

South Africa - National Report 2022

Government Activities

Based on engaged experience and the recommendations¹ of ICNIRP and the Netherlands (NL) ministry of Health, the growth and evolution to public and scientific resolutions in the domain of native and non-native electromagnetic fields (nnEMF) is easiest and most efficient when persons (schools, citizens, academics, governments) understand electromagnetic (EM) radiation (and specifically **LIGHT**, which is the visible part of the EM spectrum) first, and secondly, EMF. The next steps would be to **focus on bioadaptive solutions** instead of complaints, negatives and fear mongering.

A unifying South African (SA) governmental practice is the Batho Pele principles². The Batho Pele principles were introduced in 1997 by the Nobel Prize for Peace (1993) co-awardee Nelson Mandela's presidential administration. Batho Pele is about putting people first. The principles highlighted here are: (2) insist promises are kept; (4) don't accept insensitive treatment; (5) access to full particulars to information; (6) openness and transparency; (7) redress, complaints must spark a positive action.

Employing the Batho Pele principles is why we have proposed the title change to International Optical Radiation (visible and invisible) and EMF Project, International Advisory Committee. Furthermore, the prioritization is on bioadaptive solutions in the national reporting.

To help summarize the past year's growth of paradigm, we would like to refer to the story of the Nobel Prize in physics (1921) awardee Albert Einstein's 1942 Oxford University lecture where an exam was given to his senior class of physics students. Following the exam, Einstein's assistant questioned whether it was the exact same exam given as the previous year. Einstein confirmed it was exactly the same exam. The assistant pressed further as to how could Dr. Einstein do that, in a manner that was an unethical display of responsibility. Einstein validated his answer by stating **"the answers have changed"**. The first thematic element to this report is **"the answers have changed"**, meaning what Einstein said in 1942 is even more true for today. We live in a world where the questions may be the same

¹ 12 July 2019, the Hague, Netherlands meeting with Eric van Rongen (chairman ICNIRP & Gezondheidsraad - senior scientific staff member).

² https://static.pmg.org.za/docs/Principles_of_Batho_Pele_0.pdf

but the answers have changed. This means, what has gotten some here to now, will no longer get you to the next destination. If one wishes to have results that you have never had before, or had in a different environment but no longer now, then one needs to start doing things one has not done before.

An anecdotal reference example is made by the late musician Johnny Clegg. SA has 11 official languages, and Clegg was introduced to Zulu street guitar musician Charlie Mzila at the age of 14. A traditional street walking song³ is tailored to coupled mitochondrial (mtDNA) haplotypes. A walking song is designed to get you somewhere as a mode of transport for coupled mtDNA types. It has a cyclical rhythm and melody that requires surrendering to it because it is very repetitive. A rhythm to be used by someone to go somewhere forward. The music has a unique “picking style”, and the guitar is tuned differently from traditional western styles (uncoupled mtDNA).



This message was endorsed by the Nobel Prize for Peace (1984) awardee, the late Archbishop Emeritus Desmond Mpilo Tutu. We pay homage to the late Tutu for his diplomatic works and instrumental contributions to biophysics, quantum biology, and sub-molecular medical and agricultural sciences. Tutu’s thematic message in science diplomacy was to involve the general public. Involving citizens in scientific and diplomatic activities will expose citizens to how scientific knowledge and democratic institutions both operate. Importantly, consider their feedback, too, as new research opportunities and improvements in institutional settings can arise from this. This should not be a dialogue exclusively between scientists and diplomats, when populisms, pseudoscience, fake news and citizen mistrust of experts and democratic institutions seem to be on the rise.

Biophysics.org states “the field of science is at the forefront of solving age-old human problems as well as problems of the future by developing cutting-edge technologies working to develop methods to overcome disease, eradicate global hunger, produce renewable energy sources, and solve countless scientific mysteries”. It entails tackling a wide array of topics, for example, how nerve cells communicate, how plant cells capture light and transform it into energy, how changes in the DNA of healthy cells can trigger their transformation into cancer cells, and an inexhaustible range of other biological problems. **Biophysics is a field that applies the theories/models and methods of physics to understand how and why biological systems work.** It helps to understand the mechanics of how the molecules of life are made, how different parts of a cell move and function, and how complex systems in our bodies—the brain, circulation, immune system, and others— work.

Quantum biology (QB) is the field that deals with the application of quantum mechanics (QM) to biological processes. QB is generally considered a subdivision of quantum physics. Its application to medicine is termed sub-molecular medical sciences (**SMMS**), and its application to agriculture is termed sub-molecular agricultural sciences (**SMAS**), which indirectly also impacts SMMS. SMMS is about taking a complicated QM idea and demonstrating how it manifests itself in life, in this instance, medical treatment and/or diagnostics. SMMS is a domain that may appear hard to believe but an incredible path to be built offering novel treatment options to patients with new perspectives.

³ https://www.youtube.com/watch?v=pXHJq49xLnQ&ab_channel=SeenaMagowitzFoundation

With the growing importance of science, technology, and innovation (STI) affairs in diplomacy and the emergence of global challenges, nation-states require more science diplomats in institutionalised and non-institutionalised positions. These professionals are key to preserving national interests that ensure socio-economic competitiveness but also facilitate multilateral responses for addressing global challenges.

We pay homage to the late **Luc Montagnier** (FR). Montagnier was the co-recipient of the Nobel Prize in Physiology or Medicine (2008) for the discovery of the retrovirus Human Immunodeficiency Virus (HIV), which proved to be the cause of the immunodeficiency disease known as AIDS. This discovery has been crucial in radically improving treatment methods for AIDS sufferers but also to the scientific start to policy change as enshrined in the Promotion of Equality and Prevention of Unfair Discrimination (PEPUDA) Act 4 of 2000, Section 34. Montagnier's further important works expand to the realm of EM research into **EM outflows from orderly biological waves in organic tissues that transport information to water prior** to its receipt to the brain.

Further progressions relating to the above were recognised by the Franklin Award in Life Sciences in 2017 awarded to Dr. Douglas C. Wallace, for his works in pioneering mitochondrial biology. An important SA contribution was Prof. Himla Soodyall's work that received the SA President's award and provided critical and foundational work demonstrating key differences between coupled and uncoupled mtDNA haplotype groups, including AIDS as demonstrated by Wallace. For these demonstrations in science and medicine, designs are underway for PEPUDA sections referring to HIV/AIDS to be expanded further to include the classification of coupled and uncoupled mtDNA haplotypes. Additionally, PEPUDA Sections 2 and 3 are to be read in conjunction with the updates published by the UN 2016 Convention on the Rights of Persons with Disabilities.

Humans have epigenetically (fast-response genetic environmental adaptation) evolved two broad categories of mitochondrial DNA (mtDNA), **coupled and uncoupled haplotypes**⁴. Simply put, uncoupled mtDNA haplogroups produce both ATP and human radiation (infrared light/heat), while coupled haplogroups produce ATP but limited human radiation. Each haplogroup can produce unique bioenergetic as well as biochemical properties. Uncoupled haplotypes are able to take advantage of thermodynamic properties in pursuit of negative entropy, an adaptation strategy to the reduced solar radiation in higher latitude regions. Evidence of each mtDNA haplogroup may be adaptive or deleterious towards diseases. Based on the "the answers have changed" there is evidently a different interpretation of biomarkers and application of clinical treatment type: one must consider the haplogroup as a strategy to increasing clinical outcome success. An anecdotal reference to the above is demonstrated in the Netflix documentary "Coded Bias". Using the faces of politicians, the majority of whom came from the SA parliament, Buolamwini and her team were able to introduce a new facial analysis dataset which significantly enhanced gender and ethnic profiling biomarker types. To not apply "the answers have changed" results in recurring misdiagnosis, and mistreatment⁵.



There is still the critical repeated question and demand for progress to STEM and senior appointments relating to gender, racial-ethnic and disability diversity. Acceleration to this goal is better appreciated when it is understood that as an evolutionary mechanism the **leptin**

⁴ Zhao, R. Z., Jiang, S., Zhang, L., & Yu, Z. B. (2019). Mitochondrial electron transport chain, ROS generation and uncoupling (Review). International Journal of Molecular Medicine. Spandidos Publications. <https://doi.org/10.3892/ijmm.2019.4188>

⁵ <https://www.youtube.com/watch?v=QxuyfWoVV98>

receptor holds a difference in resistance/sensitivity between men and women. The leptin receptor is densely expressed within medial areas of the hypothalamus. Indicating impacts on cognition, memory and weight loss / obesity when the environment is not adjusted to the needs to increasing leptin sensitivity in women in particular. These adjustments too have further differences to coupled and uncoupled mtDNA. These are critical factors to not only transporting the nation forward but more importantly, almost all mtDNA is inherited from the Mother. It is in the interest of the nation to ensure mtDNA is increased in REDOX potential as possible, in order to ensure healthier children and growing leaders continue the work of this nation.

The COVID-19 outbreak has caused a profound global public health and socio-economic crisis. Although an intense international scientific collaboration has occurred to tackle the pandemic, national governments have failed in coordinating an immediate multilateral response. This global challenge has brought the interface between science, policy and diplomacy to the spotlight, with science informing governments and facilitating diplomatic collaborations. However, different interface frictions, system deficiencies and stoppers have hindered science diplomacy—based multilateral response that could have ameliorated this situation.

A support to the above is a directive⁶ issued by Judge Cassim Sardiwala that relates to the works of this report, Judge Sardiwalla's directive extract 2022, February 15, 2022:

"...there must be discussions and I think these discussions must not be seen to be obstructive and this must be conveyed to all the parties. This is a general problem, it does not have a quick answer, nor a quick solution. But we are South Africans, we need to accommodate people individual different ways and practises and understand the legislation that governs them and whether it complies and it is of – is it ...[indistinct] with what is happening on the ground and parties must find ways innovative as we have done in this country to deal with these issues of legislation that is conflicting or legislation that is not clear enough and does not cater for all situations. It appears to me that legislation from what I read does not cater for various aspects that it ought to cater for in situations of this nature.... my directive is that you must find an amicable practical solution to the problem"

Judge Sardiwalla's directive extract 2022, February 15: *"find an amicable practical solution to the problem"*. As South Africans we need to understand the legislation that governs us, whether legislation complies, including legislation that is conflicting or unclear or not catering for all situations. Constructive, inclusive discussions are encouraged.

Note, that a Nobel Prize is not absolute truth but rather a general consensus by the scientific community at the time.

With the growth and expansion of the South African International Advisory Committee to this national report, there has still been some institutional confusion about the past reporting (national reports) to the growing and expanding committee. A Public Access to Information Act (PAIA) application was processed by the Department of Health (DoH) Deputy Information Officer Gerrit Wissing, report dated 26 July 2018. Wissing reported the last DoH reporting by the former national representative Leon du Toit was in 2017, and did not follow reporting further. Minister Naledi Pandor of the Department of International Relations and

⁶ EQUALITY COURT MATTER - 57883/21 JAMES CHRYSSTOPHER LECH//AGRICULTURE AND OTHERS

Cooperation (DIRCO), and her team too processed a PAIA application⁷ into the reporting matter. Following their investigation Pandor and her team were unable to identify a division or person within the DoH responsible for reporting and engagement.

Due to the many years of absence from reporting a new International Advisory Committee (IAC) was formed per the definitions stipulated in the International EMF Project Brochure, and “The International EMF Project Progress Report June 2015-2016”. Stating the EMF Project is open to any WHO Member State government, i.e. department, or representatives of national institutions concerned with radiation protection. Outreach is always an endeavour, however, the challenge remains to locate the appropriate governmental contact at the country level, with interest and responsibility regarding Optical Radiation, EMF protection, and Radon. Value is found in the Member States, Ministries other than the Ministries of Health to collaborate together. The EMF Project continues to encourage Member States to promote direct involvement of their staff in the work of the International Optical Radiation and EMF Project through different means, including secondment.

As a result of the COVID-19 pandemic, the conclusion that National Research Foundation (NRF) take over the coordinating and reporting role of the SA WHO IAC was reached in 2021. This change was reviewed and processed by Dr. Lindiwe E. Makubalo, Minister of Health for the SA permanent mission to the UN and other International Organizations. Makubalo then had the growth change reviewed and processed by DIRCO’s UNESCO & Health team.

The NRF is an entity of the Department of Science and Innovation (DSI). Its mandate is to promote and support research through funding, human resource development, and the provision of National Research Facilities in the fields of natural, medical, social sciences, humanities, and technology. The NRF serves as the national body responsible for adhering to a number of international bodies’ regulations, including the International Science Council’s (ISC) requirements. Further details regarding the NRF can be accessed via the following link: <https://www.nrf.ac.za/about-nrf>.

