



Takeaways from 2021:

Five Consequential Findings about Iran from a Year of Research and Analysis

1) Iran can have enough weapon-grade uranium for a nuclear weapon in as little as three weeks.

As of November 2021, Iran had enough enriched uranium hexafluoride (UF₆) in the form of near 20 and 60 percent enriched uranium to produce enough weapon-grade uranium (WGU), taken here as 25 kilograms, for a single nuclear weapon in as little as three weeks. It could do so without using any of its stock of uranium enriched up to 5 percent as feedstock. The growth of Iran's stocks of near 20 and 60 percent enriched uranium has dangerously reduced breakout timelines.

See our *Analysis of IAEA Iran Verification and Monitoring Report - November 2021*, click [here](#).

2) Iran could detonate a nuclear explosive underground in as little as six months, rattling the Middle East profoundly, destabilizing the region perhaps irretrievably.

Although Iran would need longer to field a credible, reliable nuclear-tipped ballistic missile, it knows enough to build a nuclear explosive and build an underground nuclear test site. While most of the public focuses on deliverable nuclear weapons, many lose sight of Iran's extensive knowledge and experience in building nuclear weapons and the immense damage resulting from a nuclear explosion.

To learn more about Iran's nuclear weapons expertise, read the Institute's 19-page *Highlights of Iran's Perilous Pursuit of Nuclear Weapons*, click [here](#). To obtain *Iran's Perilous Pursuit of Nuclear Weapons* as an e-book or a paperback, click [here](#).

3) Iran has made key irreversible nuclear advances, perforating the Joint Comprehensive Plan of Action, perhaps irretrievably.

With its multiple violations of the Joint Comprehensive Plan of Action (JCPOA), Iran has reached previously uncharted territory, accumulating important new knowledge, experience, and practice, representing a significant degree of nuclear capability banned to Iran by this point in time under the JCPOA. Its progress has collapsed the JCPOA's overall purpose of keeping Iran twelve months from being able to produce enough weapon grade uranium for a nuclear weapon. If the JCPOA is simply revised rather than strengthened, as promised by the Biden

Administration, it will be far weaker than before and a flimsy deterrent against Iran building nuclear weapons in the next decade.

Read *Iran's Recent, Irreversible Nuclear Advances*, click [here](#).

4) Iran is mastering the construction and operation of advanced centrifuges far faster than anticipated.

Iran has rapidly increased its number of advanced centrifuges, so far doubling the number from before the JCPOA and planning to triple the pre-JCPOA quantity over the next several months. The most important advanced centrifuges today are the IR-2m, IR-4, and IR-6 centrifuges. Because of their far greater enrichment outputs, they are more useful in a speedier breakout to weapon-grade uranium or a more difficult to detect sneak out in a clandestine enrichment plant

Read *A Comprehensive Survey of Iran's Advanced Centrifuges*, click [here](#).

5) Iran remains one of the most egregious violators of strategic trade controls and sanctions.

The Institute's 2021/2022 *Peddling Peril Index* (PPI), the only public effort to comprehensively rank national strategic trade control systems ranks Iran as 196 out of 200, clustered with the likes of North Korea, South Sudan, and Yemen.

Overall, the *Peddling Peril Index* continues to present a troubling picture of the state of worldwide efforts to stop the illicit trade in goods critical to nuclear weapons, other WMD, and conventional arms.

To read more about the *Peddling Peril Index for 2021/2022*, click [here](#).