

Malta's R&I Context and the Rationale and Expected Outcomes of the PSF Exercise

Malta Peer Review kick-off meeting

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Brief background to Malta

- Population: approx. 475,701 (2018)
- GDP :€11,108.6million (2017) GDP growth: 5.8% (2018 forecast))
- Business demographics: 97.3% micro entities (2017)
- Sectors accounting for GDP in 2017
 - Public administration and defence; compulsory social security; education; human health and social work activities increased by 9.8%
 - Arts, entertainment and recreation, repair of household goods and other services increased by 9.4%
 - wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities increased by 6.2 %
 - Professional, scientific and technical activities & admin and support service activities increased by 6.1%
 - Manufacturing increased by 3.8%

GDP Sectoral Growth 2011-17

GDP Identity from the production side in 2017

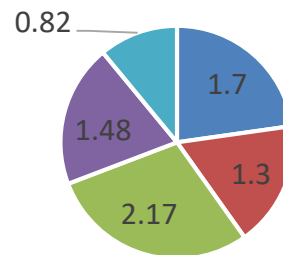
■ Public administration and defence; compulsory social security; education; human health and social work activities

■ Arts, entertainment and recreation, repair of household goods and other services

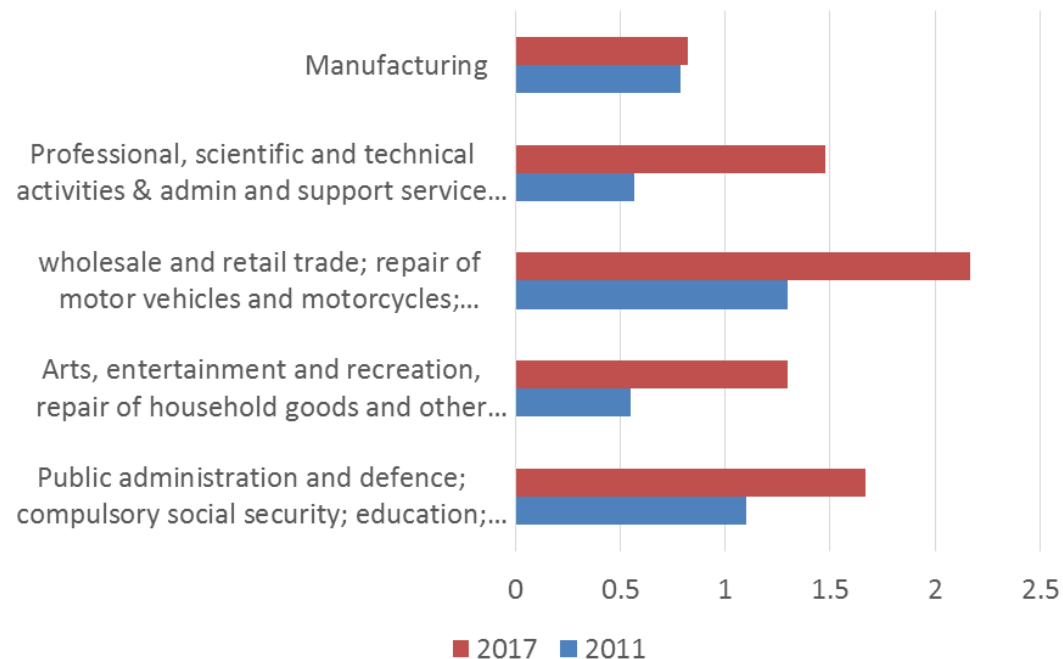
■ wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities

■ Professional, scientific and technical activities & admin and support service activities

