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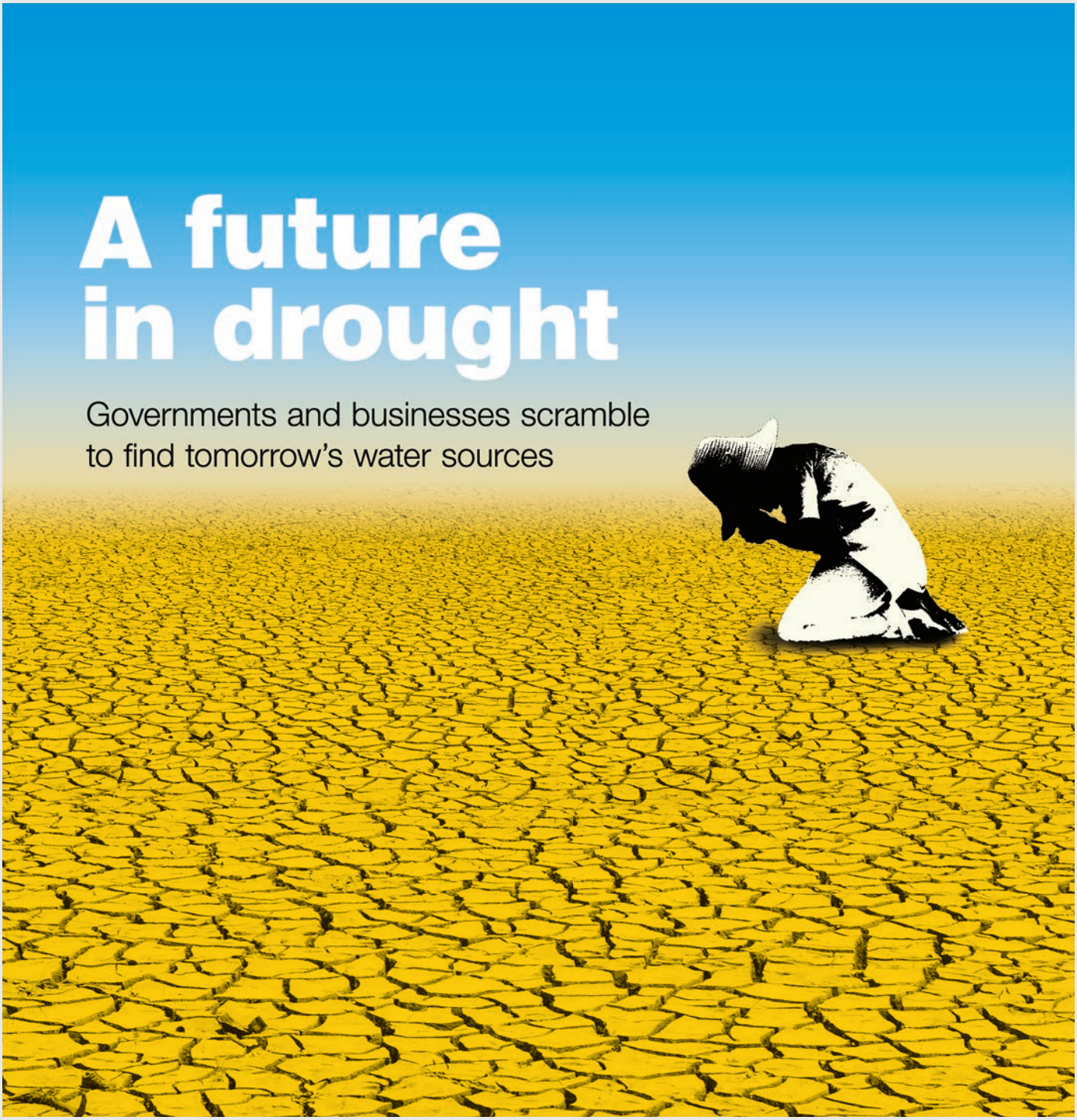
Japan keeps things cool in SE Asia

