

# **Paradigm Shift in Institutional Approach to Fund Sourcing for Research Activities**

by

**O. A. Bamiro**  
**Professor of Mechanical Engineering**  
**Faculty of Technology**  
**University of Ibadan**  
[oabamiro@yahoo.com](mailto:oabamiro@yahoo.com)

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# Central Message of the Lecture

- *First:* The on-going globalisation of the world economies is such that developing nations, such as ours, are ‘casualties’ in the ‘take-no-prisoner’ war of global competition for markets and resources;
- *Second:* The major tools of offence and defence in this ‘war’ are basically knowledge and information driven by science, technology, engineering and innovation (SETI);

## Central Message of the Lecture

- *Third:* The development and deployment of SETI capacity is sine-qua-non to the socio-economic development of our nation state
- *Fourth:* The universities, as centres of knowledge, have important role to play through the performance of their research and innovation functions.
- The various sources of research funds (off-shore and on-shore) place high premium on the quality of proposals and institutional integrity in managing funds.
- *Fifth:* The NUS goes through the so-called 'valley of death' dictated by the funding mechanism available for taking research results to the market.
- *Sixth:* multidisciplinary approach to research in the NUS, patenting of IP, establishment of RMO will go a long way in promoting research and attraction of funds.

# THE STRUCTURE OF PRESENTATION

- The key drivers of knowledge and innovation
- What is globalisation
- Case studies of classical routes of innovation.
- Universities and the challenges of research and innovation for development
- Concluding Remarks

## What is Globalisation?

*“Globalization is the growing view of the world as a single coherent entity with respect to socio-economic planning, coupled with its enforced development as a single coherent entity, under the pressure of international market forces, engineered primarily by the perspectives, national interests and current values of the Western world.”*

**Madumezia (2003)**

## Economic Globalisation: Industrial Competitiveness?

Economic globalisation has serious impact on the industrial development of any country. It is a well acknowledged fact that one of the important prerequisites for the economic well-being and prosperity of any nation is the sustainable development of industry. It is industry that provides services to members of a society by making consumer and capital goods, creating new products and processes, generating new companies and opportunities, and providing, in the process, unlimited new jobs for the population. The key to the success of modern industrial development is science, engineering, technology and innovation (SETI)

## Economic Globalisation: Industrial Competitiveness?

*“It is a very different kind of conflict. There is no clash of competing military forces and the struggle is not defined by national borders. But it does involve an often violent struggle for control of physical resources and territory that is destroying lives and communities at every hand. It is a struggle between the forces and institutions of economic globalisation and the communities that are trying to reclaim control of their economic lives. It is a conflict between competing goals – economic growth to maximise profits for absentee owners versus creating healthy communities that are good places for people to live.*”

# Economic Globalisation: Industrial Competitiveness

Stripped down, economic globalisation is a competition for the control of **markets** and **resources** between global corporations and financial markets on the one hand and locally owned businesses serving local markets on the other.



## **From Berlin to Brussels: That Europe may not underdevelop Africa again through **Market Forces****

AFRICA is in trouble. Its future is once again on the table, and it is Europe that holds the ace. Unlike the Berlin Conference of 1884 to 1885 which balkanized Africa among 13 European powers as **guaranteed sources of raw materials and markets**, the current contraption under the **Economic Partnership Agreements (EPAs)** spearheaded from Brussels is the modern day equivalent of the Berlin Conference. At issue in both Berlin and Brussels is **whether or not Africa can be allowed latitude to conduct trade, industrial and development policies for her own development** or for the development of Europe.

*Chukwuma Charles Soludo (Guardian 21/3/2012)*

## What is the kernel of the EPA?

Put simply, in order to continue to have **access to European markets** (on the terms that it had enjoyed for more than three decades) Africa is now required to **eliminate tariffs on at least 80 per cent of imports from the EU**; in some cases, abolish all export duties and taxes, in others, countries can retain existing export taxes but not increase them or introduce new taxes; eliminate all quantitative restrictions; and meet all kinds of other intrusive and **destructive conditionalities that literally tie the hands of African governments to deploy the same kinds of instruments that all countries that have industrialized applied to build competitive national economies.**

## The Globalisation Pill:

A major difference is that the 'agreement' will now be signed by free people, under supposedly democratic regimes, and in contexts where the African people again have neither voice nor choice. **Only about 10 out of 47 Sub-Saharan African countries (SSA) have either signed or initialled the EPAs.** Trade ministers of the affected regions—the African, Caribbean and Pacific (ACP) countries as well as African trade ministers and the African Union — have largely rejected the EPAs. Despite all of these, and the reported public protests in 20 countries against the raw deal, it seems all but certain to be rammed through. **In private whisperings, not many Africans or policymakers are happy with the deal but there is a certain sense of helplessness.**

# Dunlop's N8bn plant rots away!

(Guardian, August

11, 2012: Bosede Olusola-Obasa)



# The National Tragedy

- Dunlop went down after producing tyres in Nigeria for 45 years, thereby closing its N8bn tyre plant, four years after investing about N6.5bn on the plant technology with a view to boosting commercial vehicle tyre output. The expansion of the facility was completed in 2005 with a capacity to produce 300,000 heavy-duty tyres per annum and manufactured products, such as the Supersteel 315/80.
- Consequently, domestic production has been replaced by **tyres imported from Japan and South Africa**
- **Nigeria is said to have lost about N65bn annually to the down turn in the fortunes of the key tyre manufacturers.**

# The Collapse of Dunlop: Government Policy/Industrial Competitiveness

- Dunlop used to invest over \$800,000 annually on electricity generation, while paying half the amount as electricity to the PHCN each year.
- The high cost of production due to unreliable electricity, unstable government policy, influx of cheaper tyres and global economic recession, among others, saw to the eventual collapse of Dunlop.
- Specifically, **the government's unfavourable review of import tariff from 40 per cent to 10 per cent in 2006 finally halted Dunlop Plc's production as it could no longer compete well with imported products from countries with better infrastructure.**