■ Manufacturing



GDP growth by sector 2011-2017



Key Economic Trends and Forecasts

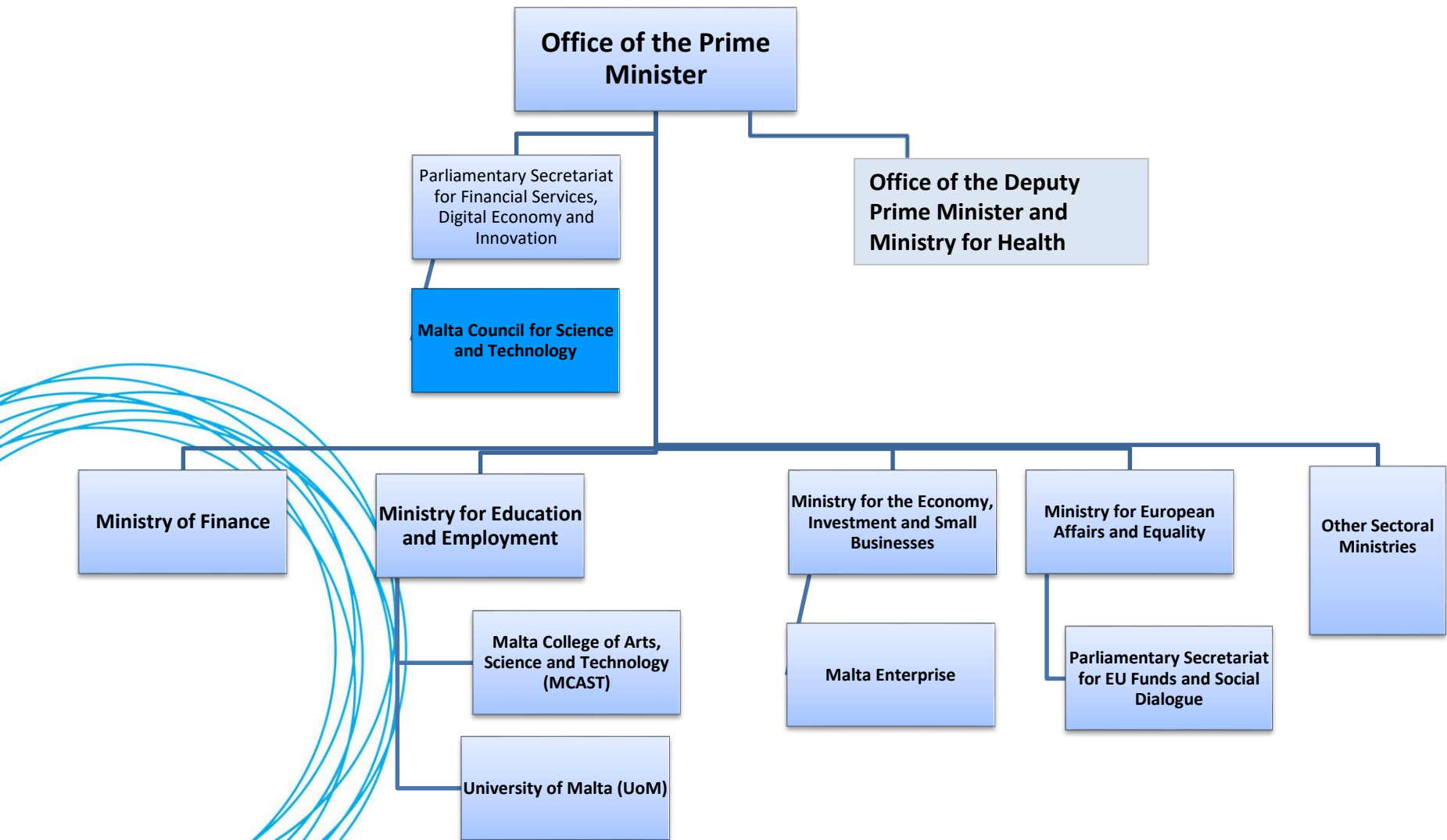
Indicators	2016	2017	2018	2019
GDP growth (% yoy)	5,5	6,6	5,8	5,1
Inflation (% yoy)	0,9	1,3	1,6	1,8
Unemployment (%)	4,7	4,0	4,0	4,0
Public budget balance (% of GDP)	1,0	3,9	1,1	1,3
Gross public debt (% of GDP)	56,2	50,8	47,1	43,4
Current account balance (% of GDP)	7,0	12,6	11,5	11,3

Source: Eurostat

Key Education Statistics

Malta	Performance relative to EU 2010 in		Relative to EU 2017 in
	2010	2017	2017
SUMMARY INNOVATION INDEX	69.3	84.5	79.9
Human resources	46.3	66.5	55.8
New doctorate graduates	7.7	38.2	27.4
Population with tertiary education	45.5	72.4	63.8
Lifelong learning	93.8	93.8	91.8
			2016
Public expenditure as a percentage of GDP			5.5%
Early leavers from education and training (age 18-24)			19.6%
Tertiary education attainment (age 30-34)			29.8%
Adult participation in learning age 25-64			7.6%
Employment rate of recent graduates (age 20-34)			92.1%
Persons with tertiary education and/or employed in science and technology as % of total employment			37%
Inbound graduate mobility bachelors			1.7%
Inbound graduate mobility masters			7.2%