Since 2015 the NRF has increased research efforts that have focused on developing science-based solutions to the effects of increased exposure to ionising and non-ionising radiation. This includes non-native electromagnetic fields (nnEMF), in particular infrared, optical, and ultraviolet (UV) photons. The NRF has distinguished itself in emerging research, and has vast interdisciplinary experience having coordinated input from multiple fields. The NRF is committed to strengthening the civic role and social responsibility of the higher education sector and promoting the fundamental role of science and research in development. Further, it seeks to support policy formation through developing and nurturing expertise across disciplines. The benefit of more rigorous and fact-based standards will assist in achieving a transparent, effective, and accountable government in South Africa.

⁷ DIRCO file number: 8/1/1

Public citizen science engagement and accelerated learning projects

The previous National Report was reviewed by Parliament's Office of the Speaker, and Office of the House Chairperson. The National Report was referred to be presented and discussed with the Portfolio Committee on Health⁸. Following the lengthy discussions and engagements with Committee Chair Dr. Kenith Jacobs, one of the feedbacks were the portfolio committee members not having the exposures and training to the subject matters contained within. On this feedback, we grew this national report to provide more focus into pragmatic applications and demonstrations in order to aid with accelerated learning. Not only for public citizens but the government officials who represent them as well.

Under the command⁹ of the Surgeon General, Lieutenant General Dr. Aubrey P. Sedibe (SA Military Health Services, Department of Defence), and the late Col. Prof. Dr. Malcolm K. Baker, (Chairperson of the Research Ethics Committee, and head of Neurology Dept. at 1 Military hospital), there was an establishment of foundations for new teaching curricula. These novel curricula are in line with SA's national strategies and that of the SANDF, and include the following:

1. Training of medical doctors (CPD training).
2. Improvement of medical services and facilities.
3. Improvement of human and animal health by mitigating environmental effects, and developing resilience programs to combat climate change and nEMF.
4. Development of updated teaching curriculum for 1st- and 2nd-year medical students in biophysics.

The teaching material focusses on a single idea in quantum mechanics and can be taken and put into practical application in the research sphere of Optical radiation and EMF. In January 2022, two courses were offered online, and in practice within their own communities administered through the Vrije Universiteit Amsterdam, NL:

1. An introduction to sub-molecular medical sciences (SMMS).
2. An introduction to sub-molecular agricultural sciences (SMAS).

At the last moment, the course was merged into a hybrid of the two with participants from SA, USA, Hungary, Netherlands, France, Canada, Croatia, Nigeria, Philippines, Italy, and Poland. The course was open to undergraduates, Master's, PhDs, and Professionals, providing European Course Transfer Credits. The course was attended and audited by Ivan Culjak who was the co-recipient of the Nobel Prize for Peace (2013) for his contributory works on the prohibition of chemical weapons. An example of pragmatic application of the course information by the attendees is an attendee who was diagnosed with bladder cancer, and underwent significant surgery with the removal of the bladder, prostate and other organs. Following surgery, the attendee attended the course remotely and applied the taught materials and pragmatic protocols from the course. In 24 days the attendee tested an astounding 33% increase in Vitamin D levels. No vitamin D supplements were taken and the case results were confirmed by physicians. The SMMS Deutenomics course is currently re-designed to include natural and medical science history using ancient texts based on

⁸ Parliament NATIONAL ASSEMBLY HOUSE CHAIRPERSON: Mr CT Frolick, MP Committees, Oversight & ICT, @ Hon TR Modise, MP Speaker National Assembly, 11 June 2021.

⁹ GOC 1 Mil Hosp, Internal file number: SG/R/311/5/13

Deuteronomistic History (DH). This new field of medicine is a modern theoretical construct holding that behind the present forms of knowledge in the books of Deuteronomy and Joshua, Judges, Samuel, and Kings (the Former Prophets in the Hebrew canon) there was a single literary and ancient scientific work presented in various symbolic (Scythian, Paleo-Hebrew) and written texts (Hebrew, Aramic).

Additional Batho Pele principle campaigns in accordance with Tutu's thematic message in science diplomacy to involve the general public were generated:

Charles Collins, Together We Grow Campaign

This campaign was demonstrated in the course, and is available on YouTube, and other Social Media platforms. Charles Collins (coupled mtDNA haplotype), a US military Veteran, applied modifications in the middle of a desert, based on the NASA HRP. Supported by his wife (uncoupled mtDNA haplotype) in his small homestead backyard, Collins and his family (children) grow aquaponics vegetables, poultry, chickens and fish. Application of the **Photon-flux model** instead of Energy-flux model, as well as use of **micro-nano bubble** water generation, demonstrated significantly lower energy inputs. Additionally there was a significant increase in larger vegetable produce and growth, coupled with clean water treatment.

Collins demonstrated significantly improved health vitals, and head scalp hair regrowth. In the spirit of Ubuntu, with produce being significantly greater, produce was shared and provided to the wider community. Of interest from a Climate Change perspective, the internal property boundary compared to external property boundary temperature was significantly cooler (a 5-8 °C difference) with this set-up. The significant impacts to temperature difference have been verified and modelled before by the USA Environmental Protection Agency (EPA). The HYGEIA processes direct and indirect climate change effects on human health and the effectiveness of mitigation options from increased ecosystem services. Pragmatic native and nEMF interventions applied in several different ways demonstrate significant mitigations to heat stress effects. A new documentary with these Charles Collins demonstrations is currently in the film editing phase.

Another pragmatic SMMS and HYGEIA application is the application of UV photons (UV-A, -B, and -C) to consumable mushrooms. For example, if not grown at home, when mushrooms are brought from the market, remove the plastic and leave mushrooms out in direct sun removed from packaging and/or any other UV filtering materials, before consumption/cooking. UV photons significantly increase Vitamin D levels found within the mushrooms.



ColdJoy

This is an SMMS application movement that has gained immense growth and popularity. The movement typically involves groups of 50 - 150 persons in the waters in the Western Cape in particular. The practice involves physicians, healthcare professionals, patients and members of the community. **The participants spend typically 30-90 mins in the ocean in native LIGHT, at different photonperiodism settings as a pragmatic application of photonbiomodulation (PBM).** The second impact is Joy from the raised and enhanced dopamine levels, to helping strengthen friendships and community growth. Physicians and patients report the application to be pragmatic and cost-effective resulting in significant improvements to their neurological and auto-immune disease states. Furthermore, it is an important bioadaptive strategy to the South Atlantic Anomaly (SAA). The ColdJoy practice aids in increasing internal magnetic-flux through mitochondrial interactions explained by the inverse-hall effect. This in turn assists in increasing photon absorption rates, and oxygen tensions, and reducing deleterious reactive oxygen species (ROS). This is an important bioadaptation example given the decrease in the earth's magnetic field, as well as the decrease in solar photons at present. Important notes for this practice are: sunglasses are not to be worn; no sunblock (AM light provides photon protective qualities); and abdominal regions are to be exposed. This includes women especially. For those that experience discomfort to cold exposure, warming apparel for the feet, hands, and head are encouraged while in the water.



Reference to the above health benefits and the below solution was displayed in the Academy Award-winning 2021 Netflix SA documentary "My Octopus Teacher".

SharkSafe Barrier

Inspired by the research above, the SharkSafe barrier makes use of **static magnets** collated into an artificial kelp forest. Not only is the solution demonstrated as effective, economic, and pragmatic but further modifications enable bio-restoration of damaged aquatic systems; amelioration of the impact of microplastics; an enhancement to carbon sequestration; and impactful medical treatment solutions. The wear and tear resilience of the system has been well tested in La Reunion, France, standing up to corrosive environments and heavy storms.

The solution demonstrates the availability for the expansion of property development not previously available; providing supportive protection to severe storms; increasing safer swimming environments and cost-effective remedies to the National Health Insurance (NHI) endeavours.

OurDomain - South East Amsterdam

A repeated theme from the SMMS course was "one has to first experience the science, in order to begin to understand it". OurDomain - South East is a residential dense housing project in Amsterdam South East, NL, composed of over 1,600 apartment units with over 2,000 residents. The following adjustments and initiations have commenced:

- Photon-flux model lighting retrofits replace the Energy-flux model lighting.
- Upgrade designs to the street lighting with the modifications to France's strict public lighting standard, EN1320. Corrective note to the EN1320, colour temperature is to be replaced by Photon-flux model.

- Library study:
 - Intervention: micro-algae oxygen bars. Converting the sequestered CO₂ to Oxygen (O₂) production using human-breath product waste, and photons from the operating lighting. Additional lighting to a photon-flux model is used to accelerate micro-algae growth, and static magnetic field application increases growth parameters, stress tolerance and significant increase in oxygen production. Furthermore, the micro-algae help process the excessive deuterium content in the air inherent with traditional closed window indoor air-circulation systems. The result is improved air quality that in turn helps reduce hypoxic states, to enable increase and sustain higher brain metabolic activity.
 - Outcome: noticeable difference in air quality, and an effective measure toward an unfavorable environment to the majority of bacteria and viruses.
- Office area:
 - Intervention: prior to intervention lights were always turned off due to the extreme brightness from the Energy-flux model configuration and terrible flicker rate. Orange PVC plastering tape was placed over the LED to aid in light diffusion, and filtering spectrum profile.
 - Outcome: Lights are on and used. Staff feel significant improvements, increased productivity, and calmness in the room, especially when working after standard working hours.
- Cinema:
 - Intervention: application of the Dutch Hacking Health award solution (sleep and neurological disorders) discussed in the previous national report. Cinema room light sources, including projector modified to providing photonbiomodulation add-on therapy sessions using IR, red, and UV photons. Air filtration and further enhanced, increased oxygen tensions through oxygen production through micro-algae oxygen bars, and electrobiomodulation (EBM). EBM can be summarised as the sun (native electromagnetic (EM) source) is a cathode ray whose light (photons) hit earth which acts as the anode. The sun's signalling networks are harmonics that determine basic morphogenetic processes through photo-acoustic cymatics. When a cathode ray hits an anode, free electrons are liberated from the anode. Proteins transform the light of the sun into sizes and shapes of matter inside of cells. This process is affected by bodily contact with the earth, known as EBM. This may be one of the reasons why humans have sweat glands on their hands and feet. The human breast is also a modified human sweat gland for electron transfer between mother and infant's mitochondria. The clinical benefits have been demonstrated on: inflammation and blood flow; wound healing and rehabilitation; increased redox stabilisation in the presence of external noise-signal disruptors; muscle and physical stress loading; hypertension; mental focus and brain function; and increased survivability in preterm infants. Note, due to 5G's **ability for jump-conduction**, the application and installation for EBM needs to be configured differently.
 - Optional cold-thermogenesis application is also available during the sessions, providing a symbiotic relationship with the oxygen bar to increase CO₂ output from humans to increase O₂ yields with the micro-algae within the space.
 - The project is working with Univet safety protection eyewear to produce new eyewear enhancements and specialities. The

enhancements support not only residents but patients in clinical settings as well.

- Outcome: a noticeable and calming experience is obtained, coupled with pragmatic learning for tenants, and visitors.
- Canal water treatment:
 - Intervention: Use of nanobubble generation coupled with UV photon treatment to increase water clarity, removal of pollutants, reduction in parasites, carbon sequestration, and increase in biodiversity.
 - Outcome: simple and pragmatic demonstration of a simple modification to a standard water pump in order to produce micro and nanobubbles.
- RF transmitters and localised hotspots:
 - Intervention: redundant, and poorly positioned/configured WiFi transmitters are disconnected. Filtering mesh installed for residents in line-of site to cellular transmitter with high reflective zone parameters.
 - Outcome: micro-algae oxygen bars and indoor plants are growing more optimally and responding better to the Photon-flux model interventions.
- Reduced electrical voltage transients.
- Music room:
 - Intervention: correction to electromagnetic interference (EMI) from electronic instruments. Lighting was changed to a photon-flux model. Installation of micro-algae oxygen bar.
 - Outcome: The correction to electromagnetic interference (EMI) from electronic instruments also improved the sound quality. Interestingly, this Photon-flux model application has increased cleanliness and hygiene practices in the space. Despite multiple users CCTV footage confirms the public room being neater, and more organized with instruments being put back when compared to the Energy-flux lighting model before. The community is engaged more, with footage showing an increase in resident participation and use of surrounding seating. Indoor plants within the space are growing larger, healthier, and following the same predictive growth pattern as demonstrated by the NASA HRP.
- Staircase:
 - Intervention: staircase lighting retrofitted to a Photon-flux model.
 - Outcome: based on EEG modeling, and understanding of light's impact on hormones and concentration, the lighting will help persons remain calmer during an emergency event. Secondly, the lighting encourages the use of the stairs instead of the elevator, particularly for the afternoon. This not only reduces elevator use, but the photon spectrum encourages a greater increase in muscle development and fat loss.
- Children brain myelination and music
 - Intervention: digital piano corrected for EMI, and obtained using a DC powerbank or grounding cable. Environmental lighting and digital learning platform (iPhone OLED), converted into a Photon-flux model. RF transmitter configured differently and thus corrected.
 - Outcome: Oxygen photosynthesis systems significantly enhanced.
 - Children of different ages from as young as 3, demonstrate significantly greater levels of engagement, concentration, and progress when compared to an Energy-flux model. Through the combination of the teaching platform and environment children also demonstrate increased learning skills in: reading, writing, mathematics, muscular response, timing and creative composition. The need for supervised teaching is significantly reduced, thereby decreasing

the required ratio of teacher to student. Interestingly, children demonstrate high levels of independence and eagerness to approach the learning task and environment daily, with children helping each other learn instead of the usual teacher to child learning. The neatness and care of the space is also greatly enhanced.

