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Inspectors from the International Atomic Energy Agency tour an Iranian facility in 2007.

POLICY

US exit from Iran nuclear deal endangers research

International collaborations could end in wake of US President Donald Trump's decision.

BY JEFF TOLLEFSON

The United States will no longer be part of the Iran nuclear deal, delivering a major blow to efforts to establish scientific collaborations between the two countries. Researchers say that the decision, announced on 8 May by US President Donald Trump, will make a bad situation worse.

Under the 2015 Joint Comprehensive Plan of Action (JCPOA), Iran agreed to scale back its nuclear programme and allow international inspections of its facilities in exchange for the removal of economic sanctions imposed by the United States, the European Union, Britain, Russia and China. At the time, many researchers saw the agreement as an opportunity to bolster Iranian science and to expand international collaborations.

But those plans have encountered roadblocks since the 2015 deal. For example, when Trump took office last year, long-standing efforts to establish scientific exchanges between Iran and the United States came to a halt. And workshops organized by the US National Academies of Sciences, Engineering, and Medicine (NASEM) between 2010 and 2017 — meant to encourage collaborations in diverse fields including solar energy and water resource ▶

management — stopped after the Trump administration raised questions about Iran and the nuclear deal, says Glenn Schweitzer, who spearheaded the NASEM work in Washington DC.

"We were all full of enthusiasm when the agreement was signed, but unfortunately things went in the opposite direction," says Soroosh Sorooshian, an Iranian–American hydrologist at the University of California, Irvine. He was one of hundreds of scientists who participated in the NASEM workshops. "God knows what happens next."

MOTHBALLED

Iranian scientists have expanded collaborations with their European counterparts in areas such as nuclear safety and security, but similar work has failed to take root in the United States.

That is in part because some US sanctions remained in place in spite of the nuclear agreement, and because US researchers often need a licence from the US Department of the Treasury to collaborate with government scientists in Iran, says Matthew Bunn, who studies nuclear non-proliferation issues at Harvard University in Cambridge, Massachusetts.

Bunn is seeking such a licence to initiate a dialogue with leading nuclear scientists in Iran, with the ultimate goal of steering the country towards a safe and secure nuclear-energy programme. Trump's decision could detract from efforts to advance meaningful scientific cooperation, Bunn says, in addition to emboldening Iranian hardliners who would like to see the country become a nuclear power.

"There won't be a lot of enthusiasm on the Iranian side for dialogues with Americans."

"I need to rethink what I had been planning," he says. "There won't be a lot of enthusiasm on the Iranian side for dialogues with Americans such as myself."

Other research collaborations that could be in jeopardy include work at Fordow, an underground nuclear facility near Qom in northern Iran. As part of the JCPOA, Iran agreed to halt uranium enrichment at the facility. The country planned to pursue particle-physics research there, and to use the facility to produce medical isotopes. Russian scientists had been working with Iran on experiments to advance Iran's medical isotope production, says Scott Kemp, who heads the Laboratory for Nuclear Security and Policy at the Massachusetts Institute of Technology in Cambridge.

"I think that work gets mothballed, at least at the outset," Kemp says. And if the agreement collapses entirely and Iran walks away, he says that the country would scrap the effort altogether "and go back to making enriched uranium".

Sorooshian says the only good news is that the number of Iranian students entering US universities has increased in the past few years, which will help to build relationships between the two countries in the decades to come.

But for now, he says that the outlook for scientific cooperation between the two countries looks grim. "Everybody is concerned." ■

PEOPLE

Sacked Japanese biologist to retrain at Crick Institute

Yoshinori Watanabe hopes to revive his career with help from his former mentor.

BY DAVID CYRANOSKI

Prominent cell biologist Yoshinori Watanabe, who was dismissed by the University of Tokyo last month, is attempting to put his past behind him by embarking on an intensive retraining programme with Nobel prizewinner Paul Nurse in London. The university dismissed Watanabe after an investigation concluded that he had committed scientific misconduct.

Watanabe, who has done groundbreaking work in chromosome biology and has a string of impressive scientific achievements to his name, arrived at Nurse's laboratory on 16 April. Watanabe says the programme will focus on data acquisition and presentation, and also involve experiments. "After that period of retraining, I hope that I will be able to find somewhere to continue my research career," he says. Watanabe told *Nature* that he made mistakes in scientific papers, but that he did not intend to deceive and that he thinks these errors do not amount to serious misconduct.

Programmes to retrain errant scientists are rare. A rehabilitation initiative run by ethicist James DuBois at Washington University in St Louis, Missouri, with support from the US Office of Research Integrity, trained 61 researchers between 2013 and 2017. Participants who are referred to the programme have generally made careless mistakes, failed to provide adequate oversight, or not complied with policies on the treatment of human research participants, animal welfare or the declaration of conflicts of interests. But few of the rehabilitation participants have been accused of manipulating data, as Watanabe was.

Nurse, who mentored Watanabe when he was a postdoctoral researcher in the 1990s, thinks that the biologist deserves the

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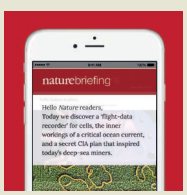

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