

MAST NEWSLETTER & JOURNAL

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Scientific Conference on Water Management Issues in Africa, 28-31 March 2012

Boname Hall, MSIRI, MAURITIUS
Organised by MAST for NASAC, with the participation of 16 African Science Academies, the Dutch and German Science Academies, with in total over 200 participants.

- The objective of the conference is to exchange ideas and experiences on water management issues in Africa-amongst researchers, policy makers, governmental institutions, non-governmental organisations, the private sector and other stakeholders.
- The Recommendations of the Conference are as per the following themes:

- Develop hydropower to enhance energy security
- Meeting growing water demand
- Prevent land degradation and water pollution
- Manage water under global climate change
- Enhance capacity to address water challenges

For example on the theme of PREVENT LAND DEGRADATION AND WATER POLLUTION, the Conference noted that

- Sustainable development of land and water resources is not possible without judicious land-use practices and sound water protection and conservation measures.

And made the following Recommendations



- Providing safe drinking water
- Ensure access to adequate sanitation
- Foster cooperation in trans-boundary water basins
- Provide water for food security
- Policy makers should promote use of planning tools (environmental impact assessment and environmental management systems) in landuse and water management
- Raise awareness of the importance of forests to avoid deforestation and encourage afforestation.

President's Note

It is a well-known fact that science is vital to the advancement of human welfare and well-being. In order to recognise, promote and support excellence in science and to encourage the development and use of science for the benefit of humanity, 105 national science academies have been established so far around the world and are all members of the Inter Academy Panel (IAP), based in Trieste, Italy. The oldest scientific academy in continuous existence is the Royal Society which was established in the UK in 1660. The Royal Society currently has a membership of 1450 outstanding individuals representing all areas of science, engineering and medicine. It is supported by a permanent staff of around 140.

Since its establishment in July 2007, the Mauritius Academy of Science and Technology (MAST) has successfully maintained excellent relationship with relevant organizations at regional and international levels. In fact MAST is in the unique position of being close to both continental Africa and South-East Asia. Besides being an active member of the Network of African Science Academies (NASAC), MAST had a strong representation of three of its fellows at the Summit of South Asian Academies, held in New Delhi, 6-8 September 2012. A joint statement, the Delhi Declaration, was subsequently issued. Moreover, following the Memoranda of Understanding established with the Academy of Science of South Africa (ASSAf) and the Indian National Science Academy (INSA), our collaboration with these two academies is being further consolidated through joint activities.

In spite of successes at regional and international levels, the impact of MAST at national level has not been developing as strongly as we would have wished, so far. The months ahead will therefore be devoted to devise ways and means to address national science-led development issues and to carry out appropriate activities to promote the popularization, understanding and appreciation of the role of Science and Technology for human development and welfare in Mauritius.

Dr.Y.Maudarbocus.

- Promote efficient and sound use of fertilisers and pesticides in agriculture.
- Adapt measures to minimise soil erosion and flooding.
- Similarly on the theme of FOOD SECURITY, the Conference noted that
- Water is essential for life as well as for promoting agricultural production and sound post harvest technologies. This includes increase in productivity per unit area with more efficient water use (more crop per drop). In addition we need to have sound strategies to help strike the right balance between agriculture for food and agriculture for biofuel.
- Promote best agricultural practices (mulching and water efficient irrigation techniques)
- Promote use of treated wastewater for crop production.



The Deputy Prime Minister, Dr. Beebeejaun
inaugurating the conference.

Backing up Technology: Lessons from Aviation.

In July this year the French accident investigation bureau published a frank and quite horrifying report on the 2009 crash into the Atlantic of Air France Flight 447, en route between Rio and Paris. It is now causing an important shift in pilot recurrent training. The causes of the disaster were several, and included: obstruction of the pilot probes by ice crystals that resulted in autopilot disconnection, the crew not identifying the approach to



stall their lack of immediate response and of inputs that would have made it possible to recover from the high

altitude, high-speed stall... In other words, the crew were so reliant on technology (you know that today over 90% of an airline flight is flown “on automatics”...which is not a bad thing in itself), that they had ‘forgotten’ how to manually handle and recover an aircraft which had got into an air-upset situation. The result: everyone in this highly technological, sophisticated modern aircraft died.

The reactions of Civil Aviation Authorities and airlines to the findings of this accident investigation have been rapid, and there is currently a rush to re-write recurrent training syllabi to emphasize the fundamentals of aerodynamics and what the air industry knows as “basic handling”.

At this stage you may be thinking: “But what has this got to do with me?” Quite a lot! In other industries and walks of life we have also become very reliant on technological advances, on robotics, on new communications devices, etc. This is not to denigrate technology and innovation, which we have long since agreed are a necessary part of modern economic development, even of survival, but to wonder whether we are ready to take control when, inevitably, the technology one day does not deliver. Just as with our computer, we need Back-up: For pilots and captains of cruise ships that’s their own manual handling; for physicians facing a likely future hand-over to robotic surgeons it’s a retention of their personal skills; and for the future generations of owners of cars that will steer, accelerate and brake themselves it’s literally just how to drive.