# Resource Control in Globalized World Economy: **Land Grabs in Africa**

A 21st-century land rush is on. Driven by fear and lured by promises of high profits, foreign investors are scooping up vast tracts of farmland in some of the world's hungriest countries to grow crops for export...The largest investors in foreign croplands hail from **China, India and South Korea, along with Saudi Arabia and other oil-rich Gulf states.** What these countries have in common is that all were shaken financially or politically by the 2007-08 food crisis; **and all lack sufficient land or water to ensure that they can feed their populations in the coming years.**

*Terry J Allen, Senior Editor, In These Times*

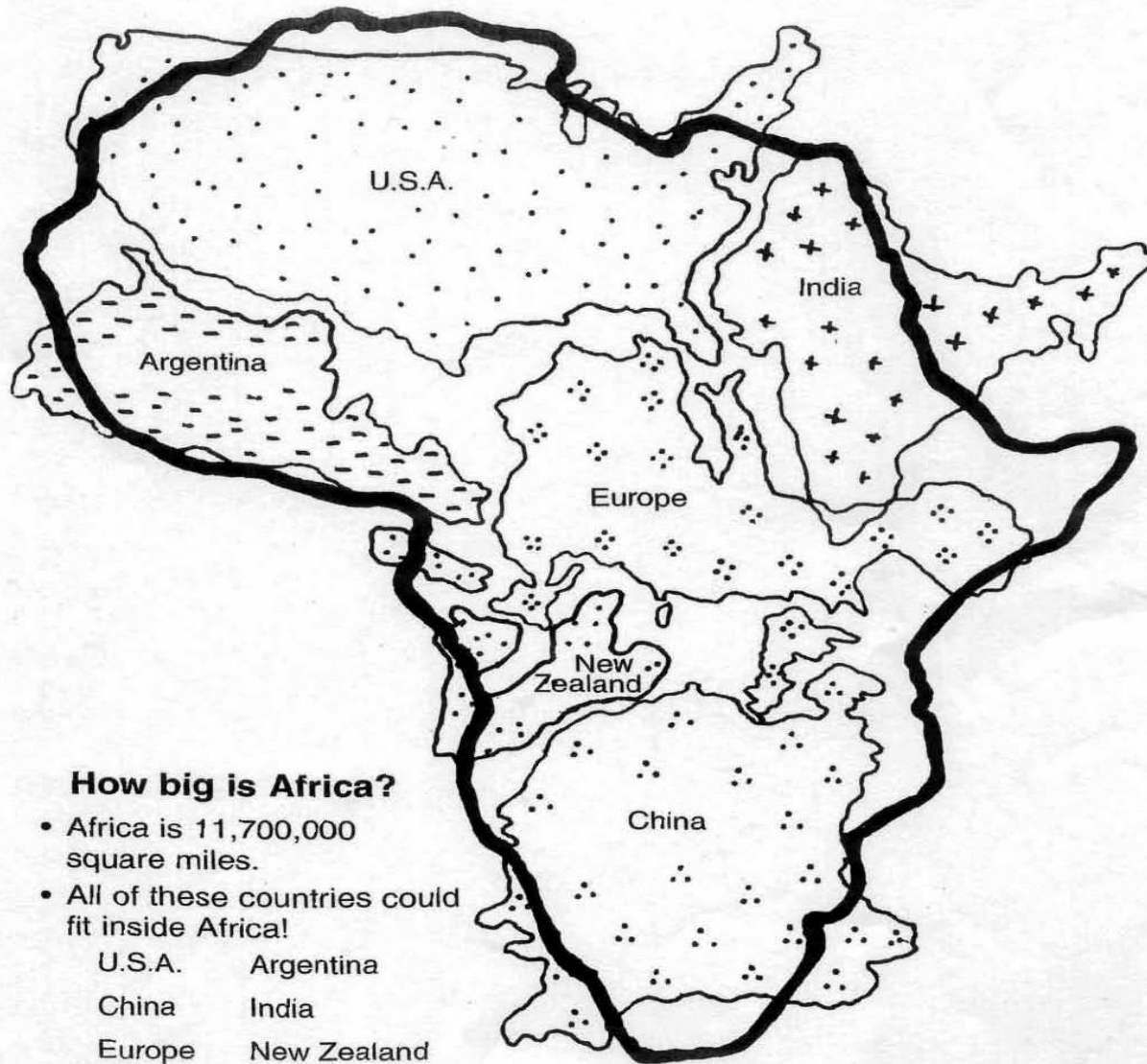
## Land grabs in Africa

Some have noted that the new “land grab” is a more sophisticated incarnation of old colonialism—driven today by a tangle of factors, including climate change, population growth, fear of social unrest, diminishing water and land, trade restrictions, erosion and pollution, the volatility of commodity prices and markets, speculation, the energy crisis, agro-energy/biofuel production, the global financial crisis, carbon trading and on and on.

**By 2010, deals were being struck for 140 million acres, with 75 percent in sub-Saharan Africa, according to a World Bank report.**



# Africa Is Big!



## How big is Africa?

- Africa is 11,700,000 square miles.
- All of these countries could fit inside Africa!

U.S.A.	Argentina
China	India
Europe	New Zealand

# Land grabs in Africa

**With a 99-year lease for 2,500 acres, a Saudi Arabian investor brought in Spanish engineers and Dutch water technology, and hired 1,000 women to pick and pack 50 tons of food a day in Ethiopia. The food supply is driven 200 miles to Addis Ababa and flown 1,000 miles to the shops and restaurants of Dubai, Jeddah and elsewhere in the Middle East.**

The same company grows wheat, rice, vegetables and flowers for the Saudi market on four farms in Ethiopia.

**With \$332 billion in assets, the China Investment Corporation is one of the world's largest sovereign wealth funds.** And like the Saudis, China's concerns about growing unrest and food insecurity are factors in its increasing investment in foreign farmland, including Africa.

