

**Entering a Resource-Shock World**

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Brace yourself. You may not be able to tell yet, but according to global experts and the U.S. intelligence community, the earth is already shifting under you. Whether you know it or not, you’re on a new planet, a resource-shock world of a sort humanity has never before experienced.

Two nightmare scenarios—a global scarcity of vital resources and the onset of extreme climate change—are already beginning to converge and in the coming decades are likely to produce a tidal wave of unrest, rebellion, competition, and conflict. Just what this tsunami of disaster will look like may, as yet, be hard to discern, but experts warn of “water wars” over contested river systems, global food riots sparked by soaring prices for life’s basics, mass migrations of climate refugees (with resulting anti-migrant violence), and the breakdown of social order or the collapse of states. At first, such mayhem is likely to arise largely in Africa, Central Asia, and other areas of the underdeveloped South, but in time *all* regions of the planet will be affected.

To appreciate the power of this encroaching catastrophe, it’s necessary to examine each of the forces that are combining to produce this future cataclysm.

**Resource Shortages and Resource Wars**

Start with one simple given: the prospect of [future scarcities](http://www.scientificamerican.com/article.cfm?id=forget-peak-oil-were-at-peak-everyt-2013-03) of vital natural resources, including energy, water, land, food, and critical minerals. This in itself would guarantee social unrest, geopolitical friction, and war.

It is important to note that absolute scarcity doesn’t have to be on the horizon in any given resource category for this scenario to kick in. A lack of adequate supplies to meet the needs of a growing, ever more urbanized and industrialized global population is enough. Given the [wave of extinctions](http://www.environmentalhealthnews.org/ehs/newscience/2011/08/2011-0829-climate-change-extinctions/) that scientists are recording, some resources—particular species of fish, animals, and trees, for example—will become less abundant in the decades to come, and may even disappear altogether. But key materials for modern civilization like oil, uranium, and copper will simply prove harder and more costly to acquire, leading to [supply bottlenecks](http://www.scientificamerican.com/article.cfm?id=how-much-is-left) and periodic shortages.

Oil—the single most important commodity in the international economy—provides an apt example. Although global oil supplies may actually grow in the coming decades, many experts doubt that they can be expanded sufficiently to meet the needs of a rising global middle class that is, for instance, expected to buy millions of new cars in the near future. In its 2011 *World Energy Outlook*, the International Energy Agency claimed that an anticipated global oil demand of 104 million barrels per day in 2035 will be satisfied. This, the report suggested, would be thanks in large part to additional supplies of “unconventional oil” (Canadian tar sands, shale oil, and so on), as well as 55 million barrels of new oil from fields “yet to be found” and “yet to be developed.”

However, many analysts scoff at this optimistic assessment, arguing that rising production costs (for energy that will be ever more difficult and costly to extract), environmental opposition, warfare, corruption, and other impediments will make it [extremely difficult](http://www.scientificamerican.com/article.cfm?id=has-peak-oil-already-happened) to achieve increases of this magnitude. In other words, even if production manages for a time to top the 2010 level of 87 million barrels per day, the goal of 104 million barrels will never be reached and the world’s major consumers will face virtual, if not absolute, scarcity.

Water provides another potent example. On an annual basis, the supply of drinking water provided by natural precipitation remains more or less constant: about 40,000 cubic kilometers. But much of this precipitation lands on Greenland, Antarctica, Siberia, and inner Amazonia where there are very few people, so the supply available to major concentrations of humanity is often surprisingly [limited](http://ga.water.usgs.gov/edu/earthwherewater.html). In many regions with high population levels, water supplies are already [relatively sparse](http://www.globalchange.umich.edu/globalchange2/current/lectures/freshwater_supply/freshwater.html). This is especially true of North Africa, Central Asia, and the Middle East, where the demand for water continues to grow as a result of rising populations, urbanization, and the emergence of new water-intensive industries. The result, even when the supply remains constant, is an environment of [increasing scarcity](http://news.nationalgeographic.com/news/2010/100930-freshwater-river-map-security-risks/).