Will India loosen up **on bank licenses?**

NIKKEI ASIAN REVIEW

April 24, 2014



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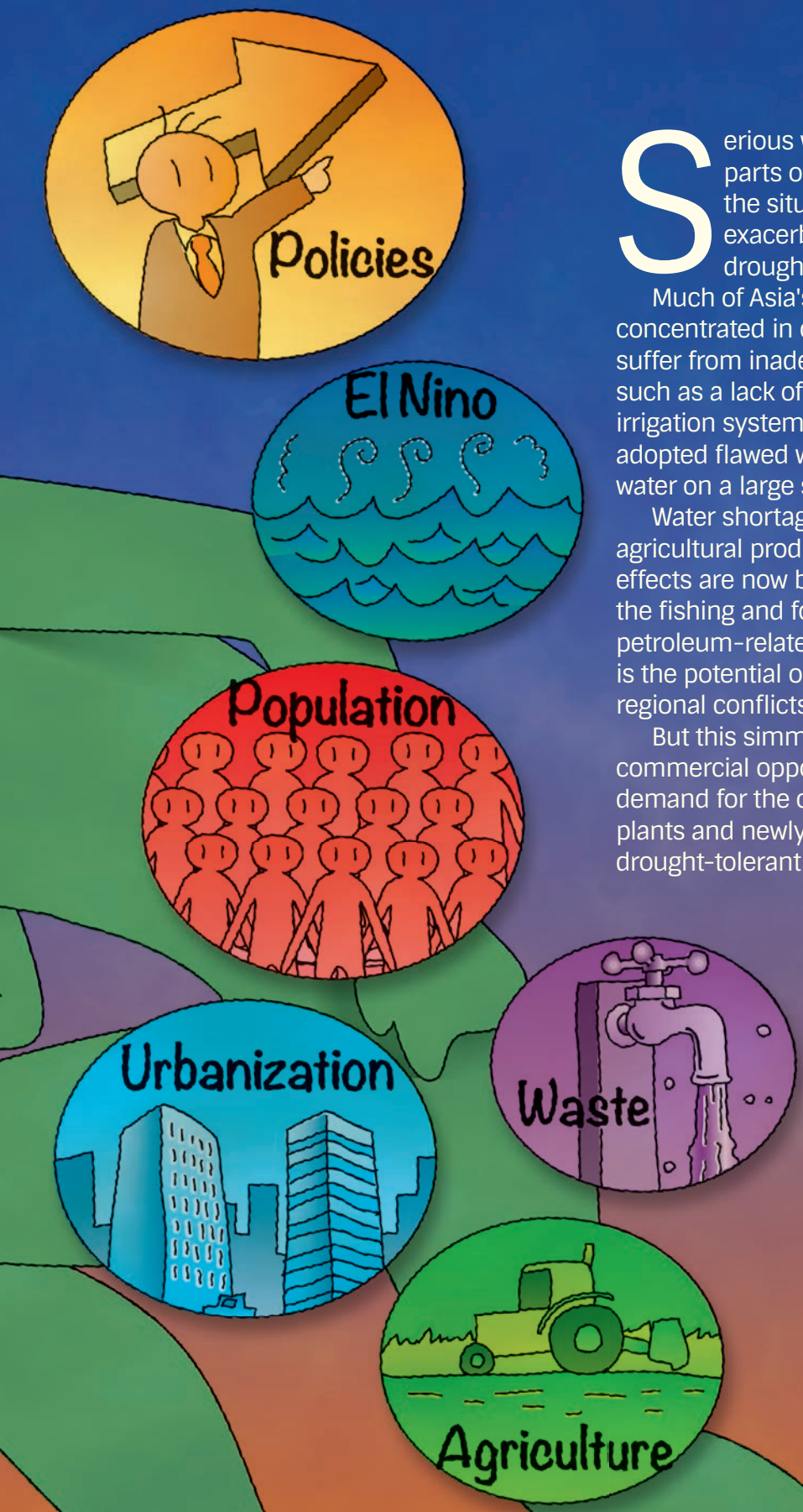
TO THE LAST DROP

WATER CRISIS IN ASIA



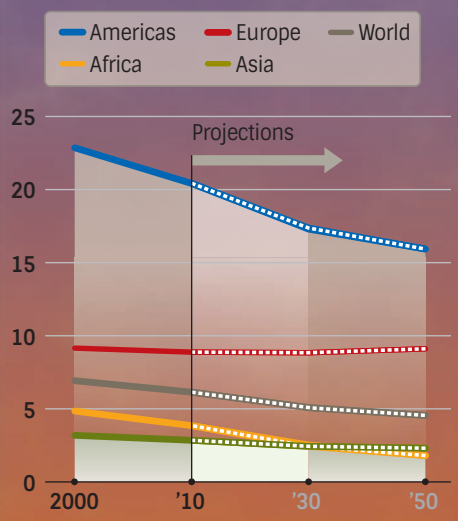
Serious water shortages are affecting many parts of Asia. While the major factor behind the situation is climate change, which has exacerbated existing conditions such as drought, there are other factors at play.

Much of Asia's population has traditionally been concentrated in cities and towns, but many areas suffer from inadequate water-supply infrastructure, such as a lack of dams and reservoirs or inefficient irrigation systems. In addition, governments have adopted flawed water policies, and households waste water on a large scale.