- An explanation to the above can be summarised as follows: **Relatively few persons pragmatically understand that the environment in which they live and work (when incorrectly calibrated) can induce undue stress and health problems such as obesity, depression or other psychiatric disorders.** It is even less understood and accepted that with knowledge transfer and interventions in the environment, health and well-being can be improved from an early age. Classic interventions are often impractical and costly. Going to neurofeedback therapy once is instructive, but regularly experiencing the benefits of adjustments in one's own living environment can change lives. This project teaches young persons, parents and interested parties that it is possible to become healthier by adjusting your environment. Through experiencing science, interest is created in career choices to work at the intersection of healthcare and construction.
- The intended results of this project are: to construct a different light environment and to train healthy brain activity in places where young myelinating brains come together, such as schools, sports clubs, youth care and occupational therapy centers.

Working together with the Amsterdam University Medical Centre (UMC), the project will be working on the quantification of health interventions by using MRI and EEG methods that are available in the lab. **The bioadaptive strategies being studied involve the three intersecting domains of LIGHT (visible and non-visible electromagnetic radiation), water (different isotopic states and REDOX charge potentials), and magnetism.**

Keynote to the significant rate of improvement and implementation to the interventions above. The primary interventions target audience to the project above were the staff and management of OurDomain. This is the same approach that should be prioritized with government as well. The government is not an ivory tower but is the people. Meaning, government officials and employees are people too. Translating to, if you want and expect government to assist the public people, then one must remember that they are the public citizens too, and representatives of the people. Helping grow their environment to enable brain energy levels for increased metabolic and sustained activity, enables improved and STI developments in the public domain. The Batho Pele principle states “putting people first”, and not only applies to the public citizen but the government officials too, which explains why working synergy and supportive interventions are vital between governmental organizations. This was demonstrated well not only in the Charles Collins Together We Grow Campaign, but with the OurDomain management team as well. They tested and adopted the simple, pragmatic and cost-effective changes not only in the facility/environment they serve, but in their own personal lives and communities as well.

NL Social Housing

- Intervention: **public communal lighting changed to a Photon-flux model. Selective apartment units changed to a Photon-flux model. Cold thermogenesis tank installed on the balconies.** Note, design and configuration for coupled and uncoupled mtDNA haplotypes is different. Installation of trampolines arrays for children. Sound propagation intervention modeling.

- **Outcome:** electrical energy consumption decreased by over 70% in communal spaces. Communal plant growth significantly increased. Decreased occurrence of flu. Internal communal noise complaints decreased as residents were falling asleep sooner with the stimulated circadian rhythm under the exposure of a Photon-flux model. The interventions not only aid in community safety, and resourcing strains on policing but are too identified as pragmatic and cost-effective SMMS applications to officers¹⁰.

La Reunion Island, Manapany, France

France holds a strict public lighting standard, EN13201, particularly for night light and wildlife interactions. From testing using a spectrometer and based on NASA HRP it was found the **reliance on colour temperature (Energy-flux model) was incorrect and misleading. Instead, the standard is to be corrected to using a Photon-flux model.** In simple terms, at night and before dawn, spectral ranges used are to be above 550 nm, and 365 nm too can be used. Reported in both the ICNIRP and EU Commission reports UV-A photons penetrate the retina. The UV photons are vital for growth and development processes and why the use of sunglasses in children is discouraged. Important to note: UV photons must always accompany the red and IR spectrums and that the choice of spectrums and their ratios are important. A Photon-flux aids toward increasing public safety, by means of increasing CCTV footage clarity, but also increasing visibility of persons on pathways with the UV photons increasing fluorescent surfaces. UV-A photons are a vasodilator and aid with bioadaptation to light flicker inherent with Energy-flux model configurations. Flicker is substantially resolved with a system of direct DC that is more readily available when renewable energy systems are correctly configured. Note, **optical pathways for light are not only limited to the eyes, but skin and subcutaneous fat too.** Furthermore, there are both image forming and non-image forming pathways responsible for biological signalling and direction on growth, development, and metabolic processing in the brain.

In the commercial and residential region of Manapany the following pragmatic and cost-effective interventions plan

- Large koi pond changed from no visibility to clear visibility (depth of 1.3 m) within 72 hours using a simple modification to the existing submersible water pump system to producing micro and nanobubbles. Significant growth in frog mating and success output in eggs. Fish grew bigger and the offspring ratio of birth to survivability ratio significantly increased. Identified fish that were ill before the intervention would gravitate to the micro-nanobubble output until they recovered.
- Pathway lights significantly decreased disturbance to resident's sleep and increased wildlife engagement.
- **Disconnection of overplanning of RF Wifi transmitters** and reconfiguration of WiFi propagation configurations.
- In residential/commercial settings lighting retrofits lead to decrease in noise complaints, property damages, alcohol and cannabis consumption. An example of a simple retrofit, below lighting was fitted to filtering using a double layer of orange



¹⁰ NL Politie Externe Memo: Onderzoek Vrije Universiteit gericht op het vergroten van de mentale en fysieke gesteldheid / herstel na ziekte binnen de Politie Eenheid Amsterdam, district Zuid, basisteam Zuid- Buitenveldert. Onderzoek geleid door PHD-kandidaat J.C. Lech, 18 November 2020.

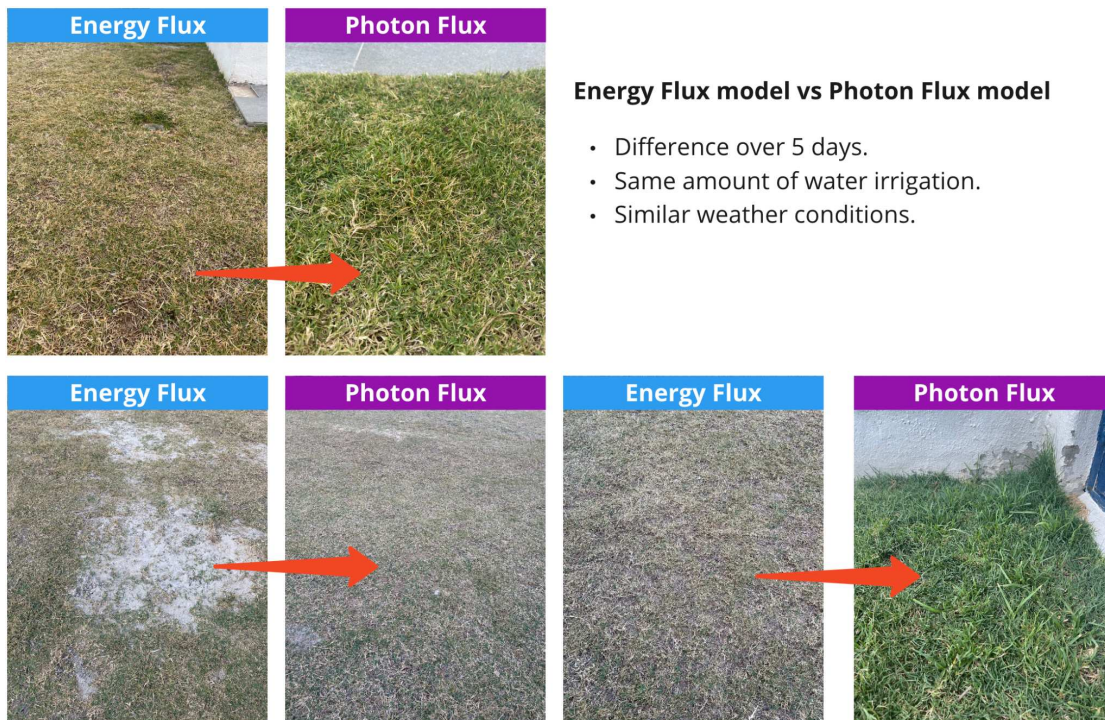
PVC plastering tape. The spectrum was filtered to remove spectra below 550 nm.

- Filming crews in the region found the lighting significantly improved the quality of the production value and decreased the need for additional equipment.

SA, Western Cape Nature residential estate

Western Cape nature reserve residential estate. Prone to wildfires, drought and high winds on the coast dune line.

- Intervention: external building lighting changed to a Photon-flux model.
- Outcome: night sky constellations and satellites were significantly more visible. Significant increase in wildlife visibility and engagement within the area. Residents went to sleep earlier and there was a decrease of reported health complaints. Decrease in property break in attempts at night. Neighboring vegetation growth on the dune increased, and grass lawn resilience to the summer elements, heat and winds significantly increased as illustrated in the images below.



New public information initiatives

The NASA Human Research Program (HRP) research methodology is employed by this research program and is beneficial in accelerating progress in our synergistic science-based research pedagogy. Small changes to terminology can have profound effects on research endeavours. Simple grammatical updates can lead to pedagogical improvements.

For example:

1. Lighting analysis research on plants, animals, and humans related to exposure regulations is mandated to shift the investigation approach from Energy-flux Models to Photon-flux Models.
2. UV radiation is better referred to as UV photons.
3. Terms such as photosynthesis, photobiomodulation (PBM), and photodynamic therapy (PDT) are encouraged to include the letter "n" after the "photo", thus referring to "photon" instead of "photo".

Update from Energy-flux to Photon-flux model

Thanks to the research efforts of the NASA Human Research Program (HRP) particularly because of the impacts light has on growth and development in plants, insects, and humans, the McCree curve model has been debunked.

Using primitive tools and single interactive analysis, the McCree curve was used to give guidance to the use of optimal wavelength selections and spectral ratios for different photosynthetic organisms using the spectral range of 400 to 700 nm as the past acceptable definition for photosynthetically active radiation (PAR). McCree measured three physiological parameters, including the quantum yield (Φ) of photosynthesis, the action spectrum, and the absorptance. Another term for "quantum yield" is "quantum efficiency" and it is defined as the amount of O_2 evolved or CO_2 assimilated per quantum (i.e. particle of light) absorbed, in the absence of photonrespiration. In other words, it is the maximum photosynthetic efficiency with which light can be converted into chemical energy at sufficiently low solar light intensities.

The McCree curve was one of the strong driving components towards an Energy-flux model, recognised by the Nobel Prize for Physics (2014) for the invention of efficient blue light-emitting diodes (LEDs), which has enabled bright and energy-saving white light sources. From a historic analysis and electrical engineering viewpoint, the conversion of watts to illuminance holds the highest efficiency for blue light. However, from a biophysics energy input to output ratio, it holds the least efficiency when measured using a photosynthetic photon flux density (PPFD).

A pragmatic and legislative example to the above can be referenced to the VW Diesel Gate, and Cellular Phonegate matters. What has been tested and developed in a controlled laboratory setting under very specific conditions does not translate to the real world operating conditions and pragmatic user handling. Secondly, there is a distinct difference between electromagnetic interference (EMI) in an electrical engineering context versus biological EMI or biological enhancement. For example, an RF transmitter or lighting configured incorrectly, and or solely on energy to transmission rate can generate biological EMI. However, when configured differently and better understood/experienced by the public, results in biological enhancement with significantly lower resource input.

A Photon-flux model examines and uses the synergistic effects of multiple spectrums of light at once on the photosynthetic organism. This can be explained by the 1908-1913 Stark-Einstein Law: 1 photon excites 1 electron, and the 1916 mathematical model - Emissivity theory by Einstein. A Photon-flux model biophysically demonstrates a lowered energy input to produce a significantly greater produce output. The Photon-flux model redefines photosynthetic photons to count far-red and UV photons, and in addition provide a protection mechanism to singlet and triplet-state oxygen states, ROS, by generating an effective magnetic field. The three (3) corrective definitions are:

1. Energy does not cause photosynthesis.
2. Energy does not cause plant shape (interchangeable to humans and animals).
3. It is photons, and these are low energy photons.