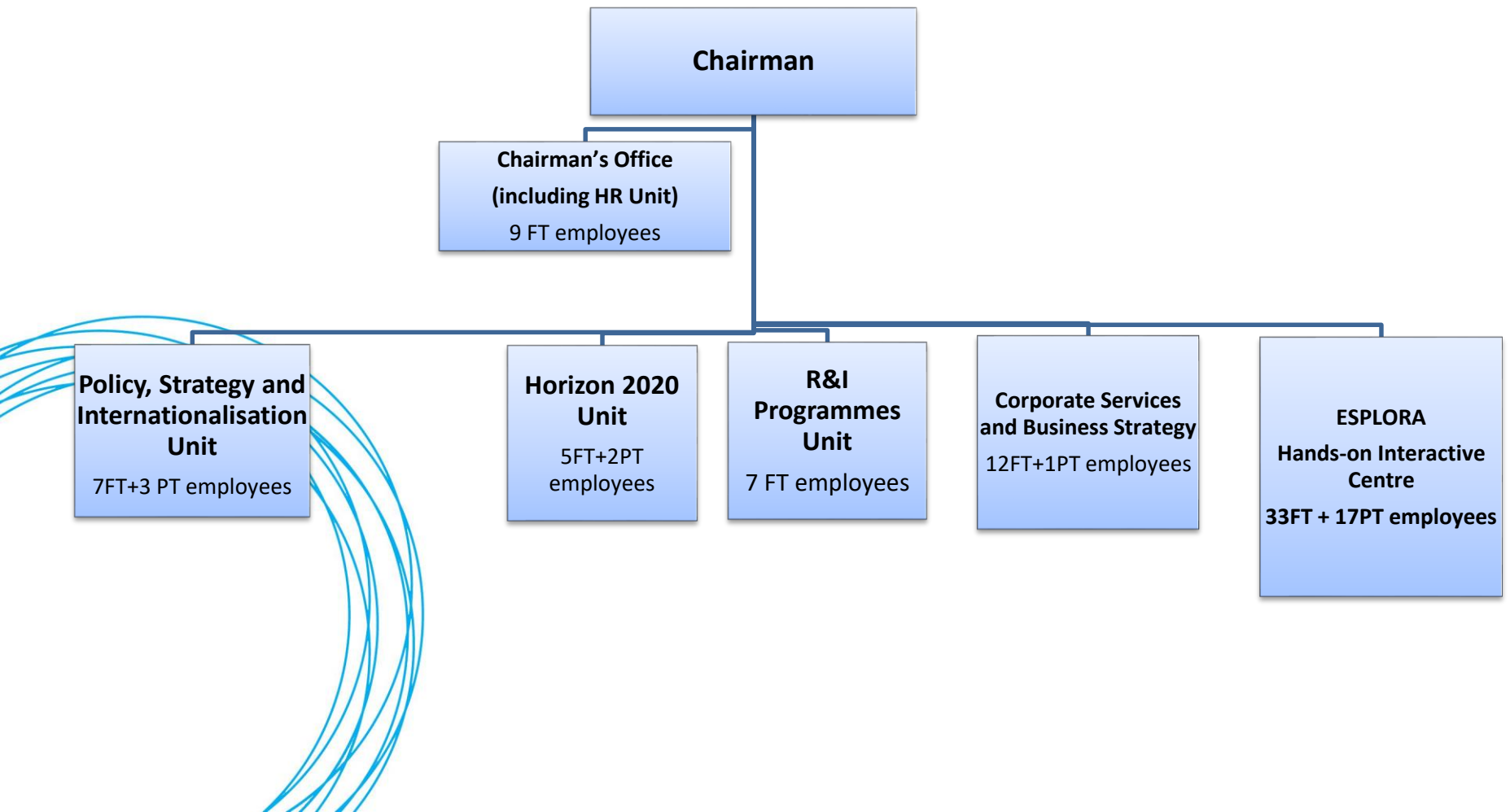
The National R&I Framework



The Malta Council for Science and Technology

- Part of the portfolio of the Parliamentary Secretariat for Financial Services, Digital Economy and Innovation within the Office of the Prime Minister.
- Public body acting for and on behalf of the Foundation for Science and Technology.
- Established by the central government in 1988 with the mandate of advising government on science and technology policy.
- Remit extended over the years to now include:
 - (a) Advising Government on research and innovation policy
 - (b) Managing the National R&I Funding Programme
 - (c) Acting as National Contact Organisation for Horizon 2020
 - (d) Setting up and running of Esplora – the National Interactive Science Centre

MCST Organisation Chart



Research and Innovation Statistics 2016

- In 2016 total expenditure on Research and Development amounted to €58.7 million, or 0.58% of GDP.
- The Business Enterprise sector contributed 62.0% to total R&D, whereas the Higher Education and Government Sectors contributed 36.7% and 1.3% respectively.
- The highest rate of R&D activity was recorded in Engineering and Technology (49.6% of total expenditure), followed by Natural Sciences (18.3%) and Medical Sciences (12.2%).
- The majority of R&D activity in Engineering and Technology and Natural Sciences was undertaken in business enterprises whereas research in relation to Medical and Social Sciences was mainly carried out by the Higher Education sector.
- Each sector mostly funds its own research, supplemented by foreign funds. Foreign funds for R&D reached 10.7% of total funds.
- The highest R&D employment rate was in the Higher Education sector (1,218 employees), followed by the Business Enterprise sector (1,111 employees). In 2016, of 2,408 employees engaged in R&D, 1,405 dedicate part of the time to R&D.