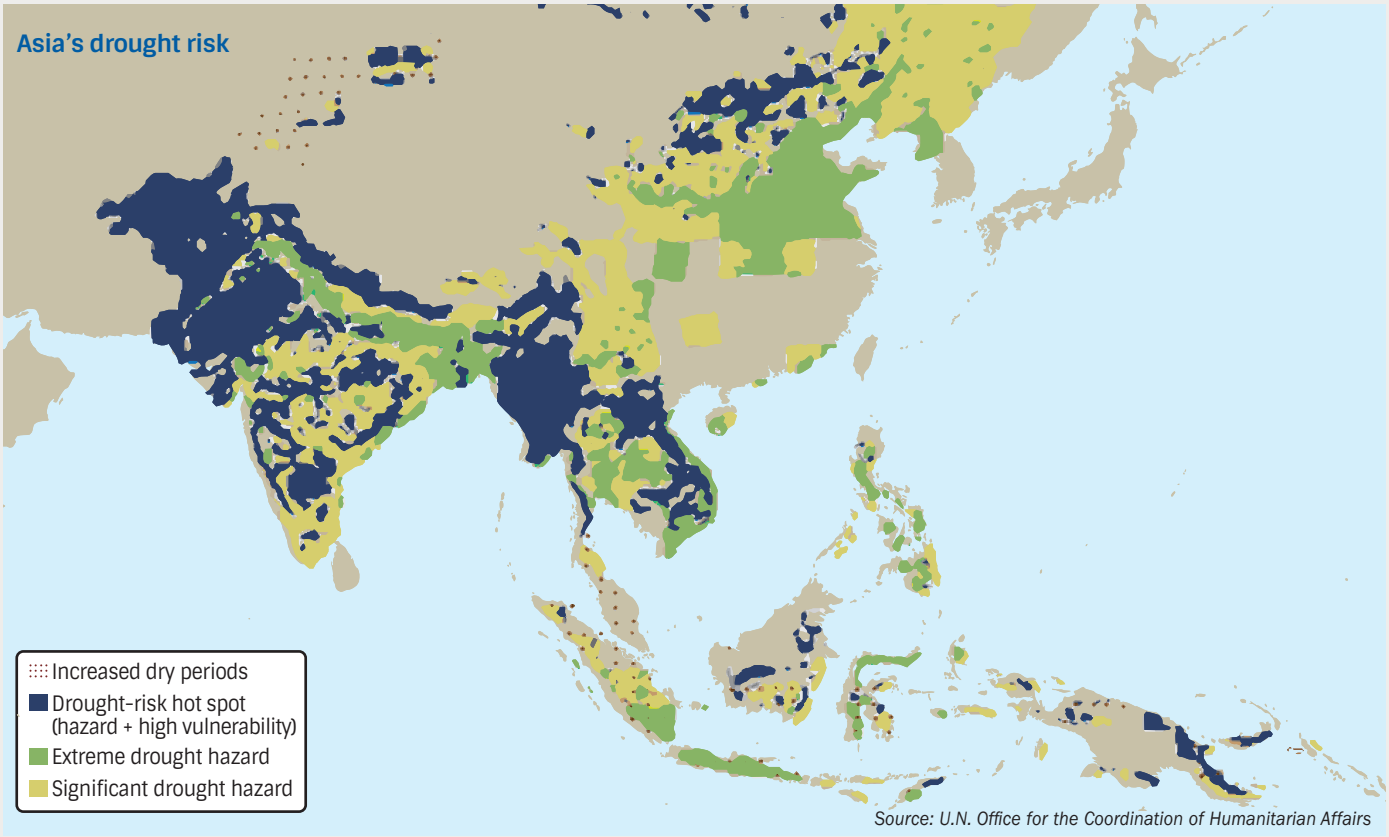
Water shortages have always proven painful for agricultural production and the environment, but their effects are now being felt further afield, including in the fishing and food industries and even in petroleum-related businesses. Another critical hazard is the potential of disputes over water rights to trigger regional conflicts.

But this simmering crisis is also providing new commercial opportunities, as seen in the growing demand for the construction of seawater desalination plants and newly developed strains of drought-tolerant grain.

Usable water per person;
in thousands of cubic meters



Source: United Nations World Water Development Report 2014, figures on renewable water resources



Source: U.N. Office for the Coordination of Humanitarian Affairs

Asia's water resources are drying up, and failure to reverse the trend could spell big trouble

Running on empty

BRAHMA CHELLANEY

Asia is the world's largest and most economically dynamic continent. But it is also the driest, and its future may depend on how well it deals with what a U.N. panel on climate change is calling a growing risk of drought-related water and food shortages.

Unusually dry weather is parching swaths of Malaysia, Indonesia, Singapore, the Korean Peninsula, Sri Lanka, Thailand and India. This trend threatens to further squeeze the availability of drinking water, hamper economic growth and -- together with the drought in the American West and parts of Brazil -- push up international food prices. Palm oil prices, for example, have already surged.