We know well in what ways life is changing, and the direction can be good if we do not allow the loss of basic human inherited wisdom. Technology is there to help, and not to make us humans redundant. The warnings are there in that always-on television set at home, which has killed family conversation; and in the hi-jacking by cell-phone “sms language” of our children’s ability to write (or even read) coherently. Like the aviation industry, while championing technology we need to ensure the preservation of all that is fundamental and good in our personal skills....or lose it all.

Capt. Dick Twomey, FRAeS, AMMAST.

Millenium Development Goals (MDG), post 2015.

Dear Community of Educators,

No matter what context we do our work on developing sustainable systems, engage people in sustainable development through communications and public awareness, good governance, learning systems, we have quite a bit to contribute to MDG 7 Post 2015, and the vision of how to shape that future we want to create. When you have a moment, mark your calendar to actively participate in this global consultation.

All the best,

Pam Punttenney and Bremley Lyngdoh
UN SD Education Caucus Co-Chairs

Science, Technology and Society.



When we analyze global economic and social development where science and technology as tools that have assisted such development, we are concerned about the impacts that have resulted and that disturb mankind. Spurred by the need for accelerated economic and technological growth to meet growing consumer demands, the society is facing immense problems due to global warming, climate change, environmental destruction, loss of biodiversity, intensity of natural calamities, urbanization, food scarcity, global financial crisis, loss of employment, cross-border conflicts, and growing social unrest. There is need for a review of our existing strategies and new approach for science-led development.

Our development has been marked by our mastery of science, its application in technology that has been the primary tool for changing our lives and ensuring basic needs. As tools, S&T is neutral. It is up to us to decide on what type of tools we develop, and what use we make of them. Generally it is the economic, social and political vision that dictates their development and use. Unless we have sound economic, social and political orientations, we are likely to fall in a trap of inappropriate development, and soon destroy ourselves, and our planet. We need changes in our economic and social policies and a new vision for political development at the global level. Concerned scientists and technologists cannot ignore this fact, and have to embark on multi-sectorial initiatives. A new agenda is essential in the face of calamities that are resulting.

Out of a population from seven to eight billion over the next twenty years, more than 60 % will live in cities and mega cities, with the growing pressure on infrastructure and basic amenities that this will bring about. The global resources are limited, but the desire of people to improve their living standard, and simply to have a basic better livelihood is but natural.

With increasing urbanization due to lack of rural employment and adequate amenities, social unrest is

more and more visible. Family structures are breaking down. Health, education, food and water requirements, are putting heavy pressures on the authorities. Slums and skyscrapers are increasing, and diseases, crimes, theft, drugs and sex are rampant.

There is no doubt that science and technology have changed our lives, with the multiple benefits that have accrued over the ages. First and foremost, our life expectancy has increased with better education, health care facilities, better agricultural output, and overall higher standard of living. Most of all, science and technology have helped to reduce the drudgery of hard physical labor, and machines have changed our lives. Life has become easier on the whole.

Developments in the communications sector have brought human beings closer together with faster travel, better telecommunications, and the world has shrunk into a global village. The advent of satellite communication, mobile phones, internet, video and teleconferences, has been a boon to mankind. Like any other technology it is up to us to make rational use of them for the preservation of human civilization. These have strengthened and enlarged man's horizon, and we are now envisaging, through space travel, migrations to other planets where new developments are possible. We have acquired greater mastery over the forces of nature, and are able to meet the needs of an ever-growing population.

However, while enhancing man's capacity to enjoy and live higher life styles, Science and Technology have also contributed to making lives more difficult by the wrong and inappropriate choices made by the users. When man started conquering new countries and peoples, developments of new forms of communication and warfare were crucial. Innovation, research and development, have led to new weapons of destruction, at times mass destruction through nuclear weapons and more sophisticated weapons. Billions of dollars are being spent to satisfy man's greed for power and control

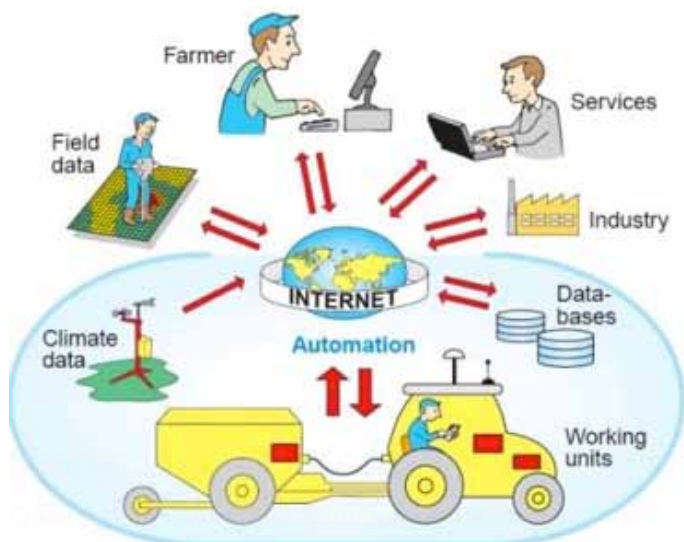
over the destinies of others. If only a small fraction of the amount spent on the development of new weapons and the pursuit of numerous wars were spent on the alleviation of poverty and the provision of basic needs globally, the world would have been a better place. Asia and Africa are witnessing continued war, and the spill over is felt in the other continents. Daily thousands of lives are being decimated. Developed countries are experiencing unprecedented economic downturn leading to unrest and heavy job losses.

