

# MP-IDSA

## *Issue Brief*

# COVID-19 and Nuclear Issues

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## *Summary*

The issue brief examines the relationship of the pandemic with the global nuclear order and its arrangements. The pandemic, COVID-19, has not only destabilised but also brought the whole world to a standstill. A major virus proliferation has affected more than two million people and took lives of more than 170,000 people, though the strategic community is still uncertain about the weaponisation of the virus. COVID-19 could have some serious implications for the nuclear order which has responded to the challenges thrown at it quite well. Nuclear industry has had a mixed impact so far and nuclear institutions are trying to temporarily manage the pandemic.

SARS-CoV-2 (severe acute respiratory syndrome coronavirus-2), popularly known as coronavirus, is wreaking havoc across the world through a disease called COVID-19. Its origin in China is still shrouded in controversy. The world is not ready to accept the Chinese explanation and information. The pandemic has locked the whole world in with countries discussing not only its origins and solutions but also implications.

Biology and physics represent two different streams of science. Depending on the perspective and the problem, a connect or disconnect between the two may be discovered. Similarly, nuclear and virus – two seemingly distinct issues – may have a connection if explored. Nicholas A. Christakis, a Harvard Professor, remarked that “the Chinese Government has essentially used a social nuclear weapon in its efforts” though he defined social nuclear weapon as a ‘collectivist culture’ of an authoritarian government.<sup>1</sup>

Quite significantly, during the corona crisis, a highly respected science journal highlighted an old discovery made by the Central Intelligence Agency (CIA) and the United States (US) Army when they had “searched the offices of Sultan Bashiruddin Mahmood – a Pakistani nuclear scientist and an associate of Osama bin Laden” in the aftermath of the 9/11 attacks. They had found a “file of information on anthrax vaccines and a diagram of a balloon intended to release anthrax spores into the atmosphere”.<sup>2</sup> These links remained a cause of worry and comprised an important element of emerging threat perceptions.

The current crisis has demonstrated that two phenomena which seem very distinct can affect each other. In this context, COVID-19 appears to have affected the nuclear order and its arrangements which have in turn responded to the crisis in a unique way. This issue brief explores the evolving relationship between the two.

## **A Killer Virus or Weapon of Mass Destruction**

When a virus or nuclear science is weaponised and used as a weapon of warfare, the international community considers it as a Weapon of Mass Destruction (WMD). When COVID-19 emerged in China, a debate began about the origin of the virus – whether it was from a hidden weapons lab or transmitted from an animal/bird. A section of the media maintained that a bio-weapon lab in Wuhan in the Hubei Province – which was the initial epicentre of the pandemic – had created the virus.<sup>3</sup>

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<sup>1</sup> Nicholas A. Christakis, [Twitter Post](#), March 09, 2020, 7:50 PM.

<sup>2</sup> Elisabeth Eaves, [“Hot Zone in the Heartland?”](#), *Bulletin of the Atomic Scientists*, March 2020 (Accessed April 17, 2020).

<sup>3</sup> Bill Gertz, [“Coronavirus may have originated in lab linked to China's biowarfare program”](#), *The Washington Times*, January 26, 2020 (Accessed April 17, 2020).

In fact, a school of thought and also some writings claimed that China had been operating a biological weapons complex despite being a signatory to the Biological and Toxin Weapons Convention (BTWC).<sup>4</sup> In general, however, the Western media has debunked the thesis of virus emerging from a lab though the debate does not dwell into the details of the secret biological weapons complex operated by China.

Most of the commentators hold the view that the trait of the virus, notwithstanding its origin or the intentions of China, is that of a WMD. Some have drawn a parallel with nuclear weapons while others have compared it with nuclear incidents such as Fukushima and Chernobyl. Notably, radiation too has the danger of a 'bystander effect'. However, this phenomenon is hardly as contagious as the SARS-CoV-2 virus. While it is true that both the virus and the radiation are invisible yet the key difference lies in the result/estimate of a nuclear weapon attack being realised immediately, depending upon the yield and place of use. Today, the impact of COVID-19 is seemingly difficult to measure, even months after its outbreak.

