

Towards a Smart Specialisation Strategy for Malta

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Executive Summary

The European Commission has asked national and regional authorities across the Union to formulate research and innovation strategies for Smart Specialisation as a key element of the delivering the Europe 2020 Strategy and relevant to all its three priorities of smart, sustainable and inclusive growth. Smart Specialisation will help the EU's Structural Funds to be used more efficiently by making the most of the synergies between different EU, national and regional policies and exploiting the synergies between public and private investments.

The regional/national Research and Innovation Strategies for Smart Specialisation (RIS3) aims to help countries and regions become and remain globally competitive by identifying the knowledge specialisations (including non-technological ones) that best fit their innovation potential and focusing their economic development activities on a limited number of priorities. The rationale, genesis and principles of RIS3 are already well documented and while making references to the background material they will not be analysed in detail here.

This report, based on a study commissioned by the DG Research and Innovation of the Commission of European Union, reviews and assesses the situation of Malta regarding its progress towards the development of a RIS3 Strategy. It uses the report structure provided by the Commission and it identifies trends in the national economy, including the identification of priority and well performing sectors where comparative advantages could be singled out. With a small but diverse economy, a large number of sectors contribute to the economy of Malta, with tourism contributing the lion's share. It also identifies any possible links between these outstanding economic sectors with the country's scientific and technological capabilities and priorities. The report also consider scenarios with regard to the science and technology areas that have to be developed and strengthened, in order to reinforce the smart specialisation effect in the context of related variety.

Potential Sectors and R&D areas identified for Smart Specialisation are presented in Table 27 – Suggested areas for potential Smart Specialisation.

The report examines synergies between the current EU Structural Funds and the FP7 programmes in Malta in order to deduce potential synergies in the forthcoming cohesion funding and Horizon 2020 in order to develop the concept of the "stairway to excellence". It highlights the Maltese Research community's significant engagement with the EU Framework Programmes. It also assesses the need to support research and innovation infrastructure and equipment particularly those in the European Strategy Forum on Research Infrastructures (ESFRI) roadmap where Malta is engaged and is a partner in a number of Large-scale European research infrastructures.

In parallel but separate from this study, work on the preparation of smart specialisation strategy in Malta started in December 2012 under the direction of the Malta Council for Science and Technology (MCST) and is expected to be completed by the third quarter of 2013. The strategy formulation comes soon after the drafting of the National Strategic Plan for Research and Innovation (2011-2020) which was issued for public consultation in December 2011 but its finalisation has been delayed in view of new requirements for compliance with conditionalities under the proposed new Cohesion Policy Framework 2014-2020.

Arrangements were made with DG REGIO to engage an international expert to further support the entrepreneurial process of discovery which should lead to finalisation of the smart specialisation aspect of the new strategy. Additionally, consultations on niches where Malta has strength and potential are being explored through further statistical analyses and consultations (one to one meetings, workshops, and focus groups) with the private, public and academic sectors as well as social partners. Over 20 meetings with different stakeholders within the public sector as well as social partners have been undertaken. Regular dialogue with the academic sector is also on going.

One key objective of this report is to identify areas within the Maltese national economy with the greatest potential for innovation-based growth in order to direct funding and efforts towards building critical mass in these areas. This document includes an analysis of available statistics on each economic sector, consultations with academia, the public sector and private enterprise as well as a peer review and the authors' independent observations.

It includes an analysis of the key and priority sectors contributing to the Maltese economy from a number of angles - sectors that are the foci of various public policies, sectors making the most significant contribution to GVA and employment and sectors with strong links to research and innovation base. It is not the remit of this document to develop the RIS3 strategy for the country nor does it recommend niches to be selected. It does, nevertheless, identify areas that due to their particular current or potential strengths are or could be the growth drivers and sources of competitive advantage. It also highlights some of the possible growth niches, the *related varieties* and *knowledge spillovers* between some key sectors and potential for growth in less research intensive sectors through the application of Key Enabling Technologies.

The study also uses the concept of *knowledge cycle* model, to examine Malta's innovation ecosystem in the context of Smart Specialisation and the development of distinctive and original areas of specialisation. It highlights gaps in provision of support

mechanism in some phases of the cycle, particularly the Knowledge Exploitation and Anchoring phases where the economic benefit of research is most tangible.

As the RIS3 Strategy for Malta was being developed at the same time as this study, this report cannot provide any insights into the content of that strategy or the areas of priority identified. The concerns expressed by the key research and innovation actors, however, create a degree of unease towards a Smart Specialisation approach for the Maltese islands. Some of these concerns are summaries in the Recommendations and Concerns section of the report.

Finally the report provides a number of top level recommendations while highlighting the key concerns:

1. It is clear from the meetings held with stakeholders that the practical implications of a smart specialisation strategy are not very clear among the concerned public body officials. Furthermore there is concern that the RIS strategy could ultimately be sabotaged by top-down decisions in favour of political expediency, which could ultimately have a negative impact on decisions or investments already made at the national level in the recent past.

2. Legitimate concerns are also prevalent as to the extent towards which this specialisation will be focused and how it would affect available funding outside of the preferred/identified priority sectors.

3. One of Malta's strengths in the last decade has certainly been its penchant and disposition towards being flexible, and reacting quickly to market or economic changes that occurred locally and worldwide. This same disposition must be maintained within the RIS3 strategy which should be considered as an evolving strategy with scope for continuous adaptation and quick ad hoc reorientations.

4. Capacity-building is central to the success of the RIS3 initiative, especially for countries like Malta which has very limited experience in research and innovation strategy-building and a somewhat embryonic R&I support framework and infrastructures. Consequently capacity-building remains crucial for ensuring the implementation of a RIS strategy and Malta has a long way to go in order to ensure the necessary top-level ownership, assembly of strategic partnerships, setup of implementation teams, the inclusion of expertise from the private sector, and the development of policy staff and expertise.

5. It is crucial that the focus of Malta's RIS strategy does not over emphasise exclusively on high technology sectors alone, and MCST must ensure that any sectors or potential clusters selected actually have economic growth potential and that innovation support can be effective. The focus must make very hard decisions on which economic sectors show the best opportunities for growth and are more likely to receive investment.

6. The selection of priorities needs to be made on the basis of some existing strength or expertise rather than aspiration or wish list which ultimately implies a focus on sectors that have a strong production base or even a resource base which is not being exploited and for which there is an economic demand. Malta runs the risk of selecting sectors based simply on the strongest research base typically within small clusters at University and this could provide a very limited basis for a RIS3 strategy and not necessarily lead to a successful strategy.