With the advent of the Industrial Revolution two and a half centuries ago, a new culture of consumerism has developed, with ruthless exploitation of the limited resources of the world. Respect for nature has diminished, with the belief that all that exists on this globe is for human consumption! Existentialism as a philosophy has become rampant in the developed world. People believe in one life that has to be lived to the full, irrespective of what happens to others and other forms of life. There is little if any, respect for other forms of life on the planet.

People are not content with simple life styles, and the spirit of greed has caught up. Accumulation of material properties and enjoyment of the same is the order of the day. Forget about morality, plain living and high thinking!

We need to question existing economic theories of growth and advocate the move from Gross Domestic Product to Gross Domestic Happiness in an environment where biodiversity, rural development, greater employment, lesser consumption of natural resources, enhanced ethical and moral values, and peace and harmony can prevail to enable higher mental and spiritual achievements. Global concerns on environment and development have spurred a new way of thinking where science is contributing to new appropriate technologies. Scientists and technologists need to engage more on research that can then have a different positive impact on society where young and old, all peoples and nations, can have a better future in peace and prosperity. But the priority remains in introducing new orientation to science in schools, colleges and universities where the syllabi should cater for environment, energy, water, food, health and sustainable living in harmony with nature.

Pr.Soodursun Jugessur



Inquiry

Question: How was the environmental movement ignited?

Exactly fifty years ago, Rachel Carson through her book *Silent Spring* raised enormous concern in the USA, regarding the deleterious effects of aerial spraying of DDT, when entering the biosphere - contaminating birds, fish, soil, water, plants and the food chain. The efforts of the early activists in the sixties in the USA were rewarded by President Nixon, who created the US Environmental Protection Agency in 1970.

Numerous writers' researchers and activists around the globe contributed to the creation of this environmental consciousness

Question. - Can you explain the genesis of international environmental action?

In 1972, two major events took place, namely – the UN Stockholm Conference on the Human Environment and the meeting of the Club of Rome (A Club of Thinkers).

That UN Conference of 1972 was the first major debate on international environmental issues, marking a turning point in the development of international environmental policies.

It culminated with an Action Plan containing 109 recommendations, together with a set of 26 environmental principles.

The first time in an international forum, it was recognized that poverty must be alleviated to help protect the environment.

A historical decision taken by the UN General Assembly in 1972 was to create UNEP as one of its subsidiary arm, with the objective of catalyzing and coordinating international environmental activities.

The report of the Club of Rome, entitled "Limits to Growth", was a ground breaking report, pointing out that, exceeding our global capacities of natural resource use and gas emissions, would limit global economic development in the 21st century.

It was this power of the mind that contributed to the development of the concept of sustainability and sustainable development.

Question. – Explain the concept of Sustainable development.

It was the Brundtland report of 1987 of the World Commission on Environment and Sustainable Development that defined in clear terms this concept – "It is a form of development that meets the need of the present, without comprising the ability of future generations to meet their own needs, in terms of natural resource use and the quality of life."

This should remain everlastingly, the sort of systems thinking for present and future generations; and should be framed within three dimensional space and endless time.

Question - How did the Rio 1992 Earth Summit on Environment and Development handle this concept?

It was an exceptional effort by the UN to bring together

governments of all member states, the private sector, world communities and other stakeholders to agree and commit themselves to a set of twenty-one goals, which is still known as Agenda 21 and is still under implementation. The significant part and follow up to this 1992 Summit has been the establishment of International Conventions, such as the Convention on Persistent Organic Pollutants, the Convention on Biological Diversity, the Kyoto Protocol and the Climate Change Framework, agreed and signed by a majority of countries.

Question - Did the Rio + 20 Conference contribute to the Future we want, come with course correction measures?

To answer this question, first of all, let's have a look at the essence of the outcome document.

The crux of the outcome is that it has been an unambitious document, leaving individual countries to react and commit themselves to the specific goals, objectives and targets. Renewing political commitment has been voluntary and not binding. No new multilateral agreement has been reached. On areas such as global warming or carbon credit, the industrialized countries tended to be in controversy with the developing countries, as it involved financial compensation. Therefore there has been no promise of financial support from developed countries to developing countries.

One good outcome has been the commitment by the private sector to increase deals in renewable energy, pollution control and water infrastructure.

Equally, more effective improvement is being expected from the gender groups, community based organizations and NGO's.

