



National Research Centre

Cairo, Egypt

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The National Research Centre

www.nrc.sci.eg

NRC in Brief

NRC 2013



Since 1956

- 50,000 m².
- 10 Research buildings.
- 2 Administration buildings.
- 10 Store rooms.
- Animal houses.
- Green houses.
- 5 Experimental stations.
- Research farm 350 feddans.



NRC

The major multi-disciplinary R&D Institute in Egypt

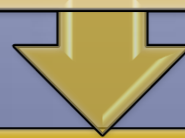
- Devoted to basic and applied research.
- The largest of all institutions affiliated to the Ministry of Scientific Research.
- Employs 70% of all scientists working in these institutions.
- Correspond to the country's key production and services sectors.



NRC Mission

Conduct Basic and Applied Research

In



Different Fields of Science and Technology

To



Strengthen the National Economy



NRC Objectives

Contribute

- Contribute in national upgrading of science & dissemination of knowledge

Guide

- The National Economy

Strengthen

- scientific linkages and cooperation with local and international organizations

provide

- scientific services and consultations

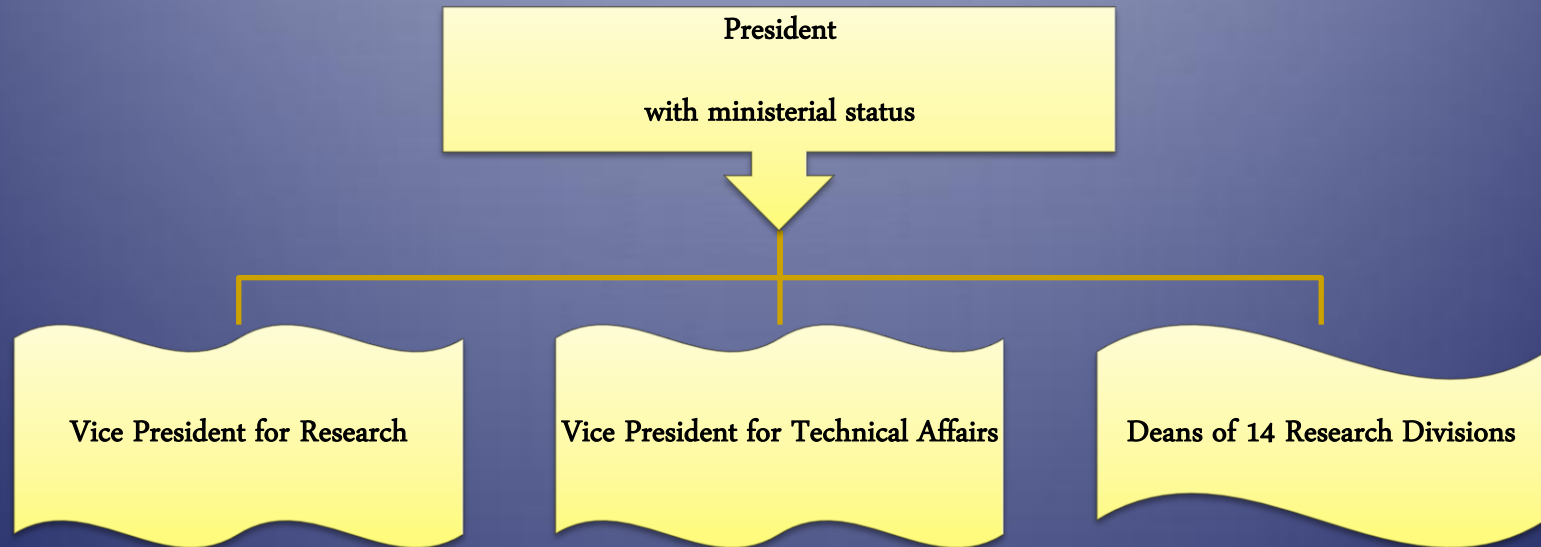
Training

- Graduate students



Organization Structure

Organization structure





Organization Structure (cont.)

Research Divisions

Environmental Sciences

Oral and Dental Research

Inorg. Chem. Ind. and Mineral Resources

Org. Chem. Industries

Genetic Engineering & Biotechnology

Medical Sciences

Textile Industries

Engineering Research

Agriculture & Biology

Physics

Human Genetics & Genome

Food Ind. and Nutrition

Pharmaceutical Industries

Veterinary Research

 Health and Environment

 Industrial Research

 Agriculture and Biology

 Basic Science



Centres of Excellence

*Advanced
materials*

Medical Sciences

Human Genetics

Influenza Virus

Textile
Industries



NRC Strengths

Man Power

Research staff: 4812

Scientific assistance: 470

Administrative staff: 2245



Research and Development

Research and Development Projects

NRC activities are *customer-oriented* in order to address the national needs more effectively through scientific and technical research.



Research and Development (Cont.)