Therefore, the Photon-flux model can be used for photonbiology, commercially to beneficially manipulate plants, animals and humans, while significantly reducing electrical energy input requirements.

In practical output, an Energy-flux model results in more energy consumption and growth losses, whereas a Photon-flux model caters towards significantly less energy input, and significantly greater growth and development returns coupled with increased bio-adaptation and resilience to stress.

For example, in the eye, demonstrated in humans, blue light has significant changes to shortening choroidal thickness and axial length by several folds when compared to red, broad spectrum light and darkness. Resulting in significant changes along the non-image forming pathways paramount to brain myelination, growth and development.

Broken windows and new developments

Any new window installations, be they replacements or new developments are endorsed to use UV transmitting (UVT) acrylics. Due to the COVID-19 pandemic acrylics have reduced in price and increased in accessibility.

Photontherapy in the form of light exposure, either natural, or if conditions do not allow, an artificial alternative, can greatly improve children's growth, development and learning. Where possible, outdoor classrooms are to be encouraged over indoor instruction, however this is not always possible given anthropomorphic developments. To enable improved access to outdoor classrooms, developments in presentation technology visible in daylight (full photon-flux spectrum, not glass-energy flux blue light spectrum) can contribute to this shift. Spectral transmission is varied between different materials. While in the past quartz glass was the best but was also the most expensive, UVT, and similar property materials are more durable than glass and have better sound dampening properties. Advancements in optical transmission by fiberglass now also enable UV photon transmissions. This enables the use of a solar collector on the roof of a building to efficiently transport fuller spectrum light to within the building via existing conduit networks. This provides spectrum lighting that enables both photontherapy and photonperiodism to regions that do not have access to windows, i.e., basements and internal rooms. From a climate change perspective this significantly reduces the need for solar PV panels, batteries, and inverters. The intervention increases to UV photon transmitting specifications, which allows for greater UV photon penetration resulting in positive health benefits for the pupils.

IV saline solutions

Based on the clinical reviews it is recommended to migrate toward balanced IV fluids instead of traditional saline. Chloride concentration of 0.9% saline is higher in concentration than that of human blood plasma, cascading to a decrease in the dielectric constant of the transfused water in a patient exhibiting a low REDOX potential. Balanced fluids, by contrast, are simply plasma electrolytes with bulk water added. For this reason, the water used should be lowered in deuterium content in order to aid toward proton recycling, increase in REDOX and increase the efficacy of additional add-on therapies.

Deuterium depleting protocols as an effective cancer therapy

Clinical reviews and understanding the underlying mechanisms demonstrate and classify deuterium depletion through consumption of water with significantly lowered deuterium levels, and/or diet with reduced deuterium levels and/or regulating deuterium's metabolic activity within the body. For example, there is strong supportive evidence for prostate, brain and lung cancers, an effective early-stage treatment as a single therapy and delays conventional therapy. Even when used in conjunction with conventional therapy of radiation or chemotherapy, patient lifespan is significantly increased compared to controls. Using a scientific-technical analysis, deutenomics is found to be a cost-effective, pragmatic and accessible form of treatment to clinicians and the public. Impacts on improvements to Type 2 diabetes are to be noted.

Traditional Tennis courts policy changes to Beach Tennis

Facilities (private, public, schools, government, etc....) that currently have or desire to install traditional "hard" tennis courts are endorsed to instead renovate and/or install a Beach Tennis court instead for the following reasons:

1. Beach tennis materials and engagement are considerably cheaper. The approach significantly decreases the economic gap. This approach is favourable to community upliftment programmes.
2. It significantly decreases negative impacts to Climate Change on traditional "hard" courts.
3. It enables enhanced brain myelination abilities for children, while enhancing engagement of the elderly into physical engagement activities, particularly to persons with diabetes.
4. Photonbiomodulation and photonperiodism can have increased efficacy.
5. It enables electrobiomodulation (EBM).
6. Note: wind barriers (UVT), soil aeration, Photon-flux model lighting and biore restoration significantly enhance the ecological and human engagements.

Surfskating

Surfskating has developed from traditional skateboarding. This is a process of board adaption to aid training towards water surfing while on land. The surfskating activity is found to be safer than traditional surfing and interestingly demonstrates high interaction with persons experiencing an initial state of low REDOX, or disease and or auto-immune disease state. The typical adoption age is age 25 years and over. The health benefit mechanism is similar to that of a trampoline, i.e. ATP buildup. While trampolines are not always accessible (due to cost, space, and configuration), surfskating is a useful alternative. Note, different board configuration designs provide varied targeting benefits. Examples of benefits to be noted are to the vestibular system, tinnitus, CNS damage, concussion rehabilitative therapy, diabetes and Parkinson's disease. Notes, use of sunglasses is discouraged, and change of clothing material to enable greater solar photon spectrum penetration is encouraged. From a climate change perspective, the approach aids towards critical awareness and

developments with the environment, coupled with an add-on therapy to aid patients gaining independence and self-confidence.

Breastfeeding

Breastfeeding is vital and critical for optimum growth and development of infants, especially to aid myelination of the child's brain. The following practices are endorsed to support such breastfeeding practices, including practices to be followed in milk banks providing donating breast milk to children in supportive need.

1. Liquid and food intakes: decreased deuterium (D) levels in liquid and food intakes will be advantageous. Methods for achieving suitable deuterium intake levels are as follows:
 - a. Exposure to solar photons, as solar light breaks down hydrogen bonds more efficiently. The O-H-D isotopic discrimination and fraction are related to vibrational frequencies of the affected bonds. This is partly why mothers are encouraged to breastfeed and increase exposure of their breasts to the sun. The practice too is an effective and pragmatic "vaccine" to breast cancer demonstrated in epidemiological analysis. For conservative settings, tan-through swimwear is also available.
 - b. Consumption of foods and water lower in deuterium levels to enable enhanced metabolic activity. See heading completed research projects.
 - c. Photonbiomodulation (PBM) demonstrates effective increases in milk production and decreases in mastitis (inflammation of the breast tissue). Even the simple application through the use of pure red LED bicycle light (battery operated), applied directly to the breast is not only pragmatic but also aids with photonperiodism, in providing a night light to aid mothers while limiting sleep disturbance to the baby.
 - d. Nanobubble water demonstrates decreases in infections and increases in metabolic rates.
2. Milk banks:
 - a. Are required to write and note the time the breast milk was expressed and bottled for storage. When being given to the infant in need, it is best practice to ensuring the photonperiodism (time) of day correlates to when the donor recipient infant is fed.
 - b. Care for the breast milk donor: information and home/facility care must be provided to the donor mother. These are pragmatic support and interventions which are inexpensive, and significantly enhance the growth and development support needs to the recipient infant.

Switching to a Climate Change model suitable to the context of South Africa and Sub-Saharan Africa

Minister Barbara Creecy, Climate Change Bill: The proposed Bill includes Personal Carbon budgets determined by the minister along with emissions regulations and limits on all persons. This is the next step in the introduction of Carbon Tax, applicable to all South Africans.

Creecy has proposed a greenhouse Climate Change model called the Arrhenius. In this report's theme of "the answers have changed", based on the reviews of data and experienced pragmatic implementation solutions, we recommend switching to a hybrid

model employing the gravito-thermo model developed by the Nobel Prize in Physics (1965) co-recipient Richard Feynman. The hybrid model is encouraged due to the unique characteristics for SA, and anecdotal demonstration by Clegg of a hybrid style of both through music.

Feynman's model historically received skepticism employing the "greenhouse effect" is solely a consequence of gravity, atmospheric mass, pressure, density, and heat capacities, and is not due to "trapped radiation" from IR-active or 'greenhouse' gas concentrations. The questions have remained the same but the demonstrated "answers have changed", and for this reason we recommend the employment by a hybrid model that is easy and pragmatic to be employed by any South African, and persons across the globe. The hybrid model was well demonstrated in the Charles Collins Together We Grow campaign, together with a demonstrated cooled down environment within a desert terrain.

Correlations between geomagnetic-field and climate parameters are demonstrated as plausible. One reason is because oxygen is the only diatomic gas that is paramagnetic. Reviewed pragmatic and simulation modelling demonstrate weak (Earth-strength) magnetic fields can affect climatically relevant properties of seawater. For example, the solubility of air in seawater to be by 15% lower under reduced magnetic field (20 mT) compared to normal field conditions (50 mT). The magnetic-field effect on CO₂ solubility is twice as large, from which one can surmise that geomagnetic field variations can modulate the carbon exchange between atmosphere and ocean. Mathematically, a 1% reduction in magnetic dipole moment may release up to ten times more CO₂ from the surface ocean than is emitted by subaerial volcanism. This is an immense figure that is dwarfed in front of anthropogenic CO₂ emissions. Using a scientific-technical analysis we recommend the following cost-effective and pragmatic interventions:

Micro-algae capture CO₂ emissions from coal fired electricity generating plants:

Already demonstrated on a large scale, micro-algae systems can recycle the CO₂ in flue gas from a Coal power plant. Photonbioreactor, meaning one is using a living organism (typically micro-algae, cyanobacteria, macro-algae or some mosses) to do the work for humans and the environment. By harnessing the ability of micro-algae to grow very fast using LIGHT to perform photosynthesis in order to take the CO₂ from flue gas and convert it into biomass, but more importantly produce high levels of oxygen (O₂). Micro-algae are significantly more efficient to CO₂ sequestration than trees. Note, the majority of the world's oxygen is produced by aquatic micro-algae and not trees. With the application of a static magnetic field (simple magnet) and photon-flux model, oxygen production, growth rate and stress tolerances of the micro-algae significantly increase further at a compounding rate. Thereby, accelerating project implementation, reducing costs, and less land use. For example, the image analysis of micro-algae using an electron microscope reveals micro-algae to be enhanced by an exposed static magnetic field to give the appearance of a lean body building, olympic triathlete, instead of a couch potato blob.

Not only is this and the following implementations inexpensive but they too substantially reduce the financial risk, and substantially accelerate the return-on-investment (ROI) in loan debt-to climate change portfolios. The theme is to use human waste or products to help feed our climate change creatures.

Nanobubble generation and carbon sequestration:

Nanobubble generation is a demonstrated approach to "helping cool the plant". Nanobubble synergy applied to irrigation and water storage is simple and pragmatic. Nanobubble

applications ameliorate soil problem spaces through oxygenating soils, resulting in increased crop output, and efficient water treatment solution.

The underlisted are the expression results applicable to poultry project implementations:

- Chickens grew in lean muscle mass.
- Antibiotics use reduced by 100%.
- Reduction of animal mortality by over 60%.
- Increase in production by 7%.
- 100% removal of bacteria, algae, amberggris, fungi and viruses.
- Prevention of scale buildup.
- Significant reduction in heavy metals, i.e. iron and manganese.
- 100% chemicals free treatment.
- Easy to operate on renewable energy.
- Static magnetic fields and Photon-flux models significantly further enhance positive associated effects and reduce costs.
- Further compounded effects are achieved through applied deutenomics. Further research and MRI imaging is currently under research illustrating favorable results.

Goat and cow milk:

The journey of deutenomics into public interest, consumer protection and SMMS commenced legislatively with the forensic tool of the EU law on the provision of food information to consumers (EEC No. 1169/201127) that came into effect in December 2014. This law includes EU regulation 1337/2013 regarding the mandatory country of origin (COO) or place of provenance labelling for unprocessed meat from pigs, sheep, goats and poultry. This paved the way for new regulations regarding COO labelling of other food products. This regulatory shift has spurred the development of new techniques for the discrimination between foods of different origins, sources, farming systems, and farming techniques. Stable isotope analysis of specific elements, including hydrogen, carbon, nitrogen, oxygen, and sulfur, has been applied in food authentication for decades. Predominantly, these methods are based on stable isotope ratio measurements of a bulk product or a specific component such as ingredient/s or target molecule. The measurements provide information on the botanical origin, geographical origin, and isotope hydrogen fractionation discrimination within said ingredient, for example.

Using a scientific-technical analysis and climate change evaluation there is strong motivational support to shift resources, policies and application from cows to goats. In sub-Saharan Africa and North America, the use of goats has been steadily growing. A primary reason is due to their adaptability: these animals can be found virtually in all agro-ecological zones within Africa. Secondly, goats produce less enteric methane (CH₄) emission to that of cows, sheep, as well as lowered farming costs. Examples of lowered farming costs include increased efficiency to converting feed into milk, lower initial investments, suitability for landless farmers and supporting women and entrepreneurship.