7. Malta must look to diversify its economic activities based on existing strengths and areas of expertise primarily by diversifying into areas of related expertise, and simply use the core knowledge base of the existing industry to target other industries within that same value chain (related variety). Tangible examples of this related variety might be the diversification from shipbuilding for instance into offshore aquaculture platforms based on existing engineering / materials expertise; or developing a food processing based tourism industry related to a cluster of high quality local products like wine or tomato growing.

8. In addition to the two key policy documents, namely Vision 2015 and the National Strategic Plan for R&I, there are a plethora of different policies and strategies in Malta relating to different aspects of R&I. Well over a dozen such documents were identified, some of which were merely lobby documents produced by interest groups and organisation with public funding. This proliferation of strategies could be seen as fragmentation in the policy making and decision taking processes and their consolidation with buy-in from all key stakeholders is recommended.

9. The case of Malta dictates that although the focus of the RIS3 strategy is focused on the internal market and local needs, the strategy must ensure that the sectors involved are empowered to operate in a more European or global dimension, and can learn by networking with competing clusters and regions with complementary interests. Consequently Malta's RIS3 strategy should facilitate the exchange with other regions however the drive to connect players in commercial sectors must be focused on the concrete supply of the required knowledge that build on existing networks rather than by formal regional agreements with no tangible or immediate benefits.

10. Malta's R&I programme should be encouraged to review its national policies and research programmes in view of the country's low RD&I intensity, with the objective to enhance the national programmes/strategies and to align them with the ERA initiatives (namely JPIs). Similarly specific evaluation criteria related to the growth/commercialisation potential of different business

sectors during calls for proposals would need to be introduced to reap the RIS3 results expected and make a difference to business development at the grass roots. Structural Funds can be used to help smooth the passage of products to market, by financing or co-financing the follow up to Horizon 2020 research projects, for example.

11. To encourage Malta's participation in Joint Programming initiatives, supporting measures aiming for effective alignment, implementation and coordination of its research programme should be provided, with a reciprocal implementation of relevant policy measures at the national level and accompanied by adequate financial and administrative commitment from the Government.

12. Malta should be encouraged to use cohesion (structural) funds at their disposal as a contribution to JPIs or other forms of transnational cooperation programmes; and to establish meaningful partnership between countries at different levels of RD&I intensity. Clearly Malta has much more to gain from territorial cooperation with the Northern countries rather than Southern Mediterranean countries where R&D intensity is inherently limited and offers limited opportunities for inbound technology transfer.

13. There is a visible gap in the provision of support mechanism in some phases of the *knowledge cycle*, particularly in the Knowledge Exploitation and Anchoring phases. It is recommended that support mechanisms, particularly those through financial engineering are developed aimed at early stage R&I based business. These may include risk sharing finance facility, Seed Corn or Venture Capital Funds as well as a "Proof of Concept" type fund.

14. It is recommended that the authorities charged with the formulation of the RIS3 strategy for Malta develop an early stage and meaningful relationship with the Smart Specialisation Platform, created by the EU Commission to develop and share information, guidelines and instructions for developing the strategy. Early stage engagement could ensure that good practice is shared and efforts are benchmarked. By the same token submitting for a peer review process will help avoid blind alleys.

1. Introduction

Smart Specialisation is set to become an important policy rationale in the upcoming structural fund period 2014 -2020.

Smart specialisation is about placing greater emphasis on innovation and having an innovation-driven development strategy in place that focuses on each region's strength and competitive advantage. It is about specialising in a smart way i.e. based on evidence and strategic intelligence about a region's assets and the capability to learn what specialisation can be developed in relation to those of other regions.

National/Regional Research and Innovation Strategies for Smart Specialisation (RIS3 strategies) are integrated, place-based economic transformation agendas that do five important things¹:

- They focus policy support and investments on key national/regional priorities, challenges and needs for knowledge-based development.
- They build on each country/region's strengths, competitive advantages and potential for excellence.
- They support technological as well as practice-based innovation and aim to stimulate private sector investment.
- They get stakeholders fully involved and encourage innovation and experimentation.
- They are evidence-based and include sound monitoring and evaluation systems.

The RIS3 ex-ante conditionality requires EU Member States and regions to identify the knowledge specialisations that best fit their innovation potential, based on their assets and capabilities. This strategy focus should not only build on and/or aim at regional scientific excellence but also support practice-based ('non-technological') innovation - like social and service innovations, action to address social challenges, new business models and demand-side measures such as public procurement - and include the adoption and diffusion of knowledge and innovation.

Consequently the RIS3 strategy is an economic transformation agenda based on 4Cs:

1. Choices and Critical mass : limited number of priorities on the basis of own strengths and international specialisation - avoid duplication and fragmentation in European R&D Area.
2. Competitive Advantage: mobilise talent by matching RTDI capacities and business needs through an entrepreneurial discovery process.
3. Clusters and Connectivity: develop world class clusters and provide arenas for related variety/cross-sectorial links internally in the region and externally, which drive specialised technological diversification – match what you have with what the rest of the world has.
4. Collaborative Leadership: efficient innovation systems as a collective endeavour based on public-private partnership (quadruple helix) – experimental platform to give voice to unusual suspects.

Work on Malta's RIS3 strategy started in December 2012 under the direction of the Malta Council for Science and Technology (MCST), and is expected to be completed by the third quarter of 2013. With the wrapping up of the National R&I Strategic Plan 2007-2010, the need was felt to actively reflect on achievements, challenges and changes which have taken place over the past years and design a new national R&I strategic plan which builds on progress made and lessons learnt in implementing the previous Plan. The strategic plan will provide a policy framework for the coming decade, and will take into consideration; inter alia, on-going work in the preparation of thematic plans in several sectors. The plan will be based on strong stakeholder consultation. A draft new R&I Strategic Plan was issued for public consultation in December 2011 but its finalisation has been delayed in view of new requirements for compliance with conditionalities under the proposed new Cohesion Policy Framework 2014-2020.

To date, comments received during the public consultation are being reviewed and where necessary, updates to the text made. In addition, statistics and text describing on-going work are being regularly updated. Work on the preparation of smart specialisation strategy has also been undertaken. Arrangements have been made with DG REGIO to engage an international expert (Prof. Luke Gheorghiu) to further support the entrepreneurial process of discovery which should lead to finalisation of the smart specialisation aspect of the new strategy. Additionally, consultations on niches where Malta has strength and potential are being explored through further statistical analyses and consultations (one to one meetings, workshops, and focus groups) with the private, public and academic sectors as well as social partners. Over 20 meetings with different stakeholders within the public sector as well as social partners have been undertaken. Regular dialogue with the academic sector is also on going. An initial workshop for the private sector was held in February 2013 and this is being followed up through one-on-one meetings and focus group meetings. A series of such focus groups was undertaken over the period April-May 2013.