Wherever you look, the picture is roughly the same: supplies of critical resources may be rising or falling, but rarely do they appear to be outpacing demand, producing a sense of widespread and systemic scarcity. However generated, a perception of scarcity—or imminent scarcity—regularly leads to anxiety, resentment, hostility, and contentiousness. This pattern is very well understood, and has been evident throughout human history.

In his book [*Constant Battles*](http://www.amazon.com/dp/0312310900/ref%3Dnosim/?tag=tomdispatch-20), for example, Steven LeBlanc, director of collections for Harvard’s [Peabody Museum](https://www.peabody.harvard.edu/) of Archaeology and Ethnology, notes that many ancient civilizations experienced higher levels of warfare when faced with resource shortages brought about by population growth, crop failures, or persistent drought. [Jared Diamond](http://en.wikipedia.org/wiki/Jared_Diamond), author of the bestseller [*Collapse*](http://www.amazon.com/dp/0143117009/ref%3Dnosim/?tag=tomdispatch-20), has detected a similar pattern in Mayan civilization and the Anasazi culture of New Mexico’s Chaco Canyon. More recently, concern over adequate food for the home population was a significant factor in Japan’s invasion of Manchuria in 1931 and Germany’s invasions of Poland in 1939 and [the Soviet Union](http://en.wikipedia.org/wiki/Hunger_Plan) in 1941, according to Lizzie Collingham, author of [*The Taste of War*](http://www.amazon.com/dp/1594203296/ref%3Dnosim/?tag=tomdispatch-20).

Although the global supply of most basic commodities has grown enormously since the end of World War II, analysts see the persistence of resource-related conflict in areas where materials remain scarce or there is anxiety about the future reliability of supplies. Many experts believe, for example, that the fighting in Darfur and other war-ravaged areas of North Africa has been driven, at least in part, by competition among desert tribes for access to scarce water supplies, exacerbated in some cases by rising population levels.

“In Darfur,” says a [2009 report](http://www.unep.org/publications/search/pub_details_s.asp?ID=3998) from the U.N. Environment Programme on the role of natural resources in the conflict, “recurrent drought, increasing demographic pressures, and political marginalization are among the forces that have pushed the region into a spiral of lawlessness and violence that has led to 300,000 deaths and the displacement of more than two million people since 2003.”

Anxiety over future supplies is often also a factor in conflicts that break out over access to oil or control of contested undersea reserves of oil and natural gas. In 1979, for instance, when the Islamic revolution in Iran overthrew the Shah and the Soviets invaded Afghanistan, Washington began to fear that someday it might be denied access to Persian Gulf oil. At that point, President Jimmy Carter promptly announced what came to be called [the Carter Doctrine](http://en.wikipedia.org/wiki/Carter_Doctrine). In his 1980 State of the Union Address, Carter [affirmed](http://millercenter.org/president/speeches/detail/3404) that any move to impede the flow of oil from the Gulf would be viewed as a threat to America’s “vital interests” and would be repelled by “any means necessary, including military force.”

In 1990, this principle was invoked by President George H.W. Bush to justify intervention in the first Persian Gulf War, just as his son would use it, in part, to justify the 2003 invasion of Iraq. Today, it remains the basis for U.S. plans to employ force to stop the Iranians from closing the [Strait of Hormuz](http://www.tomdispatch.com/blog/175496/), the strategic waterway connecting the Persian Gulf to the Indian Ocean through which about [35%](http://www.eia.gov/countries/regions-topics.cfm?fips=wotc&trk=p3) of the world’s seaborne oil commerce passes.

Recently, a set of resource conflicts have been rising toward the boiling point between China and its neighbors in Southeast Asia when it comes to control of offshore oil and gas reserves in the [South China Sea](http://www.eia.gov/countries/regions-topics.cfm?fips=SCS). Although the resulting naval clashes have yet to result in a loss of life, a strong possibility of military escalation exists. A similar situation has also arisen in the [East China Sea](http://www.eia.gov/countries/regions-topics.cfm?fips=ECS), where China and Japan are jousting for control over similarly valuable undersea reserves. Meanwhile, in the South Atlantic Ocean, Argentina and Britain are [once again squabbling](http://www.cnn.com/2013/01/03/world/falklands-argentina-background%20) over the Falkland Islands (called Las Malvinas by the Argentinians) because oil has been discovered in surrounding waters.