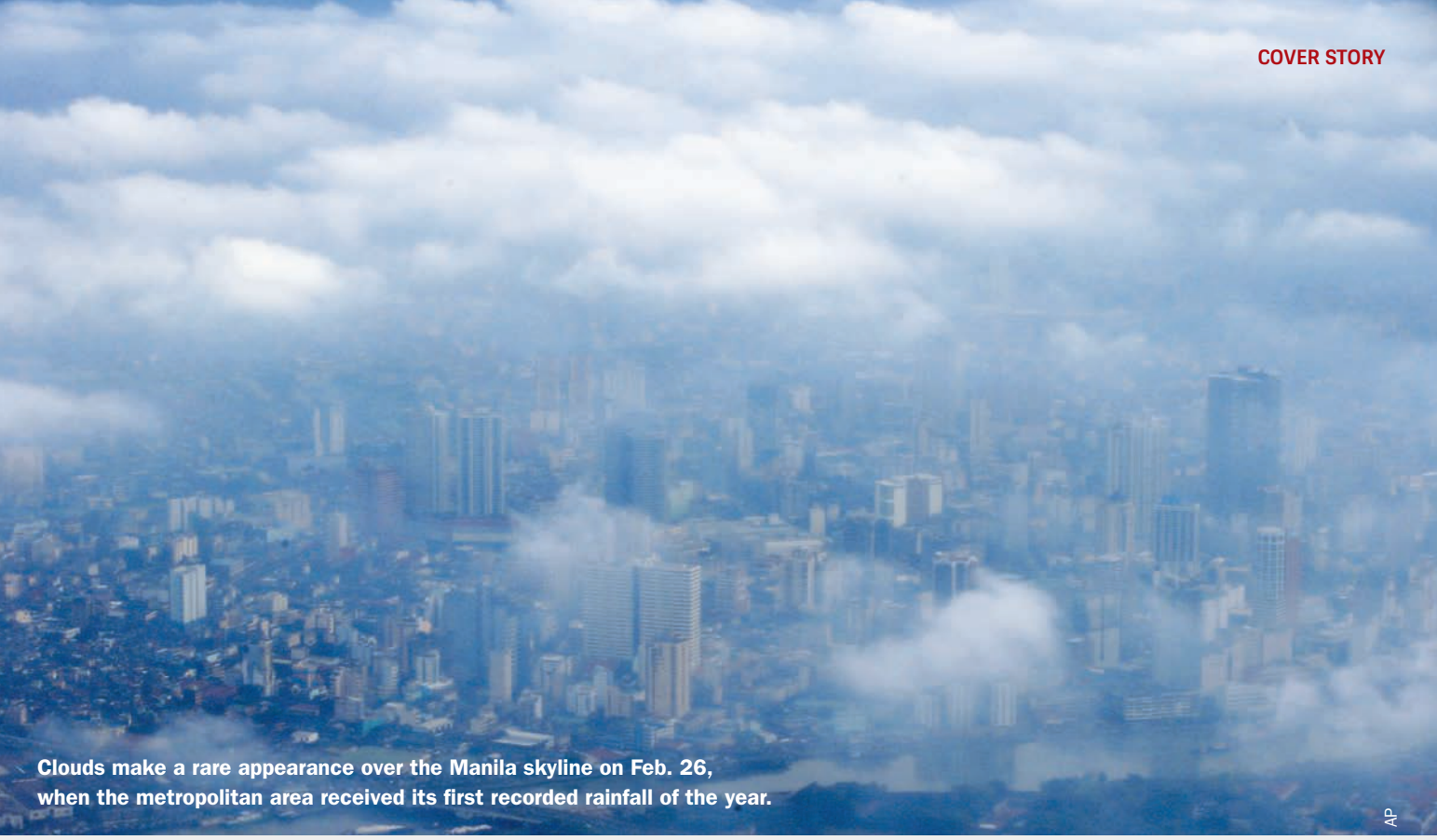
Even farmers in Australia's eastern states of New South Wales and Queensland are bracing themselves amid warnings that the drought may spread to other parts of Asia this year due to the potential return of the El Nino weather pattern.

Asia's climatic extremes play a big role in its vulnerability to droughts and heighten the risk of natural disasters and agriculture-related trouble. When it rains, it tends to pour, with monsoon-season flooding endemic in the region. But the seasons are often punctuated by long dry spells, and weak monsoons can trigger serious droughts. This can be disastrous on a continent where the availability of fresh water is not even half the global average of 6,079 cu. meters per person a year.

Asia is home to some of the world's biggest natural-disaster hot spots, and no other continent is more prone to the cumulative impact of droughts, flooding and large storms. This fragility is compounded by the region's unmatched population size and density, and its concentration of people living in deltas and other low-lying regions.

Out of balance

The specter of a hotter, drier future for Asia can be seen in the degradation of watersheds, watercourses and other ecosystems, as well as in the shrinking forests and swamps and over-dammed rivers. Such developments undermine the region's hydrological and climatic stability, fostering a cycle of chronic droughts and



Clouds make a rare appearance over the Manila skyline on Feb. 26, when the metropolitan area received its first recorded rainfall of the year.

AP

flooding. To make matters worse, Asia is likely to bear the brunt -- as the report by the U.N. Intergovernmental Panel on Climate Change warns -- of the global effects of extreme weather, rising seas and shortages of drinking water. Water wars may only be a matter of time.

Asia's droughts are becoming longer and more severe, and the availability of water per capita is declining at a rate of 1.6% a year. This is a troubling trend for a region where agriculture alone guzzles 82% of the annual water supply. The rapid spread of irrigation since the 1960s has helped turn a continent once plagued by food shortages and famines into a food exporter. But it has also exacted a heavy toll on the environment and resources.

The spread of intensive irrigation to arid or semiarid regions, such as northern China, Uzbekistan, Pakistan and Turkmenistan, has led to desertification in areas from which already-scarce water resources are being diverted. Meanwhile, the land being irrigated retains soluble salts, degrading the soil and the water table.

Six decades of aggressive irrigation have turned northern China into the country's breadbasket, even though 80% of the nation's water resources are in the south. But the north is drying up, with its lifeblood -- the Yellow River -- dying and most of the wetlands only a memory. The fine dust coating Beijing, carried on the wind from the bone-dry fields creeping ever closer to the capital, is the legacy of state-promoted irrigated farming.

Unquenchable thirst

Excessive use of water for agriculture has exacerbated Asia's susceptibility to drought, leaving other sectors -- industrial and municipal -- struggling to meet demand. With rivers and reservoirs increasingly unable to supply enough water, the hunt for the precious resource has literally gone underground. In India, China and elsewhere, the widespread use of electric and diesel-fuel pumps has been sucking up massive volumes of groundwater, a resource better kept in reserve as insurance against droughts.