Achievement of progress has been limited only to removal of lead from gasoline, elimination of chlorofluorocarbons, improved access to clean water and reduction of ocean pollution.

Question - What have been the positive aspects of the RIO + 20 conference?

The highlights from the Conference were:

- Emphasis on six priority areas – jobs, energy, cities, food, water, oceans (blue economy) and disasters; leaving individual countries to select their own priorities.
- Emphasis on the Green Economy with adequate focus on the social aspects of sustainable development and poverty eradication.
- (Green Economy is defined as an economic engine to deliver sustainable development, addressing the three pillars (environmental, social/human, economic), and integrating the cultural and ethical dimension across the three pillars. It recognizes the inherent limits and distorting effects of GDP as indicator of progress and welfare).
- Emphasis on an Institutional framework for Sustainable development.
- (Strengthen the mandate of UNEP & GEF; the UN Commission on Environment) & Dev. may be renamed

as the UN Sustainable Development Council by 2015.

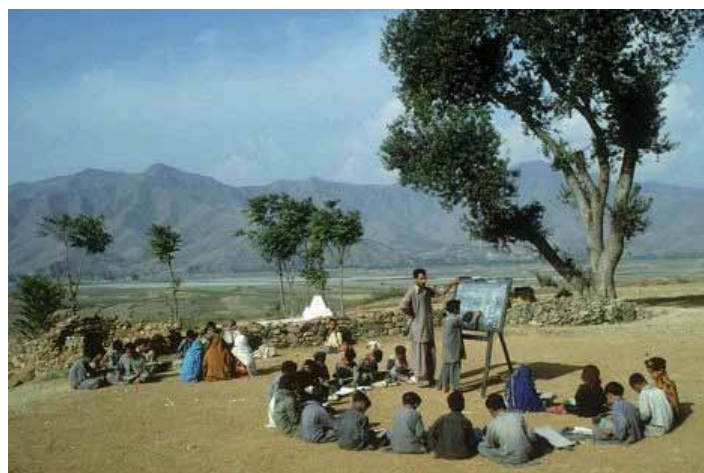
- An Open Working group is being set up by the UN to work out a framework for new Sustainable Development Goals by 2014.
- Natural Capital accounting to be considered by the financial sector to integrate natural capital criteria into financial products and services.
- Commitment to double the global rate of improvement of energy efficiency, and double the share of renewable energy in the global energy mix by 2030.
- Commitment to create Centres of Excellence for Green Technology R&D.
- Commitment to develop complementary indicators to integrate environmental and social dimensions. – GDP + INDICATOR.
- Convening of a UN SIDS Conference by 2014 – 2016.

Overall, the outcome of the Conference should be regarded as a significant and positive global exercise for maintaining a sound planet and a healthy quality of life. The roadmap targeted to 2030 is already a wise indication that the monitoring and evaluation system is becoming a perennial exercise for one and all.

Pr. Seewant Bhojedhur

The organization of Rio +10 (in Johannesburg in 2002) and Rio+20 (in Rio itself in 2012) by the United Nations showed the continued interest of the global community in advancing the process of Sustainable development for the entire planet.

The crucial role of education in achieving sustainability. Here a rural school in East Africa



The meaning of Innovation

(from selected quotes)

“Research converts money into knowledge. Innovation converts knowledge into money” (Dr R.A.Masherkar at the INSA South-Asia Summit, Delhi, Sept 2012)”

“The CEO in his chauffeur driven car AND the rickshawallah both have a mobile phones, i.e. access to instant communication”

Gandhian-style innovation=MLM

M: get More (products)

L: for Less (money)

M: for More (people)

India with 1.3 billion people has 1.3 billion mouths to feed, but also 1.3 billion minds!

Incubation is a system for linking RESEARCH to ENTRE-PRENEURSHIP and then to PRODUCTION.

LOW-COST PRODUCTION: A Indian designer produced a functional below the knee replacement leg for US\$ 28 (to help amputees) as compared to the \$30,000 to \$300,000 price tag of blade running prostheses.

If we were to summarise the main characteristics of low-cost affordable products of technology, these would be:

- better planning
- innovative design
- low-cost labour
- efficiency (i.e. product works)
- fewer components
- use of cheap/recycled/ readily available material
- possibly large-scale production
- availability of and access to the product.

Extracts from the Acceptance speech on INNOVATION by Dr Michael Atchia on receiving a Doctorate in Science from the University of SALFORD, Manchester, UK on 20th July 2012.

“A first remark: a life-time devoted to searching is made up of vastly more non-starters/failures than the few and far between ‘ah-ha’s’ , ‘found it’ found a way to do it’, in other words the joy in advancement.”

Like in 1972, here in Salford where I had joined the Environmental Resources course of the late Mike Pugh Thomas, itself a remarkable innovation for the seventies, interdisciplinary(taking in all comers from which ever discipline) and run interactively. Indeed one of the lessons which I have retained in living for innovation is to readily

recognise the innovation of others and support.