By all accounts, resource-driven potential conflicts like these will only multiply in the years ahead as demand rises, supplies dwindle, and more of what remains will be found in disputed areas. In a 2012 study titled [*Resources Futures*](http://www.chathamhouse.org/publications/papers/view/187947), the respected British think-tank Chatham House expressed particular concern about possible resource wars over water, especially in areas like the Nile and Jordan River basins where several groups or countries must share the same river for the majority of their water supplies and few possess the wherewithal to develop alternatives. “Against this backdrop of tight supplies and competition, issues related to water rights, prices, and pollution are becoming contentious,” the report noted. “In areas with limited capacity to govern shared resources, balance competing demands, and mobilize new investments, tensions over water may erupt into more open confrontations.”

**Heading for a Resource-Shock World**

Tensions like these would be destined to grow by themselves because in so many areas supplies of key resources will not be able to keep up with demand. As it happens, though, they are not “by themselves.” On this planet, a second major force has entered the equation in a significant way. With the growing reality of climate change, everything becomes a lot more terrifying.

Normally, when we consider the impact of climate change, we think primarily about the environment—the melting Arctic ice cap or Greenland ice shield, rising global sea levels, intensifying storms, expanding deserts, and endangered or disappearing species like the polar bear. But a growing number of experts are coming to realize that the most potent effects of climate change will be experienced by humans directly through the impairment or wholesale destruction of habitats upon which we rely for food production, industrial activities, or simply to live. Essentially, climate change will wreak its havoc on us by constraining our access to the basics of life: vital resources that include food, water, land, and energy. This will be devastating to human life, even as it significantly increases the danger of resource conflicts of all sorts erupting.

We already know enough about the future effects of climate change to predict the following with reasonable confidence:

\* [Rising sea levels](http://www.independent.co.uk/environment/climate-change/sea-levels-rising-more-quickly-than-predicted-warn-scientists-8364129.html) will in the next half-century [erase](http://www.serdp.org/Featured-Initiatives/Climate-Change-and-Impacts-of-Sea-Level-Rise) many coastal areas, destroying large cities, critical infrastructure (including roads, railroads, ports, airports, pipelines, refineries, and power plants), and prime agricultural land.

\* Diminished rainfall and prolonged droughts will turn once-verdant croplands into [dust bowls](http://www.scientificamerican.com/article.cfm?id=climate-change-threatens-second-dust-bowl), reducing food output and turning millions into “[climate refugees](http://www.unhcr.org/pages/49e4a5096.html).”

\* More [severe storms](http://news.nationalgeographic.com/news/2013/13/130215-severe-storm-climate-change-weather-science/) and intense [heat waves](http://www.abc.net.au/news/2013-01-12/climate-commission-predicts-more-heatwaves-bushfires/4461960%20) will kill crops, trigger forest fires, cause floods, and destroy critical infrastructure.

No one can predict how much food, land, water, and energy will be lost as a result of this onslaught (and other climate-change effects that are harder to predict or even possibly imagine), but the cumulative effect will undoubtedly be staggering. In *Resources Futures*, Chatham House offers a particularly dire warning when it comes to the threat of diminished precipitation to rain-fed agriculture. “By 2020,” the report says, “yields from rain-fed agriculture could be reduced by up to 50%” in some areas. The highest rates of loss are expected to be in Africa, where reliance on rain-fed farming is greatest, but agriculture in China, India, Pakistan, and Central Asia is also likely to be severely affected.

Heat waves, droughts, and other effects of climate change will also [reduce](http://www.pacinst.org/reports/transboundary_waters/) the flow of many vital rivers, diminishing water supplies for irrigation, [hydro-electricity power facilities](http://chinawaterrisk.org/opinions/climate-change-and-hydro-mutually-damming/), and nuclear reactors (which need massive amounts of water for cooling purposes). The melting of glaciers, especially in [the Andes](http://www.nytimes.com/2013/04/05/world/americas/1600-years-of-ice-in-perus-andes-melted-in-25-years-scientists-say.html) in Latin America and [the Himalayas](http://www.enn.com/press_releases/4071%20) in South Asia, will also rob communities and cities of crucial water supplies. An expected increase in the frequency of hurricanes and typhoons will pose a [growing threat](http://www.epa.gov/climatechange/impacts-adaptation/energy.html) to offshore oil rigs, coastal refineries, transmission lines, and other components of the global energy system.