## Some of the Consequences of Economic Globalization

- Unregulated global economy
- Concentration of power and wealth in the hands of fewer companies and people
- Loss of jobs
- Brain Drain



J. Salmi

## The Challenge

Reclaiming and building our local economies by working to create and sustain locally owned enterprises that sustainably harvest and process local resources to produce jobs and the goods and services that we need to live healthy, happy, and fulfilling lives in balance with the environment.

## The Imperative

The imperative of the above is the need for us to seek to understand, and hopefully steer, the forces that drive globalisation and global competition.



## The New World economic Order

Contemporary events have shown clearly that throughout the world, private and public sectors are seeking to chart directions for future growth and development using the triad of **knowledge, information, and innovation**. The imperative for these strategies is not simply to survive, but to thrive.

# The Imperative of Knowledge

Global or local competition will continue to place an ever greater premium on harnessing the energy of **Science, Technology and Engineering (SET)** to the engine of economic progress. Knowledge is becoming a leading factor of production around the world, and the ability to create, master, and mobilize knowledge will likely distinguish economies.

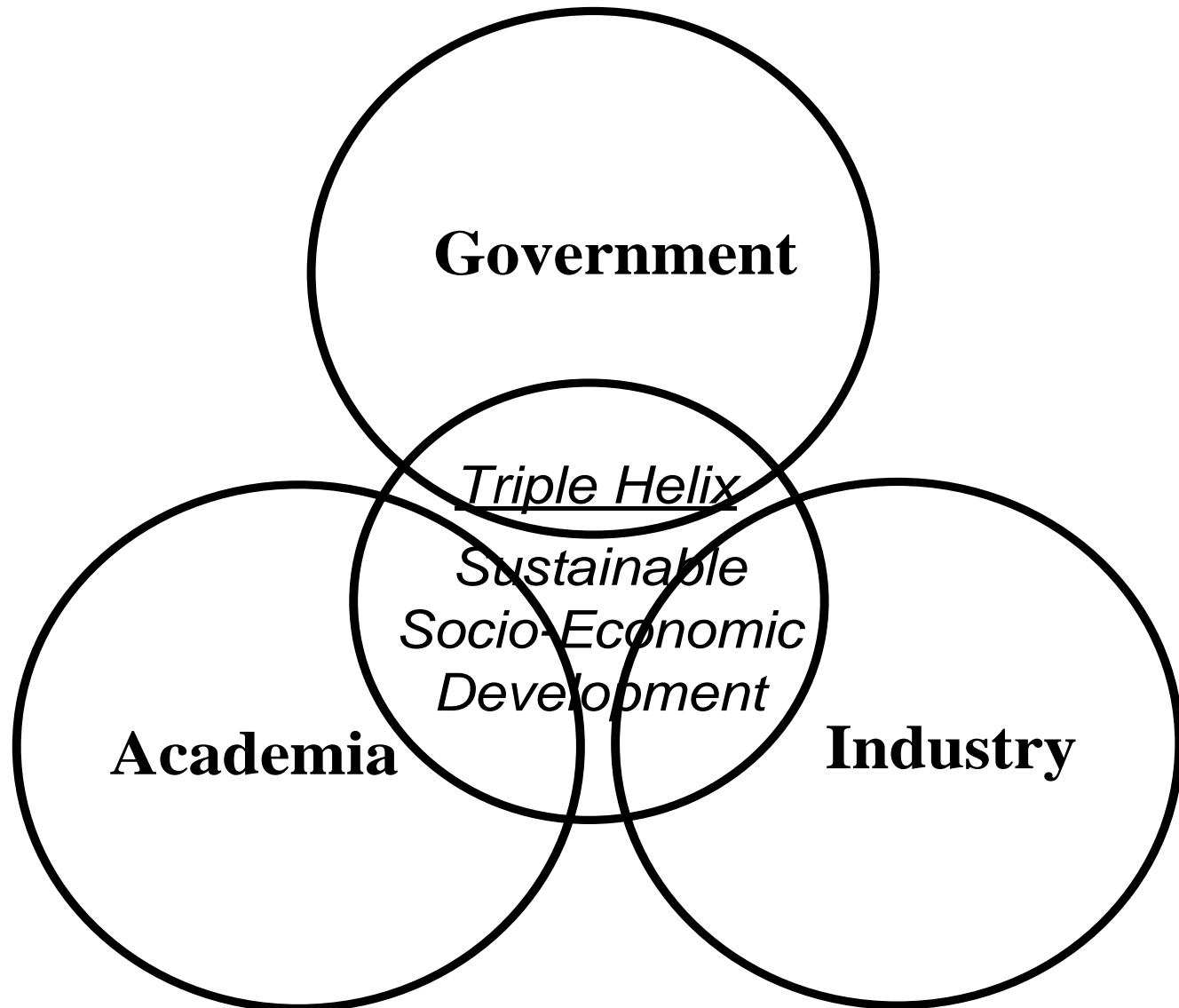




## Major Challenge facing Industry


Development of Science, Engineering, Technology and Innovation (SETI) Capability to face the challenges posed by the on-going globalisation of the world economy.

# The Triple Helix Partnership



## What is the state of our Industrial Competitiveness?

*According to the 2009 Africa Competitiveness Report, 23 African countries out of the 31 that were surveyed remain at the most basic stage of the competitiveness index of a factor-driven economy (that is, one whose ability to compete is based on unskilled labour and natural resources). Only five countries – Algeria, Mauritius, Namibia, South Africa and Tunisia - have reached the second stage of competitiveness – the efficiency driven stage (which is driven by efficient goods, sophisticated labour and financial markets, a large market size and the ability to utilize technology effectively). No African country has reached the innovation-driven stage, that is, a stage based on an ability to compete with new and unique products, and the use of sophisticated production driven competition.”*

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- A significant entrepreneurial base looking at opportunities to service local, regional and export markets;
  - Competitive production (high productivity, low costs compared to competitors);
  - Craftsmanship and specific skills;
  - Access to markets (domestic and foreign);
  - Good market intelligence; and
  - Research and development.