¹ Research and innovation strategies for smart specialisation http://ec.europa.eu/regional_policy/sources/docgener/informat/2014/smart_specialisation_en.pdf
Regional policy for smart growth in Europe 2020. European Commission. May 2011.
http://ec.europa.eu/regional_policy/information/pdf/brochures/rfec/2011_smart_growth_en.pdf

The main objective of this document is to identify areas within the Maltese national economy with the greatest potential for innovation-based growth in order to direct funding and efforts towards building critical mass in these areas. This document includes an analysis of available statistics on each economic sector, consultations with academia, the public sector and private enterprise as well as a peer review.

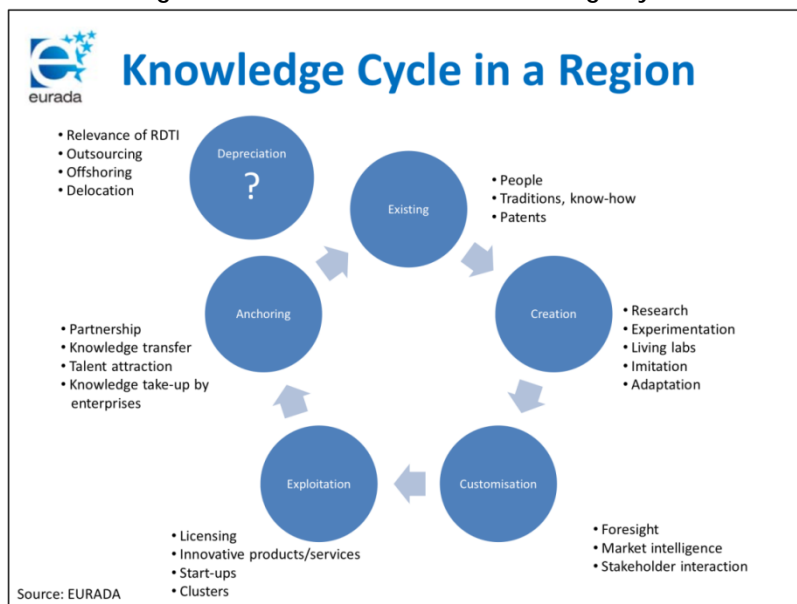
1.1 Methodological Approach and Observations

This report set out to identify areas within the Maltese national economy with the greatest potential for innovation-based growth that exhibit the potential as candidates for Smart Specialisation. It is based on available statistics for each economic sector, consultations with academia, the public sector and private enterprise, as well as the authors' independent review (Please refer to Annex 1 for a copy of the structured interview template that was used). It includes an analysis of the key and priority sectors contributing to the Maltese economy from a number of angles - sectors that are the foci of various public policies, sectors making the most significant contribution to GVA and employment and sectors with strong links to research and innovation base.

It is not the remit of this document to develop the RIS3 strategy for the country nor does it recommend niches to be selected – the detailed analysis would have been well outside the scope of this report. It does, nevertheless, identify areas that due to their particular current or potential strengths are or could be the growth drivers and sources of competitive advantage. The report highlights some of the possible growth niches, the related varieties and knowledge spillovers between some key sectors and potential for growth in less research intensive sectors through the application of Key Enabling Technologies.

The report acknowledges the role of overall innovation environment in the context of Smart Specialisation and the development of distinctive and original areas of specialisation. The European Association of Regional Development Agencies (Eurada) has developed a number of useful tools and models² for analysis of the regional assets and the innovation ecosystems for the formulation of the RIS3 strategies. In preparing this report the Knowledge Cycle model (see Figure below) was used as a guide. Interview themes and questions were devised to illicit information about each phase of the cycle and elements contributing to a sound innovation environment have been examined.

Figure 1 - EURADA's Model of Knowledge Cycle



The report follows the phases of the cycle in some detail albeit with different heading titles. In spite of the relatively modest level of investment in R&I as a proportion of GDP, Malta's innovation environment is a productive one. The report highlights gaps in provision of support mechanism in some phases of the cycle, particularly the Knowledge Exploitation and Anchoring phases. The recent initiatives such as a move towards cluster based development, MCST Commercialisation Programme and the establishment of a Knowledge Transfer Office by University of Malta are the recent steps taken to address this gap.

Developing a coherent innovation environment for all phases of the knowledge cycle is considered a prerequisite element design and formulation of a national RIS3.

² Directory of "No-Nonsense" Activities To Build S3-minded Regions, EURADA 2011, <http://eurada.org/>

2. Review and assess general trends & scenarios

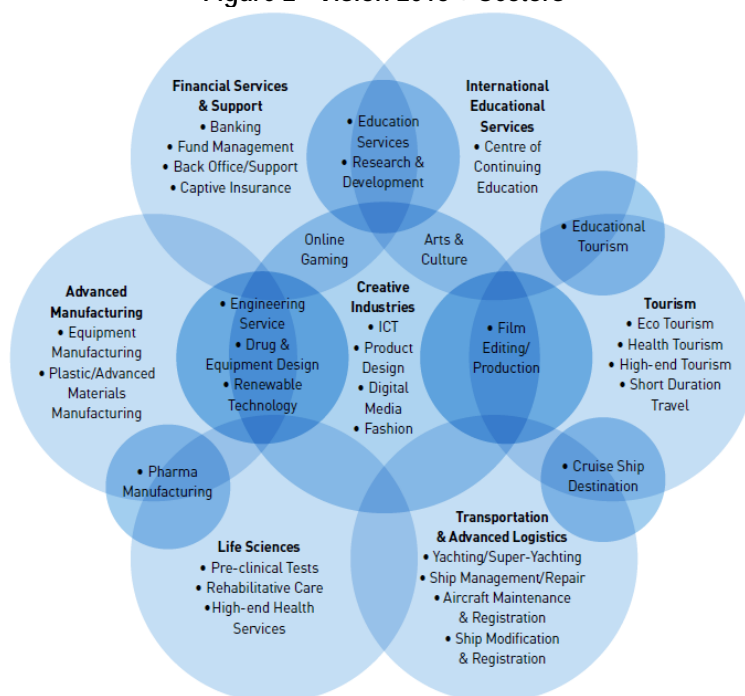
With a GDP of €6.4 billion and a population of around 415,000 living in an area of 316 sq. km., Malta is one of the smallest and most densely populated countries in the world. With an average trade to-GDP ratio of 82% since membership in 2004, it has the second most open economy in the European Union. The EU accounts for 61% of Malta's exports of goods and services. Malta's small size necessarily gives rise to a narrow export base, making the country susceptible to external shocks caused by changing levels of demand. Malta's near complete dependence on imported fossil fuels also characterises the Maltese economy by making it susceptible to price volatility in the oil sector.

