New York Times)</p>	<p>"When we're done, tap water will be relegated to irrigation and washing dishes," .</p> <p>Said Susan D. Wellington of Quaker Oats, the maker of Gatorade. (Bloomberg & NYT)</p>
Coca-Cola	<p>Has been in the business of discouraging restaurants from serving tap water,</p>	<p>& pushing "less water and more beverage choices."</p>
<p>both PepsiCo and Coca-Cola use perfectly potable tap water as the source of their bottled waters, Aquafina and Dasani.</p>		

Source of Bottled Water :	
2009	Labeling by Bottlers like Pepsi and Nestle
<p>Half of all bottled water is derived from tap water</p> 	<p>Bottlers were forced to change their labels a few years ago to accurately describe where their water came from public water sources.</p>

Source and Quality Reports :	
Bottled Water	Tap water
<p>Does not have to meet any of those standards to be distributed.</p> <p>Even if the water is only Tap water.</p>	<p>Has to produce source & quality reports.</p>

Change in Consumer Habits



1) Changes in lifestyles and eating habits in recent years are **requiring more water consumption per capita. America drinks more bottled water than milk or beer or coffee or any drink, since 2016..**

In 1976, the average american consumed a gallon and a half of bottled water each year.



In America, Bottled water sales in 2017 is 13.7 billion galons in 2017, or 42 gallons per person (+6.2%).

Beer and cider was only 26.9 gallons per person in 2017.

Carbonates soft drinks has slipped to 37.5 gallons.



2) In industrialized nations, **industries consume more than half of the water available for human use.**

Belgium, for example, uses 80% of the water available for industry.



3) Freshwater withdrawals have tripled over the last 50 years. Demand for freshwater is increasing by 64 billion cubic meters a year (1 cubic meter = 1,000 liters)



4) Biofuels.

The production of biofuels has also increased sharply in recent years, with significant impact on water demand. Between 1,000 and 4,000 litres of water are needed to produce a single litre of biofuel.



5) Energy demand

Is also accelerating, with corresponding implications for water demand.



6) Crumbling infrastructure in cities.

Reinforces bottlers expectation that future sales will rise.

In places like Flint, people are “often left with no option but to have bottled water,” said Marc Yaggi, the director of Waterkeeper Alliance. “Political decisions are made every day that jeopardize the quantity and quality of our drinking water,” Yaggi said.

Consumer's perception



Fear is main sales motor:

- A 2009 Gallup poll said that **84% of people worry a “great deal” or a “fair amount” about polluted drinking water.**

“People feeling unsafe about their drinking water clearly leads them to drink it out of a bottle,” said Ali Dibadj, a consumer analyst at Sanford C. Bernstein & Co.



Safety and Quality:

After a 4 year study the National Resources Defense Council concluded that **“There is no assurance that bottled water is safer than tap water”**

When more than 90% of the tap water was safe for drink, ad bottle water had different levels of patogens, or chemicals:

If consumed over a long period of time, some of those contaminants could cause cancer or other health problems for people with weakened immune systems”.

Water and Health:



The best water to drink is clean, pure and full of naturally occurring minerals.



Some bottled water brands use technological measures to clean up the waters to the extreme, taking out all these minerals that will actually help us.

In fact, waters that lack essential minerals can cause harm to the human body, including insulin resistance, high blood pressure, constipation and more.



All these fluids working to help you digest food, transport nutrients, keep your body temperature steady, helping your circulation and more.

It can also aid you in keeping a steady weight or even to lose weight.



Your skin looks better and your muscles work properly when you drink enough water, not to mention your kidneys, so it's a long list of advantages.



Saltier Freshwater **on lakes and rivers.**

Melted water over the oceans, to precipitation, Lakes and Rivers carry saltier water now due rain and industrialization.

More than 100 countries rely on sea desalinization.

Desalination does not remove radiation levels.

In 2018, Seven years on, radioactive water at Fukushima plant still flowing into ocean, study finds According to Japan Times, at a rate of around 2 billion becquerels a day.

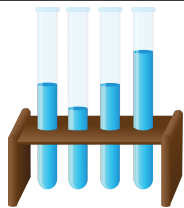
.02 becquerel per liter of seawater found in samples collected near a coastal town 8 km south of the No. 1 plant — is at a level that does not affect the local fishing industry.

2018: Plastic particles found in bottled water study around the world:



Bottled water is marketed as the very essence of purity. It's the fastest-growing beverage market in the world, valued at US\$147 billion1 per year.

But new research by Orb Media, a nonprofit journalism organization based in Washington, D.C., **shows that a single bottle can hold dozens or possibly even thousands of microscopic plastic particles.**



Tests on more than 250 bottles from 11 brands reveal contamination with plastic including polypropylene, nylon, and polyethylene terephthalate (PET). When contacted by reporters, two leading brands confirmed their products contained microplastic, but they said Orb's study significantly overstates the amount.

