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FROM THE GRASSROOTS

Clockwise from top left: A bird's-eye view of expressways in Guiyang, capital of Guizhou province. QIN GANG / FOR CHINA DAILY Workers produce thin-film solar panels at an industrial zone in the city. PROVIDED TO CHINA DAILY Students take a computer course at No 3 Primary School in Kaiyang county, Guizhou. PROVIDED TO CHINA DAILY

Big data spurs growth in Guizhou

Province transforms into key transportation, internet hub

By WANG HAO, LEI XIAOXUN, YANG JUN and **WANG XIAOYU** in Guiyang

Karst rock formations shrouded in mist are typical scenery in outlying areas of Guiyang and Guian New Area, Guizhou province, but the provincial capital and the national-level new area are also home to equally solid technological foundations.

Countless thousands of computer servers whir away in the city's data storage plants, where the temperature is strictly controlled.

These facilities bear the logos of global conglomerates such as Apple and Foxconn Technology Group, as well as Tencent, Huawei and other domestic technology powerhouses.

Zhao Deming, Party secretary of both Guiyang and Guian New Area, said: "The city (and the new area) is a major port for data. Shipments of digital information are docked and stored here, spurring development of local data processing businesses.

"These businesses boost trade and commerce, and also attract a wide range of talent and technologies."

Guizhou used to lag behind other parts of the country in economic development, but for 10 consecutive years until 2020, it ranked among the nation's top three provinces in terms of GDP growth, with an expansion rate of about 10 percent annually.

The key to this growth is big data.

In 2014, after carefully assessing Guizhou's resources and the province's key strengths, the provincial government pinpointed data processing as a new driver of economic growth.

The province is now home to 23 key data centers that are either in operation or under construction, housing an estimated total of 4 million servers.

Located on a plateau shared with neighboring Yunnan province, Guizhou is far from major earthquake zones and, compared with other mountainous areas of the country, records fewer tremors with a magnitude greater than 3.1, making data centers secure, Zhao said.

Guizhou also has respective temperatures of 15 C annually and 23 C in summer, which can significantly reduce spending on cooling equipment.

"Other big data storage areas in parts of the country that experience cold weather face frigid conditions in winter and occasional sandstorms that reduce air quality in server rooms," Zhao said.

"In terms of its natural environment, Guizhou is a godsend for big data development."

Hu Ming, deputy director of the Guian New Area Administrative Committee, said a regular server can last three to five years in Guizhou, but in windy and dusty areas, the life span is likely to be three years at most.

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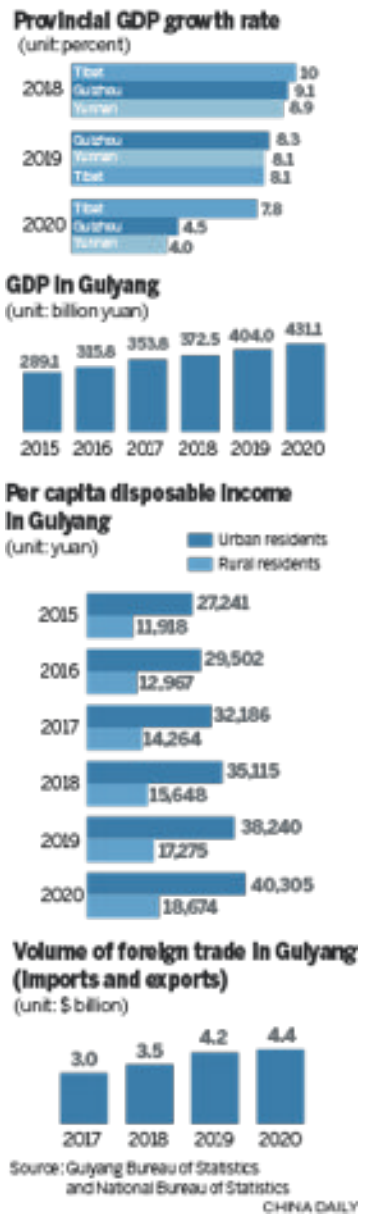
>
> **Zhao Deming,** Party secretary of Guiyang and Guian New Area



Guizhou also boasts abundant energy resources and low electricity prices.