In practice, cows produce more CH₄ than coal power plants, while goats produce less. **Goat milk and cheese are significantly lower in deuterium content, and metabolic enhancement to health, providing valuable medical interventions.** The enhancement of goat cheese and milk from a sour to sweet taste (no sugar additives), and removal of offending smell is achieved by keeping the males and females separate. Techniques referenced in this report remove the need for pasteurisation.

Magnetic field drop zone

NASA¹¹ has been observing an unusually large weak spot in the Earth's magnetic field called the South Atlantic Anomaly (SAA). Initially, over South America, it is migrating and extending over Southern Africa. Particle radiation in this SAA region can knock out onboard computers and interfere with the data collection of satellites that pass through it. Research groups must take into account current observations and model the behavior of the SAA in order to monitor and predict future changes. This will help prepare for future challenges to satellites, humans, and agriculture affected by the SAA.

Magnetoreception, the perception of the geomagnetic field, is a sensory modality well-established across all major groups of vertebrates and some invertebrates, but also recently well confirmed presence in humans. Reporting a strong, specific human brain response to ecologically-relevant rotations of Earth-strength magnetic fields in particular to EEG alpha oscillations (8-13 Hz) occurred in a repeatable manner. Termed alpha event-related desynchronization (alpha-ERD), such a response has been associated previously with sensory and cognitive processing of external stimuli including vision, auditory and somatosensory cues. Increases to stimulating biological magnetic flux help stabilise stress cellular architecture and enables the mitochondrial ATPase to spin faster in comparison to regions of reduced native magnetism.

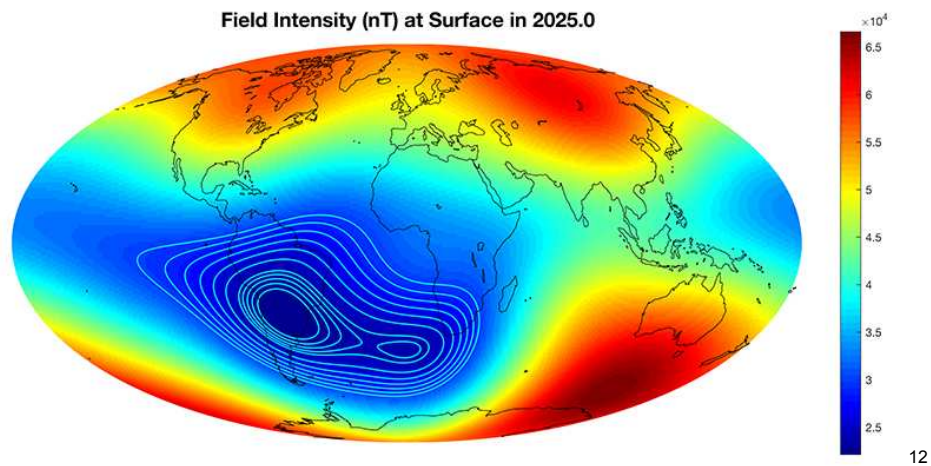
Biophysical tests reveal that the neural response is sensitive to static components of the magnetic field. This rules out all forms of electrical induction (including artifacts from the electrodes) which are determined solely on dynamic components of the field. The neural response is also sensitive to the polarity of the magnetic field. This rules out free-radical 'quantum compass' mechanisms like the cryptochrome hypothesis, which can detect only axial alignment. Ferromagnetism remains a viable biophysical mechanism for sensory transduction and provides a basis to start the behavioral exploration of human magnetoreception.

Although many migrating and homing animals are sensitive to Earth's magnetic field, most humans are not consciously aware of the geomagnetic stimuli that they encounter in everyday life. For this reason, we have focussed on pragmatic and easy to demonstrate applications to accelerating public citizen science engagement and learning surrounding the domain.

Take note, at present, it is not only the magnetic field drop that is of importance but solar photon levels as well.

Over time, Greeley found that the South Atlantic Anomaly is moving westward (at about 1° longitude every five years). Indicating, Feynman's Climate Change model and adaptive solutions are imperative for strategies to be done for SA, now and into the future.

¹¹ <https://www.nasa.gov/feature/nasa-researchers-track-slowly-splitting-dent-in-earth-s-magnetic-field>



The WHO International Optical Radiation and EMF Project International Advisory Committee research team falls between the WHO teams for Environment, Climate Change and Health (ECCH) and Radiation and Health governed by the WHO Collaborative Effort Manifesto. EMF of a very broad range of frequencies represents one of the most common and fastest growing environmental influences. EMF has notably positive or negative effects, depending on the context it is employed in. EMF has been around since the birth of the universe, with LIGHT being its most familiar and significant form. Electric and magnetic fields are part of the spectrum of EM radiation, which extends from static electric and magnetic fields, through RF, UV, and infrared radiation (IR), to X-rays. Since 2017 there has been a growing consensus that Light EM has the most predominant effect on biochemistry both positive and negative.

COVID-19

Through the declared National State of Disaster, non-pharmaceutical safety measures have been tasked to take priority and to be explored through the STI programs. In SA, the SARS-CoV-2 mRNA vaccines are not mandatory and are still considered experimental under the current legislative timeframe. While vaccination in general is a pharmaceutical measure, under the Constitution there are a number of reasonable reasons for a person to advocate not receiving the mRNA vaccine. For these reasons support is to be given on “the answers have changed” solutions to enable public and private spaces providing enhanced probability solutions to safety. Safety is not only about being “locked away” in a room but also understanding and application of measures to increasing global bioadaptation. The COVID-19 pandemic is not the last or ending of future waves, and as such, solutions are needed to enable non-invasive and pragmatic implementations specific to the context of SA.

Vaccination is an endeavour to utilise non-pathogenic material to mimic the immunological response of a natural infection, thereby conferring immunity in the event of pathogen exposure. This goal has been primarily pursued through the use of both whole organism and attenuated virus vaccines. Use of fragments of virus or their protein products, referred to as “subunit vaccines,” has been more technically challenging. The explored scientific literature suggests the immune response that vaccination with an mRNA vaccine initiates a set of biological events that are not only different from that induced by infection but are in several ways demonstrably counterproductive to both short- and long-term immune competence and normal cellular function.

¹² The South Atlantic Anomaly currently covers parts of southern Africa, much of the southern Atlantic Ocean, and South America. In 5 years, the region is forecast to grow and bifurcate. Photo: Weijia Kuang and Terence Sabaka/NASA GSFC

The mRNA SARS-CoV-2 vaccines were brought to market in response to the public health crises of Covid-19. The utilisation of mRNA vaccines in the context of infectious disease has no precedent. The many alterations in the vaccine mRNA hide the mRNA from cellular defenses and promote a longer biological half-life and high production of spike protein. However, the immune response to the vaccine is very different from the immune response to a SARS-CoV-2 infection. The recent discovery of human DNA polymerase theta (Polθ), which preferably and promiscuously transcribes RNA templates into DNA, elicits new potential harms after injecting stabilized virus RNA particles into human tissues. This harm is through the stable transfection via the reverse transcriptase function¹³ of DNA (Polθ) of human somatic cells that may constitutively produce amyloid-forming spike protein fragments, especially after repeated injections of chemically and pharmaceutically stabilised RNA products.

While the design of mRNA vaccines is still to be improved upon, those that have received or wish to receive current mRNA vaccines for SARS-CoV-2, supportive SMMS applications are strongly endorsed as pragmatic and cost-effective available options to citizens and facilities. The immune system and the DNA repair system are the two primary systems that higher organisms rely on for defense against diverse threats, and they share common elements. Loss of function of key DNA repair proteins leads to defects in repair that inhibit the production of functional B- and T-cells, resulting in immunodeficiency. To provide for those who are not vaccinated, regardless of the reasoning, given the review of evidence and cost of resources to the state and undue conflict we hope to address resolutions with the following science-based options in STI. Note that the following resolutions are also advised for those with Long Covid¹⁴ as there currently is no pharmaceutical treatment available; however, demonstrated significant improvements were found in SMMS applications i.e., in OurDomain, and the Charles Collins Together We Grow Campaign.

Similar to Climate Change discussed above, there are two models in practice: The Germ model and Terrain model. The Germ model advocates vaccinating the fish in an Energy-flux model configuration, while the Terrain model seeks to clean the tank through a Photon-flux model. Evaluated data illustrates that the vaccinated are now as likely as the unvaccinated to spread disease. Thereby, from a scientific-technical analysis it appears to be negligent to ignore the vaccinated population as a possible and relevant source of transmission when deciding about non-pharmaceutical public health control measures. Based on demonstrated findings, the Terrain model is applicable to the context of SA toward moving forward to growth, bioadaptive resilience, and increasing REDOX potential.



SARS-CoV-2 transmission occurs through contaminated air, water, and surfaces, which plays a pivotal role in its unbridled dissemination. Stability of SARS-CoV-2 in aerosols and on inanimate surfaces (e.g., glass, metal, plastic, or cardboard) can act as important transmission vectors. Findings support that aerosol and fomite transmission of SARS-CoV-2 is likely, indicating that the virus can remain viable and infectious for hours in aerosols and up to days on surfaces.

¹³ Boros, L. G., Krüger, T. P. J., Letoha, T., Tuszyński, J. A., Dorfsman, S. I., Lech, J. C. (2021, June 6). eLetter, To stabilize or not to stabilize RNA - that is still the question. Polθ reverse transcribes RNA and promotes RNA-templated DNA repair. ScienceAdvances. <https://www.science.org/doi/10.1126/sciadv.abf1771>

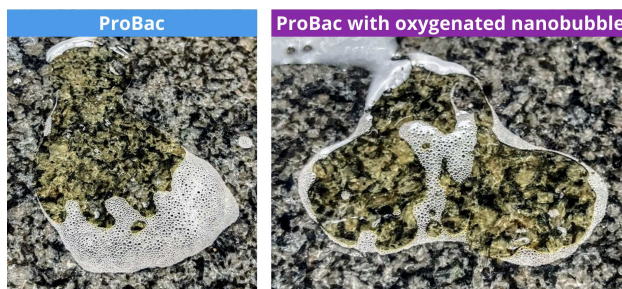
¹⁴ WHO's Science in 5 on COVID-19: Update on Long COVID

Photon-flux model light-based strategies currently are cost-effective and widely available in the market. Photons can be used to inactivate SARS-CoV-2 in air, liquids and on surfaces. Photontherapy can be used as an adjuvant to control virus infection and to modulate the host immune system that can reduce COVID-19 morbidity and mortality. From a scientific-technical analysis, light-based solutions can significantly contribute to mitigate the impacts of the COVID-19 pandemic, providing several practical answers to the new logistical and therapeutic challenges brought by COVID-19. Below we provide some pragmatic solutions.

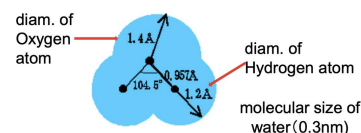
1. Cloth face masks and or medical masks not following correct instruction can not only provide hypoxic impairment, demoted brain metabolic activity, but also demonstrate a negative pollutant impact to the environment. Therefore, alternative solutions are encouraged.
2. Communal enclosed toilets and washrooms, while not a convenient topic of conversation, are found to be a region of high transmission contamination. UVC light demonstrates high efficiency treatment for short exposure, with results lasting hours after. Concerns are repeatedly raised about potential user error exposures. To address this concern there are additional synergistic solutions.

- a. Injection of nanobubble water generation in the toilet water supply. This includes for use in washing hands after.

- b. Bacteria used to clean the space. Selective bacterias are demonstrated within our government facilities (i.e. NRF iThemba labs) to clean extremely well, and keep on cleaning while substantially reducing operating costs, and impacts to Climate Change. We reference ProBac.co.za here as an example. It is not the only supplier on the market but in the interest of accelerated public citizen science engagement it is referenced to promote the theme "the answers have changed". The aerobic bacteria feed on deuterium and is activated with accelerated activity that is evident in water with high concentration of dissolved oxygen (nanobubbles), demonstrating significantly enhanced cleaning effects. Another catalyst is the availability of organic dirt found in water and surfaces. The image illustrates well the differences when applied to a vegetable oil (cold-pressed olive oil is a good test substrate). Probac has been verified in efficacy in hospitals, veterinary surfaces, schools, and government facilities. Available in major supermarket outlets, the product theme is a useful manner for the public to experience the science and difference in quality output between the Germ model vs Terrain model. For Climate Change transportation, the bacteria is highly concentrated and capable of growing, enabling significantly lowered road transport requirements in comparison to inorganic-based chemical equivalents.