*Conference of African Ministers of Industry (CAMI)*

## Import substitution and the 2012 Agric Budget

The Honourable Minister of Agriculture, Dr. Adesina has been challenging all stakeholders, including research establishments, to join hands in achieving complete replacement of imports of rice especially while diversifying the industrial uses of cassava.

We probably all witnessed Mr. President eating the cassava bread from the IITA Lab!



But who will address the value chain – from the cassava farm to the processing bay and the bakeries for onward transmission of the innovative cassava bread to our dining tables?

## Lesson from beyond

The African Development Bank (AfDB) approved US \$63.24 million funding package for the implementation of a five-year agricultural research project. The project, dubbed, '*Support to Agricultural Research for Development of Strategic Crops in Africa (SARD-SC)*', involving research establishments in the region, was meant to enhance the production of staple food items like cassava, rice, maize and wheat. Surely, this is an excellent step towards achieving food security in the region.

## What is my take on this?

- This is the type of initiative one can expect in Nigeria at the national and state levels. Our universities have to show commitment to research-driven incremental innovation to support the elements of the value chain in agriculture and other sectors to achieve sustainable development.

# What is Innovation?

- *The process by which firms master and implement the design and production of goods and services that are new to them, irrespective of whether or not they are new to their competitors - domestic or foreign'*

Innovation can also be defined as the introduction into a market (economic or social) of new or improved products, processes or services.





# Illustrative Cases of Technological Innovation

# The Avian Specialities Case




## The Nigerian Chicken Market (2002)

- ❖ Supply/Demand gap of 28t/week
- ❖ N5 billion per annum market
- ❖ Increasing supply/demand gap due to the rapid growth of fast food chains
- ❖ Non-competitive prices in the open market with imported cheaper chicken



# Challenges

- ❖ Increase in capacity
- ❖ Lower production cost



“With my production cost at N190 to N200 per kg of flesh, there is no way I can compete with imports coming into the country at N140 per kg and being sold at N200 per kg, which is basically my production cost! I do not believe in government banning imports to protect local producers. I will rather compete and I believe I will be better off competing.”

**Justus, MD of an Integrated Poultry Farm**

## Investment Decision

“The Tunnel Ventilation System automatically controls the temperature and humidity of the pen house. There is no way I can achieve control of the environment in my pen houses under the present system, which relies on natural ventilation. I have no alternative but to acquire technology similar to that used by the global players if I am to compete globally. I am not afraid of the technology game. I have done it before in respect of my hatchery, which is the most sophisticated in the country at present and doing very well. I can do it again.”

# Techno-Economic Impact of the Innovation

ITEM	TRADITIONAL TECHNOLOGY	NEW TVS TECHNOLOGY
Duration of rearing to slaughter	56	38
Total no. of rearing cycles per year	5	7
Average weight per bird (kg)	1.9	2.0
Feed requirement in kg per kg of flesh	2.52	1.88
No. of birds per pen (of standard size 40ft by 320ft)	10,000	20,000
<b>Cost per kg of flesh</b>	<b>N191.52</b>	<b>N142.8</b>


# The Triple Helix at Play

The Ministry of Agriculture, Fisheries and Food in UK (GOVERNMENT) commissioned the Silsoe Research Institute of UK (UNIVERSITY) to conduct a three-year research project to develop a system which will enable broiler producers (INDUSTRY) to breed birds that meet the exacting requirements of their customers.

## Key Lessons

- Innovation can take place outside the R & D system
- Innovation is not necessarily big science as it can utilize the technological knowledge already in the public domain.
- It can however become a sustainable instrument of competition if it is backed up by R & D institution for incremental innovation.
- Government can scan an industrial sector, identify technological needs, challenge an R & D institution to undertake necessary R & D for diffusion of solutions to the end users. This must be a deliberate policy as in the case of South Africa.





From Waste to Wealth,  
the story of the Organo-  
mineral Fertilizer  
Production at the  
University of Ibadan and  
the journey through the  
‘Valley of Death’

# In the Beginning



## The Journey.

- In 2001, 2 Professors assisted by 3 graduate students at the Department of Agronomy and the Department of Preventive and Social Medicine, using a N50,000 Senate Research Grant, developed an organo-mineral-based fertiliser utilising mainly biodegradable municipal wastes.
- The field testing of the experimental organic fertiliser was high successful and was well received by farmers.
- This created demand by the farming community that could not be met by the Laboratory.
- N1.0 million grant was provided by the RMRDC for Prototype plant development.

The Professor of Mechanical Engineering contacted towards the development of the prototype plant had this to say:

*“I dare say that it was not an easy task to convince my academic colleagues that a student could earn a Ph.D degree from the design and fabrication and testing of such a system. I can recall one of them saying **“there would be nothing new and therefore it would make no contribution to knowledge”**”*

However, reluctantly, the project was finally approved by the Postgraduate Committee of the Department.

# The Organo-Mineral Fertiliser Pilot Plant

- **Some critical elements of the Prototype plant for the production of the plant were designed and fabricated through the Ph.D research project at the Department of Mechanical Engineering using the limited RMRDC grant and the facilities of ill-equipped fabricators in the capital goods sector.**
- **A partially commercially viable prototype plant (including sorters, millers, mixers, and baggers) was finally designed and tested using the N10.0 million grant by the Oyo State Government at a big market in Ibadan noted for high generation of bio-degradable wastes.**