Over the last decade, the Maltese economy underwent a gradual change from manufacturing towards services. Whereas in 2000, manufacturing accounted for 22.4% of Gross Value Added (GVA), in 2010, it only accounted for 13.6%. On the other hand, the services sector contributed to 59% of GVA in 2010, up from 53% in 2000. Additionally, while tourism and electronics remain important pillars of the local economy, other sectors have emerged over time, such as aircraft maintenance, financial services, on-line gaming and pharmaceuticals, indicating a shift in the economy towards higher value-added sectors and sectors which are more knowledge intensive.

Indeed, in its Vision 2015 prepared in 2010, the Maltese Government identified seven sectors in which Malta should seek to become a centre of excellence and focus future business attraction, retention, and entrepreneurial development efforts upon:

1. **Creative Industries** (Information and Communications Technology, Digital Media, Design, Renewable Energy and Efficiency, Arts and Crafts, On-line gaming, Film Editing and Production and Fashion)
2. **Financial Services** (Banking, Funds Management, Captive Insurance and Trusts)
3. **Tourism** (Cultural Tourism, Eco-Tourism, Educational tourism, Cruise Ships Destination, Shorter Duration Travel and Association Conferences)
4. **Advanced Manufacturing** (Aircraft Modification, Engineering Services, Plastics/Advanced Materials)
5. **International Educational Services** (Educational Services for Tourism including Language Schools, Centre of Continuing Education)
6. **Life Sciences / Health Services** (Pharmaceuticals, Pre-Clinical Trials, Health Tourism, Rehabilitation Care)
7. **Transportation and Logistics** (Merchant Shipping, Related Shipping Services, Ship Management and Registration, Yachting /Super Yachting Services, Yachting Crew Training, Ship Repair)

Figure 2 - Vision 2015 + Sectors



The private enterprise sector

The private enterprise sector is characterised by a high predominance of micro-enterprises (97% in 2010), defined as enterprises employing 0-9 people. Between 2002 and 2010, the largest increase in number of enterprises was registered by 'Professional, Scientific and Technical Activities' (Section M, NACE Codes Rev.2) In the manufacturing sector, the majority of enterprises (92% in 2010) are engaged in medium to low and low tech activities, with only 8% (in 2010) of manufacturing enterprises falling within the high-tech or moderate to high-tech categories. No significant changes to this can be noted between 2002 and 2010, with the share of enterprises engaged in high and medium to high tech activities in 2002 being 8.2%. In 2008, the 'manufacture of basic pharmaceutical products and pharmaceutical preparations' (NACE Code Rev.2 21) sector was the economic sector which undertook most R&D in the enterprise sector, representing nearly a quarter (24.8%) of business R&D expenditure. This is closely followed by the 'computer programming, consultancy and related activities and information service activities' sector (NACE Code Rev. 2 62-63), representing another quarter (24.6%) of business R&D expenditure in 2008. During the same year, the manufacture of computer,

electronic and optical products (NACE Code Rev. 2 26) was responsible for 17.8% of business R&D expenditure. This clearly indicates that R&D activity is clustered around a few sectors, and is not a widespread feature of local economic activity. The data also indicates that when it comes to overall innovation expenditure, the highest expenditure in 2008 was in the 'telecommunications, programming and broadcasting activities' (NACE Code Rev. 2 60-61) sector (13.6% of total innovation expenditure in 2008), followed by the 'warehousing and support activities for transportation' (NACE Code Rev. 2 52) sector (10% of total innovation expenditure in 2008). Both sectors had not undertaken any R&D in the period in question. In the services sector, the number of enterprises classified as 'knowledge intensive' increased from 32.4% in 2002 to 39% in 2010. Both the 'knowledge-intensive' and the 'less-knowledge intensive' sectors experienced significant increases in the number of units between 2002 and 2010.