## Safety and Security

As of April 21, 2020, approximately 170,479 people have died while 57,348 remain critical. The virus is still spreading its tentacles with more than two million people having tested positive for COVID-19.<sup>5</sup> The virus has arguably stunned the whole world. Notably, the pace of the spread of the virus, while initially growing at a gradual speed, increases exponentially when it reaches the stage of community transmission in a country.

Given the threats posed by COVID-19 – a mass killer – the global network of policy community has advised countries to consult, if not fully adopt, the safety and security practices devised for tackling nuclear dangers.

In this context, the nuclear security summits have been a productive exercise for mutual learning and experience sharing. A small group of countries had earlier taken the campaign to the larger international and regional bodies. As the focus and priority of the international community in recent years has been on averting nuclear terrorism and nuclear accidents, the nuclear experience of synergising safety and security can be highly useful in combating threats like COVID-19. Enhanced communication and information sharing to alert each other about existing dangers and adoption of best practices can be useful in tackling this pandemic.

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<sup>4</sup> Dany Shoham, ["China's Biological Warfare Programme: An Integrative Study with Special Reference to Biological Weapons Capabilities"](#), *Journal of Defence Studies*, 9 (2), April-June 2015, pp. 131-156 (Accessed April 17, 2020).

<sup>5</sup> ["COVID-19 Coronavirus Pandemic"](#), *Worldometer*, April 21, 2020, 06:08 GMT (Accessed April 21, 2020).

## Nuclear Preparedness and Command and Control

The US nuclear-powered aircraft carrier - USS Roosevelt - had several of its crew affected by SARS-CoV-2 while sailing. The news became public leading to a clarification by President Donald Trump. Interestingly, the American President argued that in future the virus will not expose the limitations of the US forces, including the nuclear services, to the world. This clarification, however, raised concerns among others about the transparency of nuclear forces of great powers. Even America's allies like Australia were part of the group that voiced their apprehensions. Questions were raised about the safety and even preparedness of nuclear weapons and nuclear forces of countries affected by the pandemic.

Notably, the US officials had in March 2020 assured its stakeholders that the virus had not affected the American nuclear preparedness.<sup>6</sup> In fact, this assurance received criticism from within the US for paying too much attention to a nuclear war instead of tackling the pandemic.<sup>7</sup> Meanwhile, a few American citizens reminded their government about a key component of the US deterrence which involves nuclear retaliation in the face of biological weapons being used against the US and its allies.<sup>8</sup> It is likely that other nuclear weapons countries may have also secured their nuclear arsenals while keeping them in a state of readiness for any eventuality, though these countries did not follow the US in explicitly pronouncing their initiatives. However, the indisposition of British Prime Minister Boris Johnson drew some media attention about the command and control of British nuclear weapons.

## Nuclear Disarmament and Non-Proliferation

The COVID-19 pandemic is seen as an opportunity to strive for nuclear disarmament. Political writers like Noam Chomsky and others consider nuclear disarmament a far more serious issue for the world than COVID-19, which they perceive only as a temporary phenomenon.<sup>9</sup> Although Chomsky criticised President Trump for overlooking the corona problem yet he himself belittled the fight against COVID-19 by making an untimely allusion to nuclear disarmament and climate change. Indeed, while nuclear disarmament or no first use needs serious attention but it can be

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<sup>6</sup> Lucas Tomlinson, ["Coronavirus has 'no impact' on ability to launch nuclear weapons: Top US nuke commander"](#), *Fox News*, March 17, 2020 (Accessed April 17, 2020); and William M. Arkin, ["The U.S. Military's Behind-the-Scenes Moves to Protect Nuclear Readiness and Coronavirus"](#), *Newsweek*, March 23, 2020 (Accessed April 17, 2020).

<sup>7</sup> Tom Z. Collina, ["The Coronavirus Teaches US Not to Let Trump Press the Nuclear Button"](#), *Ploughshares*, March 31, 2020 (Accessed April 17, 2020).

<sup>8</sup> Tom Rogan, ["Coronavirus, super-plagues, and why we need nuclear deterrence against biological warfare"](#), *Washington Examiner*, February 27, 2020 (Accessed April 17, 2020).

<sup>9</sup> ["Noam Chomsky: 'We will overcome the coronavirus crisis, but we have more serious crises ahead of us'"](#), *Pressenza*, March 30, 2020 (Accessed April 17, 2020).

campaigned for at an appropriate time. Raising it at the time of this pandemic is unlikely to be of much help.