Research Projects

Customer-Oriented

Addressed to national needs

- 1- In-house projects - Governmental budget (18%): 10th plan (2013-2016)
- 2- National projects — contracts (54%)
- 3- International projects (38%)



Current Strategy

-  Advanced Basic Scientific Research
-  Interaction with Production and Service Sectors
-  International Relations

Major Activities

(319 Research projects)

The 10th Research Plan

2013 – 2016



Research Groups

Renewable Energy

Water

Applications of Frontier Sciences

Product/Customer-Oriented Research

Agriculture & Veterinary

Waste Management

Upgrading of Prototypes

Sinai Development

Health

Dentistry

Diagnostic Kits

Safe Food

Functional Foods

Carbon Nanotubes



Important On-going Projects

- Use of Gold Nanoparticles in

Health

Treatment of Cancer in
collaboration with Prof. Dr.

Water

- Engineering and technological
development of water desalination
membranes

Energy

- Production of biofuels from waste
materials





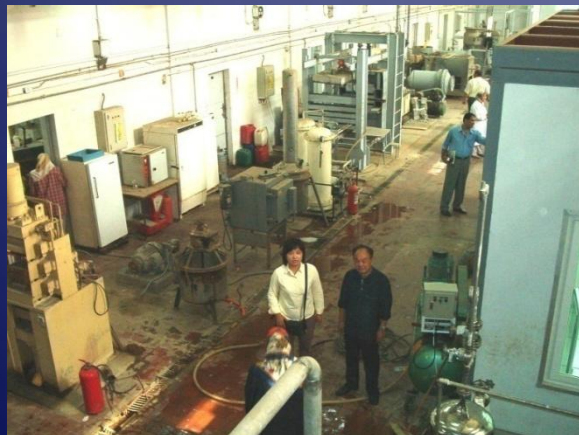
Biotechnology Plant Unit





Pilot Plant

A multipurpose Pilot Plant, a Chinese Grant





Some Plant Equipment



Distillation



2 Reactors



Multi-speed Centrifuge



Extraction



Filtration



Dryer



Absorption



International Relations

International Relations Office:

Scientific channels with regional and international universities and research centers.

Projects, contracts and scientific agreements.

African Relations Office:

Promotes the Scientific cooperation with African countries

European Relations Office:

Promotes the Scientific cooperation with European countries



NRC Networking

International Organizations:

- 🧪 **Center of excellence** (2004) by the Commission on Science and Technology for Sustainable Development in the South, **COMSATS** & **for Biotechnology** (2007)
- 🧪 **The interim regional hub** in Biosciences for North Africa by the New Partnership for Africa's Development, **NEPAD**
- 🧪 Third World Academy of Science, **TWAS**
- 🧪 Third World Network for Scientific Organizations, **TWINSO**
- 🧪 World Association of Industrial and Technological Research Organizations, **WAITRO**
- 🧪 Middle East and North Africa (**MENA**)
- African Network for Drugs and Diagnostic (**ANDI**)
- African Academy of Sciences (**ASF**)



NRC Networking (Cont.)