The Guizhou Provincial Development and Reform Commission said in early 2018 that the average price of electricity for industrial use in the province in the first 10 months of the previous year fell by nearly 0.13 yuan per kilowatt hour, hitting one of the lowest levels nationwide at the time.

Zhao said: "One giant telecommunications company alone is estimated to be able to save $100 million a year in power consumption after deciding to settle in Guizhou."

Hu added that advances made in transportation infrastructure in the province in recent years have helped its data storage and processing industries expand.

"At the end of 2019, expressways in the province extended for 7,000 kilometers. In addition, passengers traveling from Guiyang by high-speed trains can reach any part of China within seven hours," he said.

An increasingly sophisticated road and rail network epitomizes the commitments made to high-quality development in the area.

Due to its numerous rolling mountains and deep valleys, building new roads and bridges is prohibitively expensive in Guizhou, which has resulted in a series of disconnected transportation systems.

The province invested 887.3 billion yuan ($137 billion) in the transportation industry during the 13th Five-Year Plan (2015-20), a rise of more than 40 percent from the 12th Five-Year Plan (2011-15).

In terms of setting up information technology infrastructure, Guizhou used to be last among provinces nationwide.

Wu Huashan, an official with Guian New Area, said a turning point was reached in June 2017, when a direct key national internet connection channel — one of 13 across the country — was launched in the region.

Construction of the new Guian channel, designated for data transmission with foreign countries, was completed on June 30.

Guizhou is home to more than 20,000 5G base stations, with all core areas in cities throughout the province covered by this network.

"Our goal is to allow information technology infrastructure growth to outpace that of industrial development to a certain extent," Wu said.

Huang Xinyao, an employee at China Telecom's information park in Guizhou, said the facility's key strength is high-quality internet connection.

"The park's internet network is directly linked to six major cities: Beijing; Shanghai; Guangzhou, capital of Guangdong province; Nanjing, capital of Jiangsu province; Wuhan, capital of Hubei province; and Shenzhen, Guangdong," she said.

"It is also linked to all areas of Guizhou."

Huang said more direct links would be launched soon to: Xi'an, capital of Shaanxi province; Chengdu, capital of Sichuan province; Hangzhou, the Zhejiang provincial capital; and Fuzhou, capital of Fujian.

Added value

As Guizhou transforms from a landlocked hinterland area to a well-connected transportation and internet hub, it aims to explore the economic value of big data.

Hu, from the Guian New Area Administrative Committee, said, "The next vital step is to turn 'cold' data into 'hot' data, which can bring added value.

"Compared with other regions looking to big data as an economic stimulus, Guian New Area stands out because it is gaining momentum in three fields simultaneously — data centers, high-level manufacturing industry and the information technology services sector," he said.

Wang Jun, head of Guian New Area's big data development and service center, said the concentration of data centers in the locality is already bearing fruit, as orders are being generated for servers and other internet equipment, boosting the manufacturing sector.

"Guiyang is not a port city in the traditional sense. As a result, its industrial development was hamstrung by weak local demand for a long time," he said.

"It is estimated that expanding data centers in the city will create local production valued at 50 billion yuan."

Meanwhile, the area's software and information technology service sector is expected to earn at least 14 billion yuan this year and 100 billion yuan by 2024, Wang added.

Full Truck Alliance, a truck-hailing digital platform founded in Guizhou in 2017, is one of the fast-growing technology companies riding the big data wave.

Zhang Hui, the company's president and CEO, said in an earlier interview that the platform is aimed at resolving "disconnections" among drivers, truck owners and clients.

"The company's success is the outcome of integrating big data with the traditional logistics sector, which not only bolsters economic development in the province but also helps reshape people's lifestyles," he said.

More than 9 million truck drivers have registered with the platform, and the provincial government said during a news conference in December that a new round of funding enables the company to reach a valuation of more than $10 billion.

During the early stages of the pandemic, which hit Hubei hard, more than 1,300 truck drivers raced to the province to deliver emergency equipment, thanks to requests posted on the Full Truck Alliance platform.

Big data is also making a difference in the public service sector.

At East Century Technology, a company founded in Guizhou in 2000, a vast amount of meteorological, water resources and geographical data has been amassed and analyzed. This vital information has helped authorities decide whether to issue alerts for flooding and droughts, and in allocating disaster mitigation resources.