Key Indicators

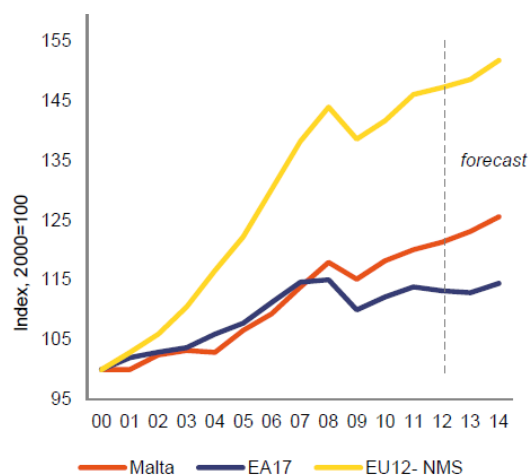
MALTA	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Average annual growth ⁽¹⁾ (%)	EU average ⁽²⁾	Rank within EU
ENABLERS																
Investment in knowledge																
New doctoral graduates (ISCED 6) per thousand population aged 25-34	0.13	0.22 ⁽³⁾	0.15	0.09	:	0.09	0.07	0.15	0.18	0.31	0.19	:	:	-1.2	1.69	27
Business enterprise expenditure on R&D (BERD) as % of GDP	:	:	:	:	0.35	0.38	0.41	0.38	0.37	0.34	0.42	0.49	:	4.8	1.26	19
Public expenditure on R&D (GOVERD + HERD) as % of GDP	:	:	0.20	0.18	0.18	0.19	0.21	0.20	0.19	0.20	0.25	0.24	:	2.4	0.74	27
Venture Capital as % of GDP	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
S&T excellence and cooperation																
Composite indicator of research excellence	:	:	:	:	:	14.4	:	:	:	:	17.5	:	:	4.1	47.9	25
Scientific publications within the 10% most cited scientific publications worldwide as % of total scientific publications of the country	4.4	4.9	0.4	2.8	3.6	6.2	8.2	5.3	7.1	:	:	:	:	6.1	10.9	19
International scientific co-publications per million population	60	72 ⁽⁴⁾	71	106	103	219	198	177	244	208	292	328	:	16.5	300	22
Public-private scientific co-publications per million population	:	:	:	:	:	:	2	1	2	6	8	:	:	36.1	53	23
FIRM ACTIVITIES AND IMPACT																
Innovation contributing to international competitiveness																
PCT patent applications per billion GDP in current PPSE	0.4	0.7	0.3	0.5	0.4	0.8	0.7	1.1	1.0	0.3	:	:	:	-3.9	3.9	26
License and patent revenues from abroad as % of GDP	:	:	:	:	0.05	0.80	2.25	0.69	0.52	0.571	0.36	0.30	:	28.7	0.58	12
Sales of new to market and new to firm innovations as % of turnover	:	:	:	:	22.2	:	28.6	:	15.2	:	7.4	:	:	-16.7	14.4	24
Knowledge-intensive services exports as % total service exports	:	:	:	:	12.5	12.0	15.4	17.8	14.5	13.3	13.6	:	:	1.5	45.1	26
Contribution of high-tech and medium-tech products to the trade balance as % of total exports plus imports of products	5.07	5.71	4.43	4.69	4.42	7.72	7.52	9.46	10.73	9.61	3.21	0.92	:	-	4.20 ⁽⁵⁾	17
Growth of total factor productivity (total economy) - 2000 = 100	100	96	98	97	95	96	97	97	99	97	98	98	99	-1 ⁽⁶⁾	103	23
Factors for structural change and addressing societal challenges																
Composite indicator of structural change	41.8	:	:	:	:	47.4	:	:	:	:	54.5	:	:	2.7	48.7	9
Employment in knowledge-intensive activities (manufacturing and business services) as % of total employment aged 15-64	:	:	:	:	:	:	:	:	15.7	15.7	16.0	16.2	:	1.1	13.6	5
SMEs introducing product or process innovations as % of SMEs	:	:	:	:	14.4	:	:	:	25.9	:	29.0	:	:	12.3	38.4	18
Environment-related technologies - patent applications to the EPO per billion GDP in current PPSE	0.00	0.00	0.00	0.00	0.15	0.11	0.27	0.19	0.00	:	:	:	:	8.9	0.39	11 ⁽⁷⁾
Health-related technologies - patent applications to the EPO per billion GDP in current PPSE	0.00	0.16	0.00	0.15	0.04	0.00	0.00	0.19	0.00	:	:	:	:	2.8	0.52	15 ⁽⁷⁾
EUROPE 2020 OBJECTIVES FOR GROWTH, JOBS AND SOCIETAL CHALLENGES																
Employment rate of the population aged 20-64 (%)	57.2	57.2	57.7	57.8	57.9	57.9	57.8	58.5	59.1	58.8	60.1	61.5	:	0.7	68.6	24
R&D intensity (GERD as % of GDP)	:	:	:	:	0.53	0.57	0.62	0.58	0.56	0.54	0.67	0.73	:	4.7	2.03	21
Greenhouse gas emissions - 1990 = 100	128	134	136	145	144	149	148	154	152	148	149	:	:	21 ⁽⁸⁾	85	26 ⁽⁸⁾
Share of renewable energy in gross final energy consumption (%)	:	:	:	:	0.1	0.1	0.2	0.2	0.2	0.2	0.4	:	:	26.0	12.5	27
Share of population aged 30-34 who have successfully completed tertiary education (%)	7.4	12.9	9.3	13.7 ⁽⁹⁾	17.6	18.4	21.6	21.5	20.9	21.0	21.5	21.1	:	5.5	34.6	25
Share of population at risk of poverty or social exclusion (%)	:	:	:	:	20.2	19.1	19.4	19.6	20.2	20.3	21.4	:	:	1.0	24.2	13 ⁽⁸⁾

2.1 General trends in national economy

According to the latest report by the EC³ (2013), the Maltese economy has managed to remain resilient throughout the European sovereign debt crisis which has made it difficult or impossible for some countries in the euro area to repay or re-finance their government debt without the assistance of third parties. However economic growth in Malta in the years before the crisis was in line with the average for the euro area, but well below the group of new Member States (EU12). In the aftermath of the global crisis, the domestic economy proved resilient and in 2009, real GDP declined by only 2.4% which is well below the 4.4% contraction in the euro area.

Figure 3 - Malta's real GDP evolution (2000 to 2014)

³ Commission staff working document. In-depth review for MALTA in accordance with Article 5 of Regulation (EU) No 1176/2011 on the prevention and correction of macroeconomic imbalances.



The subsequent rebound was more pronounced than for the euro area average (2.7% of GDP against 2.0% of GDP in the euro area), as was mainly driven by exports, while domestic demand and in particular the import-intensive investment were subdued. As a result, the current account balance has been gradually improving.

The sustainability of Malta's external balance also benefits from a favourable net external debt and positive net international investment position. Thanks to large investments in foreign debt instruments, the net international investment position (NIIP) averaged a surplus of over 20% of GDP over 2001-2011 (see Graph 5). Malta is a net external creditor and its positive balance has increased from 4.5% of GDP in 1995 to nearly 160% of GDP in 2011.

Despite Malta's still very low participation labour rates for women (28% in 2011) and older workers, job creation was strong and the unemployment rate remained at a low level of 6.5%⁴ compared to the euro area average. According to the Commission services' winter 2013 forecast⁵, after moderating in 2012, economic growth is projected to grow in 2013-14 and to continue to outperform the euro area average, underpinned by gradually resuming business investment and household consumption. Growth is expected to remain job-rich and employment is forecast to continue increasing at a relatively fast rate, mainly thanks to catching up participation and employment among women and older workers, also resulting in decreasing unemployment. Recovering domestic demand is expected to result in worsening external trade balance over 2013-14, although the current account is forecast to remain in surplus. In conclusion, the EC report suggests that Malta is experiencing macroeconomic imbalances which deserve monitoring and policy action. In particular, the high corporate and government debt levels warrant attention to ensure the long-term sustainability of the public finances. This is also the case for the very large financial sector, and particularly the strong link between the domestically-oriented banks and the housing market and construction sector, which are in the process of adjusting, can pose a challenge that deserves continued monitoring. Unfortunately recent announcements⁶ by the new Labour Government to bolster the construction industry and encouraging a boost for the property sector via reforming the Malta Environment and Planning Authority (MEPA), changing the Local Plans, fast-track planning applications and significantly reducing its tariffs have elicited criticism⁷ and at face value seem to ignore the above issue highlighted in the EC report. With already an estimated 70,000 vacant dwellings⁸ on the island, such effort risks unbalancing the local property market and indirectly the banking sector, which would ultimately jeopardise the whole economy and thwart efforts at Smart Specialisation.