Recently Signed International Protocols

Korean Industrial Technology Foundation

National Engineering Academy of Kazakhstan

Yarmuke University in Jordan

Sudanese Centre for Res. & Indust. Consultations

Arab Union of Textile Industries

Technical University of Liberec, Czech Republic

National Cancer Institute , USA

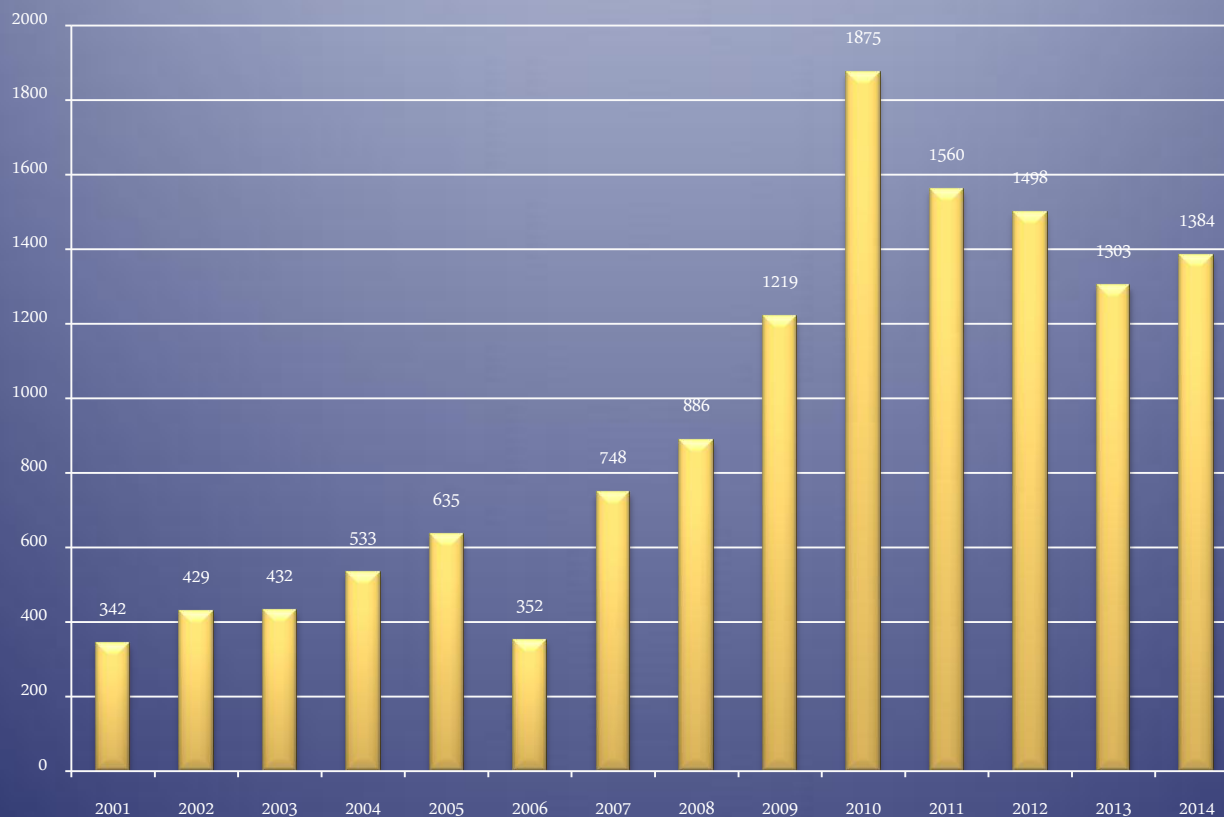
The National Research Council, Italy



Scientific Records

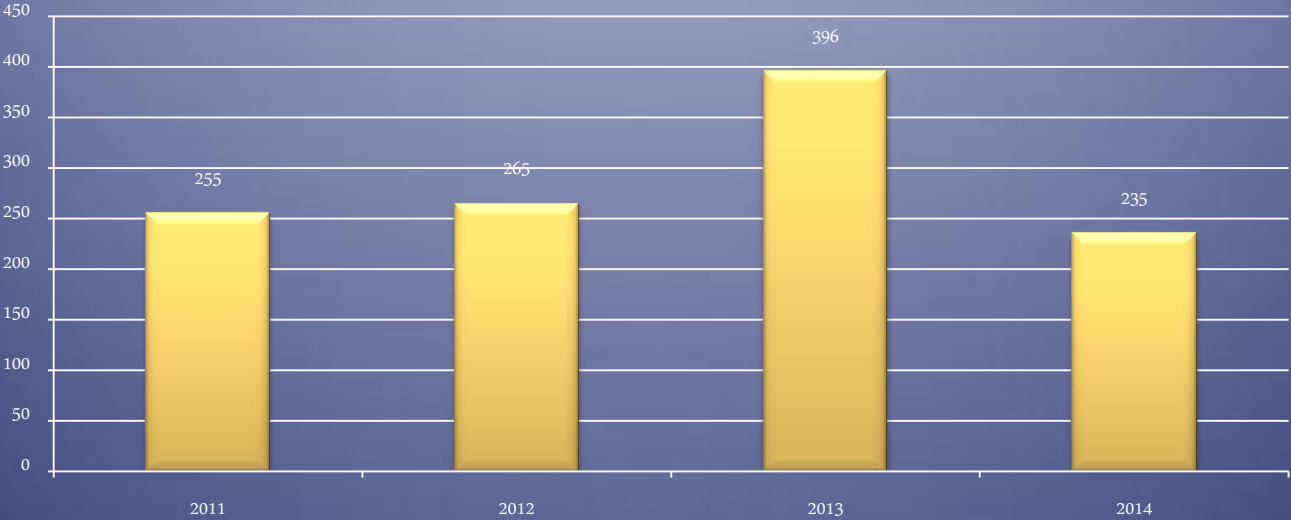


Number of International Publications