Pragmatic illustration of nanometer scale effects brought to tabletop visual representation through the public citizen science engagement and accelerated learning projects



- c. Micro-algae oxygen bars: almost all parasites, germs and viruses cannot survive the alkaline environment in which micro-algae thrives. The micro-algae demonstrated accelerated growth and multiplication, enabling residents and government facilities to help in contribution by taking a cup of

micro-algae, and growing their own in their own apartments, office, family networks, and communities. Thus accelerating climate change empowerment through changing their spaces.

3. Energy-flux model lighting is found to suppress eosinophilic cells. Eosinophils are a specialized cell of the immune system, a disease-fighting white blood cell. Eosinophil count is not only significantly suppressed by light intensity (lux), but compounded further by the flicker inherent in Energy-flux model setups commonly found in public and private space exposures. Alternatively Photon-flux models installations are found to not only reduce viral levels in the space but boosts immune system response, and recovery. Use of light, native and nnEMF, provide a faster rollout and solution when configured correctly.
4. Using a scientific-technical analysis, the use of COVID detection sniffing canines are more accurate and pragmatic than PCR testing. With it taking approximately 10 weeks to train a canine accordingly. Note, due to the increased metabolic energy requirements, canines are required to be placed on a supporting deutenomic diet.

Concluding the theme: work with nature as much as possible before clinical intervention.

Research Activities

South Africa is part of multi-national research endeavors with, for example, the Netherlands (NL), France (FR), Italy (IT), Poland (PL), Nigeria (NI), Croatia (HR) and Hungary (HU) to name but a few.

1. The COVID-19 pandemic has had an unprecedented economic impact on global health care, and there is a need for improving cost-effective treatment strategies. EM / sub-molecular medical science treatments can be implemented in an economically affordable and sustainable manner within the Climate Change Framework. For example, in orthopedics, patients that have been operated on initially achieve significantly better outcomes than those who do not undergo surgery. However, in the long term, just over half of the patients that undergo rotator cuff repair (for example) present a recurrent tear. As such, this subgroup has comparable outcomes to those individuals treated by physical therapy only. Hence, there is a stringent need to:
 - (1) develop a decision-making tool to identify patients that are more likely to heal and benefit from surgery than conservative non-invasive treatment in the mid- to long-term;
 - (2) investigate innovative cost-effective approaches to improve healing rates of patients that undergo surgery. Our current methodological and translational research project aims at grading and ranking risk factors to predict rotator cuff retear likelihood as well as investigating if a novel non-pharmacological add-on rehabilitation protocol can enhance the healing process.
2. **Deuterium has been shown to be of importance in medical applications involving moving biological networks.** It has the largest magnitude natural stable isotope related to discrepancy in behaviour when compared to that of hydrogen in hydrogen bonding and moving biological networks. The deuteron's parent ion is a proton with extensive substitution-related kinetic isotope effects due to environmental exposures that medical science needs to address in the near future. Deuterium has an

interesting relationship with ultraviolet (UV) photons and repels light absorption in the red and near-infrared (NIR) range. It is important for growth, but when in abundance or incorrect location can bring about mitochondrial dysfunction. Furthermore, MRI data interpretation can benefit from translational Deutenomics. Deuterium Metabolic Imaging is difficult to develop due to its loss to metabolic water within living organisms. New nuclear quantum event-based approaches offer hope as Deutenomics deals with proton binding and moving biological architectures in the presence of deuterium. These approaches mean one no longer needs to scan deuterium to see deuterium in proton binding networks.

3. Another example of biophysics "the answers have changed" as a field of science at the forefront of solving age-old human problems as well as problems to solving countless scientific mysteries. The unexpectedly high $\delta^2\text{H}$ (deuterium) values in proline and hydroxyproline residues of bone collagen, isolated from grey seals, as described in a groundbreaking recent publication¹⁵, calling for non-canonical biochemical and sub-molecular medical interpretations. More than twice as much deuterium (>320 ppm) than in seawater (~156 ppm) and at least 4 times higher than in any previously reported biogenic sample were reported in connective tissues. The unusually high incorporation of deuterium in proline and hydroxyproline could not be reproduced using elaborate proton-deuteron exchange reactions in the laboratory. This may call for a new adage that "you are what you tunnel" into various biological end products including proteins and their structure-strengthening amino acids. It seems evident that phenotypic traits developed for extreme survival skills are associated with deuteron accumulation magnitudes above natural abundance. Such phenomena must involve proton and deuteron tunneling to support the unique strength, durability and performance of connective and skeletal tissue collagen with adaptive significance. We shall be describing those biochemical reaction architectures that most efficiently may contribute to such substantial differences in deuterium content between the environment and phenotypically advanced species in their highly specialized connective tissues. We do this with the goal of guiding research in the new era of deutenomics that may solve the apparent challenges of biology, adaptation, evolution and/or creation of our times.

Completed research projects

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 - b. Demonstrated in the SMMS course are cost-effective and pragmatic solutions to achieving animal and human health toward favorable intracellular deuterium exchange reactions.

¹⁵ J. Am. Chem. Soc. 2022, 144, 6, 2484–2487

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 - a. The SARS-CoV-2 pandemic has added new urgency to the study of viral mechanisms of infection. But while vaccines in principle are designed to offer a measure of protection against this specific outbreak, a new era of pandemics has been predicted. In addition to this, COVID-19 has drawn attention to post-viral syndromes and the healthcare burden they entail. It seems integral that knowledge of viral mechanisms is increased through as wide a research field as possible. QB offers essential new insights into the problem, especially with regards to the important first step of virus-host invasion. Research in QB often centres around energy or charge transfer. While this is predominantly in the context of photonsynthesis there has also been cellular receptors such as olfactory or neural receptors employ vibration assisted electron tunnelling to augment the lock-and-key mechanism. Quantum tunnelling has also been observed in enzyme function. Enzymes are implicated in the invasion of host cells by the SARS-CoV-2 virus. Receptors such as olfactory receptors also appear to be disrupted by COVID-19. Building on these observations there is investigated evidence that quantum tunnelling is important in the context of infection with SARS-CoV-2. A simple model relating the vibronic mode of, for example, a viral spike protein to the likelihood of charge transfer in an idealised receptor. Results show a distinct parameter regime in which the vibronic mode of the spike protein enhances electron transfer. With this in mind, novel therapeutics to prevent SARS-CoV-2 transmission can be identified by their vibrational spectra.
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Legislative updates

National Nuclear Regulator Amendment Bill 2021 no 545

Section (h) by the substitution for the definition of "ionizing radiation" of the following definition:

" 'ionizing radiation' means [electromagnetic or corpuscular emission emitted from radioactive material and capable of producing ions, directly or indirectly while passing through matter]radiation capable of producing ion pairs in biological materials;"

Section (y) by the insertion after the definition of "prescribed" of the following definitions:

" 'Public Finance Management Act' means Public Finance Management Act, 1999 (Act No.1 of 1999); 'radiation' means ionizing radiation or non-ionizing radiation;"

Further areas of public concern and concomitant national responses

A wonderful element about the weather (literal or figurative) is its ability to unite us. When a storm or crisis rolls in, typically everybody is thinking alike . “Oh, first I have to get my priority personal supplies immediately”, but then, I have to go check on my fellow neighbours, both domestic and abroad. When we work together in this manner to take collective action for the common good using increased REDOX potential goals, we find public citizens and scientists sourcing and implementing amazing solutions. Giving us a way to do that, giving us a way to come together, and protect each other in the face of life’s greatest disasters, on its best days that is what a government is (Batho Pele principles). Even if the government does not always live up to it.

Trust: There is growing concern about a crisis in public trust that is contributing to, among other things, support for extreme political views, increasing public discontent, protests and in some cases violent conflict. The UN Secretary-General recently warned of a “trust deficit” that threatens to undermine progress towards the Sustainable Development Goals (SDGs)¹⁶. Mutual trust between the public and health systems has long been recognized as integral to the long-term success of policy initiatives. Yet trust cannot be assumed, and trust building should be a fundamental part in planning and program implementation. Trust is a concept that we often take for granted. But as much as it serves as glue for human relationships, trust lies, albeit subtly or sometimes hidden, at the crux of all global health interventions and is critical to their success or failure.

We have been seeing an increased threat to telecommunications infrastructures. These threats were brought to the public domain¹⁷. However, the threat level to telecommunications infrastructure is difficult to determine as well. Are they genuine concerns or political motivation? Activist groups in South Africa, as in the rest of the world, have been infiltrated by radical ideologists. Damage to telecommunications infrastructure could have much more serious consequences in the future as some might be motivated to violent action since these groups perceive 5G in particular to be life and even existence threatening. Government has reached out and offered to engage publicly with anti-5G groups but the offers were ignored and declined.

One approach toward helping build the bridge of trust can be attained in understanding the difference between a guideline versus a standard.

Legal accountability of a Guideline versus a Standard

In 2006 the WHO published a Framework for developing health-based EMF standards. The publication came about due to parties employing the strategy of creating a false sense of public safety through the mixed and inappropriate use of words, guidelines and standards as was found to be in the 2017 SA National Report Addendum, and in PAIA applications processed by the public over the past year.

A pattern of some municipal officials, the former national reporting representative at the DoH, and industry inter-changing the definition of guidelines and standards, with respect to EMF radiation protection measures, was identified.

¹⁶ <https://www.un.org/development/desa/dspd/2021/07/trust-public-institutions/>

¹⁷ EC10/2021 Lech v City of Cape Town, MTN, Warren Peterson Planning, Bidoli Family Trust.

It is evident clarity must be re-published in this report in order to help grow and guide municipal, industry and public engagements. The WHO (2006) explains how the use of the words guidelines and standards has substantially different implications for public health and EMF radiation protection enforcement:

1. **Guidelines** are voluntary instruments of instructions and recommendations that are not legally mandated and therefore have no legal standing.
2. **Standards** are the mandatory, compulsory and legally binding instruments, i.e., laws, acts, regulations, ordinances and decrees. They require procedures and systems to exist in order to ensure compliance with mandatory standards, i.e., an agency is mandated to check compliance through calculations and measurements in the workplace, residence and other vulnerable areas.

In summary, a standard has mandatory and legally binding instruments, monitoring and enforcement systems. Identified were municipalities advertising having a “standard” in the form of a Telecommunications bylaw however, the municipalities purposefully do not meet the criteria to qualify as a standard but instead as a guideline.

We shall use the simple example of traffic law and bylaws. Every vehicle within the municipality must be registered and be licensed. The operating of said vehicles requires the operator to have a license that must be renewed and updated regularly. Different zones have different operating requirements such as speed, emissions, weight class, noise etc.... There is a monitoring system through cameras, traffic inspector officials, and the public. Finally, there is enforcement in place through fines, inspections, confiscation and court appearances. Furthermore, outside parties can obtain access to verifying the operations of the standard and contribute to efficacy, enhancement and progressive development.

The WHO states there is to be no internationally mandated EMF radiation standard but recommends that countries adopt their health-based EMF radiation standard from the large selection of international guidelines published, based on their tolerance of risk value toward accrued benefits to health.

It could be argued that EMF radiation protection and interpretation would fall into existing legislation in SA with there being no national EMF radiation exposure safety standard in the country. The argument is based on the false sense of safety associated with the lack of a standard and consequently lack of surveillance of EMF exposure to the public. Because it cannot be denied that there is the potential of harm from exposure to EMF radiation, legally binding exposure standards have been established in many countries worldwide.

Individuals who have had the privilege to graduate from university, and completed basic chemistry should be familiar with the theme strongly stated in chapter one (1) of the textbook Chemical Principles by Dumdahl DeCoste. We see the idea of changing theories in all realms of science. It is also important to keep in mind that scientists are human. They have prejudices; they misinterpret data; they become emotionally attached to their theories and thus lose objectivity; and they play politics. The progress of science is often affected more by the frailties of humans and their institutions than by the limitations of scientific measuring devices. The scientific methods are only as effective as the humans using them. They do not automatically lead to progress.

One of the most convincing manners that lead to progress is through the visualization of the data, followed by the knowledge transfer of that data. To aid municipal officials, industry and public engagement we shall illustrate through visualization why both the Telecommunications Act and the municipalities' "by-law" is required to enforce capturing, regulating and monitoring the needed data, so that this Committee and others can aid the People (under the Batho Pele Principles) and South Africa to lead to progress, particularly in the COVID-19 pandemic aftermath.