Growing more and enthusiastic about the environmental cause day by day I had the sudden idea that we needed a Nobel Prize for the environment. Launched the idea through a 5-line letter to The Times. At the time it initiated discussion(fellow students, BBC Manchester, Manchester Guardian etc, but nothing else happened).

In 1986 when I joined UNEP at it HQ in Nairobi, Kenya, as Chief of EE/ET with, actually, world-wide responsibility, one of my briefs was to meet someone whom my predecessor described as ‘a formidable lady’. She had been creating green belts around villages, thereby making villagers self-sufficient in firewood, in energy. I went to see her work and immediately proposed to her a contract to expand this positive idea to the neighbouring countries of Uganda/Tanzania/Ethiopia etc. We had to wait for the 21st century for that formidable lady(the late Pr Wangari Mathai) as well as Al Gore to be awarded the Nobel peace Prize, FOR WORK IN THE FIELD OF THE ENVIRONMENT, 40 years after that insignificant letter from a SALFORD student to The Times. Lessons here abound: you get a brain wave? refine it, share it, publish it; if someone proposes a good idea? go and see for yourself ; as a responsible cadre go for the notion of the multiplier effect, i.e. replicate the idea, because as it expand to others new lessons are learnt; finally persevere, concrete results may well take a life time to appear!

In 75-77, doing research here in Salford, for my PhD not content to display my data in the usual tabular or pie-chart form, I designed a new form of computer graphics which I called ‘computer curriculum maps’. But how to do it in practice, knowing little of computer language and having at the Environmental Resources Unit one mere keyboard, an hour computer time having to be booked 2 days ahead? Remember this was the mid seventies, before the PC, before Bill Gates, before Microsoft or Apple. With the co-operation of many I finally did it. Apart from incorporating the format into my thesis, what else to do with it? A friend working for the patent office suggested to start the long-winded process of seeking a patent for the idea. Mike Pugh Thomas suggested to publish it. I happily wrote it up and an appropriate journal immediately published it. What lesson here? A new idea? Refine it, publish it so others can move ahead from it. It’s the difference between the designer of Linux system who put the product directly into the public domain and the designer of Microsoft who patented each idea every bit of the way and made billions of dollars out of it. Many a business graduate here in this hall may well say ‘wrong choice’ but that was the Salford way!”

Definition of INNOVATION : the introduction of something new, a new idea, method, or device, a novelty. Other synonyms: brainchild, coinage, concoction, contrivance, creation, contraption, gadget, clone, imitation, reduplication, replication,

An innovation in technology is an improvement to something already existing. Distinguishing an element of novelty in an invention remains a concern of patent law. The Renaissance in Europe was a period of unusual innovation: Leonardo da Vinci produced ingenious designs for submarines, airplanes, and helicopters and drawings of elaborate trains of gears and of the patterns of flow in

liquids. Earlier civilisations such as those of Mesopotamia, Egypt, Greece, China, India and others made significant innovations in various fields from building to irrigation, from navigation to agriculture from warfare to medicine. Technology provided science with instruments that greatly enhanced its powers. In the 20th century, innovations in semiconductor technology increased the performance and decreased the cost of electronic materials and devices by a factor of a million, an achievement unparalleled in the history of any technology.

A local example of innovation: the creation and subsequent use of a considerable number of new varieties of sugar-cane (adapted to various climatic and soil conditions) by the MSIRI constitute an important contribution of Mauritius to world agriculture.

Michael Atchia

What is renewable energy?

Energy derived from natural processes (e.g. sunlight and wind) that are replenished at a faster rate than they are consumed. Solar, wind, geothermal, hydro, and some forms of biomass are common sources of renewable energy.

How much of the world's energy comes from renewable sources?

In 2009, the world relied on renewable sources for around 13 % of its primary energy supply, according to IEA statistics. Renewables accounted for 20% of global electricity generation and 3% of global energy consumption for road transport in the same year.

How much has biofuel production grown over the last decade?

Global biofuel production grew from 16 billion litres in 2000, to more than 100 billion litres in 2010. This biofuel provides around 3% of the world's fuel for transport. (In Brazil, biofuel provides 23% of all transport fuel, compared with 4% in the United States and 3% in the European Union).

Should renewables be subsidised?

The IEA believes that further growth of renewable energy is essential for a secure and sustainable energy system. Transitional economic incentives that decrease over time are justified. Incentives are sometimes needed to stimulate cost reductions through technology learning, such as improvements in manufacturing, increased technology performances, economies of scale and larger deployment. Incentives may also be justified to secure additional energy security and environmental benefits. Current policies have started to deliver in this respect. The IEA offers policy makers guidance on how to steer policies on renewables.

Energy Efficiency Management Office (EEMO)

From 2010 to 2011, the energy intensity in the Republic dropped from 1.46 to 1.40 in terms of tonnes of oil

equivalent (toe) per Rs 100 000 GDP. This implies that had the energy intensity remained the same as in 2010, the import bill would have been at least Rs 1 billion higher with more than 200 000 tonnes of CO₂ emitted. A corresponding increase in the maximum peak demand of at least 20 MW and an extra power consumption of about 200 GWh would have been recorded had it not been for the drop of energy intensity.