In June, the company's early warning system for flooding, known as East Auspicious Clouds, successfully predicted 10 hours in advance that a stretch of rail line connecting Guizhou and Sichuan provinces was at high risk of being left under water. This alert enabled railway authorities in Chengdu to take precautions and minimize disruption to services.

Li Tao, the company's chief engineer, said, "Compared with the conventional flood warning method, which relies on installing sensors at key points, the big data and cloud computing system covers a wider area at lower cost."

According to a white paper issued last year on development of the digital economy in China, the growth rate of this economy in Guizhou in 2019 reached 22.1 percent, making it the first provincial-level region to witness such expansion for five consecutive years.

Zhao, the Guiyang Party secretary, said, "Like traditional ports, which only rose to prominence after decades of gradual development, we need to bide our time for the big data industry to emerge and mature.

"We need to persevere, press ahead and be patient in order to realize the goal of achieving a novel development pathway that is distinct to Guizhou," he said.

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Pioneering court plays vital role in protecting environment

By YANG JUN and **WANG XIAOYU** in Guiyang

Guiyang, capital of Guizhou province and a front-runner in China's digital economy, is also home to the country's first court solely devoted to handling environmental cases.

About an hour's drive from the city lies Hongfeng Lake, which takes its name from the red leaves adorning the lakeside maple trees every autumn.

The lake, which covers 57 square kilometers in Guiyang and neighboring Anshun city, is a major source of drinking water for local residents.

A two-story, plain building sits on the east bank, housing the environmental protection court responsible to Qingzhen People's Court in Qingzhen, a county-level city administered by Guiyang.

Luo Qianguang, head of the court, said it was established in late 2007 to help tackle deteriorating water quality in the lake. This issue emerged in 2002, when a devastating bloom of algae caused a series of bad odors to reach nearby neighborhoods, raising concerns about the impact on drinking water.

However, as the pollution source was mainly located on upper reaches of the lake outside of the jurisdiction of Guiyang, remedial efforts were weak and insufficient.

"The main benefit of the court is that it is in charge of all environmental cases in the city, its districts and counties. In recent years, it has handled all types of cases — criminal, civil and administrative lawsuits, along with a rising number of public interest litigation cases," Luo said.

The fact that a single institution handles environmental cases is believed to have been a "game-changer" in rooting out pollutants in Hongfeng Lake and restoring its waters, Luo said.

The first case heard by the court involved a chemical engineering company in Anshun that had dumped millions of metric tons of phosphorus waste near the lake since the 1990s and was responsible for the algal bloom on its lower reaches.

About one month after it was established, the court issued its first ruling, ordering the company to shut down production lines and remove all phosphorus waste left by the lakeside.

According to the court, the amount of phosphorus in the lake fell by nearly 60 percent from 2007 to 2010.

"More important, the court became an inspiration for local governments as well as the top court (the Supreme People' Court), which adopted its working mechanism in following years," Luo said.

For the past 14 years, the court, which is staffed by fewer than 10 people, has become a testing ground for a host of innovative rules, regulations and settlements designed for environmental cases.

The court is allowed to issue injunctions against polluting enterprises before a case is settled, Luo said.

"Completing legal procedures takes time, and the longer it takes, the more damage is done to the environment. Allowing the court to intervene earlier is vital for curbing the spread of pollutants as soon as possible," he said.

"Compared with administrative orders from the local environmental protection bureau, a ban from the court is more forceful and has a stronger deterrent effect," Luo added.

The court also allows experts to analyze cases. "Both the plaintiff and the defendant can invite experts recognized by the court for their expertise to provide opinions," he said.

Luo added that the number of cases filed to the court annually had risen from an initial 100 to more than 400 in recent years. However, due to the pandemic, last year it handled about 290 cases.

"In environmental cases, we always emphasize the significance of restoring the environment, instead of being fixated on handing out penalties," he said.

"For example, companies convicted of fishing illegally are also ordered to plant more trees and disperse fish seedlings in waters. Such efforts are taken into consideration when we make legal decisions," Luo said.

Over the years, the court has also encouraged nonprofit organizations, volunteers, lawyers and companies to unite in implementing regular supervision efforts, and has offered to provide legal guidance for this work.

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