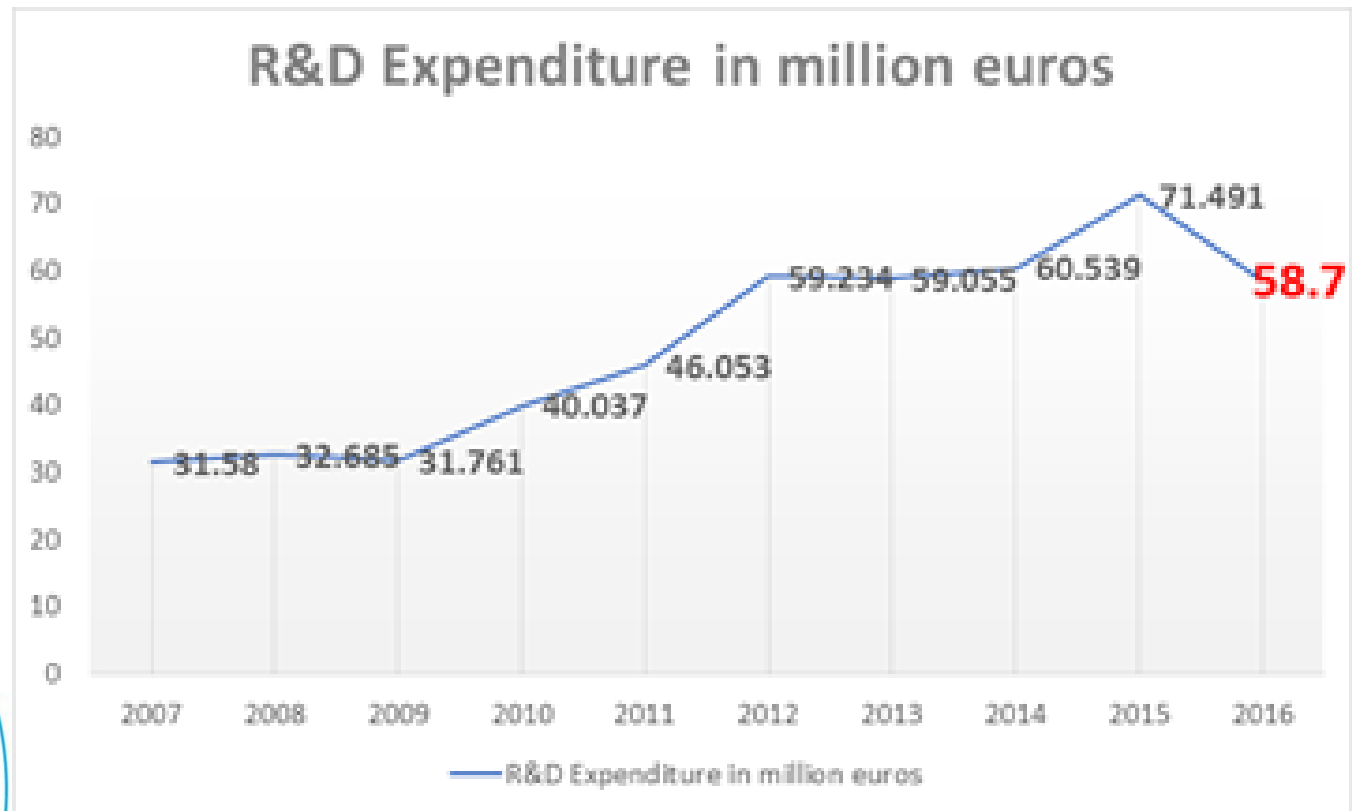
Longer term trends

- Strong fluctuations in R&D expenditure (0.55% of GDP in 2007 to 0.58% of GDP in 2016).
- Innovation expenditure as a % of GDP has decreased from 1.69% in 2008 to 0.88% in 2014.
- The % of enterprises with innovation activity as % of total enterprises has varied considerably over the years (19.6% in 2006, 36% in 2010 and 34% in 2014).
- Increase in the number of PhD holders in the workforce (0.19% in 2009 to 0.45% in 2015).
- Number of researchers (in FTE) increased from 492 in 2007 to 820 in 2015.
- Share of R&D-related Structural Funds expenditure has increased tenfold in comparison with 2000–06 and now accounts for €117 million of the spend. ERDF Malta R&D expenditure is approximately €73 million in 2014-2020.

Innovation in the business enterprise sector

- Even split between Malta-based enterprises undertaking product/process innovation and organisational/marketing innovation (<40% in 2014)
- Why do companies not innovate (2014)?
 - No compelling reason to innovate – 94.5%
 - Lack of internal finance – 1.5%
 - Lack of skilled employees – 1.9%
 - Considered innovating, but the barriers were too high – 5.5%
 - Low market demand – 7.5%
- Crucial importance of supporting a culture for innovation.
- Scope to support further technology-based innovation but also provide more support to non-technology-based innovation - role of smart specialisation.

Malta R&D expenditure over time



Brief overview of R&I policy making in Malta

- 1994 MCST National S&T Policy document – Agenda 21 and IRM
- 1995 Government adopted Charter establishing the Foundation for Science and Technology
- 2000 linked to EU accession launch of RTDI audit and Foresight exercises leading to First National RTDI Strategy and RTDI Programme in 2003
- Second R&I Strategy: 2017-2010; addressed both Research and Innovation
- Third R&I Strategy launched in 2014, will last until 2020; includes smart specialisation.
- Fourth R&I Strategy to be launched in 2020 – PSF Peer Review will feed into this

National R&I Strategy 2007-2010

Vision: R&I at the heart of the Maltese economy to support value-added growth and wealth

Mission: Building and sustaining the R&I enabling framework

Underlying Strategic Principles:

- Addressing national issues
- Focussing on selected areas of economic importance
- Enabling SMEs to innovate
- Exporting locally generated R&I
- Expanding Malta's Science, Engineering and Technology Human Capital Base
- Establishing the nexus between the knowledge institutions and business
- Developing a national pro-innovation culture supportive of invention, risk taking and entrepreneurship

Main priorities and initiatives

66 recommendations led by MCST, UoM, OPM, MEYE, NCHE, FOI and NSO

Key initiatives:

- ERDF: UoM research infrastructures €15m
- ERDF: Manufacturing Research Platform €700k
- ESF: Science Popularisation €600k
- ESF: Ph.D. Bursaries €4.3m