The melting of the Arctic ice cap will [open that region](http://www.upi.com/Business_News/Energy-Resources/2013/01/16/Global-warming-opening-up-Russias-Arctic-oil/UPI-11771358359184/) to oil and gas exploration, but an increase in iceberg activity will make all efforts to exploit that region’s energy supplies perilous and exceedingly costly. Longer growing seasons in the north, especially Siberia and Canada’s northern provinces, [might compensate](http://geocurrents.info/place/russia-ukraine-and-caucasus/siberia/global-warming-and-siberia-blessing-or-curse) to some degree for the desiccation of croplands in more southerly latitudes. However, moving the global agricultural system (and the world’s farmers) northward from abandoned farmlands in the United States, Mexico, Brazil, India, China, Argentina, and Australia would be a daunting prospect.

It is safe to assume that climate change, especially when combined with growing supply shortages, will result in a significant reduction in the planet’s vital resources, augmenting the kinds of pressures that have historically led to conflict, even under better circumstances. In this way, according to the Chatham House report, climate change is best understood as a “threat multiplier… a key factor exacerbating existing resource vulnerability” in states already prone to such disorders.

Like [other experts](http://www.guardian.co.uk/global-development/2013/apr/13/climate-change-millions-starvation-scientists) on the subject, Chatham House’s analysts claim, for example, that climate change will reduce crop output in many areas, sending global food prices soaring and triggering unrest among those already pushed to the limit under existing conditions. “Increased frequency and severity of extreme weather events, such as droughts, heat waves, and floods, will also result in much larger and frequent local harvest shocks around the world… These shocks will affect global food prices whenever key centers of agricultural production area are hit—further amplifying global food price volatility.” This, in turn, will increase the likelihood of civil unrest.

When, for instance, a [brutal heat wave](http://www.bbc.co.uk/news/business-10977955%20) decimated Russia’s wheat crop during the summer of 2010, the global price of wheat (and so of that staple of life, [bread](http://www.tomdispatch.com/archive/175419)) began an inexorable upward climb, reaching particularly high levels in North Africa and the Middle East. With local governments unwilling or unable to help desperate populations, anger over impossible-to-afford food merged with resentment toward autocratic regimes to trigger the massive popular outburst we know as the Arab Spring.

Many such explosions are likely in the future, Chatham House suggests, if current trends continue as climate change and resource scarcity meld into a single reality in our world. A single provocative question from that group should haunt us all: “Are we on the cusp of a new world order dominated by struggles over access to affordable resources?”

For the U.S. intelligence community, which appears to have been influenced by the report, the response was blunt. In March, for the first time, Director of National Intelligence James R. Clapper [listed](http://www.upi.com/Top_News/US/2013/03/13/Official-US-faces-diverse-threats/UPI-15151363156505/) “competition and scarcity involving natural resources” as a national security threat on a par with global terrorism, cyberwar, and nuclear proliferation.

“Many countries important to the United States are vulnerable to natural resource shocks that degrade economic development, frustrate attempts to democratize, raise the risk of regime-threatening instability, and aggravate regional tensions,” he wrote in his [prepared statement](http://www.dni.gov/index.php/newsroom/testimonies) for the Senate Select Committee on Intelligence. “Extreme weather events (floods, droughts, heat waves) will increasingly disrupt food and energy markets, exacerbating state weakness, forcing human migrations, and triggering riots, civil disobedience, and vandalism.”

There was a new phrase embedded in his comments: “resource shocks.” It catches something of the world we’re barreling toward, and the language is striking for an intelligence community that, like the government it serves, has largely played down or ignored the dangers of climate change. For the first time, senior government analysts may be coming to appreciate what energy experts, resource analysts, and scientists have long been warning about: the unbridled consumption of the world’s natural resources, combined with the advent of extreme climate change, could produce a global explosion of human chaos and conflict. We are now heading directly into a resource-shock world.

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