# The Waste Composting Bay



# The Milling System at the Bodija Market



# *The Mixer and Bagger System*





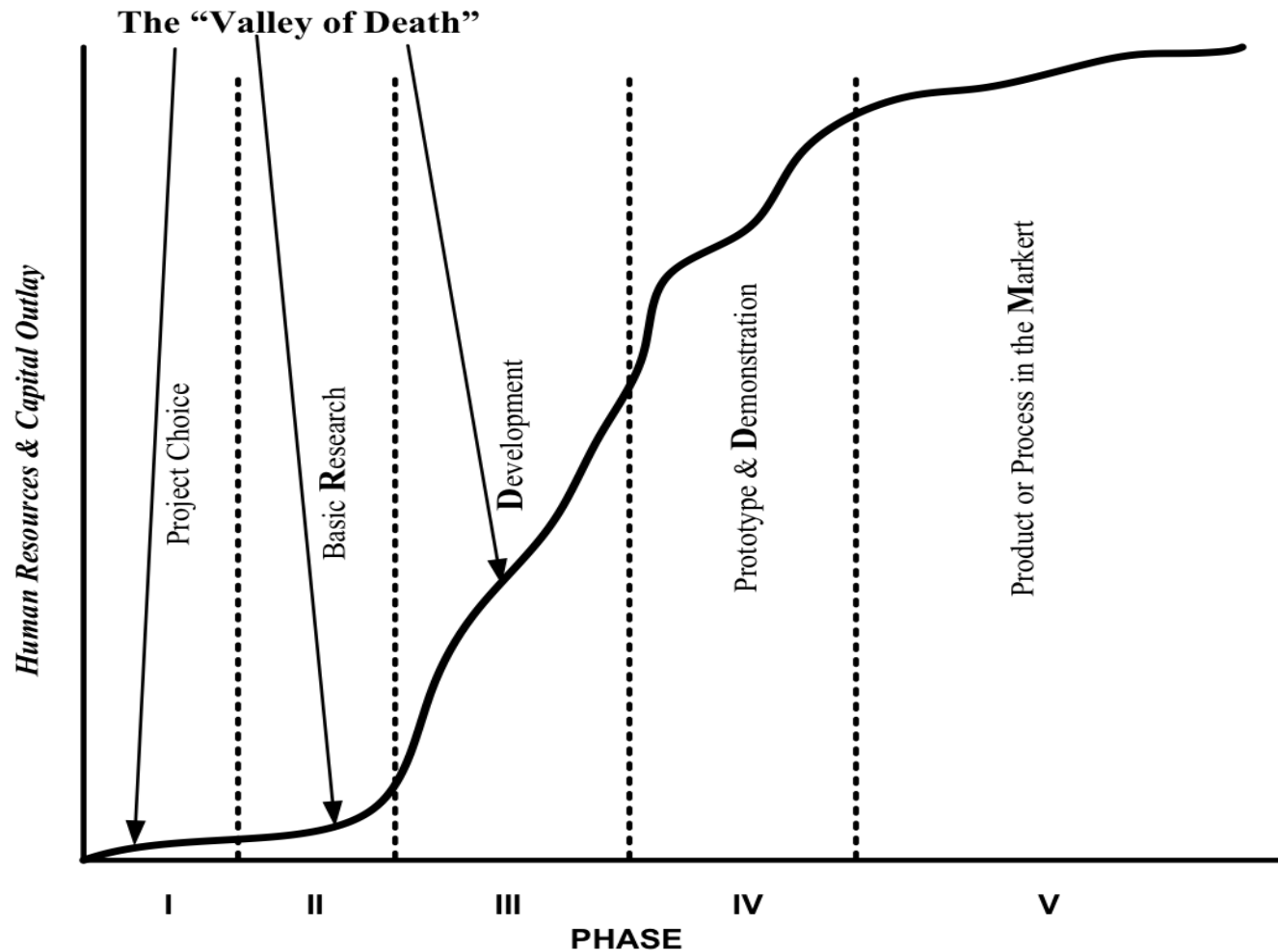
## The Organo-Mineral Fertilizer Plant


- At this stage 3 engineers, a metalworking outfit with 2 technicians, 2 craftsmen and 10 artisans were involved. This brings the number of people involved to 22 from the original 5 agronomists.
- The P.h.D student of mechanical engineering was awarded the Ph.D degree while 3 agronomists also got their P.h.D degrees from the formulation and field testing of the different formulations of the fertiliser in several ecological zones in the country.
- However, no investor yet to take the plant to the market through large scale production to meet the growing demand.

# Lessons from the Case

- A research idea can start with one or two researchers with moderate funding.
- As the research result progresses into the developmental phase it will move into the multidisciplinary phase through the involvement of researchers or professionals from other disciplines. It will also require significant increase in funding
- As it progresses into the pilot stage, more funding is required from diverse sources as well as additional professionals
- Whether the product or service gets to the market or not depends critically on the investment climate of the country to turn the research idea to a product in the market.

# The Basic Phases of Research Commercialisation: The 'S-Curve' and the 'Valley of Death'



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- The funding of the R component, which is mainly by government allocation, has been dwindling with budget allocation to the universities mainly geared towards meeting the recurrent expenditure. The Nigerian situation is such that government funding of R is nothing to write home about with the pockets of on-going research now mainly funded by international Agencies and Foundations. Needless to say that such researches are never geared towards industrial development as they are almost invariably conducted to satisfy the interests of the sponsors.

## Triple Helix: The South African Case

This is based on the Presentation by David Phaho of the Tshumisano Trust, Department of Science and Technology titled:

**“LEVERAGING UNIVERSITY EXPERTISE TO ENHANCE INDUSTRIAL INNOVATION & COMPETITIVENESS”**



Tshumisano Trust is an Agency of  
The Department of Science and  
Technology to Strengthen  
Technology Transfer and Diffusion  
Initiatives at Universities to  
Support SMME' s.

# Technology Diffusion

It is any process by which basic understanding, information and innovations move from **Universities, Institutions** or **Government Agencies** to Individuals or Firms in the Private Sector.

# Economic Growth Imperatives in South Africa

- ❖ Skills Development in Areas of National Priority
- ❖ Mineral Beneficiation – From a **Resource** driven to a **Knowledge** driven economy
- ❖ Enhanced Manufacture and Export of Finished Products from key industries: **Automotives, Chemicals, Plastics, Metal products** etc.