- For plastic particles in the 100 micron, or 0.10 millimeter size range, tests conducted for Orb at the State University of New York revealed a global average of 10.4 plastic particles per liter. These particles were confirmed as plastic using an industry standard infrared microscope.









- The tests also showed a much greater number of even smaller particles that researchers said are also likely plastic. **The global average for these particles was 314.6 per liter.**

Plastic and Health:

- "Humans need approximately 2 liters of fluids a day to stay hydrated and healthy — even more in hot and arid regions. Orb's findings suggest that a person who drinks a liter of bottled water a day might be consuming **tens of thousands of microplastic particles each year** ...
- For microplastic debris around 100 microns in size ... bottled water samples contained nearly twice as many pieces of microplastics per liter (10.4) than the tap water samples (4.45) ... According to existing scientific research, the plastic particles you consume in food or drinks might interact with your body in a number of different ways ...

- Some particles might lodge in the intestinal wall. Others might be taken up by intestinal tissue to travel through the body's lymphatic system. Particles around 110 microns in size (0.11 millimeters) **can be taken into the body's hepatic portal vein, which carries blood from the intestines, gallbladder, pancreas and spleen to the liver.**
- Smaller debris, in the range of 20 microns (0.02 mm) **has been shown to enter the bloodstream before it lodges in the kidneys and liver** ... Ninety percent of the plastic particles we found ... were between 100 and 6.5 microns — small enough ... for some to cross the gut into your body."

“It's disheartening, I mean, it's sad,” said Peggy Apter, a real estate investor in Carmel, Indiana. **“I mean, what's the world come to? Why can't we have just clean, pure water?”**

Some factors that move the water market		Change 2018-2100
	Climate	Temperature increases each year
	Agricultural demand	Increases to feed 11.2 billion people
	Electricity Demand	Increases
	Demand of the Product	Increased by 1)the number of people, 2)the longer years they drink, and 3)amount of bottle people drinks per year
	Need of have it Locally available	Increases
	Need of drinking a quality, safe water	Increases

An indicator about WATER	Around the world
It seems that there is no index for the price of Water bottle in a country, or world	There are index for the price of Mc'Donalds hamburgers price around the world. By brands there are partial indicator of prices of soda like Pepsi, Coca, but not water.
	Some stocks offer index about the manufacturers of water plants,equipments,associations, but no index on the price of bottled water, for example
Power purchase remains over time.	For example revaluated assets or results in terms of water.
Index about water price has multiple uses:	Can be used in real life, some examples of use:
	For supply chains. <ul style="list-style-type: none"> To Improve connections and logistics among all supply chains
	For finance, in several ways: <ul style="list-style-type: none"> water commodity, for real water operations Valued transactions on a current price of water A cryptocurrency based on the index. Insurances against water changes for supply chains, for example As Water bonds
	For loyalty campaigns: <ul style="list-style-type: none"> Can be ported to real world, for example, a bottle of water could represent a real bottle of water as promotion campaign, environmental commitment, water footprint reduction, etc.
	For environmental commitment: <ul style="list-style-type: none"> Business can measure or promote their actions for a better planet based on water index
	To measure, compare or trade across different markets and ecosystems across different geographic areas
	For social patterns, and fill needs of freshwater in the century. <ul style="list-style-type: none"> Adapting to the change: weather change, population change, food change, environmental change, water availability changing needs
	For Nature conservation and species: <ul style="list-style-type: none"> protection, flora, fauna, ecosystems, and campaigns, linked via a water index.

FRESHWATER SUPPLY 2018-2100

Water	is almost a Fixed Limited resource (if not polluted)	
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FRESHWATER SUPPLY 2018-2100		
% of Freshwater	2% only (200,000 km3)	
Readily Available freshwater	is 1% (if not polluted, or made saltier by melting)	▼
Availability of Fresh water 2018-2100	Decreases (glacier melting, evaporation, ground depletion, continued drought, filtration)	▼
	If technology an countries makes affordable to deliver on time glacier water from other countries or sea, no pollution, then it could Increase	▲
Availability of Clean Tap Water	Decreases (infrastructure obsolescency, economic interests)	▼
Availability of Purified Freshwater & Quality	Decreases (plastic packagings, salinity in rivers, pollutants, radiation, lifespan of city infrastructure)	▼
Fresh waters 2108-2100:		
Availability of Glaciers(69% of world freshwater)	Decreases. (Asian Glaciers Depletion, Glaciers in Artic and Antartic melted)	▼
Availability of Groundwater (30%)	Decreases (Groundwater Depletion in some areas: Western Mexico, North Arabian, Ganges).	
Availability of rivers lakes, swamps: (0.03%)	Decreases Salinated water on rivers and lakes rising, via rain and pollution.	▼
Ocean Desalinisation	Increases Desalination does not remove radiation.	▲
Warmer Planet:		
Drought months	Increases	▲
Global year temperature	Increases 3.5-4C	▲
Rainforests	Reduces (less rain, higher temperature to adapt to it)	▼
Evaporation	Increases, not reaching near crops	▲