In Asia's heavily populated coastal regions -- home to almost half its population -- the over-pumping of groundwater has caused seawater to seep into the water table, crimping the availability of drinking water in such cities as Manila, Jakarta, Bangkok, Dhaka and Karachi.

The upstream construction of giant dams and other water diversions is eating away at the shorelines of Asia's 11 urban megadeltas, all fed and formed by rivers originating on the Tibetan plateau. Most of these megadeltas are also home to booming economic centers, including Tianjin, Shanghai, Guangzhou, Bangkok and Kolkata.

Beyond the ecological fallout, the damming of shared rivers is also a big source of political tension. This is especially true for China and its neighbors. China already has more large-scale dams than the rest of the world combined, and it is building more. The focus of its latest construction push has shifted from dams along internal rivers to those straddling waterways that flow into other countries.

Asian hydropolitics promises to become only murkier as China completes more upstream dams on the Mekong, the Salween, the Brahmaputra and other rivers that flow to South, Southeast and Central Asia and to Russia.

Recurrent droughts in the downstream Mekong basin have created a public-relations headache for Beijing, which rejects allegations that its multitude of upriver dams has contributed to this phenomenon. But the claims have not stopped China from moving forward with projects to build three additional giant dams on the Mekong River, continental Southeast

Women and children await government relief in Pakistan's drought-hit province of Sindh on March 11. Dozens of children have died of malnutrition and other causes in the country's desiccated south, prompting Prime Minister Nawaz Sharif to distribute $10 million in emergency aid.

Reuters

Asia's lifeline.

In parts of Asia where access to water is limited, even small declines in its availability or annual variations in rainfall can threaten entire communities by creating droughtlike conditions. The struggle for water in some stricken areas has led villagers to hire security guards to protect their wells and other sources.

Other examples of the knock-on effects of droughts include water rationing in parts of Malaysia; the persistent haze caused by the annual forest fires that plague Riau, the second-largest province on the Indonesian island of Sumatra; and the high suicide rate among Indian farmers. Recurrent droughts since the 1990s are widely seen as a key factor in the suicides of more than 200,000 farmers in the country's central and southern regions. And this year's weak "northeast monsoon" could further hit agricultural output in Asia.

Then there is the problem of environmental refugees. The Yemeni city of Sanaa risks becoming the first capital to run out of water. Where will its citizens go if the water supply dries up? Meanwhile, China's damming of the Brahmaputra could force an exodus of thirsty Bangladeshis living downstream, creating a potentially huge security problem for India.

Dig deep enough and conflicts over resources can often be found at the heart of civil wars. The internal strife in Yemen and Afghanistan illustrates the degree to which persistent droughts can poison interethnic relations and trigger bloodshed.

Two sides collide

In water-stressed South Korea, the government is encouraging big companies to move water-intensive production activity overseas, even if the products being made are for the domestic market. But this strategy is creating problems abroad. A business deal that gave the South Korean side the right to lease up to half of all arable land in Madagascar triggered a powerful grass-roots backlash that toppled the country's democratically elected president in 2009.

In places where water is already hard to come by, plans to construct new factories often spark local protests. This happened when South Korean steelmaker Posco said it was building a plant in the drought-prone eastern Indian state of Odisha.

Given that Asia holds 60% of the world's population, the region's increasing vulnerability to droughts carries the potential for humanitarian disasters. That is because the poor are the ones hit hardest when the taps go dry. This vulnerability is a potential source of conflict and refugee crises.

Averting a water-related disaster requires long-term thinking and action. Governments throughout the region need to shore up the environment by restoring the ecosystem -- including reconverting farmland into forests -- introducing new drought-resistant crops and halting the degradation of freshwater and coastal ecosystems. Combating wild climatic fluctuations, as manifested by chronic droughts and flooding, demands such capital-intensive measures as building surface reservoirs and other infrastructure.

Asia will also have to adopt agricultural practices that use water more efficiently. That includes overhauling antediluvian irrigation systems. Most farmers in the region still use flood irrigation when drip systems and sprinklers could halve their water use. But as long as growers enjoy access to free or heavily subsidized water, they will have little incentive to change.

Brahma Chellaney is a geostrategist and author of "Water: Asia's New Battleground" (Georgetown University Press, 2013), winner of the Bernard Schwartz Book Award.

Drought, torrential rains hit hard in a country where even small changes in weather can have drastic effects

Indonesia caught between extremes

JEFFREY HUTTON
Contributing writer

JAKARTA -- When it comes to climate change, Indonesia stands to lose more than most. Poor infrastructure and living standards along with extreme weather have been known to shut down the capital for days, with losses to business and government running into the tens of millions of dollars.

But unpredictable and extreme weather patterns in the last few months -- from drought to torrential rain in some parts of the sprawling archipelago -- have hit Indonesia's oil and gas sector as well as agriculture, and cut into commodities exports. Experts say worse is on the way.

On Sumatra, haze from forest fires has resulted in nearly $1 billion in losses, as businesses and schools, not to mention the main airport and oil wells, shut down or scaled back operations. Oil and gas regulator SKK Migas said in April that hundreds of oil wells had been shut down amid deteriorating air quality.

On Sulawesi, one of Indonesia's largest islands, heavy rains have hit coffee production. Production of palm oil, which accounts for more than 10% of the country's exports, could slump as the possible El Nino weather phenomenon exacerbates drought in some parts of the country.

