HORIZON 2020 (H2020), THE NEW EUROPEAN UNION FRAMEWORKPROGRAMME

Mrs Mamohloding Tlhagale

Director: Strategic Partnerships

Department of Science and Technology, South Africa

science & technology

Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

Presentation Overview

- What is H2020
- H2020 priorities
- Themes and budget
- Current open calls

What is Horizon 2020

- The EC programme aimed at building competitive industries, better societies and excellence in science
- Support projects that will bridge the gap between research and market/industry
- Coupling research to innovation–from research to retail, and bring together (FP7, EIT and CIP)
- Focus on challenges facing society, e.g. health, food, clean energy, transport
- From 2014-2020 with a budget of 70 B €
- Work Programme run for a 2 year period

H2020 priorities

Excellent science

- European Research Council (ERC): Frontier research by the best individual teams
- Future and Emerging Technologies: Collaborative research to open new fields of innovation
- Marie Sklodowska-Curie actions (MSCA): Opportunities for training and career development:
- Research infrastructures(including e-infrastructure: Ensuring access to world-class facilities

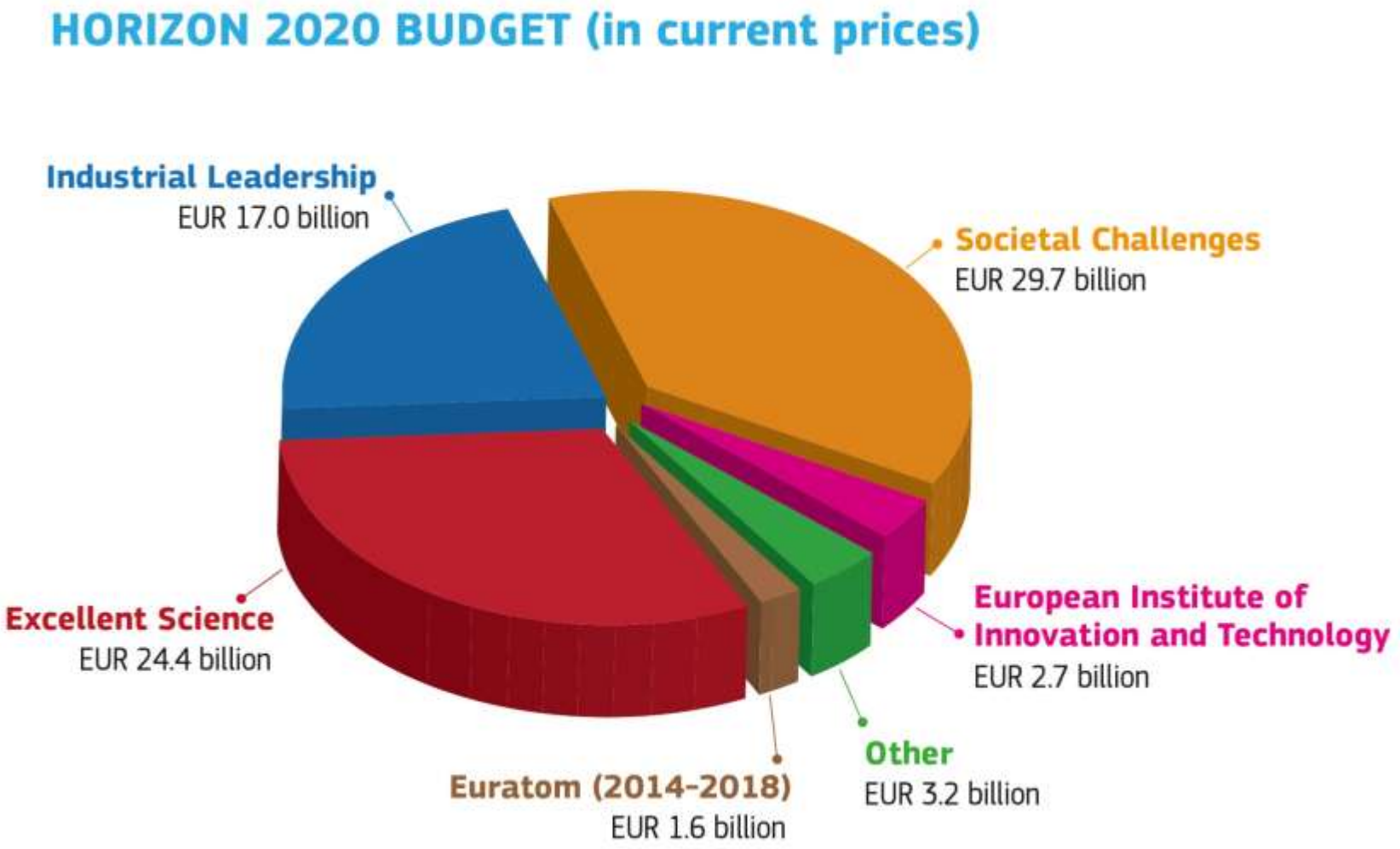
Industrial leadership

- Leadership in enabling and industrial technologies (LEITs): ICT, nanotech, materials, biotech, manufacturing, space:
- Access to risk finance: Leveraging private finance and venture capital for research and innovation
- Innovation in SMEs: Fostering all forms of innovation in all types of SMEs