2.1.1 Trade Performance

The Maltese economy is very open and total trade (exports plus imports) amounted to around 200% of GDP in 2011. The exports of goods and services (% of GDP) in Malta was last reported at 97.98 in 2011, according to a World Bank report published in 2012.⁹

Table 1 - International trade: an overview¹⁰

Imports/Exports	2008	2009	2010	2011
Imports	3,897,147	3,454,417	4,328,071	5,325,236
<i>by broad economic category:</i>				
Industrial supplies	1,569,747	1,214,187	1,499,927	1,540,816

⁴ October-December 2012. Table 2. Labour force distribution. Labour Force Survey: y: Q4/2012. NSO.

http://www.nso.gov.mt/statdoc/document_file.aspx?id=3559

⁵ European Economic Forecast. Winter 2013. Malta- Growth gradually gaining pace. EC. Page 66.

http://ec.europa.eu/economy_finance/publications/european_economy/2013/pdf/ee1_en.pdf

⁶ <http://www.timesofmalta.com/articles/view/20130411/local/Mepa-fees-cut-by-an-average-of-25-per-cent.465076>

⁷ <http://www.independent.com.mt/mobile/2013-04-23/news/government-risks-creating-housing-bubble-kristy-debono-1449852928/>

⁸ Data from the 2005 Census of Population and Housing in Malta shows that the total number of dwellings in Malta stood at 192,314. Of these, 139,178 were occupied and 53,136 vacant. 27.6% of Malta's building stock was vacant in 2005. <http://www.nso.gov.mt/docs/CensusVol2.pdf>

⁹ Doing Business 2013. Smarter Regulations for Small and Medium-Size Enterprises. World Bank.

<http://www.doingbusiness.org/reports/global-reports/doing-business-2013> and <http://www.tradingeconomics.com/malta/exports-of-goods-and-services-percent-of-gdp-wb-data.html>

¹⁰ Table 43. International trade: an overview. Malta in Figures 2012. National Statistics Office, Malta. 2012.

http://epp.eurostat.ec.europa.eu/portal/page/portal/pgp_ess/0_DOCS/mt/Malta_in_figures_2012.pdf

Capital goods	610,202	692,350	838,809	874,893
Consumer goods	972,839	890,745	933,747	975,691
Fuels/lubricants	744,359	657,135	1,055,588	1,933,836
Exports	2,455,542	2,085,900	2,806,021	3,815,235
Visible trade gap	-1,441,605	-1,368,517	-1,522,050	-1,510,001

In the trade of services, the main exports in 2011 were tourism and remote gaming¹¹ whereas the economy imports business services in particular management and accounting. In terms of goods, the main export is electrical machinery, while new high technology activities have emerged in recent years, namely in the aircraft and pharmaceuticals sectors. As Malta has increasingly become an important trans-shipment centre for crude oil in the Mediterranean area, trade in oil has also seen significant growth over the past several years. Its net impact on the trade balance, however, appears to be small as it mainly represents re-exporting. The trade balance has been gradually improving in recent years, mainly reflecting gains in market shares in services. Reflecting the structural shift in the economy, it was trade in the less import-intensive services that drove the improvement. This has been reflected in gains in market shares in the trade of services – in particular recreational services, legal and accounting services and IT – while losing in the trade of goods (machinery and electrical equipment as well as textiles).

Table 2- Imports by sector

Sector	2008	2009	2010	2011
Food and live animals	435,766	386,921	393,525	421,555
Beverages and tobacco	62,051	59,505	62,635	64,112
Crude materials, inedible, except fuels	25,976	31,382	31,552	23,597
Mineral fuels, lubricants and related materials	757,628	657,758	1,057,702	1,943,171
Animal and vegetable oils, fats and waxes	9,047	6,902	6,926	8,585
Chemicals and related products, n.e.s.	347,708	315,801	376,137	433,944
Manufactured goods classified chiefly by material	355,514	288,354	326,229	330,572
Machinery and transport equipment	1,452,766	1,325,689	1,640,583	1,687,369
Miscellaneous manufactured articles	425,032	359,791	393,590	377,974
Commodities and transactions n.e.c.	25,659	22,314	39,192	34,357
TOTAL	3,897,147	3,454,417	4,328,071	5,325,236

Source: National Statistics Office.

Table 3 - Exports by sector¹²

Sector	2008	2009	2010	2011
Food and live animals	161,330	69,576	135,694	129,791
Beverages and tobacco	15,843	17,666	22,502	21,562
Crude materials, inedible, except fuels	12,517	9,602	13,718	19,783
Mineral fuels, lubricants and related materials	411,752	446,812	718,934	1,621,721
Animal and vegetable oils, fats and waxes	524	39	5	0
Chemicals and related products, n.e.s.	224,324	205,098	273,772	258,698
Manufactured goods classified chiefly by material	112,884	89,017	123,550	132,804
Machinery and transport equipment	1,173,546	939,026	1,177,201	1,237,822
Miscellaneous manufactured articles	335,702	307,169	331,104	383,222
Commodities and transactions n.e.c.	7,120	1,895	9,541	9,832
TOTAL	2,455,542	2,085,900	2,806,021	3,815,235

Note: Totals may not add up due to rounding. Source: National Statistics Office.

GVA classified under the wholesale and retail trade, repair of motor vehicles and motorcycles, transportation and storage, accommodation and food services sector increased by 4.3 per cent during 2012 when compared to 2011. At a more disaggregated level, GVA at basic prices in the wholesale and retail trade and repair of motor vehicles and motorcycles sector in 2012 stood at €620.3 million, a rise of 3.6 per cent when compared to 2011.¹³

¹¹ Following the so-called "VAT package" adopted by the council in Council Directive 2008/8/EC of 12 February 2008, Malta's attractiveness as a location for remote gaming could diminish. Malta currently exempts from VAT such activities. The new Council Directive stipulates that as of 2015 VAT must be charged on the basis of where the customer is located. Since several Member States do not apply a blanket exemption to gaming, service suppliers established in Malta will have to charge and account for VAT where this is applicable. Any VAT advantage gained by choosing Malta as a location for remote gaming will thus disappear.

¹² Central Bank of Malta. External statistics 2011. <http://www.centralbankmalta.org/site/statistics7.asp>

¹³ Economic Review. April 2013. Ministry of Finance.

<http://mfin.gov.mt/en/The-Budget/Documents/The%20Budget%202013/Economic%20Review%202013.pdf>

The accommodation and food service activities sector also registered a rise in its GVA at basic prices, amounting to €19.2 million (6.7 per cent) during 2012 to €307.5 million. On the other hand, the transportation and storage sector increased by 3.3 per cent during 2012 to €352.8 million. During the period under review, there were also declines in the manufacturing of machinery and equipment (4.0 per cent) and manufacturing of computer and electronics (1.9 per cent).