The EEMO has set as target to achieve 1.30 toe per Rs 100 000 GDP by 2015. This is tantamount to an annual saving of 0.1 toe/Rs 100 000 GDP, that is an estimated annual saving of between Rs 3 and 4 billion or more than 500 000 tonnes of CO₂ as a conservative estimate. In terms of electricity, this works out to be a decrease of 200 to 400 GWh yearly or an avoided investment in capacity of between 50 MW and 100 MW.

In order to reach the above targets, considered conservative by the EEMO, an action-plan for 2012-2015 has been devised and has to be implemented. Emphasis is there placed on education, training, awareness and sensitization; institutional capacity-building; introduction of labels and standards that will initially be on a voluntary basis. The Observatoire de l'Énergie is already in place to provide the pulse of the energy sector. Voluntary initiatives involving industry as well as domestic demand-side management will also be promoted through several concrete actions from dedicated campaigns to the conduct of on-site energy audits. The transport sector will be the focus of the EEMO's attention also.

However, targets and plans are not the ultimate ends of Energy Management. For long, energy saving has been considered a priority. Energy Management is not just about saving energy, it is really about making MORE with LESS energy. It is about linking demand and supply in such a way so as to optimise resources. It is about being energy-intelligent. It is about being energy-conscious. It is about a new culture of generating, distributing and consuming energy. Such a new paradigm is essential if we want to exploit the potential of energy efficiency fully.

Ideas are abundant, the technology exists, the human resources can be trained to acquire the right skills and the political will is unflinching. But this is not sufficient to make the transformation of our "paysage énergétique" a reality towards greater efficiency reaping economic, environmental and social benefits of significant measure. A new culture is needed in terms of Energy Management.

We are calling for a real game changer, a shift to a vision different from the current business-as-usual scenario.

Firstly, there is the need for a new philosophy underpinning our very concept of energy production and use. The distinction between producers and consumers will phase out gradually as we consider that all of us have the potential of being "pro-sumers". Decentralised energy management based on a clear definition of individual rights and responsibilities will lead the way to a new framework where everyone is called upon to become energy-conscious whether at home or at work, while travelling or during leisure, as an investor or as a consumer. Addressing development requirements will be met as much by demand-side management as by

installing new capacity. If the burden is shared, the former can be our solution.

Secondly, Energy Management requires that we adopt a multidisciplinary approach. For instance, designers, architects, engineers, promoters, clients and local authorities will have to work hand-in-hand to ensure that buildings are energy-efficient. A holistic dimension is needed when we are planning our new cities or transport systems. Integration of knowledge from different disciplines, including the behavioural sciences when it comes to assessing attitudes, will have to be considered if we want energy efficiency to happen.

Last but not least, Energy Management is about education. However, it is more than just adding 'eco-literacy' modules to our curricula. From early childhood education to the social media, teaching and learning will have to incorporate multiple realities. In other words, constructive new knowledge must be sought in view of having a transformative impact on the individual as well as on society. The outcome will be that people or companies will act energy-consciously, not out of compulsion or guilt, not even for the real financial benefits, but out of a sense of sheer responsibility and faith in a better world.

The vision of the EEMO is to lead thus the country in energy efficiency promotion and development towards greater prosperity and sustainability.

Dr. Khalil ELAHEE

What is the Paryavaran Mitra programme?



<http://www.paryavaranmitra.in/>

Paryavaran Mitra is a programme for students that envisions creating Paryavaran Mitra (Friends of the Environment) in schools across India. It is an action-based Hand Print, focusing on sustainability and Climate Change education.

The goal of the Paryavaran Mitra programme is to create a network of young people across the nation who have the knowledge, awareness and commitment to meet the challenges of global citizenship and climate change.

What is Hand Print?

Everyday actions of individuals add up and have a

global influence both positive and negative.

The Hand Print is a measure of positive environmental action—action that is directed to decrease the human Footprint.

The Footprint is the negative effect we leave on global resources. Footprint measures the impact of our everyday actions and the way we live.

Everything we need and use in our daily life involves exhaustive use of materials and energy. This consumption is linked with the way we live, what we buy and how we use our resources—in other words, our lifestyle.

How can we know how much materials and energy each of us utilizes to maintain our lifestyle? The Ecological Footprint is an estimate of earth's productive land area and water that it takes to supply the resources that an individual or group demands, and to absorb the waste that the individual or group produces. Every human that lives has an Ecological Footprint!

Hand Print refers to each individual's efforts that help to improve the conditions for life on our planet, today and in the future. The Hand Print actions positively impact the three aspects of sustainability: environment, society and economy.



EASAC-NASAC Joint Workshop

“Strengthening the Dialogue between Science and Policy”

17-19 September 2012, German National Academy of Sciences (Leopoldina), Halle, Germany.