Societal challenges

- Inclusive and reflective societies
- Science with and for society
- Spreading excellence and widening participation

H2020 budget



Cross cutting issues across WPs

Social Sciences and Humanities (over € 400 million)

- >200 topics (at least 35% of the total topics in the Work Programme)

Gender

- Explicitly integrated in all the sections of the Work Programme
- Specific call under Science with and for Society (€ 9.5 million)

Climate Change

- ~35% of the budget for activities addressing climate change
- Climate topics are of particular importance in some of the focus areas of the Work Programme

Topics are flagged to ease access for applicants

MARIE CURIE ACTIONS (MSCA)

ITN → Action 1 **ITN** Early-stage Researchers

Innovative Training Networks
Support for doctoral and early-stage training
European Training Networks, European Industrial Doctorates, European Joint Doctorates

IEF
IOF
IIF
CIG
→ Action 2 **IF** Experienced Researchers

Individual Fellowships
Support for experienced researchers undertaking international and inter-sector mobility: **European Fellowships** and **Global Fellowships,** Dedicated support for **career restart** and **reintegration**

IAPP
IRSES
→ Action 3 **RISE** Exchange of Staff

Research and Innovation Staff Exchange
International and inter-sector cooperation through the exchange of staff

COFUND → Action 4 **COFUND**

Co-funding of regional, national and international programme
Doctoral and fellowship programmes

Space

- Applications in satellite navigation
- Earth observation
  - Land surface changing, climate change monitoring
- Space weather, near Earth objects
- Space technologies
  - Propulsion, robotics, in-orbit demonstration
- Space exploration
  - Life support
- Outreach through education

Energy

- Energy efficiency
  - Increasing energy efficiency in buildings
  - Increasing energy efficiency through renewable energy use heating and cooling
  - Increasing energy efficiency in industry
  - Energy efficiency energy related products
- Competitive low-carbon economy
  - Renewable electricity, heating and cooling (Dev, demo, next gen techs)
  - Grids (Electricity-system integration, and Innovative grid technologies)
- Enhanced energy storage technologies
- Sustainable biofuels and alternative fuels
- Carbon capture and storage
- Society and economy policy aspects

Smart, green and integrated transport

- **Aviation**
  - Innovative technologies and concepts
  - Increasing levels of safety
  - Improving knowledge and skills

Rail
- Intelligent infrastructure
- New generation rail vehicles

- **Road**
  - Mitigating CO2 and pollution
  - Advanced bus concepts
  - Safety vulnerable road users
  - Safe and connected automation
  - Clean engines
  - Automotive supply chain management

Waterborne
- Energy efficient and emission free vehicle
- Inland waterways transport

Secure societies

- Fight against crime and terrorism
  - Forensics
  - Law-enforcement capacities
  - Urban security
  - Ethical and social dimension
- Disaster resilient societies
  - Crisis management
  - Critical infrastructure
- Border security
  - Maritime border security
  - Border crossings
- Digital security
  - Privacy, access control, secure information services

ICT

- New generation of components and systems
- Advanced computing
- Future Internet (cloud)
- Content technologies and information management (big data)
  - Social media, language technologies
- Robotics
- Micro- and nano-electronics, photonics
- Cyber-security
- Internet of Things

NMP/LEIT

Leadership in enabling and industrial technologies / nanotechnology, materials and production technology

- Bridging gap nanotechnology and market
  - Nano-capsules, nano-composites, etc.
- Nanotechnology and advanced materials for health applications
  - Cancer, Alzheimer, Diabetes
- Nanotechnology and advanced materials for energy efficiency
- Nanotechnology and advanced materials for competitiveness and sustainability
  - Low energy for drinking water
- Safety of nanotechnology and regulation
- Generic needs productions
  - Open innovation, frugal engineering
- Factories of the future
- Energy-efficient buildings

Health, demographic change and well-being

- Understanding health, ageing and disease
- Health promotion, disease prevention, preparedness and screening
  - Vaccine development for disease (TB)
  - Control infectious epidemics and foodborne outbreaks
- Improving diagnosis
  - Diagnostic tools, biomarkers
- Innovative treatments and technologies
  - Chronic non-communicable diseases
  - Regenerative medicine
- Advancing active and health ageing
  - ICT and robotics
- Integrated, sustainable citizen-centred care
- Improving health information and data exploitation
  - e-Health, bioinformatics