Use for power
generation

Increases



FRESHWATER DEMAND 2018-2100		
Needed free of pollutants	Increases For Agriculture & Human consumption	▲
Freshwater free of salinity	Increases For Agriculture & Human consumption	▲
Population	Increases From 7 to 11.2 billions	▲
Daily Lifestyle of population	Requires more freshwater	▲
Life span of people	Increases 13 years per capita	▲
Energy requirements	Increases. Biodiesel, electricity, hydrogen, use more water.	▲
Need of Available stocks of portable fresh water	Increases. Flooding probability raises 100 to 1 compared vs past century. People needs	▲
Quality of water, unpolluted	Need increases. (infrastructure)	▲
Fear as sales motor	Increases Cities infrastructure gets old, bottlers campaigns.	▲
Warmer Planet		
Use of Freshwater	Increases (due temperature increase, faster warm, evaporation, perspiration, filtration.)	▲
Water needed to feed more people	Increases (to feed 60% more population in warmer temperatures)	▲
Freshwater needed to feed people living longer	Increases (to feed all the population living 13 years more)	▲
Freshwater needed to generate food	Increases to feed livestock and plants	▲
Water needed in longer droughts	Increases for all human activities	▲

Freshwater Supply vs Demand 2018-2100
Results
<p>Consumption requirements exceeds the sustainable water supplies, each year during this century</p> <p>Economy and society relied on hydrologic stability</p> <p>Water is nature's currency for the entire economy, and society</p>

Source

<http://harvardnsj.org/2018/05/water-scarcity-the-most-understated-global-security-risk/>
<https://www.weforum.org/reports/the-global-risks-report-2018>
<https://www.sciencealert.com/global-water-availability-to-2050>
<https://www.circleofblue.org/2015/world/world-economic-forum-ranks-water-crises-as-top-global-risk/>
<https://news.mit.edu/2014/predicting-the-future-of-global-water-stress>
https://www.huffingtonpost.com.mx/entry/water-scarcity-study_us_56c1ebc5e4b0b40245c72f5e
<https://www.fewresources.org/water-scarcity-issues-were-running-out-of-water.html>
<https://www.livescience.com/41320-11-billion-water-scarcity.html>
<https://www.circleofblue.org/2015/world/world-economic-forum-ranks-water-crises-as-top-global-risk>
<https://www.insidermonkey.com/blog/top-10-healthiest-bottled-water-in-the-world-466424/?singlepage=1>
<https://news.nationalgeographic.com/2018/03/world-water-day-water-crisis-explained/>
<https://www.treehugger.com/clean-water/we-use-how-much-water-scary-water-footprints-country-by-country.html>
<https://waterfootprint.org/en/water-footprint/national-water-footprint/>
https://en.wikipedia.org/wiki/Water_resources
<https://articles.mercola.com/sites/articles/archive/2018/04/21/bottled-water-microplastics-contamination.aspx>
<https://www.prnewswire.com/news-releases/global-bottled-water-spring-purified-mineral-sparkling-market-2014-2018--2025-300744649.html>
<https://www.dailymail.co.uk/sciencetech/article-2718817/Can-stop-climate-change-Infographic-claims-reveal-four-different-scenarios-awaiting-humanity-NONE-great.html>
<https://www.businessinsider.com/facts-bottled-water-industry-2011-10#to-manufacture-demand-beverage-companies-declared-war-on-tap-water-through-advertising-5>
<https://www.nrdc.org/stories/truth-about-tap>
<https://tidesandcurrents.noaa.gov/sltrends/>
<https://www.bevindustry.com/articles/91188-consumers-reaffirm-bottled-water-is-americas-favorite-drink>
<https://www.nbwa.org/resources/industry-fast-facts>
<http://www.unwater.org/water-facts/scarcity/#>
<https://www.nytimes.com/2001/08/24/opinion/1-tap-water-in-a-bottle-842370.html>
<https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2018-full-report.pdf>
<https://www.japantimes.co.jp/news/2018/03/29/national/seven-years-radioactive-water-fukushima-plant-still-flowing-ocean-study-finds/#.XAtFAXBofIV>
<https://www.denverpost.com/2016/08/03/bottled-water-to-outsell-soda-for-first-time-with-nod-to-flint/>
<https://www.ica.org/newsroom/news/2018/october/hydrogen-the-missing-link-in-the-energy-transition.html>
<https://www.abc.net.au/news/2018-06-23/australians-space-mission-to-measure-world-groundwater-reserves/9899730>
https://www.jpl.nasa.gov/news/press_kits/grace-fo/facts/
<https://medium.com/s/futurehuman/the-5-best-places-to-live-in-2100-e4c360ce3a27>
<https://thenarwhal.ca/glaciers-canadian-rockies-could-shrink-95-2100-study-finds>
<https://e360.yale.edu/features/redrawing-the-map-how-the-worlds-climate-zones-are-shifting>
<https://www.thelocal.ch/20170217/swiss-study-snow-to-largely-disappear-from-alps-by-2100>