

COMMUNICATION
CHALLENGES FACED BY
NATIONAL SCIENCE ACADEMIES
-Questions That Must Be
Answered!

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Why Communicate?

- To exchange information & ideas to bring about positive changes.

Major Challenges:

1. Effective communication with policymakers.
2. Effective communication with the public.
3. Effective communication with the media as partners.

Communicating with Policymakers – challenges:

- How to ensure full participation at events
- How to ensure that study reports are noticed
- How to maximize ‘attention’ time of policymakers (brevity, language etc)
- Compelling “Call to Action” conclusion (highlight next steps)

Suggested Approaches:

- Explore personal relationships of members (Fellows)
- Cultivate good relationship with policymakers' assistants
- Present study reports in person

Communicating with the Public - challenges:

- How to initiate/sustain public awareness of academies
- How to disseminate study reports to the public
- How to communicate science in simple and attractive language

Carbon dioxide controls Earth's temperature, study finds

Water vapor and clouds were the major contributors to Earth's greenhouse effect, but a new atmospheric climate modeling study shows that the planet's temperature ultimately depends on the atmospheric level of carbon dioxide.

The study, conducted by Andrew Lacis and colleagues at NASA's Goddard Institute for Space Studies (GISS) in New York, United States of America (USA), examined the nature of Earth's greenhouse effect and clarified the role that greenhouse gases and clouds play in absorbing outgoing infrared radiation.

Notably, the team identified non-condensing greenhouse gases—such as carbon dioxide, methane, nitrous oxide, ozone, and chlorofluorocarbons—as providing the core support for the terrestrial greenhouse effect.

Without non-condensing greenhouse gases, water vapor and clouds would be unable to provide the feedback mechanisms that amplify the greenhouse effect. The study's results are published October 15 in *Science*.

A companion study led by GISS co-author Gavin Schmidt that has been

accepted for publication in the *Journal of Geophysical Research* shows that carbon dioxide accounts for about 20 per cent of the greenhouse effect, water vapor and clouds together account for 75 per cent, and minor gases and aerosols make up the remaining five per cent.

However, it is the 25 per cent non-condensing greenhouse gas component, which includes carbon dioxide, that is the key factor in sustaining Earth's greenhouse effect. By this accounting, carbon dioxide is responsible for 80 per cent of the radiative forcing that sustains the Earth's

greenhouse effect.

The climate forcing experiment described in *Science* was simple in design and concept—all of the non-condensing greenhouse gases and aerosols were zeroed out, and the global climate model was run forward in time to see what would happen to the greenhouse effect.

Without the sustaining support by the non-condensing greenhouse gases, Earth's greenhouse effect collapsed as water vapor quickly precipitated from the atmosphere, plunging the model Earth into an icebound state—a clear demonstration that

water vapor, although contributing 50 per cent of the total greenhouse warming, acts as a feedback process, and as such, cannot by itself uphold the Earth's greenhouse effect.

"Our climate modeling simulation should be viewed as an experiment in atmospheric physics, illustrating a cause and effect problem which allowed us to gain a better understanding of the working mechanics of Earth's greenhouse effect, and enabled us to demonstrate the direct relationship that exists between rising atmospheric carbon dioxide

and rising global temperature," Lacis said.

The study ties in to the geologic record in which carbon dioxide levels have oscillated between approximately 180 parts per million during ice ages, and about 280 parts per million during warmer interglacial periods. To provide perspective to the nearly 1°C (1.8°F) increase in global temperature over the past century, it is estimated that the global mean temperature difference between the extremes of the ice age and interglacial periods is only about 5°C (9°F).

Fresh debate over DNA screening in IVF, stem cell therapy

By Chikwema Muanya

The birth of first three In Vitro Fertilisation (IVF) babies to two 40-year-old women in Europe from eggs screened for chromosomal abnormalities using a fast new Deoxy Ribonucleic Acid (DNA) genetic material test, and the commencement of the first official trial of using human embryonic stem cells in patients by United States of America (USA) doctors have sparked fresh ethical and safety debates.

A school of thought is concerned that pre-implantation genetic test of embryo will mean the destruction of more 'abnormal' ones, that is legalising abortion and murder, and that having too many stem cells, or stem cells that live for too long in stem cell therapy, can increase the odds of developing cancer.

However, a new research published in *Genes and Development*, has identified a gene called *Sept4* that prevents stem cells from turning cancerous. By identifying a mechanism that regulates programmed cell death in precursor cells for blood, or hematopoietic stem cells, the work is the first to connect the death of such cells to a later susceptibility to tumors in mice.