Section 26 of the Promotion of Equality and Prevention of Unfair Discrimination Act, 2000 (PEPUDA or the Equality Act, Act No. 4 of 2000) requires the responsibility of persons operating in the public domain to promote equality:

It is the responsibility of any person directly or indirectly contracting with the State or exercising public power to promote equality by-

- a) Adopting appropriate equality plans, codes regulatory mechanisms and other appropriate measures for the effective promotion of equality in the spheres of their operation;*
- b) enforcing and monitoring the enforcement of the equality plans, codes and regulatory mechanisms developed by them; and*
- c) making regular reports to the relevant monitoring authorities or institutions as may be provided in regulations, where appropriate.*

The Telecommunications Act is administered by the Independent Communications Authority of South Africa ("ICASA"). Part of ICASA's mandate revolves around spectrum licensing and sites. ICASA's responsibility is not health directly; however, they are required to collect and enforce critical technical data for each transmitting and receiving site that serves the public domain within SA. This data helps for the development of technological and innovative progress while maintaining a balance on exposure to said radiation to the public and environment.

The data and management of affairs are to be reported to this Committee, and the people in order to be reported and published in the WHO National report so that we can inform Parliament accordingly, along with other Organs of State on new national policies that must be adopted. Especially when "the answers have changed".

Any party as in the case example of industry service, and or government provider, is required to submit an application to ICASA for a license per site, see Telecommunications Act 103 of 1996, Section 6. The data requested within the application forms are very specific, as reported in the 2017 SA WHO National Report Addendum.

The application for a license per site requires the following:

- 1.1. Location XY coordinates.
- 1.2. Digital Terrain Model (DTM).
- 1.3. Building layer – shapes with heights.
- 1.4. Vegetation layer – shapes with heights.
- 1.5. Land use classification.
- 1.6. Height of the antenna above ground.
- 1.7. Antenna direction – azimuth and tilt.
- 1.8. Antenna model/radiation pattern.
- 1.9. Transmitting power.
- 1.10. Frequency/frequency band.
- 1.11. Bandwidth.
- 1.12. Network/communication technology.
- 1.13. Signal analysis extent or location of interest.

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Part 2: Government Notices Act No. 103 of 1996

2.177
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Part 2: Government Notices Act No. 103 of 1996

d	Requirements for interconnection to other telecommunications networks or services and the transmission medium and links required
e	Upgrading of the network to new standards and technical developments
f	Compliance with recognised international technical standards and specifications.

Notes on (5g) Please note the following further explanations in respect of point (5g) in the table on the previous page:

Term	Explanation
Bandwidth	Refers to the actual Bandwidth of the Signal Transmitted and not to the Baseband value, for example
Baseband value	This is the frequency during the signal processing stage
Reflectors	In the case where a Reflector is used as part of a Radio link, the Link will be treated as consisting of two parts, ie. two separate links. The applicant must calculate hypothetical values for <ul style="list-style-type: none"> • antenna parameters • transmit power etc. in order to supply the information required for the Site containing the Reflector.

No.	Information required	Explanation
9	Details of radio network planning including methods to reserve frequency.	
	Site-Name/s	Name of the place where equipment is located
	Site Code	Code assigned to place
	Site/s Co-ordinates (ddmmss)	Geographical co-ordinates used to locate a place on a map. ddmmss = degrees , minutes, seconds
	Frequency/ frequencies	Air waves through which radio waves are transmitted
	Bandwidth of Transmitted Signal (MHz)	Amount of frequency occupied by the transmitted signal
	Modulation Scheme and Bit-Rate	Method and speed of transmitting radio signal
	Antenna Site	Where antenna is situated
	Antenna Type	Type of antenna
	Antenna Diameter (meter)	Diameter of antenna
	Antenna Gain (dB)	<ul style="list-style-type: none"> • Given in specifications for antenna • dB = decibel
	Antenna Polarisation (H/V)	<ul style="list-style-type: none"> • Polarisation - horizontally or vertically polarised transmission • H/V = horizontal/vertical
	Transmit Power (dBm/Watt)/ Receiver Sensitivity Threshold (dBm)	<ul style="list-style-type: none"> • Wattage (Watt = measurement of power) • Receiver sensitivity threshold = the lowest value that can be detected by a receiver
	Fixed Loss (dB): Transmit and receive	Percentage of lost power
	Type of Service	Whether it is data service, voice, paging, telemetry etc
	Area and Direction of Operation	Geographical area of service

Diagrams or sketches (5g) Applicants must supply diagrams or sketches of proposed operations, systems or Radio Links for **explanatory purposes**. Insufficient or **incorrect** information will result in an unsuccessful application.

No.	Information required
h	Adherence to EMC specifications
i	Theoretical traffic volume forecasts and alternate routing and redundancy requirements
j	Numbering plan for the service
k	Quality systems employed and the quality targets used
l	Details of fixed network planning
m	Presentation of network planning data in the form of schedules, tables, diagrams and maps for the initial phase and two subsequent phases
n	Network management, fault detection, service and maintenance mechanisms
o	Equipment specifications/type approval certificates
p	Regulatory requirements (ITU & Radio Act)
q	Technical expertise
r	Service monitoring capabilities.



Official use only

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SECTION 1: RADIOCOMMUNICATION APPLICATION

The form must be completed in CAPITAL LETTERS, and in BLACK INK

Number of appendices attached A,B,C,D e.g. (1 of 20) of

Application Type

Temporary/Test Licence Date / /

Transfer From To

New Radio Communication Service New Radio Type Approval

Radio Communication Service Modification Modify Type Approval

Existing Licence No.

Official Use Only

Recommended Signature

Approved Signature

Not Approved

Pending Signature

Waiting List Date

Officer

Date

Notes

Other Specify

Type Of Service

Aeronautical

Alarms

Amateur Radio

Cellular

Citizen Band

Civil Defence Force

Communal Repeater

Demonstration

Experimental

Link above 1000 MHz

Link below 1000 MHz

Maritime

Load Shedding

Message Handling

Paging

Private

Private Repeater

Satellite

Short Range Business Portable

Ski-Boat

Special

Telemetry

Trunking

Radio Suppliers/Technicians

Vehicle Tracking

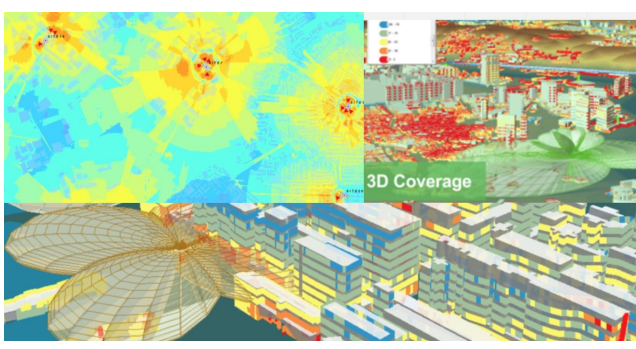
Very Short Range Band

Wan

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SECTION 1 - RADIOCOMMUNICATIONS LICENSES (Revised on October 17, 2010)		Administrative Requirements	Remarks
1.1 Date of Application:			
1.1.1 Date of application in the Name of:			
1.1.2 Name of Company:			
1.1.3 Trading Name of Company:			
1.1.4 South African Company Registration & Tax Number:	Reg. No. Tax No.		
1.2 Applicant Information:	Name of Applicant / Section		
1.2.1 Title and Address of Responsible Person:	Summers		
1.2.2 Title and Address of Responsible Person:	Summers		
1.2.3 Title and Address of Responsible Person:	Summers		
1.2.4 Title and Address of Responsible Person:	Summers		
1.2.5 Title and Address of Responsible Person:	Summers		
1.2.6 Title and Address of Responsible Person:	Summers		
1.2.7 Title and Address of Responsible Person:	Summers		
1.2.8 Title and Address of Responsible Person:	Summers		
1.2.9 Title and Address of Responsible Person:	Summers		
1.2.10 Title and Address of Responsible Person:	Summers		
1.2.11 Title and Address of Responsible Person:	Summers		
1.2.12 Title and Address of Responsible Person:	Summers		
1.2.13 Title and Address of Responsible Person:	Summers		
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The above documents are available from the Telecommunications regulator’s website. Below inserted is the type of visuals to be created from the data requested. One of the most convincing manners that lead to progress is through the visualization of the data.



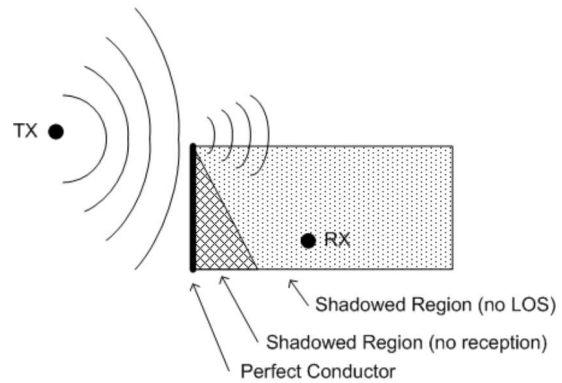
The data and these visuals are required in order to accurately evaluate and ascertain areas of signal coverage but very important too what exposure levels of radiation could be permitted and/or the occurrence of localized hotspots that will disrupt the biological functions and order. Note, evaluators of the images must take note of the figures, data and manner to which the graphic color coding is configured. Altering the visual grading of the data demonstrates increased likelihood of misinterpretation of the data by the user. This also includes if the user is viewing the data on a screen that is setup in an Energy-flux vs Photon-flux model.

Without such information, the Committee, ICASA, researchers or City Health Officials when responding to a complaint are investigating an area similar to searching for a “needle in an enormous haystack”. The information and simulation models allow efficient use of resources and rapid response time to said complaints.

The data is needed to cross-check and verify an installer's/applicant's permit claims to the need of an installation in a specific site and the configuration. **For example, an applicant openly stating there is a signal drop in the area is vague and unsubstantiated.** Further it does not allow for constructive progress to what alternative configurations and or signal use could be used, especially when growth and innovation is so rapid in the sphere of STI. For example, below are the three main areas a signal can reach a specific end-user, particularly if the target is moving.



Figure 4.3 Propagation modes of Reflection, Diffraction and Scattering (USNA, 2016)



Consider a Transmitter and Receiver where an object is blocking the direct line-of-sight path between Tx (transmitter) and Rx (receiver). The signal can diffract around the object such that energy can get to the Rx even though it is shadowed. Note: The more deeply the receiver is shadowed, the lower the received power. At some point, the receiver won't be able to receive any signal.

Investigations to bottle-necks in information and standard implementation: In the 2017 National Report Addendum, in a processed PAIA application, ICASA CEO Wilington Ngwepe wrote that the regulator does not have the requested technical information despite being required by the Telecommunications Act.

On 2 December 2021, a meeting was held per the request by the ICASA's team members for:

1. Management: National Spectrum Monitoring.
2. RF measurement.
3. Telecommunications network measurements.

The meeting was held following the request of ICASA for assistance and guidance following a review of the 2017 National Report addendum.

ICASA with their involvement in “*various spectrum monitoring campaigns across SA. among these, they are also involved in broadband infrastructure and 5G roll-outs. Amidst the fast moving technology deployments - are many complaints and concerns around radiation (EMF exposure) and the authority's role in monitoring and enforcement*”. In addition - “*we (ICASA) have determined the regulatory gaps and are planning to address them by developing standards*”.

ICASA communicated that being issued mandates from the Minister of Communications is not to be met however due to internal bureaucracies and the influence of parties outside the organization as it would take them “two hundred (200) years”. The statement of two hundred years was repeated several times by the ICASA members. As such ICASA confirmed there are many sites across the country that do not have a valid transmission license for the site.

As discussed with ICASA and stated in the 2017 National Report Addendum, there is available a cost-effective and rapid response solution to addressing both the public's and ICASA's complaints. The solution meets the requirements set out in Chapter 5 of PEPUDA.

A Public Access to Information Act (PAIA) was submitted to ICASA this year requesting an update on the current state of the database development and licensing. This application has been ignored by ICASA. The Information Regulator of SA shall be approached to aid with overcoming the bureaucratic issues raised by ICASA before.

PAIA application outcomes to date: In the 2017 National Report addendum, the DoH stated to having never reviewed the technical parameters as required by the Telecommunications Act for sites in SA. In the case of EMF radiation exposure neither domestic academics nor legislative and regulatory ‘practitioners’ (ICASA, DoH, City of Cape Town (CoCPT) municipality), are able to monitor, study, regulate or implement a national EMF radiation exposure protection standard because access to data is denied by permit applicants and or installers. In the report, the CoCPT stated having requested the technical data of permit applicants, repeatedly year after year. Every time the request was refused, yet the CoCPT would still issue permits to applicants. It was stated bureaucratically that the request and rejection to provide the permit would be overruled without just cause. Furthermore when the CoCPT City Health department would request the information and or deny a permit application, it too would be overruled.

