Information Note[1]

Event: Side event of the First Committee "Challenges for the Governance of Synthetic Biology and Implications for UN Security Council resolution 1540 (2004)"

Organizer: Permanent Missions of the Plurinational State of Bolivia and Sweden to the United Nations

Date and Venue: 30 October 2018, 1315-1430 – UN Headquarters New York, Conference Room 7

Participants: Missions to the United Nations, Attendees to the First Committee

Background

- In Operative Paragraph 7 of Resolution 2325 (2016), the Security Council calls upon States to take into account developments on the evolving nature of risk of proliferation and rapid advances in science and technology in their implementation of resolution 1540 (2004).

- In Operative Paragraph 8 of 2325 (2016), the Security Council requests the 1540 Committee to take note in its work, where relevant, of the continually evolving nature of the risks of proliferation, including the use by non-State actors of rapid advances in science, technology and international commerce for proliferation in the context of the implementation of resolution 1540 (2004).

- On 23 October 2018, the Permanent Missions of the Plurinational State of Bolivia and Sweden to the United Nations sent an invitation to the 1540 Committee Chair, requesting his participation with opening remarks at the beginning of the event as well as inviting the Group of Experts to participate and deliver a short presentation.

- New scientific developments, or so-called emerging technologies, are transforming life, industry, and the global economy in positive ways, but some of them may also have significant potential to be misused as weapons of mass destruction by non-State actors. For that reason, it is imperative to raise awareness among the international community about the threats that some of these technologies may pose, particularly the ones related to synthetic biology.

- Throughout the course of this event, Member States as well as national and international scientific societies will be able to foresee potential risks and then pathways for governing these types of technology, which, due to their constant change and evolution, may require

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a regulatory framework to keep up with the speed, complexity and innovation which characterize them. Such an analysis will contribute to the effective implementation of requirements of resolution 1540 (2004) by Member States.

Highlights

The audience heard opening remarks from the Chair of the 1540 Committee; Mr Carl Magnus Eriksson, the Director of the Department for Disarmament, Non-Proliferation and Export Control in the Swedish Ministry of Foreign Affairs; and a 1540 Expert. The Chair of the 1540 Committee highlighted the role of resolution 1540 (2004) in the face of globalization, rapid advances in science and technology, and the continuously evolving trading environment which bring great benefits but also new risks, including in respect of terrorism and proliferation of weapons of mass destruction. He underlined that these risks need to be countered by the modification of existing measures or by the introduction of new ones. Mr Eriksson observed that as States implement resolution 1540 (2004), they must adjust to evolving security threats but also take into consideration technological innovations of potential relevance to the resolution. He added that this is especially so for biotechnology. The 1540 Expert briefly reviewed how the 1540 Committee is taking note in its work of advances in science and technology, for example, synthetic biology, particularly as they relate to the measures required under resolution 1540 (2004) to prevent the proliferation of biological, chemical and nuclear weapons and related material to and by non-State actors.

We then heard a presentation by Dr Nancy Connell, Senior Scholar, Johns Hopkins Center for Health Security, and a statement by Dr Natasha Bajema, Senior Research Fellow, Center for the Study of Weapons of Mass Destruction, National Defense University.

In their presentations, as well as during the questions and answers that came after them, it became clear that we are facing different types of risks in the biotechnology area but in a certain way these risks are converging. They include the rise of accessible gene editing tools, the digitalization of science and the growing volume of genomic data available online. These elements introduce a variety of risks and reveal vulnerabilities which are increasing because of a lack of awareness among scientists and the academic sector about them.

Dr Connell talked about the latest gene editing technologies and the risks they may pose due to their dual-use nature, and described the different techniques that are used as well as the different applications that synthetic biology offers. These applications may include the manufacturing of chemicals utilising microorganisms, modification of the human genome, as well as the modification of the human microbiome or immune system. She also discussed the convergence of different fields such as medicine, agriculture, engineering, chemistry and biology and the rapid advances that the biotechnological field is experiencing, underlining that governance measures regarding these issues need to be reviewed. In addition, she described how new generations of students are embracing the meetings of the International Genetically Engineered Machine Competition (iGem) and producing many interesting discoveries.

Dr Bajema then described in detail the characteristics of digitalisation of biology making reference to their benefits as well as to their possible misuse. Moreover, she described another

aspect of these developments, namely the risks posed by the amount of information available on the internet due to the digitalisation of science as well as the growing ability of a broader set of actors to manipulate genetic material. This may be increasing the risks of misuse of so-called digital biology. She added that, in this sense, it is important for Member States, which usually emphasise the physical protection, accountability or security of valuable biological materials during their production, use, storage or transport, to begin considering how to secure digital biology (which at the moment is barely secured), including that obtained from physical material. Dr Bajema underlined that it is important to recall that gene editing technologies and genomic data information can lower the bar for engineering new pathogens as well as engineering pathogens with customized capabilities. For example, pathogens with enhanced pathogenicity and/or with a broader range of hosts could evade existing treatments or prophylactic measures.

In Operative Paragraph 7 of resolution 2325 (2016), the Security Council called upon States to take into account developments on the evolving nature of risk proliferation and rapid advances in science and technology in their implementation of resolution 1540 (2004). For that reason, it is crucial for Member States to consider governance mechanisms which can effectively handle new technologies, whether through existing frameworks or with novel regulatory systems. The participants learned that it is imperative to continue raising awareness about these matters in order that Member States will review their biosecurity measures to better deal with the new biothreats discussed at the side event.

Additional Comments

For further information, please contact the 1540 Committee experts by e-mail at 1540experts@un.org.