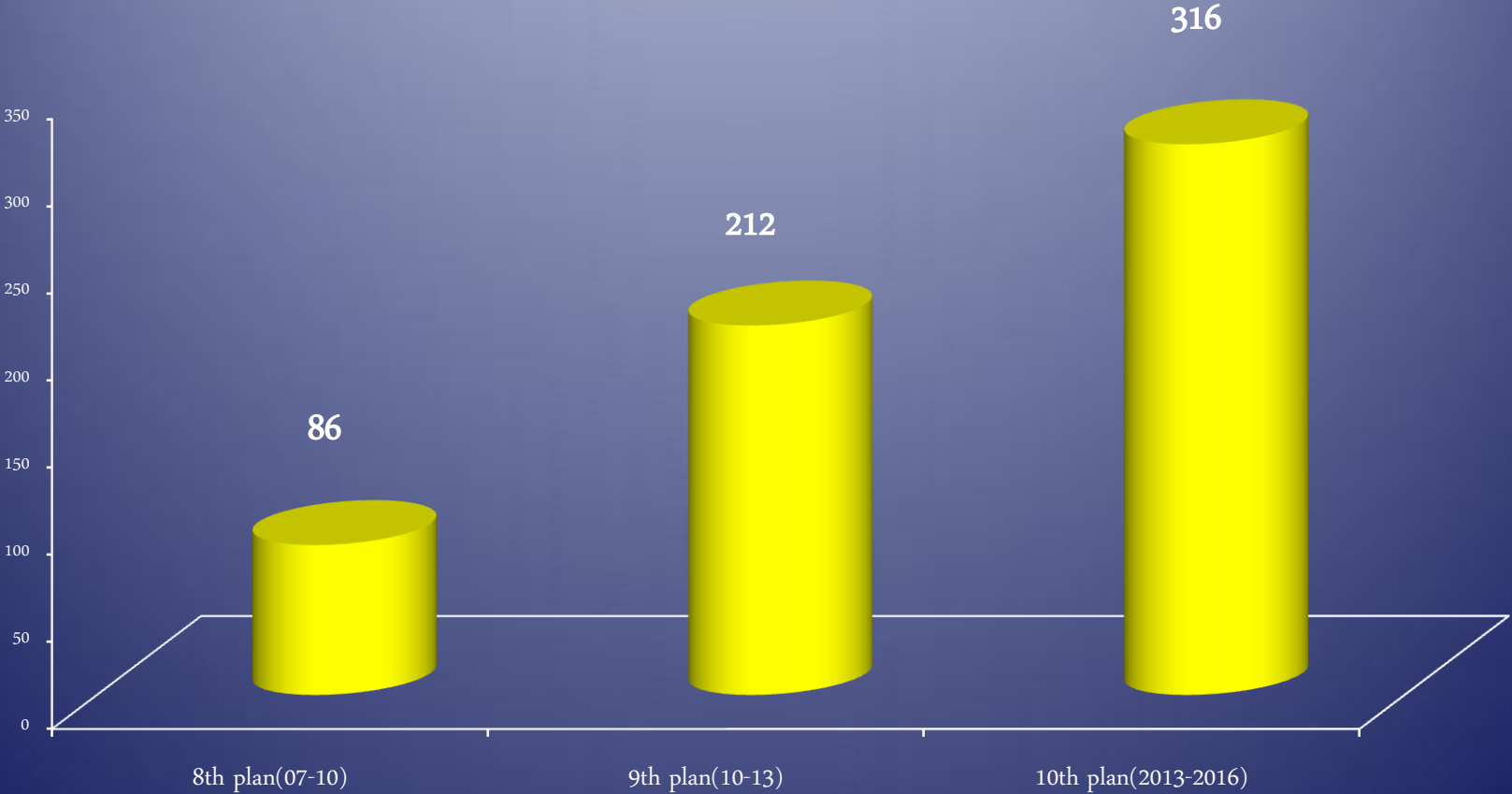
Number of International Projects



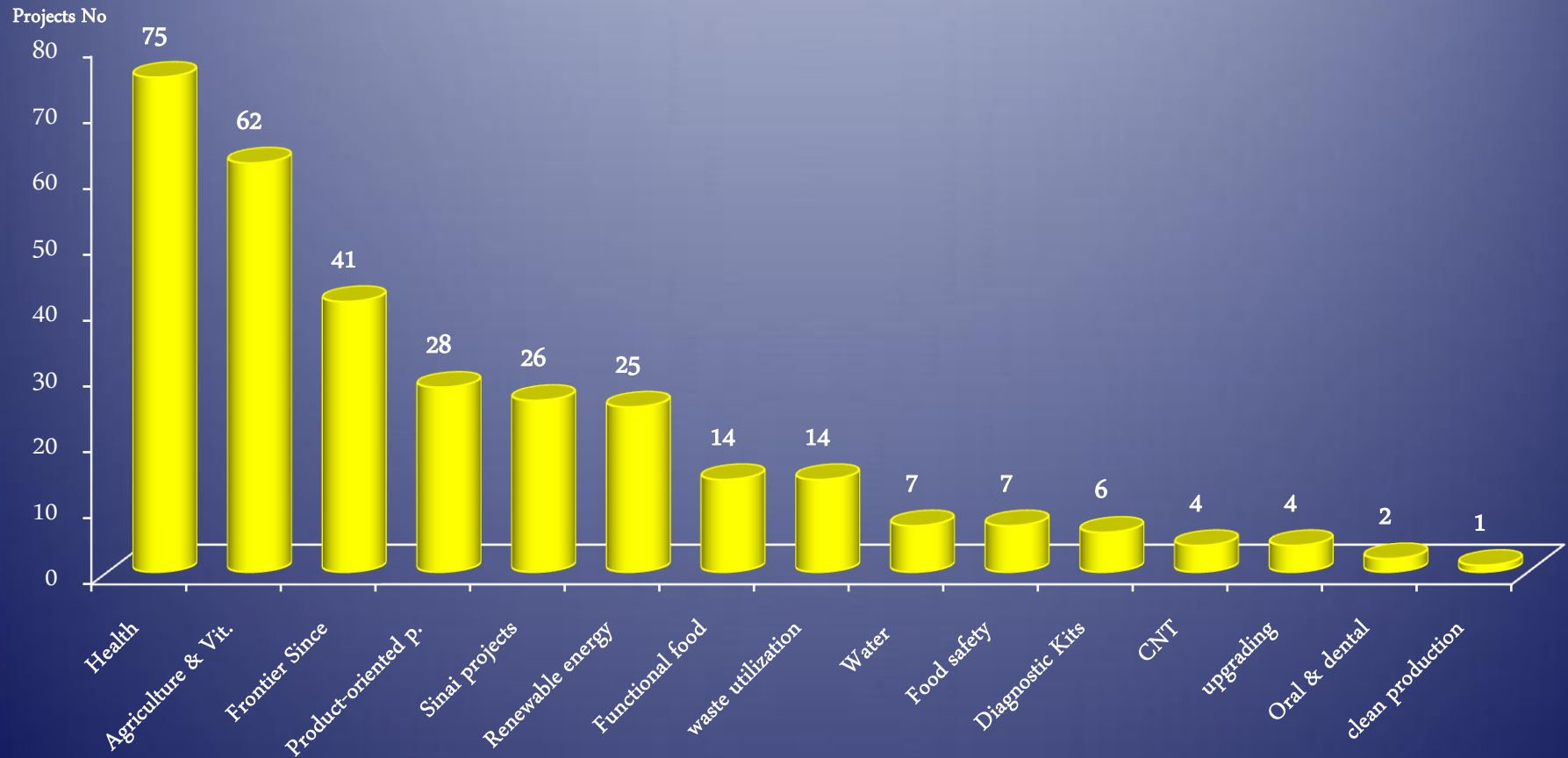


Number of In-house Research Projects

Projects No

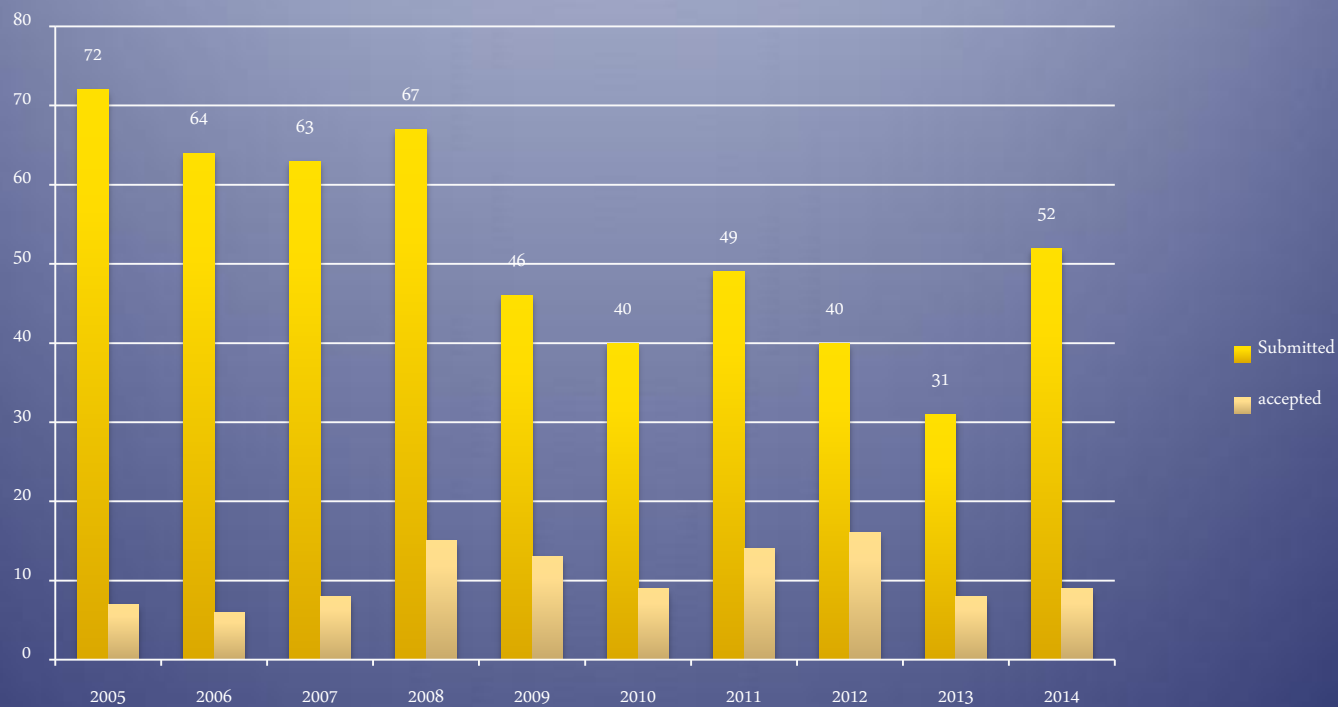


10th Research plan (No. of projects axis-wise)