With its reliance on commodities, widespread poverty and creaking infrastructure, Indonesia is particularly vulnerable to the ravages of climate change. Rising temperatures could disrupt the livelihoods of millions in a country where roughly 40% make less than $2 a day.

"Farmers have been particularly hard hit by the erratic weather," said Steve Rhee, program officer for natural resources at the Ford Foundation in Jakarta. Agriculture accounts for roughly 15% of economic activity, and every 1-degree rise in global temperature can erase 10% from rice yields domestically, eroding incomes and driving up food prices.

"The economic costs of climate change will continue to be significant," he said.

Fires and water

The fires on Riau, a province on the east coast of Sumatra, are a particular concern this year. So far, losses have totaled 10 trillion rupiah ($875 million). This is a stark reminder of 1997, when bad weather and drought due to El Nino contributed to raging forest fires and caused about $4.5 billion in damage.

Even small changes in weather patterns can make life harder. In January 2013, torrential rains over nearly a week triggered a state of emergency that shut down Jakarta's financial and administrative districts and forced thousands of residents to evacuate. Economic losses were estimated at $150,000 an hour, as Jakarta and its satellite towns -- which together account for 28 million people -- shut down. The problems were made worse by drains blocked with garbage and dilapidated dams dating back to the Dutch colonial era.

The dry weather has also hit Indonesia's lucrative palm oil production. In late February London Sumatra Indonesia, a major palm oil producer, said crude palm oil production fell 12% last year to less than 400,000 metric tons. As for coffee exports, overseas shipments may fall an annual 17% to about 375,000 tons in 2014, according to calculations by Bloomberg News.

Most sobering is the finding by the Asian Development Bank that Indonesia, Thailand, the Philippines and Vietnam will be among Southeast Asia's worst weather-affected countries by the end of this century. Damage from climate change will sap an average 6.7% of combined gross domestic product annually of those economies by 2100. In response, Indonesian government spending to mitigate natural disasters ballooned from 0.6% of GDP in the mid-2000s to 1% in 2012.

AP

A woman collects water for bathing from a well under an overpass in a Jakarta slum on March 13.

Alleviating poverty and investing in infrastructure are the only ways to make regional economies more resilient to climate change, according to Rob Daniel, a technical adviser at PricewaterhouseCoopers in Jakarta. "It's less to do with extreme weather and more to do with the subsistence level of people who are not able to withstand even minor changes," he said.

Thailand's caretaker government, preoccupied with political turmoil, faces a bigger challenge from Mother Nature

Of rice and rain

MICHAEL SAINSBURY
Contributing writer

A rice farmer who identified himself only as Somyod stands by his paddy near Sing Buri, about 150km north of Bangkok. The 46-year-old said he has not seen a payment from the Thai government's rice subsidy program in about a year. Meanwhile, his farm is desperate for rain.

BANGKOK -- A few kilometers out of Sing Buri, the dusty and nondescript capital of the eponymous province in Thailand's central plains, farmers are burning the remains of the harvest from the second rice crop they planted in late 2013. Beneath the plumes of white smoke, the earth is parched. A large dam just out of town is almost empty, and locals say fish in the creeks are smaller and harder to find than usual.

"It's always dry at this time of year but we didn't get as much rain in last year's wet season, and the hot weather has come earlier," said Somyod, a wiry, weather-beaten farmer.

Many rice farmers in Thailand's north and northeast have been forced to abandon the second crop due to drought conditions that, in some provinces, are the worst in decades. Already 30 provinces in Thailand have been declared "drought emergencies" by the country's irrigation department. They range from Satun in the south to Phayao, north of Chiang Mai.

Thailand's Office of Agricultural Economics projects that this year's off-season rice production will drop from the previous year by approximately 500,000 tons, or 5%.

Usable water reserves in each of the major dams -- Bhumibol, Sirikit and Kaewnoi -- in the Chao Phraya River basin, the nation's main catchment area, were at barely 20% of total capacity in late March. The Thai Meteorological Department has forecast that rains will start later than usual this year, in mid-May rather than April.

Crops other than rice, including maize, pineapple, rubber and sugar, have also been affected in an agricultural sector that contributes more than 8% of Thailand's annual gross domestic product -- down from 25% in the 1980s.

"Very severe"

Water in general is emerging as a major issue for the Asia-Pacific region, home to about 4.4 billion people, or roughly 60% of the global population. Yet, as the United Nations Economic and Social Commission for Asia and the Pacific reported in March, the region has only about 38% of the world's fresh water.

The drought in Thailand is part of a prolonged spell of dry weather that has hit much of Southeast Asia. The Intergovernmental Panel on Climate Change in its latest major report warned of the growing impact of global warming on yields of key crops such as wheat, rice and maize in tropical and temperate regions. The cyclical El Nino effect is expected to take hold later this year, depressing rainfall further, and meteorologists are predicting conditions could be even worse next year if the wet season disappoints.

"The preliminary findings point to a very severe drought, about the same magnitude as the one experienced in 1997-1998," said Hiroyuki Konuma, the U.N. Food and Agriculture Organization's regional representative for Asia and the Pacific.

The 4,350km-long Mekong River -- the lifeblood for millions of rice and fish farmers in Laos, Thailand, Cambodia and Vietnam -- is at its lowest level in 50 years.