# TECHNOLOGY STATIONS

- ❖ **Agri-food Processing** at Cape Peninsula University of Technology (Cape Town)
- ❖ **Chemicals** at Tshwane University of Technology (Ga-Rankuwa)
- ❖ **Composite Materials** at Vaal University of Technology (Vanderbylpark)
- ❖ **Downstream Chemicals** at NMMU (Port Elizabeth)
- ❖ **Chemicals** at Mangosuthu Technikon in Umlazi (Durban)
- ❖ **Clothing and Textile Technology** at CPUT (Bellville)

- ❖ **Automotive Components** at NMMU (Port Elizabeth)
- ❖ **Metals & Manufacturing** at Central University of Technology (Bloemfontein)
- ❖ **Moulded and Reinforced Plastics** at Durban Institute of Technology (Durban)
- ❖ **Metal Casting and Foundry Technologies** at University of Johannesburg
- ❖ **Electronics** at Tshwane University of Technology (Tshwane)
- ❖ **Agri-food Processing** at University of Limpopo (Polokwane)

<b>Technology Station</b>	<b>SME' s Assisted FY 2003/4</b>	<b>SME' s Assisted FY 2004/5</b>	<b>SME' s Assisted FY 2005/6</b>	<b>*SME' s Assisted FY 2006/7</b>
<b>Agrifood (CPUT)*</b>	-	5	38	24
<b>Electronics (TUT)</b>	22	7	65	44
<b>Materials Technology (VUT)</b>	19	20	117	110
<b>Reinforced and Moulded Plastics (DUT)*</b>	-	66	65	76
<b>Downstream Chemicals (NMMU)</b>	-	-	-	408
<b>Automotive Components (NMMU)</b>	68	107	139	113
<b>Clothing and Textile (CPUT)</b>	34	96	127	72
<b>Metal Casting (UoJ)*</b>	-	10	25	42
<b>Chemicals (Mangosuthu Technikon)</b>	30	29	80	60
<b>Product Development (CUT)</b>	42	85	59	136
<b>Chemicals (TUT)</b>	18	23	72	113
<b>Total</b>	<b>233</b>	<b>448</b>	<b>787</b>	<b>*1658</b>

\*Annualised for FY 2006/7. \*\*Projects and Services and Technical Consultancy.

# What are universities for in relation to the performance of the research and innovation function?

*Proposition 2 - The university's concern is 'useful knowledge', but not merely with the immediately applicable - a university is a resource for an unknown future.*

One of the roles of the university is to prepare the knowledge that an unpredictable future may need. A university that moulds itself only to present demands is one that is not listening to its historians. Today's preoccupations are inevitably myopic, often ephemeral, giving little thought for tomorrow.

## The 'Wet Blankets'


*“Heavier than air flying machines are impossible”.*

◦ Lord Kelvin, President, Royal Society, 1895.

● *“Airplanes are interesting toys but of no military value.”*

◦ Marechal Ferdinand Foch, Professor of Strategy, Ecole Superieure de Guerre.

One can readily see from the above incidents how myopic people we often credit with scientific knowledge and capability may be by also not seeing beyond their noses in judging emerging ideas that seem to challenge contemporary understanding and their academic comfort zone.



A cursory examination of the innovation cycles that have been witnessed in the past few decades all over the world shows that the technologies that will probably drive world economies in the some decades hence are probably still to come to human consciousness.

# Funding of Research and Development

- Government allocation
- Government ministries and agencies
- National Research Fund
- Contract research
- Funding Agencies
- Collaborative research – Research Linkage

# Major National Research Funds

- The Tertiary Education Trust Fund (TETFund) Research Fund ([www.tetfund.gov.ng](http://www.tetfund.gov.ng))
- The Agric Council Research Fund



# TETFUND RESEARCH FUND

- It is heartening the new initiative for funding research by the Tertiary Education Trust Fund (TETFund) with an initial take-off grant of ₦3.0 billion. If the Fund is properly managed with projects well defined and geared towards addressing developmental issues, the Nigerian university system may be on the way to becoming agents of innovation-driven development. It is also hoped that the university system will equally respond to this new initiative from government.



# Research Thematic Areas

1. *Humanities and Social Sciences;*
2. *Science, Technology and Innovation; and*
3. *Cross-Cutting*

# HUMANITIES AND SOCIAL SCIENCES

- National Integration and National Security
- Education and Training

# SCIENCE TECHNOLOGY AND INNOVATION

- Agriculture and Food Security
- Health and Social Welfare
- Transport
- Power and Energy
- ICT and Telecommunications

# CROSS-CUTTING TOPICS

- Entrepreneurship and Wealth Creation
- Environment, Housing and Urban Development
- Land Reforms

# Preliminary Results of Funding

- 150 applications received after almost three to four months of call for proposals
- 30 proposals (20 under S & T, 5 under Humanities, and 5 under Cross-Cutting) qualified for the next stage involving presentation at Abuja.
- 17 proposals (10 under S & T, 3 under Humanities, and 4 under Cross-Cutting) to be funded.