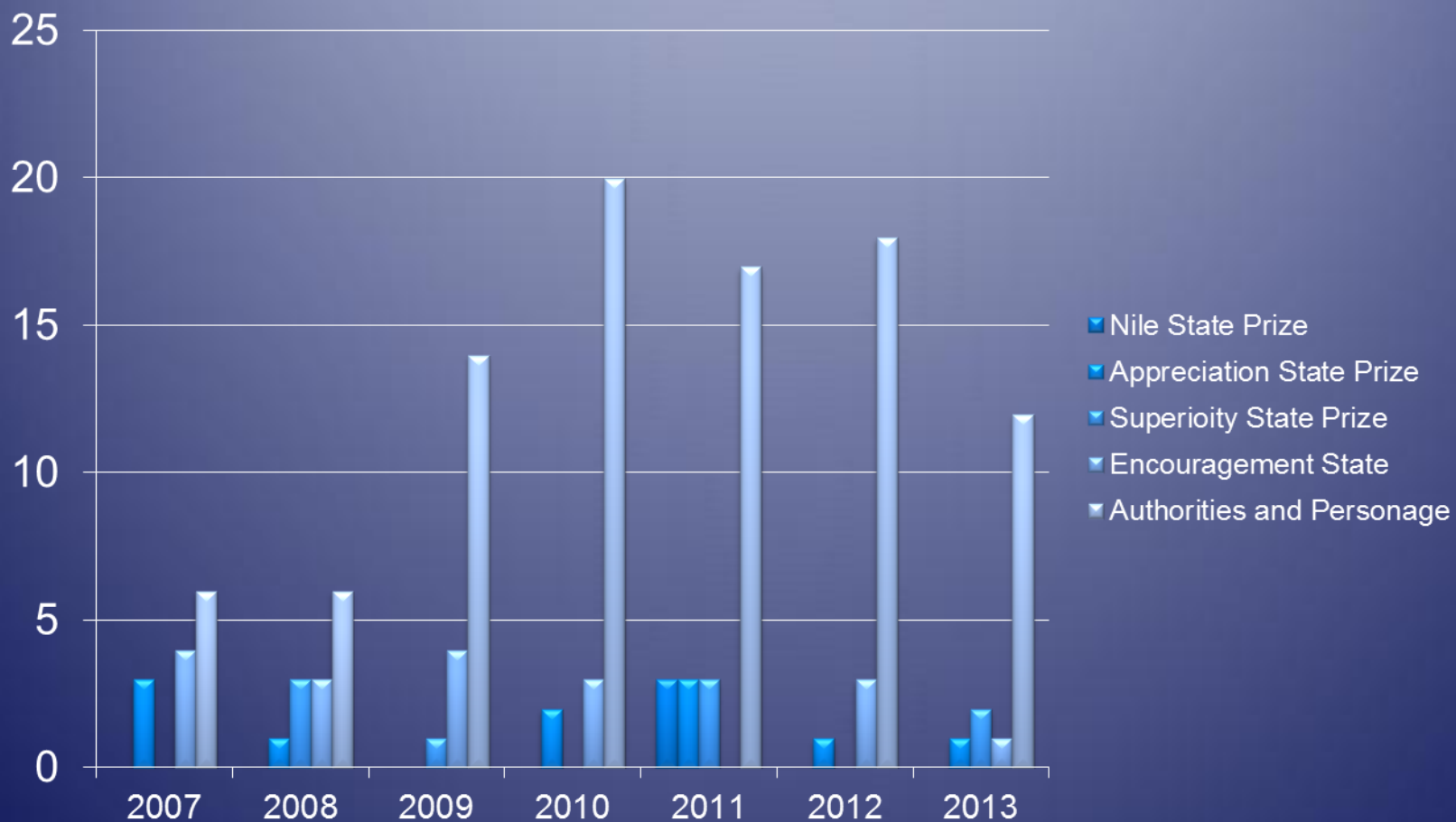


Submitted and Accepted Patents





Number of Prizes



Apart from many other International and NRC prizes



2014/2015 activities with COMSATS



4th International Conference on Nanodevices and Nanomaterials

Cairo, 8th - 9th December 2015





**The NRC Museum for the oldest
scientific equipment utilized by the
first generation of our staff (1956 –
1970)**

**The Integrated
Research Group in
Agriculture
(Research Project)**

**International Conference
on Agriculture, Food
Security, and
Biotechnology
8th – 9th June 2015**



Future Plans



1- Network of Central Labs

A new six-floor building has been established at the NRC premises (will be in service within 3 months) for new/important sectors such as:

First: Industry-oriented sector

- 1- Fibre formation lab
- 2- Filters for water treatments
- 3- Material and geo-engineering, and metallurgy
- 4- Biopolymers for medical applications
- 5- Polymer Encapsulation for medical purposes



1- Network of central labs

Second: Agricultural and Biological sectors

- 1- Horticultural crops
- 2- Proteomics
- 3- Functional Foods
- 4- Food Safety
- 5- Plant, animal, and microbial Biotechnology



1- Network of central labs

Third: Medical sector

- 1- Immunity and Infection Diseases
- 2- Plant molecular genetics
- 3- Stem Cells
- 4- Cancer Biology
- 5- Virology



1- Network of central labs

Fourth: Renewable energy sector

- 1- Solar cells
- 2- Biofuel
- 3- Biodiesel
- 4- Green energy



1- Network of central labs

Fifth: Pharmaceutical sector

- 1- Probiotic
- 2- Influenza vaccines
- 3- Vet. vaccines

Future Plans (Cont.)



2- Solar energy plant in 6th of October
City



2- New internationally accredited animal
Facility Centre (within 4 months)



Unit of stem cells for diabetes and
cancer



Proposal for Participation in COMSATS Programmes





Applied Research opportunities

The National Research Centre of Egypt has reputable contributions in many fields. The NRC is willing to promote collaboration with the staff of the akin disciplines in the Member states research institution in all or some of the following fields



Applied Research opportunities

1- Health

Triplet PCR kits for HCV, TB and toxoplasma



Production of immunoassay kits for HCV antibodies and antigens



Early detection of biochemical genetic diseases



Stem cells

Obesity



Diabetes

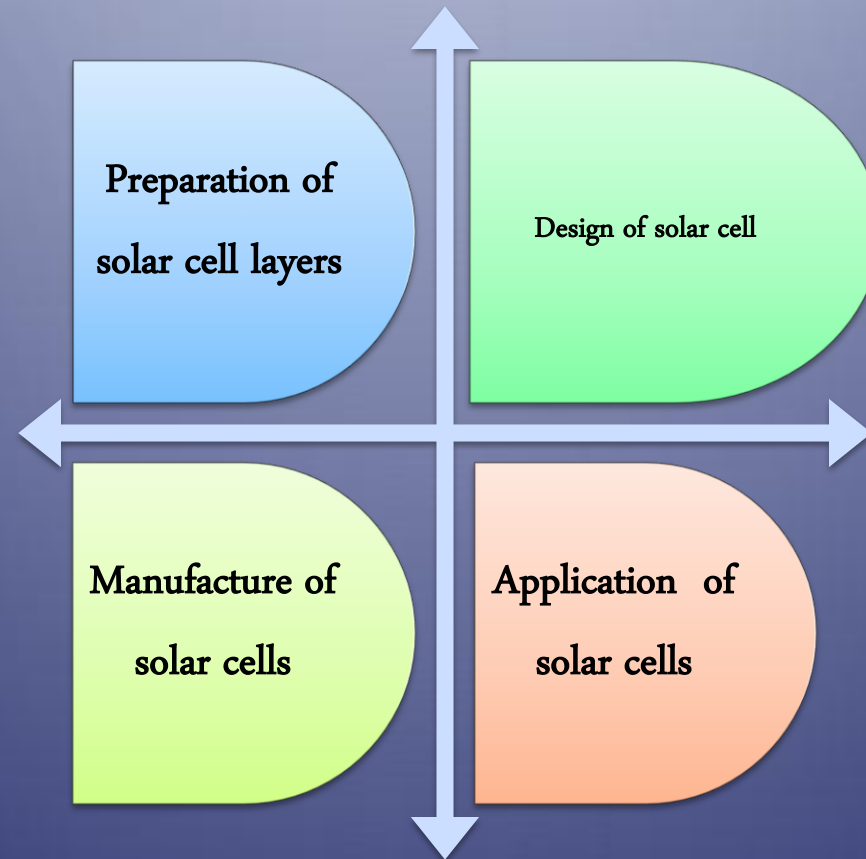
HCV

Cancer



Applied Research opportunities

2- Solar Cells





Applied Research opportunities

3- Nanotechnology

Hard disk applications based on magnetic nanoparticle

Biosensor based on metal and semiconductor nanoparticles for virus, bacteria and DNA detection