Rice and coffee sectors in densely populated Vietnam have been badly hit; so, too, have fishermen, who collectively haul about 4.5 million tons of fish and aquatic products from the river each year, according to the Vientiane-based Mekong River Commission.

Adding to these problems is increased salinity in water-starved rivers across the region. This has affected inland fishing industries in Laos, Thailand and Cambodia.

Prapat Panyachartrak, president of Thailand's National Farmers Council, cautioned April 1 that the council expects an "extremely difficult" year for farmers.

Compounding problems arising from the drought are the political turmoil and financial constraints on the Thai caretaker government. This, Prapat noted, has resulted in a freeze on payments to farmers under the government's controversial and now-abandoned rice subsidy scheme.

Among the program's unintended victims are increasingly desperate rice farmers in Sing Buri, who say the government has not paid them for the last two rice crops.

Worse is to come. Droughts in Southeast Asia are now more frequent, more extreme and less predictable. The last big drought came in 2010; the one before that was in 2005. In the last century, these spells would only occur once a decade or even less, according to Fitrian Ardiansyah, climate and sustainability specialist at the Australian National University.

"In previous years, farmers have had the capacity to adapt," he said. "But climate anomalies are happening more frequently and farmers have less capacity to" deal with them.

The accelerating drought cycle is causing more fires and with them, unseasonal, choking haze. This enveloped such cities as Singapore and Chiang Mai, in Thailand's north, in March.

The FAO's Konuma said the spreading drought in Southeast Asia threatens to raise food prices and weigh on economic growth. "Higher prices may hurt consumers throughout the region," he said. "Already the price of palm oil has begun to surge."

In their search for solutions, some farmers and agribusinesses across the region are turning to more drought-resistant hybrid seeds, such as Monsanto's genetically modified corn and DuPont Pioneer's hybrid corn. In Thailand, the government used to distribute hybrid seeds, but in recent years the private sector has seized most of the market.

Thailand and Southeast Asia more generally are wary of genetically modified, drought-tolerant crops. Thailand's government had a negative experience with GM papaya in the mid-2000s. So far, only the Philippines and Myanmar have widely embraced the trend. Yet research continues: The Rubber Research Institute of India and its Malaysian counterpart have developed genetically modified rubber plants. Thailand-listed Univanich Palm Oil is developing new strains of less-thirsty rubber plants as well.

Reuters

A girl splashes elephants during the Songkran water festival in Thailand's Ayutthaya Province on April 9. Water is used to symbolically wash away the ills of the past year.

Managing the problem

Few agriculture and food-related businesses in Thailand will remain unscathed by the sustained drought, Konuma said. In Sing Buri, general retailers and restaurants say they are feeling the pressure, with sales down by as much as 50% from last year due to a combination of the water shortage and growing financial distress among local rice farmers.

Major food companies such as Thai conglomerate Charoen Pokphand Group and global player Nestle, which sources coffee from Vietnam, are being hit with higher produce prices. On the flip side, Konuma noted, bottled water suppliers such as Thai Beverage are benefiting from increased demand for their products.

From a broader perspective, the drought/flood cycle and the increasing amount of land under cultivation are creating new water-management challenges. Last year, Korea Water Resources Corp. and a consortium led by Italian-Thai Development won seven contracts totaling 371 billion baht ($11.5 billion) from the Thai government, which wants to better conserve water supplies and avoid disasters like the floods of 2011. More such tenders are likely in the future, according to experts.

Thailand's agriculture sector consumes 70% of the nation's water supply, while household consumption accounts for 4% and the industrial sector uses 2%. The remainder is reserved for the "ecological balance." With the anticipated impact of climate change, better water management is becoming more critical, Konuma stressed. "If it is not put into action, the country could be facing huge problems from floods and droughts."

In the meantime, a repeat of conditions in 2005 -- when Thailand suffered the most severe drought in a decade -- is a growing possibility. That year, production of sugar cane plunged 24%, cassava fell 24%, corn dropped 6% and rubber decreased 1%, according to a March report by Siam Commercial Bank's Economic Intelligence Center.

A sequel would further damage an economy already squeezed by slow export growth and political chaos.

Research contributed by Paringya Rukluea

A prolonged dry spell leaves an unprepared Malaysia struggling to meet its water needs

Tapped out

CK TAN
Nikkei staff writer

KUALA LUMPUR -- Rainfall is abundant throughout the year in tropical Malaysia and Singapore, with both countries receiving an average of more than 2,000 mm of precipitation annually. But an unusual dry spell has kept policymakers on their toes and raised calls for a re-examination of water-use policies.

The first few months of the year are normally dry in Malaysia, but the capital of Kuala Lumpur is parched, with rainfall totals 60% below normal. This has forced water rationing that has affected about 90% of the residents in the metropolitan area.

The amount of water in at least three of the seven reservoirs that supply drinking water to the city has dropped to critical levels. Rationing started in March and will last until the end of April. During that time, water will be supplied to 1,340,231 households and businesses on a two days on/two days off schedule, the National Water Services Commission said.

People in affected areas have complained of the inconvenience and cost of buying spare water tanks for storage. "I bought four 20-liter pails, each costing 200 ringgit ($61.7), for use during the two days of dry taps," lamented Daniel Chong, a restaurant owner in a suburb of Kuala Lumpur.

