



## World Federation of Engineering Organizations Fédération Mondiale des Organisations d'Ingénieurs

*WFEO Statement on the Covid-19 virus situation*

*Paris, 4 March 2020*

### **Engineering: Stepping up to the challenge of coronavirus and other global threats**

The World Federation of Engineering Organizations (WFEO) has followed the developments in the global spread of [Covid-19](#) with deep concern, both for those affected and those on the frontline of response.

What began as a cluster of infections in [Wuhan](#), China, has now spread worldwide, causing thousands of new cases and fatalities as well as widescale disruption and fear, both societally and economically.

The outbreak of this novel coronavirus has demonstrated the globalised nature of the new and evolving challenges that humankind is facing, while also revealing the necessity and importance of international cooperation in confronting them.

Covid-19, like other existential threats such as climate change, water shortages and food insecurity, not only affects people, but it also impacts trade, travel, education and labour across borders.

As the world's problem-solvers, engineers worldwide are striving to rise to these challenges with increasingly innovative solutions, aided by advances in technology, to provide short-term and longer-term responses.

### **Infrastructure**

The outbreak of novel coronavirus raised the urgent need for special infrastructure to help quarantine, treat and contain cases of the illness.

Building two speciality 1,000 and 1,600-bed [field hospitals](#) in Wuhan in just 10 days is one example of how engineers can contribute to the response campaign. It is also a reminder of the importance of collaboration between different engineering professions to meet such a high specification, with specialised ventilation and water treatment systems, quarantine wards, and reliable power supplies as well as high-speed network.

### **INTERNATIONAL ENGINEERING LEADERSHIP FOR SUSTAINABLE DEVELOPMENT**

FMOI/WFEO: Maison de l'UNESCO 1, rue Miollis 75015 Paris, France  
Tél: +33 (0)1 45 68 48 46 Fax: +33 (0)1 45 68 48 65 email: [executivedirector@wfeo.org](mailto:executivedirector@wfeo.org)  
Web site : [www.wfeo.org](http://www.wfeo.org)

The response to the outbreak also reinforces the importance of maintaining a skilled and experienced workforce. In many countries, there is a shortage of both engineering talents and opportunities for professional development, as highlighted in this year's [Global Engineer Survey](#). Investing and upskilling engineers is critical to drive economic growth and to provide an insurance against shocks and crises.

Faced with the ongoing pandemic, WFEO calls on engineers worldwide to take rapid action and make emergency plans based on local conditions to address the urgent infrastructure needs to control coronavirus.

## **Medicine**

Engineers can also provide tools to help clinical treatment. For example, scientists and engineers have developed [algorithms](#) to help predict the biomolecular structure of Covid-19, an important step in the process of developing an effective vaccine. In addition, different kinds of tools using AI and computer vision for the [quick screening](#) and diagnosis of patients are being tested.

In the meantime, medicines, food and care for affected patients have been delivered by healthcare professionals safely, thanks to effective personal protection equipment and clothing. And [robots](#) are being used to provide further support, helping protect the medical workforce and limit the spread of disease.

Bioengineering offers significant opportunities to develop new healthcare innovations by blending two traditional disciplines and using the ingenuity of engineers to improve medicine. This would be further enhanced by recruiting a diverse range of problem solvers.

WFEO calls on national governments and engineering organizations to bring engineers, scientists and doctors together in “medical plus engineering” projects to explore the enormous potential of engineering in helping medical treatment more efficiently and safely.

## **Monitoring**

An important aspect of the response to the coronavirus outbreak has been to monitor its spread, in which computer engineers have played an important role by developing [digital platforms](#) to collect accurate and up-to-date data. Analysing them with proper models, sometimes using machine learning, allows governments and agencies to give reliable advice to the public and take relevant decisions about disease control and management.

WFEO calls on engineers of different professions to continue to find ways to harness the power of data technology. When using big data techniques to improve engineering practice, engineers are also responsible for ensuring engineering data is recorded, stored and disseminated in time and with integrity.

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Artificial intelligence, machine learning and satellite technology all offer new tools with which to tackle global challenges. Moreover, encouraging and inspiring the next generation of engineers will be vital when it comes to making the most of these innovations.

### **Collaboration and Partnership**

Collaboration and partnership are key for engineers to carry out work to fight coronavirus and other global threats most effectively.

WFEO calls on engineers to cooperate actively with colleagues of different engineering profession, as well as with doctors, social workers, teachers, governmental officers, and the private sector.

WFEO also calls on national governments, the United Nations and other international organizations to take effective measures to facilitate international engineering cooperation to enhance engineering capacity nationally and globally to address the pressing challenges in short and long term.

Finally, WFEO calls on engineers to share engineering developments and experiences including data, algorithms, and new technology in an “open-source” model, to increase their value and potential applications in solving problems in every country of the world, leaving no one behind.

### **Engineering for Sustainable Development**

Covid-19 is one of many global threats facing the world today, and engineers are at the forefront of developing the new technologies, infrastructure and solutions that will best help us respond.

In the decade of delivery before the UN’s 2030 target for achieving the [Sustainable Development Goals](#) (SDGs), engineering has a vital role in every aspect from clean water and energy to health, wellbeing and gender equality.

Higher education institutes, national governments and international bodies must prioritise long-term engineering capability building to respond to current threats and future-proof economies and societies against new challenges.

WFEO will continue to accelerate the implementation of the SDGs and to lead the engineering profession in building a fairer, safer, more sustainable world.

*For press inquiries, please contact Donna Bonwater [donna@marchmontcomms.com](mailto:donna@marchmontcomms.com)>*

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