For years, the world has ignored serious issues relating to viruses and the BTWC. It has, instead, largely focused its energy and resources on the campaign for combating nuclear dangers. This campaign has had some success, particularly in the fields of nuclear security and safety. However, this success has come at the cost of a pandemic like coronavirus. Unfortunately, people like Chomsky have not grasped the mass destructive nature of COVID-19 and continue to be obsessed with nuclear disarmament. Today, COVID-19 has demonstrated that despite having signed a disarmament convention/treaty, a country can still deceive or mismanage its problems and push the world towards a global disaster. The fight against WMD is complex and it ought not to be approached in a simplistic and naïve manner.

### **NPT Review Conference**

On March 27, 2020, Gustavo Zlauvinen, the President-designate of the 2020 Review Conference of the Non-Proliferation Treaty (NPT), issued a letter informing all members and Permanent Observers of NPT about the postponement of the Tenth Review Conference. This event will, however, be held before April 2021.<sup>10</sup> It is quite apparent that the conference was postponed due to the prevailing COVID-19 situation in the world, particularly in the host city New York. Notably, the year 2020 marks the dual anniversaries of NPT - the golden jubilee of its entry into force and the silver jubilee of its indefinite extension.

Arguably, the postponement of the event is likely to have brought respite from a potential embarrassment for the Tenth Review Conference. In fact, as rightly pointed out by the president of the 2005 Review Conference, the “nine quinquennial treaty review conferences held since the treaty’s inception have failed to produce a consensus final document on the status of treaty implementation.”<sup>11</sup> Notably, two of the last three review conferences failed to produce any consensus document. It has also been observed that most of the member states remain unhappy over the non-implementation of the consensus documents agreed in 2000 and 2010.

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<sup>10</sup> [\*\*“Letter from the President-Designate”\*\*](#), *2020 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, United Nations Office of Disarmament Affairs*, March 27, 2020 (Accessed April 17, 2020).

<sup>11</sup> Sergio Duarte, [\*\*“Unmet Promise: The Challenges Awaiting the 2020 NPT Review Conference”\*\*](#), *Arms Control Today*, November 2018 (Accessed April 17, 2020).

## Iranian Sanctions

Iran was one of the first countries after China to be seriously affected by coronavirus. As of April 21, there have been more than 5,209 casualties while 3,389 people continue to remain critical. More than 83,505 people have been infected.<sup>12</sup> The pandemic has put Iran under enormous pressure. The Iranian leaders and officials have appealed to the international community to ease the existing sanctions and permit the country to trade on humanitarian grounds.<sup>13</sup> Tehran has argued that the continuation of extra-territorial sanctions is inhumane.

Several countries, including European states, have supported the idea of relaxing sanctions and trade restrictions on Iran.<sup>14</sup> A few elements in the US have also supported a humanitarian approach towards Iran though the US Government appears unmoved.<sup>15</sup> However, American officials, including President Trump, have denied ever hindering humanitarian assistance to Iran.<sup>16</sup> President Trump was, in fact, emphatic in expressing relaxation for ‘medical goods.’

Notably, Iran’s nuclear energy production too has come under pressure. Iran has insisted on continuing its enrichment “unless the European Union gives objective guarantees to honour its commitments to Iran in the context of the Joint Comprehensive Plan of Action”.<sup>17</sup> Meanwhile, a section of Arab and Israeli writers have kept raising red flags about the Iranian nuclear programme.<sup>18</sup> These writers, along with a section of the Western non-proliferation community, suspect Iran of continuing with its bomb manufacturing in a hidden facility.<sup>19</sup> In this context, the Shahid Mahallati Plant is the main target of these sceptics. In March 2020, even the International Atomic Energy Agency (IAEA) called upon Iran to immediately cooperate

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<sup>12</sup> [“Reported Cases and Deaths by Country, Territory, or Conveyance”](#), *Worldometer*, April 21, 2020, 06:12 GMT (Accessed April 21, 2020).

<sup>13</sup> [“Envoy: US sanctions endanger lives of people in Iran”](#), *Islamic Republic News Agency*, March 25, 2020 (Accessed April 17, 2020); and [“Zarif: US Medical Terrorism impedes effective reaction to pandemic”](#), *Islamic Republic News Agency*, March 21, 2020 (Accessed April 17, 2020).