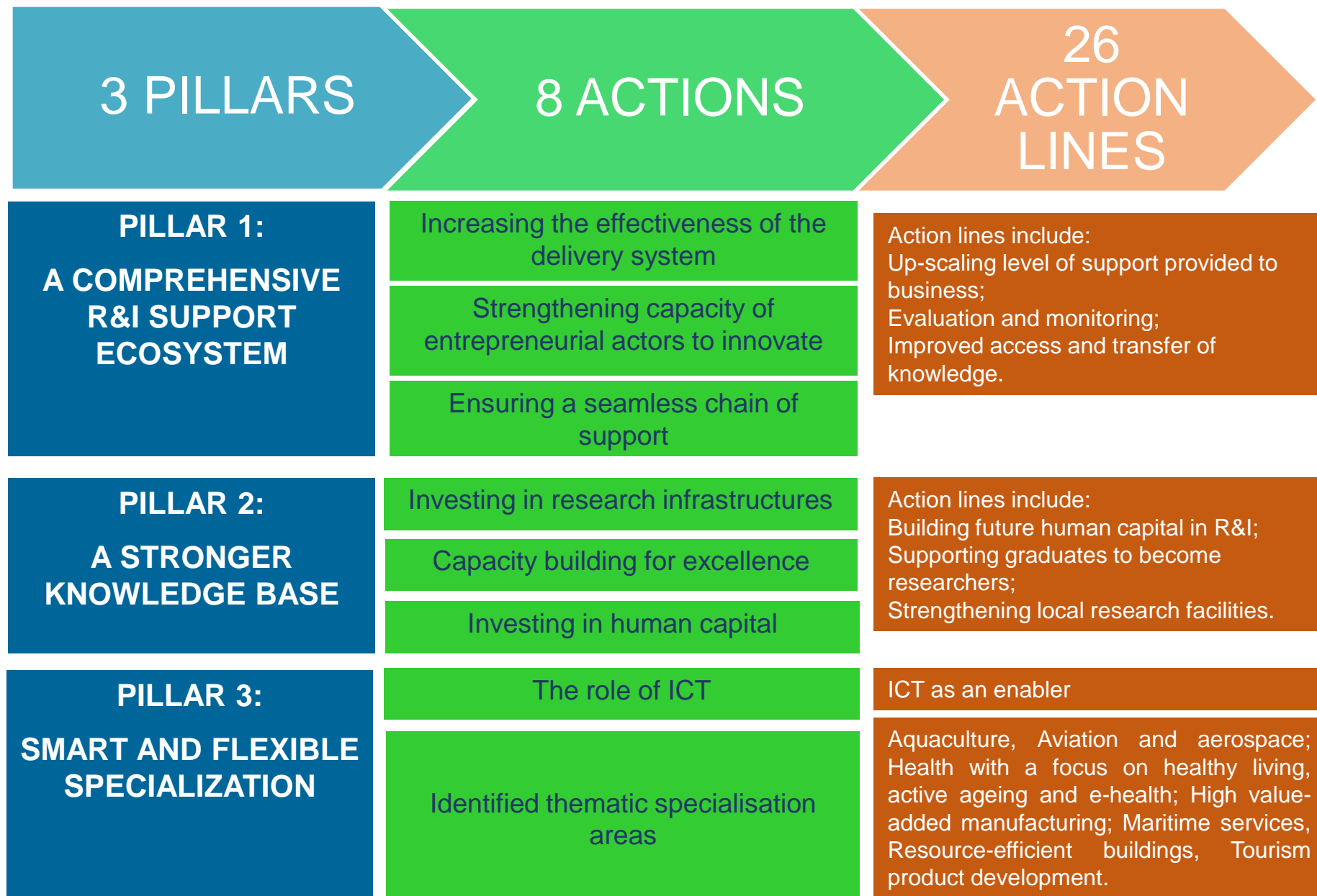
4 Platforms of Strategic Importance:

- Environment and energy resources
- ICT
- Value-added manufacturing and services
- Health-biotech

National R&I Strategy 2020 – mission and vision

- R&I recognised as central pivots of our drive to become a knowledge-based economy and society.
- R&I are not end goals in themselves but a means to address social and economic challenges and to improve Malta's economic competitiveness.
- Link with Malta's economic, social and environmental goals.
- The mission of Strategy is to provide an enabling framework for achieving this vision.

National R&I Strategy: Overall Structure



National R&I Strategy 2020 targets

No.	Indicator	Figures quoted in Strategy	Current 2020 Target
1	Gross R&D expenditure as a percentage of GDP	0.72% (2011 figure)	2.0%
2	The number of doctorate holders as a percentage of the active population	0.47% (2012 figure)	0.60%
3	The number of researchers (expressed in full-time equivalents, FTE)	755 (2011 figure)	900
4	Innovation expenditure as a percentage of GDP	1.46% (2010 figure)	2.5%
5	Employment in knowledge-intensive activities as a percentage of total employment	40.8% (2011 figure)	55%
6	Enterprises with innovation activity as a percentage of total enterprises	36.0% (2010 figure)	50%
7	Enterprises with innovation activity in the Core NACE Codes, as a percentage of the total enterprises in the Core NACE Codes	41.5% (2010 figure)	60%