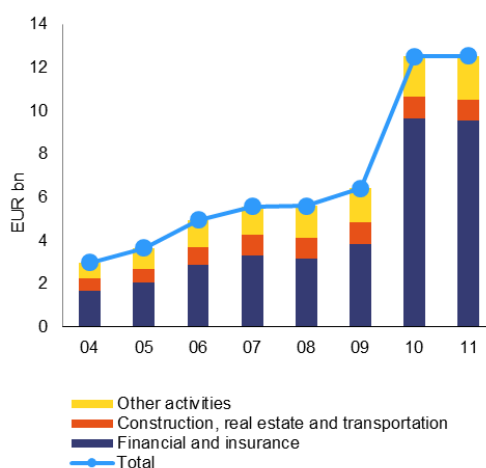
Table 4 - Contribution of Regional GVA to Total Economy GVA - By industry and by region (NUTS III)

	2007	2008	2009	2010	2011
1 Agriculture, forestry and fishing (A)	2.07	1.47	1.75	1.75	1.57
2 Mining and quarrying; manufacturing; electricity, gas, steam and air conditioning supply; water supply; sewerage, waste management and remediation activities (B+C+D+E)	16.61	17.23	15.39	15.20	13.93
3 Construction (F)	4.92	4.72	4.55	4.23	4.03
4 Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities; information and communication (G+H+I+J)	29.43	27.86	26.77	26.30	26.46
5 Financial and insurance activities; real estate activities; professional, scientific and technical activities; administrative and support service	20.56	19.95	22.35	23.00	23.79
6 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 (O+P+Q+R+S+T+U)	26.41	28.78	29.19	29.52	30.22
Gross value added at basic prices					
<i>MT MALTA</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>
<i>MT001 Malta</i>	<i>94.48</i>	<i>94.61</i>	<i>94.42</i>	<i>94.49</i>	<i>94.52</i>
<i>MT002 Gozo and Comino</i>	<i>5.29</i>	<i>5.18</i>	<i>5.37</i>	<i>5.29</i>	<i>5.26</i>
<i>MTZZZ Extra-Regio</i>	<i>0.23</i>	<i>0.21</i>	<i>0.22</i>	<i>0.22</i>	<i>0.22</i>

2.1.2 Foreign Direct Investment (FDI)

Past current account deficits have been comfortably financed by FDI inflows, mainly thanks to an expanding banking sector. Malta has historically been an attractive destination for foreign investment, despite the small size of its domestic market. FDI inflows have averaged around 10% of GDP since the beginning of the decade (see Graph 3). The majority of respondents in a recent survey by Ernst & Young (2012) indicated that Malta's attractiveness as a destination for foreign investment is related to its stable social climate and corporate taxation regime as well as the reliable and transparent regulatory environment. As Figure 4 illustrates, FDI inflows have been largely dominated by the financial sector, which by 2009 represented around 56% of the total stock of FDI in Malta and this share increased to around 80% in 2010, with the arrival of a major German international bank.

Figure 4 - Malta's inward FDI stocks



In fact, FDI represents a relatively small proportion of the gross financing flows in Malta. The banking sector attracts also a significant amount of financing reported as 'other investment' in the balance of payments statistics, which mainly represents loans and deposits transferred from parent institutions into their banking branches and subsidiaries in Malta. These very large capital flows do not stay in the country but are invested abroad either as loans or deposits in other banks or in the form of portfolio investment. The construction sector also attracted a sizeable share of FDI inflows, but these appear to have dried up after 2007-08.

A notable improvement in the current account balance started in 2009. The current account balance moved from a deficit of nearly 8% of GDP at the end of 2009 to a 2% of GDP surplus in the second quarter of 2012. The improvement is mainly attributable to the goods balance, which moved from -21% of GDP at the beginning of 2009 to -15% of GDP in the third quarter of 2012. The slowdown in the import-intensive construction sector (see section 2.6 later), also related to the completion of a major construction project in 2007, as well as a strong increase in exports are key drivers of this development.

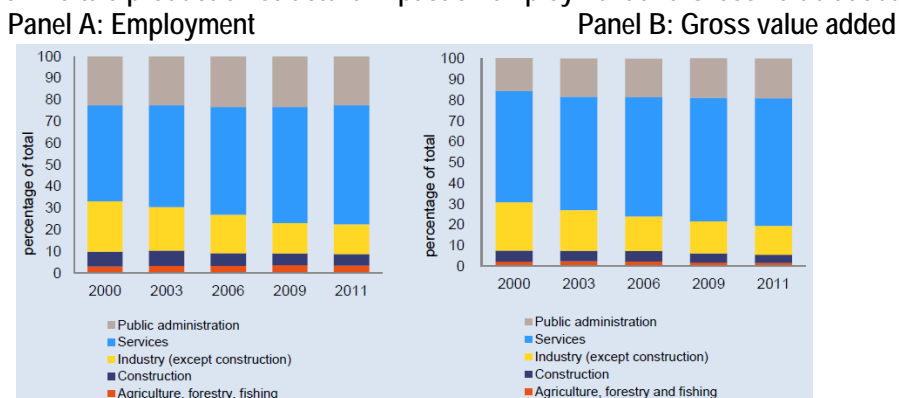
2.1.3 Manufacturing and Production Structure

Malta's production structure predominantly consists of domestic-owned micro enterprises operating alongside a small number of relatively large export-oriented subsidiaries of multinational companies that account for most of Malta's export earnings. ST Microelectronics alone accounts for about half of Malta's merchandise exports, and, as of 2011, with around 1,550 staff was the country's biggest private-sector employer.¹⁴ However in 2012 the biggest employer seems to be METHODE Electronics Malta Ltd.¹⁵ which is focused on plastic injection moulding, insert moulding, PCB assembly, stamping, plating, ultra-sonic welding, paint and laser etching, assembly and testing with research and development, product and tool design, tool building, rapid prototyping and laboratory services.

While the manufacturing sector remains an important pillar of the domestic economy, the share of total value added generated by this sector has been steadily declining - from 21% in 2000 to 13% in 2011 - and its share in total employment declined by almost 8 percentage points over the same period (see Figure 5). This structural change started already twenty years ago, thanks to foreign direct investment and the birth of new and growing industries. In addition, important changes have occurred within the manufacturing sector, with the emergence of activities in pharmaceuticals, precision engineering, aircraft maintenance and medical devices coming to complement the important electronics sector and moving the overall sector to higher technology activities.

By contrast, the services sector has been gaining in importance, mainly thanks to the emergence of new activities such as remote gaming, financial intermediation, tourism, as well as, more recently, IT, legal and accounting services. In particular, the rapid growth of the remote gaming sector is striking as the number of people employed in it doubled and this sector increased its share in gross value added by around 8 percentage points since 2000. The shift towards services plays an important role in the current account balance improvement due to the much smaller share of imported inputs in total output in their production compared to the production of goods.

