



## Message from the NSTF Executive Director

### **We need scientists of the calibre of the NSTF-South32 Awardees**

The [2019/2020 NSTF-South32 Awards Winners](#) were announced at a [live-streamed event](#) on 30 July 2020. The 22-year old NSTF Awards (or NSTF-South32 Awards, for the fifth year) are a showcase of South African excellence. The work over many years of the Finalists and Winners contributes to the universal body of knowledge which is essential for our understanding of the universe. Most of these Finalists and Winners have world-class expertise and have contributed to the nurturing of the next generations of scientists, and have done research with impact – not only on the academic disciplines, but by generating the data made available for further important research. Their research has led – or will lead - to applications in crucial fields of the economy and society, and to potentially life-changing innovations. They deserve our deep appreciation for the role they have played, and are playing.

For the 15 years that I have been with the NSTF, we have been raising awareness of the truly amazing work done by South African scientists and related professionals. However, it is difficult to get the public to be enthusiastic about these unless it involves major headlines in the news. The news has for years rightly been dominated by reports of corruption in government and private sector, mismanagement, protests and the plight of the poor. Then came 2020 and a tiny bit of live material that has been wreaking havoc across the planet. Science is now headline news! We would not have wished for the pandemic, given a choice, but it has taught the public about science (if they cared to listen, that is). In January 2020 no-one knew what a virus was, exactly. Now people know enough to tweet about it - and sometimes get it right. It has been the main talking point for more than four months.

We cannot understand the virus and pandemic without science, and we cannot seek solutions – vaccines, treatments and cures – without science. Even those in high positions who have denied the pandemic being a crisis, and refused to listen to science, have perhaps by now realised that without exact scientific knowledge there will be no end to this scourge.

What can scientists do? It is obvious that medical scientists can contribute directly to alleviating human suffering and even finding lasting solutions to the current pandemic. But it is just as important to prevent future suffering and the damage to economies and societies. When the previous Severe Acute Respiratory Syndrome (SARS) epidemic from 2002 to 2004 ended, so did funding for research related to it, notably clinical trials of vaccines, with the result that humanity could not benefit fully from the work that was started, and we were completely unprepared to deal with the SARS-CoV-2 virus. The pandemic should teach us about the importance of ongoing scientific research (if people care to listen, that is).

It is not only the fields of medical research that are important. All other fields of research remain of great value, as they address a myriad of problems to be solved. The rest of the scientific endeavour

does not cease to be crucial just because our attention is often obsessively focused on the pandemic.

In the context of treating and preventing COVID-19, for example, materials science can assist in developing more efficient and environmentally friendly materials. From personal protective equipment (PPE) to surfaces of counters and tables, surfaces of electronic devices, clothes and shoes, medical equipment, shopping bags... the list of materials that could be improved is long. Before the pandemic, some progress had been made in developing alternatives to plastic and exploring the possibilities of a circular economy in relation to plastics manufacturing and recycling. Since the pandemic started, these matters have no longer grabbed headlines. The main material used to manage the spread of the virus is plastic, with the exception of cloth masks. It is doubtful that the properties of the plastic materials used have been considered beyond their ability to shield people from the virus. When the next pandemic arrives, we should be ready with improved materials for PPEs that can (e.g.) be composted, and surfaces that are self-cleaning.

Food security is an area of major concern, particularly in the present circumstances. Research and innovation in agriculture are thus, more than ever, of critical importance. 2020 is the International Year of Plant Health, prompting the promotion of research into the health of food crops, and innovations leading to greater efficiencies and secondary agricultural products. The winner of the [NSTF Special Annual Theme Award](#) this year is **Prof Mike Wingfield**. He established FABI – the Forestry and Agricultural Biotechnology Institute- and was its Director for 20 years. Large numbers of scientists working in plant health have been trained by him and FABI, both locally and globally.

The pandemic has made the government acutely aware of the lack of access to water in many parts of the country. In a hurried fashion measures were taken to ensure water access during the lockdown and for the schools when they re-opened. The success of these essential measures seems to be patchy. The problem of access to water has been highlighted, emphasised, investigated, monitored and researched over many years, but the disaster of lack of water has finally been brought home by the pandemic.

The winner of the [NSTF-Water Research Commission \(WRC\) Award](#) this year went to **Prof Faizal Bux**, Director and Professor: Institute for Water and Wastewater Technology, Durban University of Technology (DUT). About 30 years of his research have focussed on investigating microbial contributions to wastewater treatment processes. Innovative technology was developed in close consultation with water sector partners, both locally and internationally. Water can be treated and re-used in the most effective way, with a positive impact on water access. This is the kind of research that should lead to large scale implementation by government.

And so I could continue, not only by telling of this year's Award Winners, but of more than 200 previous Winners, and thousands of Finalists over the years. (My apologies for not highlighting every one of the 15 Winners this year.)

As a last point, the challenge of solving problems in today's world is that it is a globalised world, and everything is interconnected. It has taken decades to build understanding of the complexity of Earth itself, with the natural global systems (e.g. ocean currents) interacting with one another, with the outcomes often difficult to predict. Super computers are required to process the collected data of such complex systems, and yet, there is still so much that humankind does not understand. The human-made world is also complex, and the interaction of natural systems and anthropogenic systems even more so. The world needs scientists to study and analyse the enormous complexity of a globalised world. Scientists are mostly educated and trained to have vast knowledge and deep

understanding of one particular field, but the scientific way of thinking equips every scientist to deal better with complexity than most people.

The world needs scientists. The world needs scientists of the calibre of the NSTF-South32 Awardees.

***The opinions expressed above are those of the Executive Director, Ms Jansie Niehaus, and do not necessarily reflect the views of the [Executive Committee](#) or [members](#) of the NSTF.***