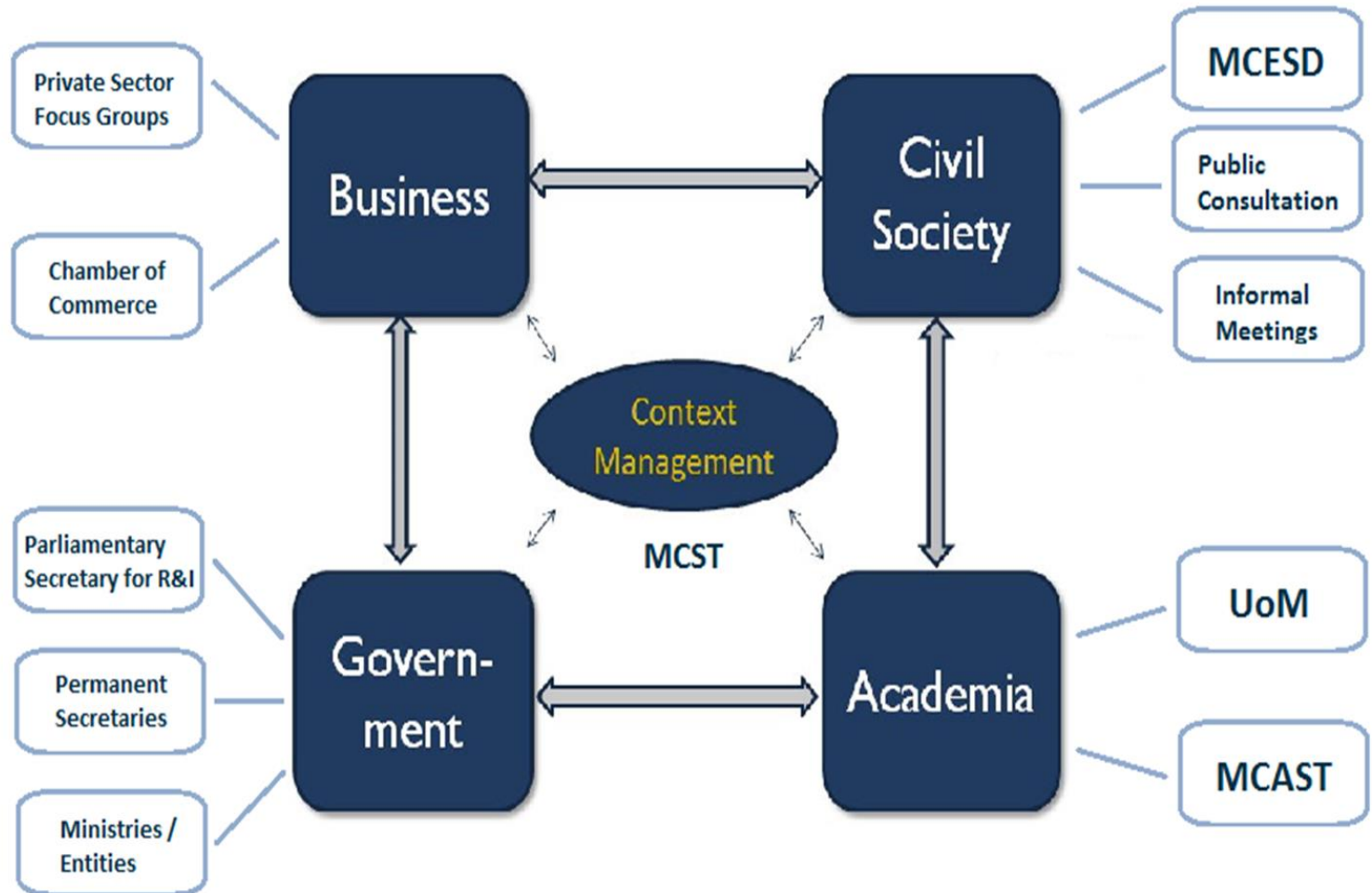
National R&I Action Plan 2015-2020

- Complements the Strategy.
- Rolling plan detailing the timeframes, budgets and owners of measures to achieve the objectives of the Strategy.
- Includes a monitoring mechanism.

R&I Strategy and Action Plan Governance

- Steering Group – Meets at the level of high-level representatives of relevant organisations and institutions.
- Core Group - meets at the level of Permanent Secretaries of relevant Ministries and the Parliamentary Secretary.
- Focus groups bringing together all stakeholders (2013, 2017, 2018 planned).
- Permanent thematic networks (industry driven) – set up independently to discuss issues within the sectors; may discuss R&I issues and the outcomes feed into the Entrepreneurial Discovery Process.

Quadruple Helix Approach



2017 Update of the Action Plan - overview

	Action Plan 2016	Updates 2017	Changes
Pillar 1	Measures by 8 entities, 41 in total	Same stakeholders + MSD (PPCD). 13 measures completed 14 measures to be updated, 9 new measures 3 measures still TBC	New instruments addressing same objectives; Change in ownership of some measures; Some measures ended
Pillar 2			
Pillar 3	11 proposals by 6 entities	10 proposals by 2 entities	Several sectors not addressed Scope of some proposals changed

Main measures and actions

- FUSION – the National R&I funding program
 - Local funds (budget of €2.2 million per year)
 - Part 1: Commercialisation Voucher Programme
 - Part 2: Technology Development Programme
 - Link with Smart Specialisation
- Esplora – the National Interactive Science Centre
- Various scholarship schemes
 - Undergraduate, post-graduate, doctoral and post-doctoral level
 - National and EU funds