<sup>14</sup> [“UK envoy praises Iranians' support for each other in fighting coronavirus”](#), *Islamic Republic News Agency*, March 16, 2020 (Accessed April 17, 2020).

<sup>15</sup> Narges Bajoghli and Mahsa Rouhi, [“How Trump Sanctions on Iran Will Worsen the Pandemic”](#), *The New York Times*, March 24, 2020 (Accessed April 17, 2020).

<sup>16</sup> [“White House, Remarks by President Trump, Vice President Pence, and Members of the Coronavirus Task Force in Press Briefing”](#), *The White House, The United States Government*, April 08, 2020 (Accessed April 17, 2020).

<sup>17</sup> [“Majlis: Iran will enrich uranium unless EU gives objective guarantees to honor JCPOA”](#), *Islamic Republic News Agency*, April 08, 2020 (Accessed April 17, 2020).

<sup>18</sup> Benjamin Weinthal, [“Iran urged to declare newly revealed nuclear weapons site to IAEA”](#), *The Jerusalem Post*, April 08, 2020 (Accessed April 17, 2020); and Majid Rafizadeh, [“Amid virus crisis, Iran focuses on nuclear program”](#), *Arab News*, March 08, 2020 (Accessed April 17, 2020).

<sup>19</sup> Kate Nicholson, [“Iran World War 3 shock: Why coronavirus pandemic could end Tehran’s nuclear plans”](#), *Express*, April 03, 2020 (Accessed April 17, 2020).

with the agency by providing its inspectors access to sites which Iran had denied in the past.<sup>20</sup>

### **Nuclear Industry in Lockdown?**

The world, in general, has suffered economically because of the lockdown. While production and delivery of essential items have been relaxed yet the industries have largely not functioned, given the restrictions on the movement of people.

The lockdowns, however, have had a mixed impact on the global nuclear industry. Notably, today, this industry meets several needs of the mankind. This includes treatment of cancer and generation of electricity. Since nuclear power plants usually have a reservoir of fuel load for a few years (normally three years),<sup>21</sup> they are insulated from disruptions to the supply of fuel needed for running the reactors. In comparison, the functioning of coal and gas-based power plants is interrupted on account of disruption in the transportation of fuel supply.

The nuclear power plant operators use a set of guidelines issued by the competent authorities for the operation of their nuclear facilities. Today, the operating countries have prepared themselves to the dangers of the pandemic. The gap in time, from the outbreak in Wuhan to the disease becoming a global pandemic, has seemingly helped the nuclear operators to develop industry specific guidelines. These include social distancing, shrunken staffing, telecommuting, systematic medical screening of employees, sterilisation of work areas, availability of personal protective equipment, travel restrictions, self-isolation, and assembly restrictions, among others. Notably, it has been alleged that China has a contingency plan to evacuate critical infrastructure including nuclear plants with the help of its specialised military units.<sup>22</sup>

While the nuclear guidelines are normally issued by the national authority yet national governments often consult relevant international organisations and nuclear industry associations. However, it is likely that in case of non-availability of the required staff, a nuclear facility may temporarily suspend its operations. Notably, several nuclear units have continued their operations. Rosatom State Atomic Energy

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<sup>20</sup> Nicole Jawerth, [\*\*“IAEA Director General Calls on Iran to Cooperate Immediately and Fully”\*\*](#), *IAEA Office of Public Information and Communication*, March 09, 2020 (Accessed April 17, 2020).

<sup>21</sup> [\*\*“COVID-19 Coronavirus and Nuclear Energy”\*\*](#), *World Nuclear Association*, Updated April 17, 2020 (Accessed April 17, 2020).

<sup>22</sup> Xu Keyue, Liu Xuanzun and Chen Qingqing, [\*\*“Experts call for epidemic evacuation zones, dedicated military unit to handle crises”\*\*](#), *Global Times*, February 09, 2020 (Accessed April 17, 2020).