# Major deficiencies of the proposals

- Poor proposal writing with researchers unable to keep within the guidelines provided.
- Poor research team in terms of capacity to deliver the project.
- Outrageous budget in most cases

# Grants from Foreign Funding Agencies

- WHO (The World Health Organisation)
- IAEA (International Atomic Energy Agency)
- USAID (United States Agency for International Development)
- CIDA (Canadian International Development Agency)
- John D. and Catherine T. MacArthur Foundation
- Carnegie Corporation
- UNFPA (United Nation Population Fund)



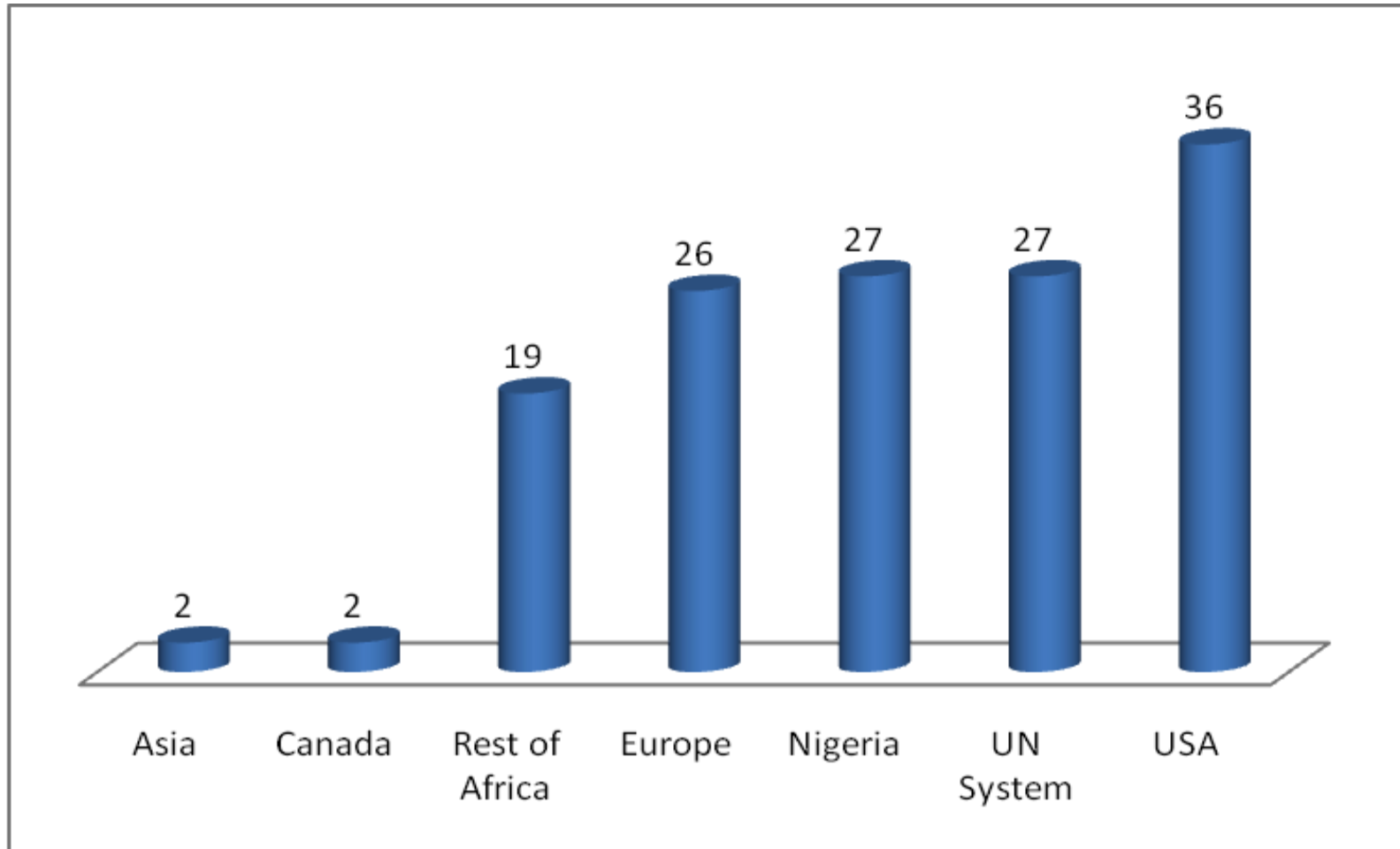
# Grants from Foreign Funding Agencies

- Bill and Melinda Gates Foundation
- FAO (Food and Agriculture Organisation)
- NIH (National Institute of Health), USA
- National Science Foundation (NSF) of USA
- World Bank
- Rockefeller Foundation
- Ford Foundation

Research Fund Website for Africa

[www.alerts@research-africa.net](mailto:www.alerts@research-africa.net) to which a number of our institutions have subscribed.

# Operating Research and Technical MOUs with Institutions in Different Regions of the World by the University of Ibadan



# MULTIDISCIPLINARY CENTRAL RESEARCH LABORATORY (MCRL)



# EQUIPMENT

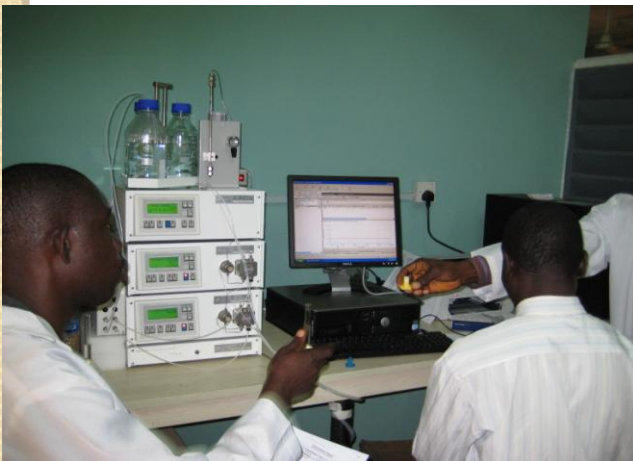
All equipment now installed including Gas Chromatograph (Perkin Elmer Clarus 500 with FID)





# OTHER MAJOR EQUIPMENT

Atomic Absorption Spectrophotometer, FTIR, HPLCs





# ADDITIONAL EQUIPMENT

- Two visible spectrophotometers (320-1100 nm)
- Mercury/hydride vapor system (accessory for the Perkin Elmer A Analyst AAS)
- Hollow cathode lamps for the Perkin Elmer A Analyst AAS
- Flame photometer
- Laboratory freezer (-80 ° C)
- Coulter counter
- Ultracentrifuge (100,000 rpm)
- Refrigerated table top centrifuge
- Freeze dryer
- Ashing furnace
- Varian-240 Gas chromatograph-mass spectrometer (GC-MS)
- Gas generators for nitrogen, hydrogen and air.
- Leica inverted microscope and workstation
- Leica transmitted light and fluorescence microscope
- Leica teaching microscope
- Millipore water purification syst