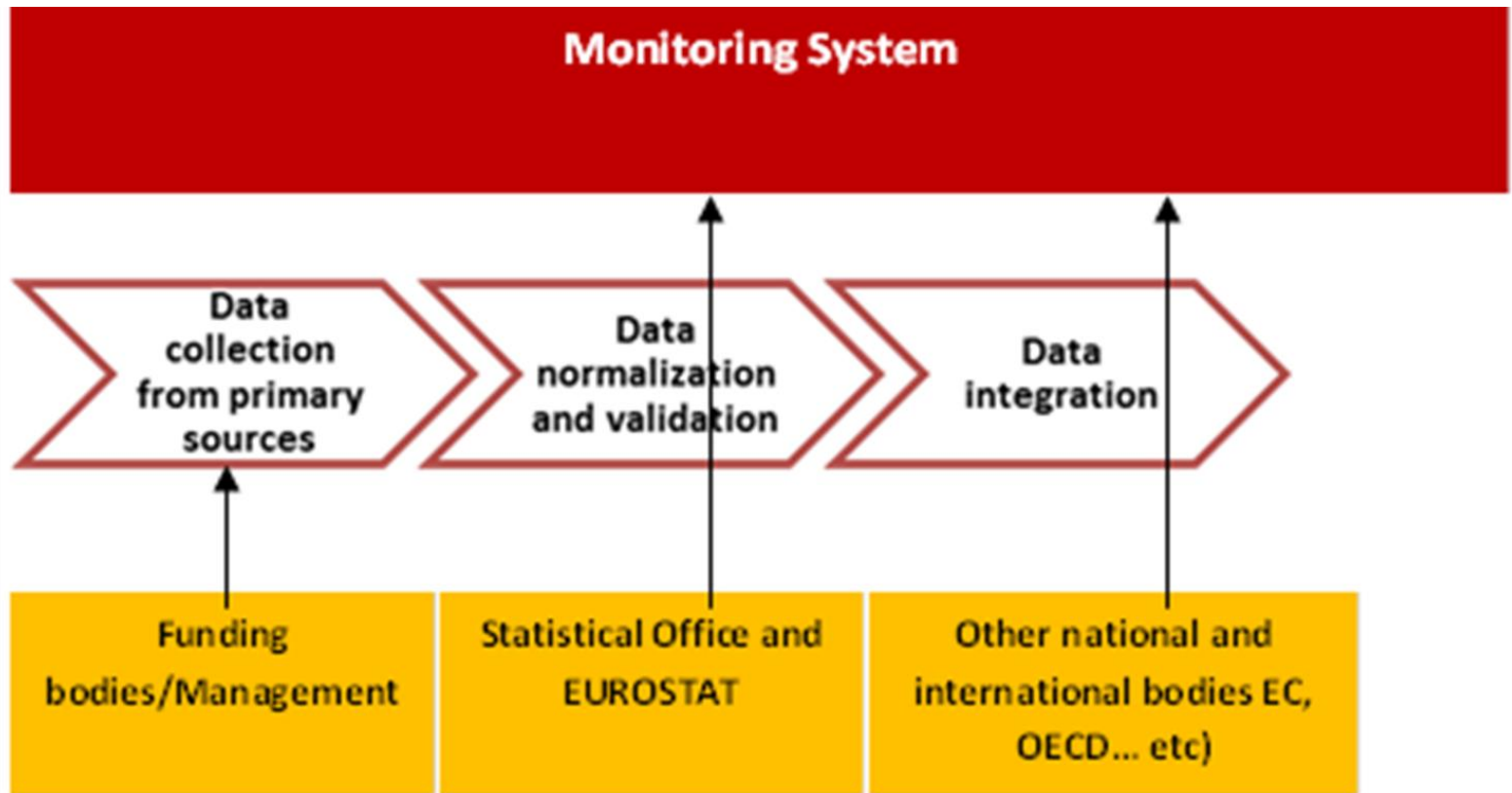
Main measures and actions – Support for business R&D and Innovation

- Innovation Aid for SMEs (tax credits for costs incurred in loaning highly qualified personnel)
- Aid for Research and Development Projects (tax credits on direct or indirect project costs)
- Qualifying Employment in Innovation and Creativity (employment of non residents in roles not currently addressed by the local labour market by temporarily easing tax expenses).
- R&D Feasibility Studies 2014–2020 (Supports studies to determine that the key elements of the proposed research project are based on sound principles).
- Research and Development 2014–2020 (supports industrial research or experimental development leading to the development of innovative products and solutions).
- Tax Credits for R&D and Innovation (open to undertakings employing for minimum one year persons holding or reading for a PhD in science, information technology or engineering).

