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Global race on to match U.S. drone capabilities

By [William Wan](#) and [Peter Finn](#), Published: July 4, 2011

At the most recent Zhuhai air show, the premier event for China's aviation industry, crowds swarmed around a model of an armed, jet-propelled drone and marveled at the accompanying display of its purported martial prowess.

In a [video](#) and [map](#), the thin, sleek drone locates what appears to be a U.S. aircraft carrier group near an island with a striking resemblance to Taiwan and sends targeting information back to shore, triggering a devastating barrage of cruise missiles toward the formation of ships.

Little is known about the actual abilities of the WJ-600 drone or the more than two dozen other Chinese models that were on display at Zhuhai in November. But the speed at which they have been developed highlights how U.S. [military successes](#) with drones have changed strategic thinking worldwide and spurred a global rush for unmanned aircraft.

More than 50 countries have purchased surveillance drones, and many have started in-country development programs for armed versions because no nation is exporting weaponized drones beyond a handful of sales between the United States and its closest allies.

"This is the direction all aviation is going," said Kenneth Anderson, a professor of law at American University who studies the legal questions surrounding the use of drones in warfare. "Everybody will wind up using this technology because it's going to become the standard for many, many applications of what are now manned aircraft."

Military planners worldwide see drones as relatively cheap weapons and highly effective reconnaissance tools. Hand-launched ones used by ground troops can cost in the tens of thousands of dollars. Near the top of the line, the [Predator B](#), or MQ9-Reaper, manufactured by General Atomics Aeronautical Systems, costs about \$10.5 million. By comparison, a single F-22 fighter jet costs about \$150 million.

Defense spending on drones has become the most dynamic sector of the world's aerospace industry, according to a report by the Teal Group in Fairfax. The group's 2011 market study estimated that in the coming decade global spending on drones will double, reaching \$94 billion.

But the world's expanding drone fleets — and the push to weaponize them — have alarmed some academics and peace activists, who argue that robotic warfare raises profound questions about the rules of engagement and the protection of civilians, and could [encourage conflicts](#).

"They could reduce the threshold for going to war," said Noel Sharkey, a professor of artificial

intelligence and robotics at the University of Sheffield in England. “One of the great inhibitors of war is the body bag count, but that is undermined by the idea of riskless war.”

China on fast track

No country has ramped up its research in recent years faster than China. It displayed a drone model for the first time at the Zhuhai air show five years ago, but now every major manufacturer for the Chinese military has a research center devoted to drones, according to Chinese analysts.

Much of this work remains secret, but the large number of drones at recent exhibitions underlines not only China’s determination to catch up in that sector — by building equivalents to the leading U.S. combat and surveillance models, the Predator and the Global Hawk — but also its desire to sell this technology abroad.

“The United States doesn’t export many attack drones, so we’re taking advantage of that hole in the market,” said Zhang Qiaoliang, a representative of the Chengdu Aircraft Design and Research Institute, which manufactures many of the most advanced military aircraft for the People’s Liberation Army. “The main reason is the amazing demand in the market for drones after 9/11.”

Although surveillance drones have become widely used around the world, armed drones are more difficult to acquire.

Israel, the second-largest drone manufacturer after the United States, has flown armed models, but few details are available. India announced this year that it is developing ones that will fire missiles and fly at 30,000 feet. Russia has shown models of drones with weapons, but there is little evidence that they are operational.

Pakistan has said it plans to obtain armed drones from China, which has already sold the nation ones for surveillance. And Iran last summer unveiled a drone that Iranian President Mahmoud Ahmadinejad called the “ambassador of death” but whose effectiveness is still unproven, according to military analysts.

The United States is not yet threatened by any of these developments. No other country can match its array of aircraft with advanced weapons and sensors, coupled with the necessary satellite and telecommunications systems to deploy drones successfully across the globe.

“We are well ahead in having established systems actively in use,” said retired Lt. Gen. David A. Deptula, the former deputy chief of staff for intelligence, surveillance and reconnaissance at the Air Force. “But the capability of other countries will do nothing but grow.”

Raising alarm

In [recent conflicts](#), the United States has primarily used [land-based drones](#), but it is developing an aircraft carrier-based version to deploy in the Pacific. Defense analysts say the new drone is partly intended to counter the long-range “carrier killer” missile that China is developing.