Objectives of the Workshop:

- To enable member academies of NASAC and EASAC to share experiences of their past interactions with policy-makers and the wider public.
- To discuss good practice in some of the more specific activities which belong to a dialogue between science and policy-makers and the wider public.
- To scope possible common interests and to develop mechanisms for any future collaborations between the two networks.
- Participants: Representatives from member academies of

NASAC – Network of African Science Academies

EASAC – European Academies’ Science Advisory Council

I was nominated by MAST to participate in this workshop held at Leopoldina Nationale Akademie, the German Academy of Science, situated in an impressive newly built complex in Halle. Its construction was fully funded by the German Government through a Stimulus Package, at a cost of some 30 million dollars, excluding land acquisition.

The objectives of the meeting, attended by National Science Academies from both Western, that is EASAC academies, and African, that is NASAC, Science Academies were:

- To enable member academies of NASAC and EASAC to share experiences of their past interactions with policy-makers and the wider public.
- To discuss good practice in some of the more specific activities which belong to a dialogue between science and policy-makers and the wider public.
- To scope possible common interests and to develop mechanisms for any future collaborations between the two networks.

The meeting was formally opened by the President of Leopoldina Prof. Jorg Hacker, before the introductory session.

An important introductory lecture was one on “Which science-advice do policy makers need?” by Dr. Thomas Fiest, member of the German Parliament, the Bundestag. In his presentation he explained the functions of the Science Commission of the Bundestag and how it goes about to encourage both academic and practical research in Germany especially with regard to energy self-reliance. An important point made was that they do not accept non-sought advice as the job of the Science Commission is to look for advice which matters to the national German development situation.

There were important exchanges of ideas between representatives of NASAC academies and the European EASAC academies on their respective role in science policy dialogue and it was clear that in Africa a lot remains to be done to get Science Academies to harness their potential for policy dialogue on the one hand with national governments and on the other hand with the African Union, the apex political arm in Africa, equal in status to the European Union. Issues discussed were policy matters like:

- academies’ activities that are relevant to the dialogue of each academy with policy-makers
- Explain why the academy thinks this is an activity worth engaging in
- Explain what the academy had/has to do to run this activity, e.g. did any new processes have to be developed
- What you hope to achieve in terms of impact from this activity?
- How / whether you see this activity develop into the future?

Three academies were shortlisted to speak about an activity specific to the Academy and I chose to describe our efforts in getting MAST to become a statutory body under the Parliament through a MAST Bill.

The basis issue was that a lot of important decisions by national governments in Africa and Europe and elsewhere are linked to science. Therefore the science that needs to be developed must be independent and of high quality. Only then will it be possible for sound important decisions to be arrived at in modern societies.

It was felt through the various sessions dealing with science issues like GM crops, biodiversity, sustainable energy and others that NASAC could give greater attention to policy dialogue between science academies in Africa and through NASAC to develop a pathway to sensitize the African Union on the importance of African Science Academies in developing sound policies towards achieving sustainable development.

Pr. Abed Peerally FMAST



The Summit of South Asia Academies held at the seat of the INDIAN NATIONAL ACADEMY OF SCIENCE (INSA), New Delhi, 6-9 Sept 2012.

The Summit witnessed real and in-depth collaboration between the participating scientists from India (host country), Pakistan, Bangladesh, Sri Lanka, Nepal, Iran, Afghanistan etc as well as, from outside Asia, the representatives of Mauritius (Dr Yousuf MAUDERBOCUS, Pr Soondursun JUGESSUR, Dr Michael ATCHIA) and the representative of the African Academy of Science.

The summit established a science network for South ASIA, similar and parallel to NASAC, the Network of Science academies of Africa, which recently held a major conference in MAURITIUS on water resources, hosted by our own MAST (Mauritius Academy of Science and Technology)

The Summit was chaired by the President of INSA, Pr K. Lal and opened by the acting Indian Federal Minister for Science and Technology, Shri Vayalar Ravi (who also remains as Minister for Overseas Indians and in which capacity he was in Mauritius end October 2012 for a Apravasi meeting)

Proposed Joint Research Project between INSA and MAST

Title : Informal Science Education

Partners: Indian National Academy of Science (INSA), Hq in New Delhi and Mauritius Academy of Science and Technology (MAST), Hq in Ebene, Mauritius.

Objective: General improvement of scientific literacy, in parallel with what the formal system (at

primary secondary and university levels) provides through set curricula and formal courses, especially in Integrated Science, Chemistry, Physics and the Biological Sciences.

Context: The close relations between the level of literacy (in particular science literacy) to both development and quality of life drives this project to help improve the level of scientific literacy. Both Mauritius and India (and indeed Africa and South Asia) have made in recent years huge strides in literacy and scientific literacy, but much remains to be done as the rate of technological change accelerate

Scientific Content:

- Topics from formal education curricula in
- Chemistry, Physics, Biology, Environmental Science etc.
- New fields such as Education for Sustainable Development (ESD), Biotechnology etc as well as frontiers of research in Medicine, Engineering, IT, Space Exploration, Climate Change etc all of which students may access on the web.
- Selected applications of science and technology to human welfare
- Project Justification: Lack of interest in Science subjects is detrimental to medium term development. This is a cause of major concern in many countries including India and Mauritius.