Food security, sustainable agriculture, marine and maritime research, and bio-economy

- **Sustainable food security**
  - Food production systems
  - Healthy diets
  - Global drivers of food security
  - Role of small and family farm

Sustainable agriculture and forest
- Production efficiency and coping climate change
- Ecosystems services and public goods
- Empowerment of rural areas

- **Blue growth**
  - Exploiting marine diversity
  - Multi-use offshore platforms
  - Seabed mining
  - Ocean observation technologies

Sustainable and competitive agri-food sector
- Informed consumer choices
- Healthy and safe foods
- Edible oils and fats

- **Unlocking potential aquatic living resources**
  - Sustainable and environmentally friendly fisheries
  - Biotechnology for marine innovation

- **Sustainable and competitive bio-based industries**
  - Integrated bio-refineries
  - Market development bio-based products and services

EURATOM

- Safe operation of nuclear systems

  - High density uranium targets for the production of medical radio isotopes

- Management of ultimate radio waste
- Radiation protection
- Education, training and socio-economic aspects
- Fusion

Climate action, resource efficiency and raw materials

- Waste a resource to recycle, reuse and recover raw materials
  - Food waste, waste treatment technologies, electronic waste, agricultural waste
- Water innovation
  - Interactions land use, energy, water, climate change
  - Eco-innovative water technologies
  - Predictions water cycle
  - Water re-use process industries
- *Africa, water and global change: vulnerabilities, risks and cost-effective adaptation measures*
- Fighting and adapting climate change:
  - Earth system modelling
  - Response strategies and economics of climate change
- Sustainable managing natural resources and ecosystems
  - Biodiversity, ecosystems and ecosystem services
  - Boundaries, tipping points and resilience
  - Effective governance, social resilience and public engagement
  - Sustainable supply of non-energy and non-agriculture raw materials
  - Global Environmental Observation and Information Systems
  - EO data ecosystems modelling and services
  - Next-generation in-situ observation capacities

Research Infrastructure

- Development, deployment and operation of e-Infrastructures
  - Connectivity, data, integration
  - High-performance computing, high-speed research networks
- Integrating networks for existing infrastructures
- Support for development of new infrastructures
- Innovative potential of research infrastructures
- Skills for management of research infrastructures

Social Sciences

Changing World: Innovative, inclusive and reflective societies

- Overcoming crisis, new ideas, strategies and governance structures
- Reflective societies: cultural heritage
- Inclusive and sustainable Europe for the young generation
- Reflective societies: European values and identities
- New forms of innovation
- Digital empowerment of citizens
- Societal engagement in research and innovation
  Ethics, youth, gender

Science for Society

-
- Making science education and careers attractive for young people
- Promoting gender equality in research and innovation
- Integrating society in science and innovation
- Developing governance for the advancement of responsible research and innovation
- Sharing knowledge about science with society

2014 calls

Excellent Science Pillar: ~ € 3 billion

- European Research Council (4 calls) € 1 662 million
- MSCA (6 calls) € 800 million
- Future and Emerging Technologies (FET) (4 calls) € 200 million
- European Research Infrastructures (including e-Infrastructures) (4 calls) € 277 million

Industrial Leadership Pillar: ~ € 1.8 billion

- Information and Communication Technologies (ICT), (2 calls) € 700 million
- Nanotechnologies, Advanced Materials, Biotechnology and Production (5 calls) € 500 M
- Space (5 calls) € 128 million
- Access to Risk Finance (financial instruments) (2 calls) € 5 million (€ 295 million NOT in calls)
- Innovation in small and medium-sized enterprises (1 call) € 10 million
- SME Instrument € 251 million

2014 calls...

Societal Challenges Pillar: ~ € 2.8 billion

- Health, demographic change and wellbeing (2 calls) € 600 million
- Food Security, Sustainable Agriculture and Forestry, Marine and Maritime and Inland Water Research and the Bio-economy (3 calls) € 300 million
- Secure, clean and efficient energy (4 calls) € 600 million
- Smart, green and integrated transport (3 calls) € 540 million
- Climate action, environment, resource efficiency and raw materials (3 calls), € 300 M
- Europe in a changing world inclusive, innovative and reflective societies (5 calls) € 112M
- Secure Societies (4 calls) € 200 million

In addition

- Spreading Excellence and Widening Participation (3 calls) € 50 million
- Science with and for Society (4 calls) € 45 million

THANK YOU!

Mamohloding.tlhagale@dst.gov.za

Tel: +27 12 843 6340