The research also provides evidence of the potentially carcinogenic downside to stem

cell to people with spinal cord injuries.

A geneticist at the University of Lagos, Akoka, Prof. Peter Odeigah, told *The Guardian*: "This is very exciting news, however, it is very important to appreciate that the objective of trials at this stage is to confirm first of all that no harm is done to patients, rather than to look for benefits."

"Stem cell research controversy is not about its goals but the means of obtaining them. The dispute about onset of personhood, sanctity of life donor, consent and others can be solved by production of pluripotent stem cells. Clinical trials should have good clinical practice, ethics based on respect for persons, beneficence, justice and informed consent."

In cell biology, pluripotency refers to a stem cell that has the potential to differentiate into any of the three germ layers: endoderm (interior stomach lining, gastrointestinal tract, the lungs), mesoderm (muscle, bone, blood, urogenital), or ectoderm (epidermal tissues and nervous system). Cells can give rise to any fetal or adult cell type.

In the U.S.A. trial, patients who have sustained such an injury within the last 14 days will be given the experimental stem cell treatment.

Meanwhile, studies have shown that IVF often fails because implanted eggs have

Urbanisation as a challenge to public health

Nigeria as a nation has over the years been experiencing an accelerated shift of her populations from rural to urban areas. This rapid rate of urbanisation has, no doubt, engendered several challenges and problems similar to situations in other parts of the world.

Socially, most problems confronting cities, towns and their inhabitants as identified in Agenda 21 in Nigeria include inadequate financial resources, lack of employment opportunities, spreading homelessness and expansion of squatter settlements, increased poverty, growing inequality and rising crime rates, inadequate and deteriorating building stock, services

and a major urban policy issue in Nigeria because poverty and slum conditions pose a serious public health threat to the country's rapidly expanding urban population. He stated that in most areas of Nigeria and other African cities, inadequate sanitation and waste management, and poor state of public health infrastructure have led to the spread of a wide variety of water-borne and other communicable diseases.

In his words: "Those of us who are living in the megacity of Lagos are very much aware of the constraints for space and the rapidly disappearing neighbourhood meeting places for relaxation. We are well aware of the slums often located in the vicinity

of comfortable living and well constructed neighbourhood. Our actions as individuals, community, corporate organisations and government should be focused towards mitigating the challenges of urbanisation."

For Alton Osofisan, chief medical director, Lagos University Teaching Hospital (LUTH), NI-Araba, though urbanisation has its positive effects, one of the health problems has to do with the issue of mental health as evident in the number of people with stress depression and anxiety.

Osofisan noted that urban centres have the increased risk factors for non-communicable diseases and their risk factors such as tobacco use, unhealthy diet, physical inactivity,

harmful use of alcohol as well as risks associated with disease outbreaks.

"River pollution is particularly hard to be worse where rivers pass through cities and the most widespread is contamination from human excreta, sewage and oxygen loss. In many cities in the country there is limited access to clean drinking water. The quality of several watercourses is poor, with pollutant levels higher than the WHO standards.

Socially, pesticide contamination from urban agriculture, residues from sawmills and manufacturing industries, wastewater from urban drains and municipal dumping of waste especially human excreta, pollute drinking water sources that affect the health of the urban and peri-urban populations. In

the long-term, treatment of sewage would be required for safer vegetable production and to reduce water pollution," Osofisan stated.

It is noteworthy that ill-equipped settlements, characterised by inefficient and uncoordinated urban governance, poor economic and resource base of cities, lack of community participation in urban development, poor urban land management and unsustainable development have endangered the lives of people living in urban areas.

Giving these realities, there is the need for all levels of government to take responsibilities to address these challenges by showing serious commitment, to overcoming them through various planned strategies as evident in Lagos State with the *new urban development*.

Suggested Approaches:

- Examine issues that are of public interest -hypertension and energy
- Press releases
- Use of websites (academies' and others') for dissemination
- Get non-expert review of publications

Communicating with the Media - challenges:

- How to enter 'real' partnership with the media
- How to get better coverage for science events/activities
- How to work with the media in a timely manner

Suggested Approaches:

- Present academies as resource centres to journalists
- Hold regular interactive forum with journalists
- Provide full sponsorship to journalists to events
- Reward excellence in science communication -prizes



Ngiyabonga!

Thank you!