Corporation has assured India that the outbreak of COVID-19 will not stop it from completing Kudankulam 3 and 4 reactors on time.<sup>23</sup>

Nevertheless, a diverse set of problems have surfaced. Construction activities have been stopped at new sites in countries like China. Interestingly, in countries like South Africa, nuclear power units have been shut down due to a fall in demand for electricity caused by the lockdown. The UK has stopped work at a nuclear fuel reprocessing site located at Sellafield while France has revised its nuclear energy generation and distribution target. The Bulgarian Government has delayed its nuclear power plant bidding process. Meanwhile, the Rooppur nuclear power plant in Bangladesh has continued the construction activities albeit at a slower pace. The danger to nuclear personnel is highlighted by the incidents in a few power plants where the workers contracted the virus from fellow employees.<sup>24</sup> Interestingly, in Japan, raincoats were made available, to workers to protect themselves from the virus. Not surprisingly, the protection offered by them was found to be inadequate.

Like the nuclear power industry, the uranium industry too has had its unique share of experience in dealing with COVID-19. The Canadian uranium company Cameco has suspended its uranium mining operations because of the threat of contagion among its workers.<sup>25</sup> Other uranium companies operating in the country have expressed apprehensions about operating uranium mines amidst the looming shadow of the virus. Similarly, in Africa, Namibia, which is a leading supplier of uranium to China, has stopped mining uranium.<sup>26</sup>

Other leading uranium producers, including Kazakhstan, while expressing apprehensions about the invisible threat of the virus and maintaining certain precautions, have decided to continue operations till the time the threat reaches their shores.<sup>27</sup> Quite significantly, the uranium industry is bucking the global trend of an economic decline. There has been a spurt in prices anchored in the closure of several mines. Notably, as a pre-coronavirus induced crisis, the prices of uranium had been on a steadily declining curve since the Fukushima incident.

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<sup>23</sup> [\*\*"Amid COVID-19 outbreak, Rosatom vows to fulfil Kudankulam nuclear plant deadline"\*\*](#), *The New Indian Express*, March 27, 2020 (Accessed April 17, 2020).

<sup>24</sup> See [\*\*"Andrew Maykuth, More Limerick nuclear plant workers test positive for coronavirus; refueling to continue"\*\*](#), *The Inquirer*, April 08, 2020 (Accessed April 17, 2020); [\*\*"Nuclear corporation Rosatom subcontractors' staff isolated in Belarus over coronavirus"\*\*](#), *Tass*, April 08, 2020 (Accessed April 17, 2020); and [\*\*"Nuclear industry's response to Covid-19 outbreak"\*\*](#), *Power Technology*, April 01, 2020 (Accessed April 17, 2020).

<sup>25</sup> [\*\*"Canadian uranium operations suspended in response to COVID-19"\*\*](#), *World Nuclear Association*, March 24, 2020 (Accessed April 17, 2020).

<sup>26</sup> Neil Hume, [\*\*"Uranium bucks weak commodity trend"\*\*](#), *The Financial Times*, March 30, 2020 (Accessed April 17, 2020).

<sup>27</sup> [\*\*"Uranium firms adjust to COVID-19 impact"\*\*](#), *World Nuclear Association*, March 17, 2020 (Accessed April 17, 2020).



The global uranium market is largely controlled by six mines which produce two-thirds of the global supply. The price of uranium has increased by 14 per cent in the last two weeks of March 2020 “to \$27 per pound, breaking out of the \$24 to \$26 range it had held for almost a year.”<sup>28</sup> The price further increased to \$28.70 when the Kazakh Government forced Kazatomprom to reduce its projected output for 2020.<sup>29</sup>

## Interlinking Institutions

The pandemic has resulted in a selective institutional de-linking – a term coined by the 19th-century German economist Friedrich List – leading to enhanced institutional linkages. The weakness of specialised health institutions to meet the challenge of COVID-19 has prompted other institutions to adapt their roles in tackling growing emergencies at the national and international levels. Needless to say, the common and collective goal is to defeat the danger posed by the virus.

Interestingly, the non-health and at times pure commercial organisations have entered the collective response theatre aimed at tackling the virus. For example, sanitisers and face masks are being manufactured by bodies with unrelated areas of interest. Similarly, non-scientific organisations are contributing towards the business of health science research. Their area of activity is only partially overlapping. These institutions have at times even suspended their core specialised operations to produce equipment needed to tackle the pandemic.

Since the real battle is being fought by the national governments, these initiatives are likely to be more visible at the national level.