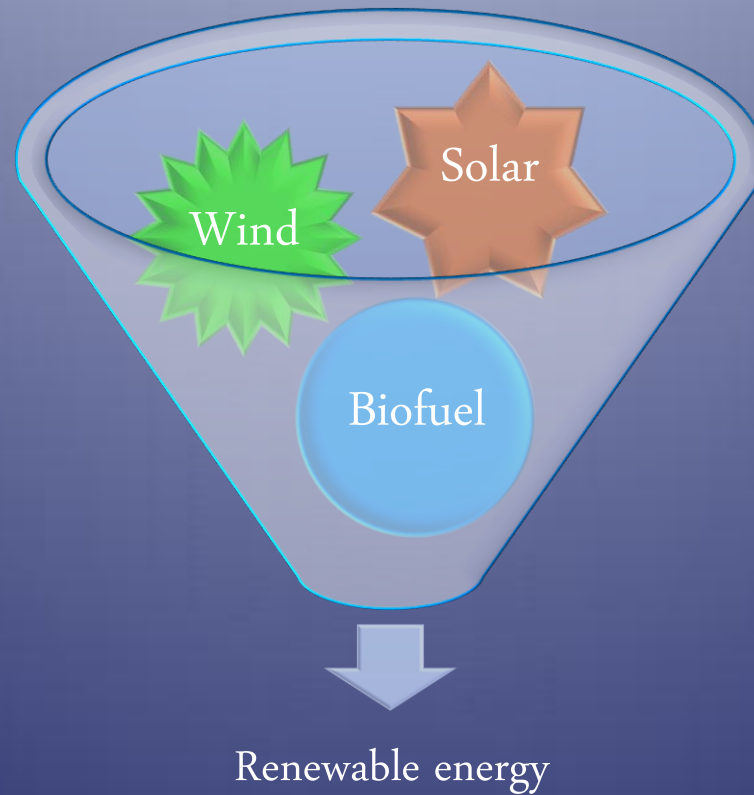
Bioactivity of ceramic/polymers nanocomposite for biomedical applications

Application of carbon nanotubes in medicine and environment



Applied Research opportunities

4- Renewable energy





Applied Research opportunities

5- Industrial Research

Purification of industrial water from heavy metals and other contaminants

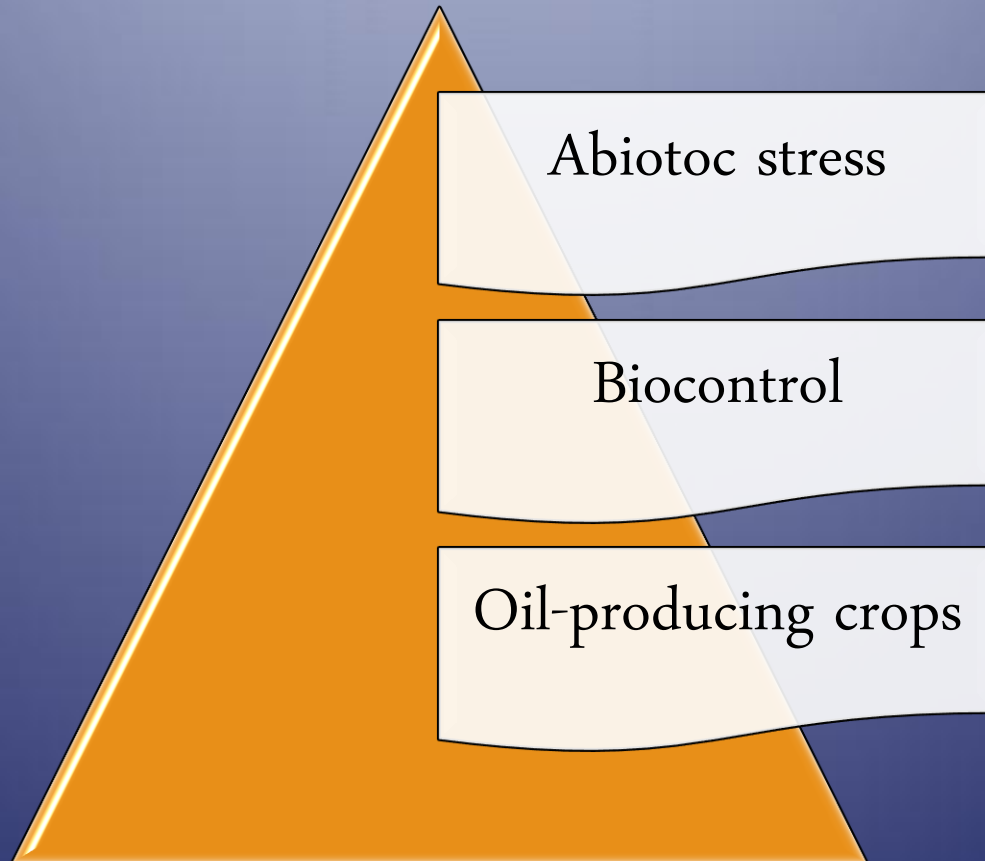
Functional Food from traditional experience to modern production

Functional polymers for various applications



Applied Research opportunities

6- Agriculture





Thank You