MAST -PUBLIC LECTURE SERIES 2013-2014

By decision of the Council of MAST this series will be inaugurated soon.

The Objective is clearly the popularisation of science through making a specialist scientist personally available to present then interact with those present on a topic of current interest.

The internet has already huge volume of info on all topics, often without any guide as to which is reliable, accurate and hence worth retaining and / or using. Thus interaction in the form of comments from participants, questions and answers will form the main part of each session.

We are at the level of drawing a list of volunteer lecturers hence this circular to solicit your collaboration. Day (Friday afternoons/Saturday mornings) , dates, venue(a municipality?) , time (tentatively 5 to 6.30 pm?/9.30-11 am?), duration (90 minutes in all per session ?) will be worked out as soon as we get sufficient number of volunteer lecturer.

Possible event structure :

- 40 MINUTES PRESENTATION by main speaker (with PP)
- Questions and comments from the floor participants
- Summary of recommendations: what can be done/what you can do
- Closing remarks

Target audience: Public in general/ press for popular education/HSC and University students, administrators and decision makers in the public and private sectors.

Will you volunteer? In your reply please indicate your name and position as well as one (maybe 2) topics of science/technology(including the education aspects and the societal implications) of your choice which you will be comfortable to lecture on to a public audience probably made up (we hope!) many young people. We hope all lecturers will use a PP presentation of 30-40 minutes to introduce the topic.

Reply by email to the President of MAST, Dr Yousuf Maudarboccus, copy to the undersigned and to the Secretary of MAST Dr Arjoon Suddhoo.

Thanks you.

Michael Atchia

PRO/MAST

yousufm@myt.mu; asuddhoo@mrc.intnet.mu; mklatchia@intnet.mu

PS : we already have a few topics

Lunar exploration, its history and significance

Towards a renewable energy civilisation

The Rio Process,(1992/2012): what has it achieved, what next?

On the road to sustainability in the energy sector

On the road to sustainability in the transportation sector

The contribution of business and industry to sustainability

Book review

Sustainable Development at Universities: New Horizons

Edited by Walter Leal Filho(Peter Lang Scientific Publishers: Frankfurt,2012. 994 pp)

This book, prepared in the context of the UN Conference on Sustainable Development (UNCSD), also known as Rio+20, contains the papers submitted to the World Symposium on Sustainable Development at Universities (WSSD-U-2012),

which took place in Rio de Janeiro, Brazil on 5 and 6 June 2012. It pursues the following main aims: to document and disseminate experiences from universities all round the world regarding education for sustainable development, as well as to foster the exchange of information, ideas and experiences acquired in the execution of projects.

MAST has its HQ. at the MAURITIUS RE-SEARCH COUNCIL(MRC)

Level 6, Ebene Heights,
34, Cybercity, Ebene,
MAURITIUS.
TEL: (230) 465 1235;
Fax: 465 1239 or
Email: mrc@intnet.mu

For further info. on the Academy contact the Hon Secretary/MAST, Dr. Arjoon Suddhoo, at the MRC address given above.

Appeal
Willing to join MAST and put your expertise at the service of the country? Send us a short résumé on yourself and tell us how you can assist.

Email us at:
mrc@intnet.mu
Attn: Secretary, MAST.

Newsletter edited by :
Dr. Michael Atchia
PRO/MAST
mklatchia@intnet.mu

We're on the Web!
<http://academyscience.intnet.mu>



Executive Committee of MAST, 2012 / 2013

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MAST Membership

Honorary Fellows

Fellows: very senior scientists with many years of experience

Members: scientists with minimum of ten years post PhD

Associate Members: Scientists with basic science qualifications and still ready to promote Science and Technology in Mauritius

Contact Secretary MAST for further details

IAP

The global network of science academies, currently has a membership of 105 scientific academies from around the world, including our own MAST; these include both national academies/institutions as well as regional/global groupings of scientists. A number of other scientific organizations participate in IAP meetings and activities as observers. IAP and its member academies believe that science, scientific knowledge and scientific progress are an essential part of human culture and are vital to advance human welfare and well being. They also believe that the scientific method has much to offer in the pursuit of just and fair societies. These beliefs are the foundation of IAP and all it does. IAP is therefore committed to making the voice of science heard on issues of crucial importance to the future of mankind.

Amongst other objectives, IAP seeks to reform science education on a global scale by encouraging hands-on inquiry-based learning (IBSE), especially in primary and secondary schools.

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IAP Executive Committee 2010-2012: Co-Chairs Howard Alper of Canada, Chair of the Government of Canada's Science, Technology and Innovation Council; Mohamed H.A. Hassan of Sudan, Past President, African Academy of Sciences.

Earth Hour 2013

8:30 pm Saturday 23 March. Earth Hour has grown from a one-city initiative in 2007 to the world's largest campaign for the planet, uniting hundreds of millions of people across 7001 cities and towns in 152 countries



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