Low tariffs encourage high water consumption, with Malaysians using some 212 liters per person per day, far more than the minimum requirement of 15 liters a day recommended by the World Health Organization.

Water supply is regulated by state

Reuters

Residents collect water from a tanker near Kuala Lumpur on Feb. 25. Hot weather and the closure of two water treatment plants since Jan. 28 due to ammonia pollution in the Langat River have resulted in water shortages in some areas of the Klang Valley, according to local media.

governments, and like many essential goods, it is heavily subsidized. In Kuala Lumpur, households pay only 0.57 ringgit per cubic meter of water. In the state of Selangor, which surrounds the capital, water usage of up to 20 cu. meters per month is free.

High and dry

As a short-term measure, the government has turned to cloud seeding to induce rainfall near reservoirs. In cloud seeding, a salt solution is sprayed from aircraft into clouds to squeeze the water out of them, but so far the attempts to create rain have failed.

Rapid urbanization over the last few years has strained much of Kuala Lumpur's infrastructure, including its water supply. The government is building a tunnel to channel water from Pahang, a less densely populated state next to Selangor. The two states signed a water transfer agreement in 2007 when they were administered by the ruling party.

The 44.6km tunnel, which is being built by a Japanese-Malaysian consortium, is expected to be completed in June. Planners say it will be able to supply 1.89 million cu. meters of untreated water daily through 2050. But Selangor is now ruled by the opposition, and before the water shortage became acute, the state government objected to the construction of a water treatment plant on its land, due to a dispute over its ownership.

In February, the central and state governments hastily signed a memorandum of understanding on what they called a "historic occasion," setting aside their differences to authorize construction of the Langat 2 water treatment plant. But although Selangor has given the go-ahead, it will take at least three years to complete the project before potable water starts flowing to Kuala Lumpur, Selangor and Putrajaya, the seat of the national government.

Better prepared

The drought is also affecting neighboring Singapore. February was the driest month in the city-state since 1869, according to the National Environment Agency. But unlike Malaysia, Singapore has not had to resort to rationing because it gets over half its water supply from recycled wastewater called NEWater and desalinated seawater. The rest is imported or obtained from local catchments.

Singapore is committed to water reclamation, working to capture every spare drop of water and recycle it more than once. In 1961, an agreement was reached for the southern Malaysian state of Johor to supply Singapore with all its water needs. But friction between the two sides following Singapore's independence four years later compelled its leaders to look for alternatives.

Singapore's desperation became dangerously acute in the 1970s. Lee Kuan Yew, then prime minister, wrote in his memoirs published in 1999 that he warned Mahathir bin Mohamad, Malaysia's deputy prime minister at the time, that Singapore would not hesitate to go to war should its neighbor abruptly cut off the water supply.

Last year, the land-scarce country announced a second phase of construction on a deep sewage tunnel system to boost its supply of reclaimed water. Costing $2.35 billion, the 18km underground "superhighway" will allow Singapore to meet 55% of its water needs with used water, up from the current 30%, when it is completed in 2022. Phase 1's 48km tunnel currently treats the equivalent of 320 Olympic-size swimming pools of used water daily, according to the Public Utilities Board, the national water agency.

Tapping adversity

Singapore's water policies have also created opportunities for its companies at home. Hyflux, which started in 1989 as a trading company selling water treatment products, has since grown into Singapore's largest listed water company, with a market capitalization of $1 billion Singapore dollars ($799 million).

The company made a net profit of S$44 million on revenue of S$535.8 million in 2013. It draws two-thirds of its sales from emerging markets in Asia, where it builds and maintains water treatment and seawater desalination plants.

Together with Hitachi, it is currently constructing a desalination plant in the state of Gujarat in northwestern India. Hyflux says the $600 million plant will be the biggest desalination plant in Asia, capable of supplying 336,000 cu. meters of water per day for 30 years. The project is part of the Delhi-Mumbai Industrial Corridor projects being promoted by the Japanese and Indian governments to build industrial parks along a 1,500km stretch between the two cities using private funds.

Despite an 18% drop in revenue last year, Hyflux is upbeat about its prospects this year. It sees good opportunities in its key markets with an estimated $8 billion worth of projects available for tender, according to OCBC Investment Research.

With an order book of S$2.67 billion as of the end of 2013, the company is shifting its attention from established markets in Asia to the Middle East and Africa. Last month, it inked a joint venture agreement in Nigeria to explore opportunities in the water business there. Hyflux's partner in Nigeria is Tolaram, a Singapore-based conglomerate engaged in food, logistics, energy and property in Asia and Africa.

Back on its home turf, Hyflux completed Singapore's largest desalination plant last September. The plant supplies 318,500 cu. meters of desalinated water per day, meeting 25% the island's water demand together with another plant.

Today, Singapore is proud that it no longer relies on only one source of water.

"We have resilience in our system. Even if there is a drought, we are prepared," Prime Minister Lee Hsien Loong said during the official opening of the desalination plant. "What was once our strategic weakness has become a source of thought leadership and competitive advantage."

Malaysians poked fun when Singapore launched its NEWater program 10 years ago, saying their much more affluent neighbors had to drink "sewer water." But with faucets in Malaysia running intermittently dry for more than a month, few are laughing now. ■