PAIA applications were also processed by the NRF iThemba Labs, and SA Medical Research Council (SAMRC) into the cellular transmitters at their government facility sites. The outcome revealed the Telecommunications Act had not been complied with and the needed technical information to access safety or alternative configurations was not made available to them. PAIA outcomes from the public demonstrated a systemic problem in both Nelson Mandela Bay Municipality, Eastern Cape¹⁸, and the Ethekwini Municipality, KwaZulu-Natal¹⁹.

The Municipal System Act requires municipalities in generating and governing their bylaws to be encouraged to generate new bylaws that will help move progressively toward social upliftment of local communities so long as they do not create policies and practices that will

¹⁸ File reference: 2841730

¹⁹ Reference: TPAC 10/10/2021 C

weaken national legislature. However, from reviewing PAIA applications municipalities nationally were found to have contravened this responsibility by failing to obtain and enforce the required data of permit applicants, and to confirm if permit applicants have a valid ICASA license to operate at the designated site.

In discussion with the software vendors for the software to generate the visual illustrations for RF propagation, we confirm municipalities and permit applicants do have the software and capacity to make such similar RF prediction models. Municipalities use taxpayer funds to pay the software license fees, infrastructure housing, equipment upgrade and salaries of staff to produce such models and regulatory practices. Yet, it was found they purposefully chose not to. Paying such fees and not utilizing the immense arsenal of resources is a direct mismanagement of public funds and contravention of the Municipal Systems Act. Where the municipality identifies irregularities in operating sites, the municipality is to report the infringement to the regulator so that the offenses can be dealt with accordingly as stipulated in the Telecommunications Act, and Penalties administered. These penalties include a fine of five hundred thousand South African rands and or two years imprisonment. Furthermore the telecommunications equipment on the site is forfeited to the regulator and credited to the Telecommunications Fund. Municipalities failing in their duties to exercise the course of reporting as stipulated in the Telecommunications Act is a direct intention to weaken national policy and endanger the community.

Batho Pele is about putting people first. Per these governing principles, it is imperative that we as a nation (2) insist promises are kept; (5) access to full particulars to information is granted; (6) openness and transparency; (7) redress, where these complaints are noted in this report from both the public, industry and government officials, we must spark positive actions.

Guidance from WHO and ICNIRP on the subject matter:

In reviews of documentation by municipalities, and permit applicants it is repeatedly stated that they prescribe to the recommendations of the WHO and ICNIRP. However, it is evident they have not read the documentation of either party nor do they demonstrate competency and understanding of the documents supplied by each. Instead, they interchange the legal accountability between a guideline and a standard.

Given the problem space reported upon, the WHO and ICNIRP were consulted on the subject matter:

1. On 12 July 2019, an in-person meeting with ICNIRP's chairman at the time Eric van Rongen.
2. On 24 February 2021 a telephone meeting with WHO - International EMF Project Team Leader, Dr. Emilie van Deventer.

Both their statements and comments on the subject matter were clear:

1. The practices of municipalities and permit applicants are not endorsed and are not meant to occur.
2. Even in the case of the Netherlands not having a national EMF Protection Standard, the involvement and regulation control of the municipalities prevents such

unregulated site installations and exposure of harm to the public. Meaning the second line-of-defence is effective.

3. When the municipality and/or a member of the public submits a complaint to the national regulator, the matter is swiftly addressed and taken seriously by the regulator.

Furthermore, former ICNIRP chair Professor Paolo Vecchia, publically stipulated the following statements about the ICNIRP guidelines, “these are”:

1. “not mandatory prescriptions for safety”;
2. “not the ‘last word’ on the issue”;
3. “they are not defensive walls for industry or others”.

Following review, the recommendations from this committee are as follows:

A municipality, property owner, or residential community is required to check:

1. Is there an ICASA license for the site? Meaning have all parameters of the Telecommunications Act been met, and can the approved application be verified by another party?
2. If the ICASA license was issued, is the license still valid or expired and in need of renewal?
3. All technical parameters per the Telecommunication Act parameters are furnished.
4. Technical parameters are to be input to the municipal Planning Geographical Information System (GIS).
5. GIS is to run simulation models to ensure compliance and no interference in signal and of potential Health/Environment issues with other divisions.
6. Complying to the above can aid toward STI advances.

The SA public health interest issues and, as such, is of utmost importance as the use and prevalence of the health impact of the technologies employed in this sector, especially for Consumers as contemplated by the Consumer Protection Act, 68 of 2008, whose preamble includes:

PREAMBLE

The people of South Africa recognise—

That apartheid and discriminatory laws of the past have burdened the nation with unacceptably high levels of poverty, illiteracy and other forms of social and economic inequality;

That it is necessary to develop and employ innovative means to—

- (a) *fulfill the rights of historically disadvantaged persons and to promote their full participation as consumers;*
- (b) *protect the interests of all consumers, ensure accessible, transparent and efficient redress for consumers who are subjected to abuse or exploitation in the marketplace;*
and
- (c) *to give effect to internationally recognised customer rights;*

*That recent and emerging technological changes, trading methods, patterns and agreements have brought, and will continue to bring, new benefits, opportunities and challenges to the market for consumer goods and services within South Africa; and
That it is desirable to promote an economic environment that supports and strengthens a culture of consumer rights and responsibilities, business innovation and enhanced performance.*

For the reasons set out above, and to give effect to the international law obligations of the Republic, a law is to be enacted in order to—

- *promote and protect the economic interests of consumers;*
- *improve access to, and the quality of, information that is necessary so that consumers are able to make informed choices according to their individual wishes and needs;*
- *protect consumers from hazards to their well-being and safety;*
- *develop effective means of redress for consumers;*
- *promote and provide for consumer education, including education concerning the social and economic effects of consumer choices;*
- *facilitate the freedom of consumers to associate and form groups to advocate and promote their common interests; and*
- *promote consumer participation in decision-making processes concerning the marketplace and the interests of consumers.*

It is accordingly clear that continued research in this field is a constitutional imperative. Particularly, as the “answers have changed” and complaints must spark positive action. Reviews of this committee into the works sets apart and focuses on the public health aspects which belie the technological ideals which modern society embraces at a very rapid speed. It seems evident that it is precisely this alacrity of development and integration of new technologies into society which creates a regulatory and research lacuna. As it is a public interest issue without any doubt, it is in our view, and that of the general consensus of the scientific community through the Nobel Prizes, more than warranted for a scientific and comprehensive analysis to sparking positive innovation to bioadaptive solutions in the safest possible way in which to integrate these new technologies within the human society’s interest. Research works presented forward by science diplomats reviewed by this committee, do contribute significantly to the policy which does help shape the public health regulatory lacuna which currently exists concerning electronic frequency enabling technology and their radiation emissions, in the interest of South African society.

Equality Court applications

In accordance with the Batho Pele principles, the following Equality Court applications were brought forward:

1. EQUALITY COURT MATTER - 57883/21 JAMES CHRYSTOPHER LECH//AGRICULTURE AND OTHERS. Pretoria High Court.
 - a. The application was brought forward for the review of unfair discrimination under the Equality Act. Requesting the update of outdated policies and practices that are not in alignment with the published updates in the United Nations (UN) 2016 Convention on the Rights of Persons with Disabilities.
 - b. Implement the latest training based on the found science-based solutions produced by SA and corresponding partners. For example the implemented use of biophoton sensors instead of costly and obsolete and dated blood

biomarkers. The biophoton sensor is a non-invasive breath sensor for animals, using laser-based techniques enabling the specific detection of disease biomarkers. For the early detection of illnesses well before observable symptoms. With automated and continuous monitoring, this would enable timely and precise care adjustments by animal health workers and or agriculturalists to stop sickness progression.

- c. With COVID-19 pandemic-related economic impact on global health care, and tourism, there is an unprecedented need for improving cost-effective treatment strategies. SMMS and SMAS in diagnostics and treatment training is available for new teaching curricula for SA.
- d. Implementation of such technology would stimulate growth to the economy in enabling tourists to travel to SA with their pets more freely while using such technology at border control would allow highly efficient, fast, non-invasive and cost-effective early detection.
- e. Horizontally, the technology would also be utilizable by government officials in helping improve his Directive deliverables in animal health, and help increase food security for the nation.
- f. Per the step-by-step guide²⁰ for lodging an Equality Court case, step 3 was not adhered to by the respondents. Judge Sardiwalla issued the directive that the respondents must respond and appear in court as this matter is of Public Interest.
- g. Judge Sardiwalla's directive extract 2022, February 15²¹, "*....I think there must be discussions and I think these discussions must not be seen to be obstructive and this must be conveyed to all the parties. This is a general problem, it does not have a quick answer, nor a quick solution. But we are South Africans, we need to accommodate people individual different ways and practises and understand the legislation that governs them and whether it complies and it is of – is it ...[indistinct] with what is happening on the ground and parties must find ways innovative as we have done in this country to deal with these issues of legislation that is conflicting or legislation that is not clear enough and does not cater for all situations. It appears to me that legislation from what I read does not cater for various aspects that it ought to cater for in situations of this nature. Across border issues, animal issues and ...[indistinct]. There is complex legislation but it does not deal with all the issues. This is a specific issue. So I trust that you all understand what I am saying and this is why I gave you a little lecture so that you understand what I am saying and that you need with the relevant authorities, all of you, discuss it and my directive is that you must find an amicable practical solution to the problem. It is only then if I am satisfied that you have done enough to reach an amicable practical solution, with the lawmakers, with the departments, with the heads of department and then I will decide on what order I will make. Am I understood?"*

²⁰ https://www.justice.gov.za/eqcact/eqc_step-guide.html

²¹ Performed by Gauteng Transcribers.

2. EQUALITY COURT - 58744/21 JAMES CHRYSOPHER LECH//MINISTER OF POLICE & 6 OTHERS. Pretoria High Court.

- a. The application was brought forward for the review of unfair discrimination under the Equality Act. Requesting the update of outdated policies and practices that are not in alignment with the published updates in the United Nations (UN) 2016 Convention on the Rights of Persons with Disabilities, and the enhancement advancement per the UN guidelines for inclusive quality police services for persons with disabilities.
- b. Application requesting the implementation to the latest training based on the found science-based solutions in providing cooperation and assistance to updating and providing officers with assistance per the findings and recommendations on SMMS applications²².

Two learning outcomes strategies came from the experiences and interactions. One could expend time, and resources trying to change others; they either do not understand or do not know how to grow. Or, one follows what is enshrined in the Batho Pele principles. By changing the environment, demonstrating the differences, and enabling the people to put themselves and others first, enables learning experience and understanding to grow together.

On 18 February 2022, South African Human Rights Commission CEO Tseliso Thipanyane, provided some useful insights and recommended steps forward to helping SA grow as per the directive of Judge Sardiwalla. There are hundreds of Equality Courts in SA however, very few are being utilized. Chapter 5 of the Equality Act is still in need to be updated further. The Department of Treasury supports the SAHRC through funding and it was reported that the funds have been beneficial to wonderful landmark cases. The SAHRC does have funds available for litigation purposes but it is favorable if a matter brought forward is a national matter, and secondly helps grow (together we grow) SA policies and legislations.

²² - NL Politie Externe Memo: Onderzoek Vrije Universiteit gericht op het vergroten van de mentale en fysieke gesteldheid / herstel na ziekte binnen de Politie Eenheid Amsterdam, district Zuid, basisteam Zuid- Buitenveldert. Onderzoek geleid door PHD-kandidaat J.C. Lech, 18 November 2020.

- GOC 1 Mil Hosp, Internal file number: SG/R/311/5/13.

Concluding

The number of LIGHT, EMF and Climate Change related complaints received by various government departments has been increasing over time. In the past, these have not been handled optimally, but there is now a general consensus to strive toward cooperative solutions and synergy. One of the proposed means employed is to increase both technical and non-technical communication strategies. This will encourage the nation's inhabitants to become citizen scientists in a pedagogy that is aligned with this committee's voice.

We thank the South African people and foreign agencies for their financial contributions via taxes and direct donations. With your support, our researchers have been able to provide and share the findings within this report which you have made possible through your investments and contributions.

Dialogue and growth in working together is needed and why the designed and carried out solutions in this report are effective- economical and pragmatic, enabling all residents of SA and globally to employ, test, and enhance within their own personal spaces, work and government facilities.

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This report was commissioned by the WHO International Optical Radiation and EMF Project IAC - ZA and ISC. The members for this national report are listed on the next page.

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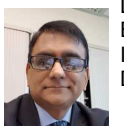
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²³ Melchor, L. (2020). What is a science diplomat. The Hague Journal of Diplomacy, 15(3), 409–423.
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