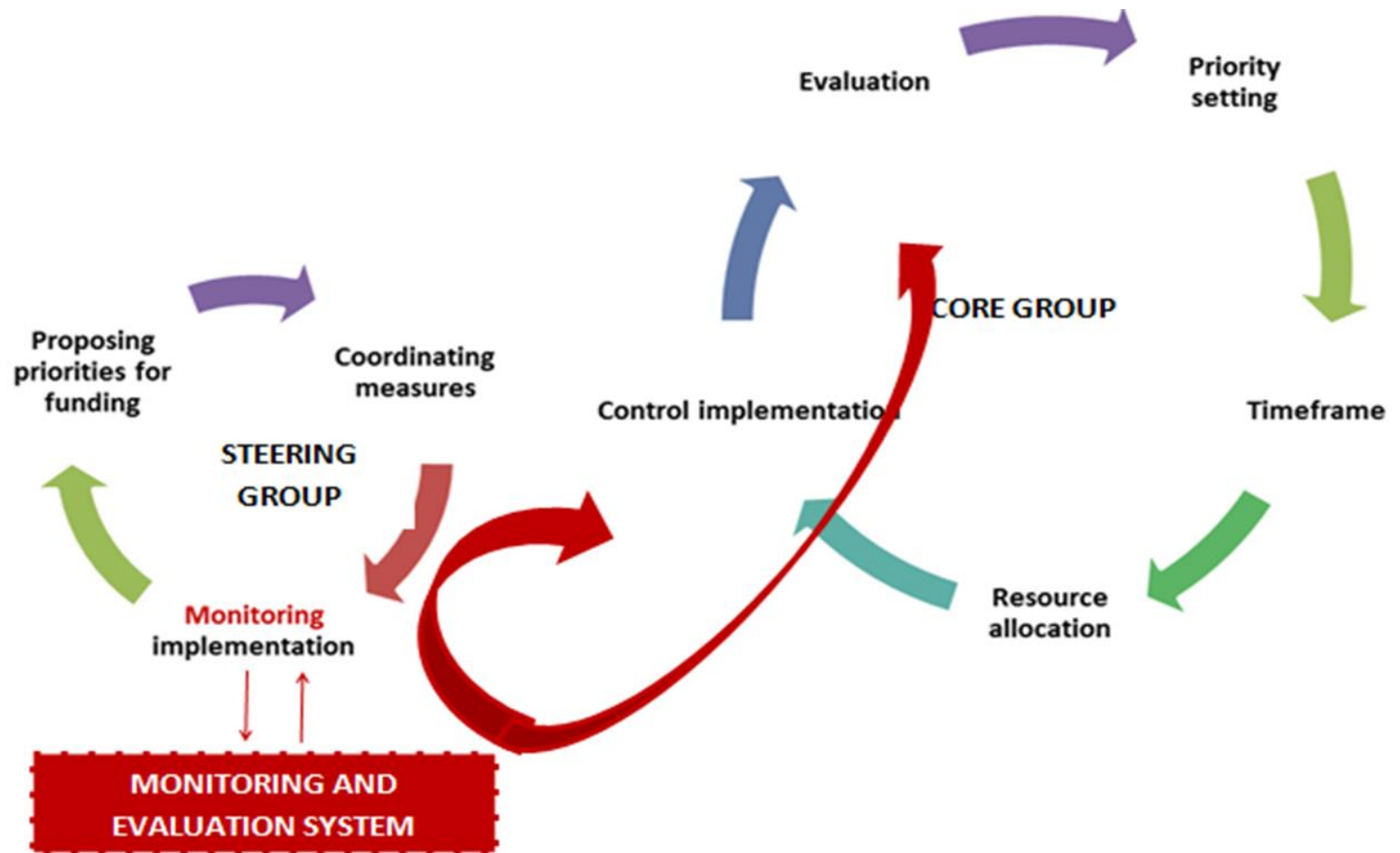
Participation in Horizon 2020

- Malta actively participating in Horizon 2020:
 - 123 Maltese participants in 97 signed grant agreements
 - Over €19 million in funding (of which €5.5 going to SMEs)
 - Success rate – around 13.8% (slightly below MS average of 14.58%)
- H2020 is enabling MT researchers to work with leading EU and international researchers and entities and access new networks. As a result, raising their profiles and the profile of their research through the sharing of expertise and access to equipment, infrastructures and results obtained from projects. Horizon 2020 is locally administered by MCST

The monitoring process



Governance of the monitoring system



Policy Support Facility 2018

Peer Review of Malta's R&I System

Rationale

- Reviews of Malta's R&I system to date have been partial in scope. The aim is to tackle the R&I system as a whole - the first exercise of its kind.
- The broader approach will entail a review of Malta's R&I policy mix, with a specific focus on the National R&I Strategy.
- A key objective is to feed into the preparation of Malta's national strategy for R&D and innovation post-2020.

Key R&I Challenges to be addressed

1. Ensuring an adequate level of public funding for R&D
2. Increasing R&I investment in the private sector
3. Improving the capacity and quality of the science base
4. Strengthening entrepreneurship and innovation

Main goals and outcomes

Peer Review should support Malta's efforts

1. to continue R&I capacity building
2. to improve the dynamics of the R&I system
3. to improve the efficiency of current public investments in R&I.

Overall objective: recommendations to inform the design of the next National R&I Strategy post 2020

- **Process:** based on a holistic approach, looking at the full range of policies and instruments supporting Malta's R&I system.
- **Purpose:** to reflect on the adequacy and 'fit-for-purpose' nature of existing measures, within the specific Maltese setting.
- **Scope:** take an international perspective, benchmarking Malta's R&I system with systems of other comparable EU or European countries.

Key focus areas and questions

1. To what extent does Malta have adequate and appropriate **policies and strategies** in place to achieve the above-stated goals?
2. In terms of implementation, does Malta have adequate and appropriate **structures and resources** in place to achieve the above-stated goals?
3. In terms of ensuring effective results, to what extent does Malta have adequate and appropriate **measures and instruments (incl. monitoring and evaluation)** in place to achieve the above-stated goals?

Focus area	Aspects to be analysed	Rationale
Policies	<p>Does the MT policy mix have an optimal balance between R&I? Should MT have separate research and innovation strategies?</p> <p>How do R&I policies support existing/emerging specialisation patterns and how can these be better supported? Are there any dedicated policies that should be added in its policy mix? Which ERA initiatives will best help MT achieve its goals?</p>	<p>Both previous national strategies were combined R&I Strategies, with innovation closely associated with research and research outputs. Should this remain or should MT perhaps focus primarily on innovation and align research needs/ priorities to it?</p> <p>Is MT missing any dedicated policies and can the ERA initiatives provide important insights here? How can Malta can make best use of the various ERA initiatives to achieve its goals?</p>
Structures and resources	<p>Does MT have adequate public structures to achieve its defined goals? How can MT improve coordination and communication between the different structures?</p> <p>Does MT have adequate resources and skills?</p>	<p>Assess the current set up of who the main players in R&I policy making and implementation are, and how they inter-relate. Advise on whether any key function or critical skill set is missing in the administrative set up and how best to improve coordination among the various players (public and private).</p>
Measures and instruments	<p>Does MT have the appropriate instruments at the right funding levels to achieve pre-defined goals? How can MT improve its level of participation in international programmes and should it prioritise some over others?</p>	<p>Review the current measures in place and provide advice on whether any critical support measures are missing as well as any general improvements which should be made to existing programmes.</p> <p>Evaluate MT's participation in international programmes and provide recommendations over how best to improve participation</p>



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Thank you for your
kind attention.