India too is roping in its scientific institutions to meet the challenge posed by the coronavirus. It has permitted both public and private labs to carry out COVID-19 tests. Similarly, the Department of Atomic Energy will make available its laboratories for COVID-19 tests.<sup>30</sup> Interestingly, the department has for a long time been associated with other therapeutic activities.

At the international arena, the IAEA – an institution dealing with nuclear science and technology – has shared its expertise with the global community. Its Incident and Emergency Centre based in Vienna has offered its knowledge base to the global endeavour of tackling the disease. The IAEA along with Food and Agriculture Office (FAO) has also sought to advance the idea of real-time reverse transcription-

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<sup>28</sup> Neil Hume, no. 27.

<sup>29</sup> Neil Hume, [“Uranium enters bull market after Covid-19 hits supply”](#), *The Financial Times*, March 30, 2020 (Accessed April 17, 2020).

<sup>30</sup> [“India’s S&T Institutions Raise their Game Against COVID-19”](#), *Press Information Bureau*, Government of India, April 06, 2020\_(Accessed April 17, 2020).

polymerase chain reaction (RT-PCR). This chain reaction is considered highly effective, given the precise laboratory technique deployed in “detecting, tracking, and studying the coronavirus”.<sup>31</sup>

The RT-PCR was originally used in nuclear labs as “radioactive isotope markers to detect targeted genetic materials”.<sup>32</sup> Later, the technique was refined and the advanced version of RT-PCR replaced the isotopic tagging with special marking - mostly fluorescent - thereby enabling to procure instant results. Now, scientists can detect the definite presence of genetic materials in any pathogen, including virus. While the IAEA has offered this technique to all its members yet several of these countries apparently do not have sufficient training and, therefore, need to be trained.

The RT-PCR takes three hours to deliver the result. In comparison, the traditional techniques - used by majority of the countries - take seven to eight hours to detect the virus. Notably, the pandemic has propelled countries to invent better equipment that give more accurate results in a shorter timeframe. South Korean and American techniques now provide results in minutes. Even Indian instruments have started to provide quick results. However, IAEA’s offer, given the ability of its processes to effectively detect, track and study the virus, can perhaps be the most vital force multiplier in the battle against COVID-19.

In this context, 14 countries in Africa, Asia, Latin America and the Caribbean have sought this nuclear-derived technique of detection, which IAEA claims to be the only certain tool to detect the virus.<sup>33</sup> The agency also received requests from 90 countries for the supply of test kits, protective equipment and tools. From April 1, 2020, the IAEA has begun despatching its nuclear-derived tools. The agency is relying on its own resources apart from the extra-budgetary funds it has received from countries such as the US, Canada, Netherlands and Australia. Interestingly, China has offered its support in the fight against a virus which it had unleashed all over the world.

Arguably, this institutional creativity has become a much-desired necessity at the international level. While this difficult period has prevented the establishment of an alternative institution, yet it is likely that a distinctive one, clustered separately, will emerge post the period of crisis. Nevertheless, it is also possible that the mitigated yet persistent situation may lead to the establishment of a new, precise and a more

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<sup>31</sup> Nicole Jawerth, [“How is the COVID-19 Virus Detected using Real Time RT-PCR?”](#), *International Atomic Energy Agency*, March 27, 2020 (Accessed April 17, 2020).

<sup>32</sup> Ibid.

<sup>33</sup> [“IAEA to Support Countries in the Detection of Novel Coronavirus”](#), *International Atomic Energy Agency*, March 09, 2020 (Accessed April 17, 2020).

effective institution to deal with the emergent situation. Till then, the IAEA remains at the forefront of fostering effective international cooperation and global governance.

## **Conclusion**

The COVID-19 pandemic has shaken the world. It has adversely affected not only normal businesses but also severely strained established structures and institutions. In this difficult period, the proverbial silver lining in the form of mutual learning and sharing of experience is heartening.

Like the rest of the sectors, the nuclear field too is dealing with the fallout of COVID-19. Innovative flexibility and openness in the rules of jurisdiction of partially overlapping and non-hierarchical institutions, operating in a particular issue-area, are the new emerging developments. While these institutions may have a partial corrective path yet their inextricably entangled self-interests have led to creative changes without any hidden agendas or inappropriate interventions.

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