With the ascendance of China’s military, American allies in the Pacific increasingly see the United States as the main bulwark against rising Chinese power. And China has increasingly framed its military developments in response to U.S. capabilities.

A sea-based drone would give the United States the ability to fly three times the distance of a normal Navy fighter jet, potentially keeping a carrier group farther from China's coast.

This possible use of U.S. drones in the Pacific has been noted with alarm in news reports in China as well as in North Korea's state-run media.

There are similar anxieties in the United States over China's accelerating drone industry. A report last November by the U.S.-China Economic and Security Review Commission noted that the Chinese military "has deployed several types of unmanned aerial vehicles for both reconnaissance and combat."

In the pipeline, the report said, China has several medium- and high-altitude long-endurance drones, which could expand China's options for long-range surveillance and attacks.

China's rapid development has pushed its neighbors into action. After a diplomatic clash with China last fall over disputed territories in the South China Sea, Japan announced that it planned to send military officials to the United States to study how it operates and maintains its Global Hawk high-altitude surveillance drones. In South Korea, lawmakers this year accused China of hacking into military computers to learn about the country's plans to acquire Global Hawk, which could peer into not only North Korea but also parts of China and other neighboring countries.

On top of the increasing anxieties of individual countries, there also are international concerns that some governments might not be able to protect these new weapons from hackers and terrorists. Sharkey, the University of Sheffield professor who also co-founded the International Committee for Robot Arms Control, noted that Iraqi insurgents, using a \$30 piece of software, intercepted live feeds from U.S. drones; the video was later found on the laptop of a captured militant.

Relaxing U.S. export controls

But with China and other countries beginning to market their drones, the United States is looking to boost its sales by exploring ways to relax American export controls.

Vice Adm. William E. Landay III, director of the Defense Security Cooperation Agency overseeing foreign military sales, said at a Pentagon briefing recently that his agency is working on preapproved lists of countries that would qualify to purchase drones with certain capabilities. "If industry understands where they might have an opportunity to sell, and where they won't, that's useful for them," Landay said.

General Atomics, the San Diego-based manufacturer of the U.S. Predator drones, has received approval to export to the Middle East and Latin America an unarmed, early-generation Predator, according to company spokeswoman Kimberly Kasitz. The company is now in talks with Saudi Arabia, the United Arab Emirates and Egypt, among others, she said.

At the same time, U.S. officials have sought to limit where others sell their drones. After Israel sold an anti-radar attack drone to China, the Pentagon temporarily shut Israel out of the F-35 Joint Strike Fighter program to register its disapproval.

In 2009, the United States also objected to an Israeli sale of sophisticated drones to Russia, according to diplomatic cables released by the anti-secrecy group WikiLeaks. A smaller co-production deal was later brokered with the Russians, who bristled when Georgia deployed Israeli surveillance drones against its forces during the 2008 war between the two countries.

But for China, there are few constraints on selling. It has begun to show its combat drone prototypes at international air shows, including last month in Paris, where a Chinese manufacturer displayed a craft, called the Wing-Loong, that looked like a Predator knockoff. Because of how tightly China controls its military technology, it is unclear how far along the Wing-Loong or any of its armed drones are from actual production and operation, defense analysts say.

According to the Aviation Industry Corp. of China, it has begun offering international customers a combat and surveillance drone comparable to the Predator called the Yilong, or “pterodactyl” in English. Zhang, of the Chengdu Aircraft Design and Research Institute, said the company anticipates sales in Pakistan, the Middle East and Africa.

However, he and others displaying drones at a recent Beijing anti-terrorism convention played down the threat of increasing Chinese drone technology.

“I don’t think China’s drone technology has reached the world’s first-class level,” said Wu Zilei, from the China Shipbuilding Industry Corp., echoing an almost constant refrain. “The reconnaissance drones are okay, but the attack drones are still years behind the United States.”

But Richard Fisher, a senior fellow at the Washington-based International Assessment and Strategy Center, said such statements are routine and intended to deflect concern about the nation’s expanding military ambitions.

“The Chinese are catching up quickly. This is something we know for sure,” Fisher said. “We should not take comfort in some perceived lags in sensors or satellites capabilities. Those are just a matter of time.”

More drone coverage

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Staff researchers Julie Tate in Washington and Zhang Jie in Beijing contributed to this report.

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