# OPERATIONS

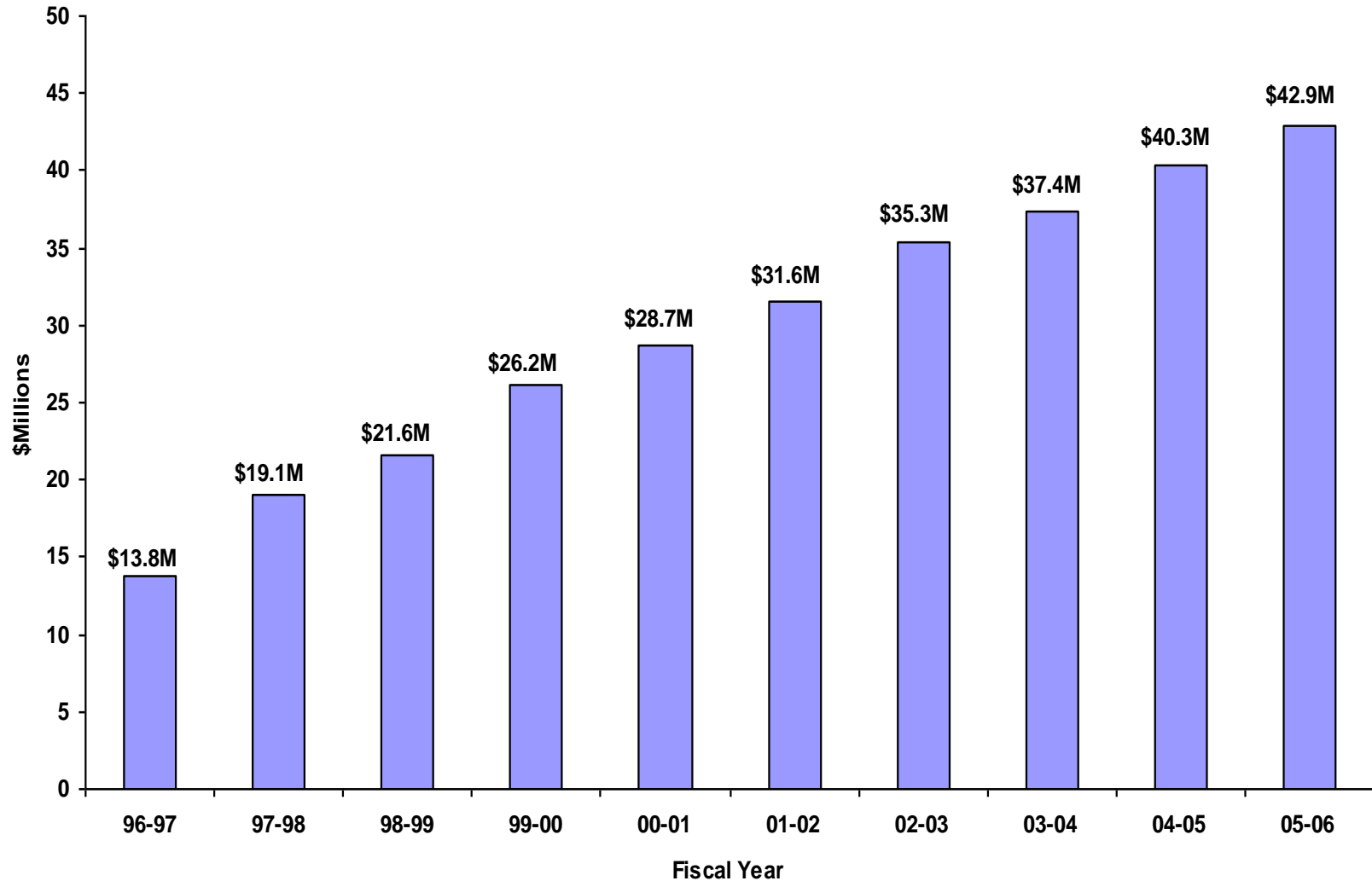
- Lab became fully operational with a special release of the University Bulletin informing the University Community and the general public on February 12, 2010.
- Users from within the University and outside largely academic institutions.
- Visitors from outside the country including Nigerian academics in the diaspora.

# Research Management Office

- Packaging of proposals
- Contracts & grants management
- Financial management
- Intellectual property management
- Regulatory compliance
- Ethics and responsible conduct of research
- Information services

## University of California, United States (RMO)

# University of California, Davis Technology Transfer Income



# ETHICS POLICY

Most funding agencies now insist on institutions defining their ethics policy. The Ethics Policy is a set of guidelines that will ensure that the rights, safety, well-being of component subjects of service deliveries are promoted and research investigations are of high integrity.

## Ethics Policy at UI

- Health Research Ethics Committee (HREC) to review and monitor all studies on human health including clinical trials
- Social Sciences and Humanities Research Ethics Committee (SSHREC) to review and monitor studies related to behaviour of human participants
- Animal Care and Use Research Ethics Committee (ACUREC) to review and monitor studies related to animal care and use

# Ethics Policy at UI

- Plant Use and Conservation Research Ethics Committee (PUCREC) to review and monitor studies related to plant use and conservation
- Science and Technology Research Ethics Committee (STREC) to review and monitor studies based on environmental problems and safety in Science & Technology

## Concluding Remarks

The funding mechanisms of our university-based research must ensure that new research ideas go beyond the laboratory stage, i.e., scale the 'valley of death' to reach the market, while universities must also embrace the triple helix partnership in which government supports research efforts that are geared towards identifying and addressing the problems of enterprises in our industrial space. And to do this efficiently, it is recommended that our universities establish the institutional framework for the management of research and innovation as witnessed in most successful research universities in the world.





Thank You