Figure 5 - Malta's production structure impact on employment and Gross value added



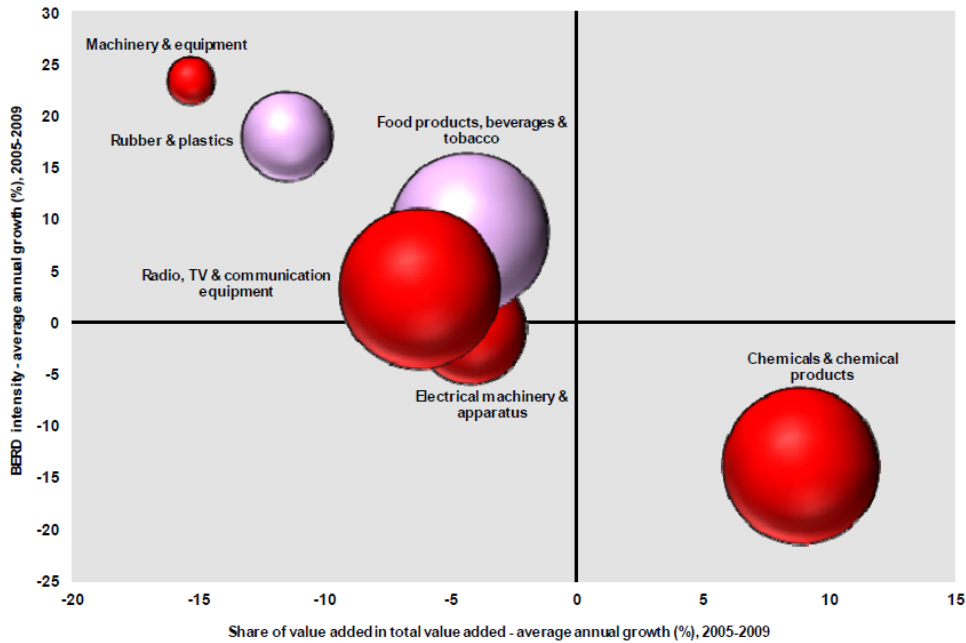
The graph below illustrates the upgrading of knowledge in different manufacturing industries. The position on the horizontal axis illustrates the changing weight of each industry sector in value added over the period. The general trend of moving to the left-hand side reflects the decrease of manufacturing in the overall economy. The sectors above the x-axis are sectors whose research intensity has increased over time. The size of the bubble represents the share of the sector (in value added) in manufacturing (for all sectors presented in the graph). The red-coloured sectors are high-tech or medium-high-tech sectors.

Figure 6 - Share of value added versus BERD intensity - average annual growth, 2005 – 2009¹⁶

¹⁴ http://www.pwc.com/mt/en/about-us/doing-business/doing_business_in_malta_2013.pdf

¹⁵ <http://www.methode.com/manufacturing.html>

¹⁶ Research and Innovation performance in Malta. Specific Malta Country Report. 2013 http://ec.europa.eu/research/innovation-union/pdf/state-of-the-union/2012/innovation_union_progress_at_country_level_2013.pdf

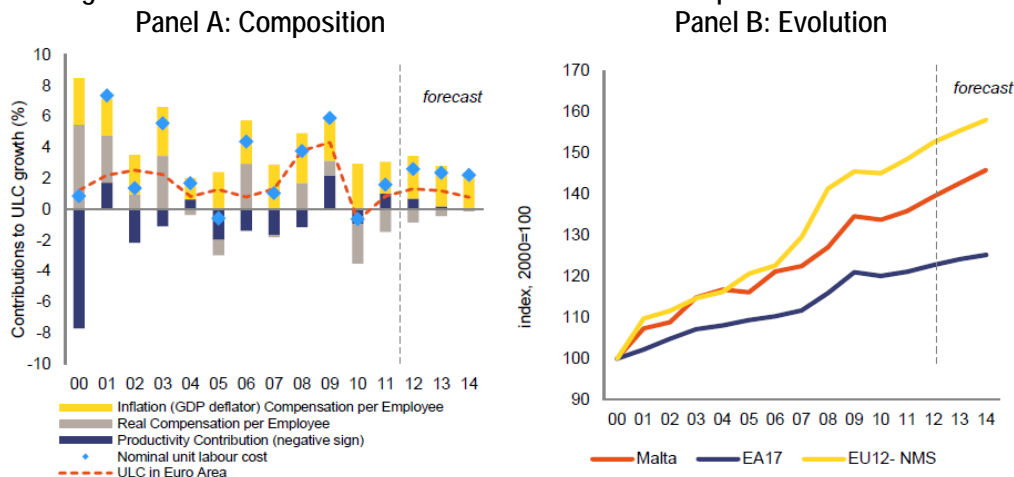


2.1.4 Competitiveness

The Maltese economy is very open and total trade (exports plus imports) amounted to around 200% of GDP in 2011. In the trade of services, the main exports are tourism and remote gaming¹⁷, whereas the economy imports business services, in particular management and accounting. In terms of goods, the main export is electrical machinery, while new high technology activities have emerged in recent years, namely in the aircraft and pharmaceuticals sectors. As Malta has increasingly become an important trans-shipment centre for crude oil in the Mediterranean area, trade in oil has also seen significant growth over the past several years. Its net impact on the trade balance, however, appears to be small as it mainly represents re-exporting.

The trade balance has been gradually improving in recent years, mainly reflecting gains in market shares in services. Reflecting the structural shift in the economy, it was trade in the less import-intensive services that drove the improvement. This has been reflected in gains in market shares in the trade of services – in particular recreational services, legal and accounting services and IT – while losing in the trade of goods (machinery and electrical equipment as well as textiles). The economy has been gradually losing cost competitiveness vis-à-vis the euro area over the past decade. The growth of nominal unit labour costs, an indicator of the cost of labour needed to produce one unit of output, was notably more moderate than the average for the new Member States but still exceeded the average for the euro area (see Graph 9). Compensation per employee increased faster than in the euro area, in particular in the years following EU accession, also because skill shortages in the emerging new industries increased competition for qualified employees and pushed up wages. At the same time, labour productivity growth in Malta has been modest, trailing behind the average increases for the euro area. After 2009, however, wage developments moderated and converged to the relatively slow productivity growth, thus helping the economy to regain some cost competitiveness and support the export-led recovery from the recession in 2009. While the existing automatic wage indexation mechanism (Cost-of-Living Adjustment) does not appear to have been a major hindrance to wage adjustment and overall labour market performance so far, looking forward it poses a potential risk to the economy in particular during strongly adverse phases of the economic cycle, by impeding the adjustment of real wages, in turn impeding the absorption of unemployment and hampering competitiveness.

Figure 7 - Unit labour costs in Malta and harmonised competitiveness indicator



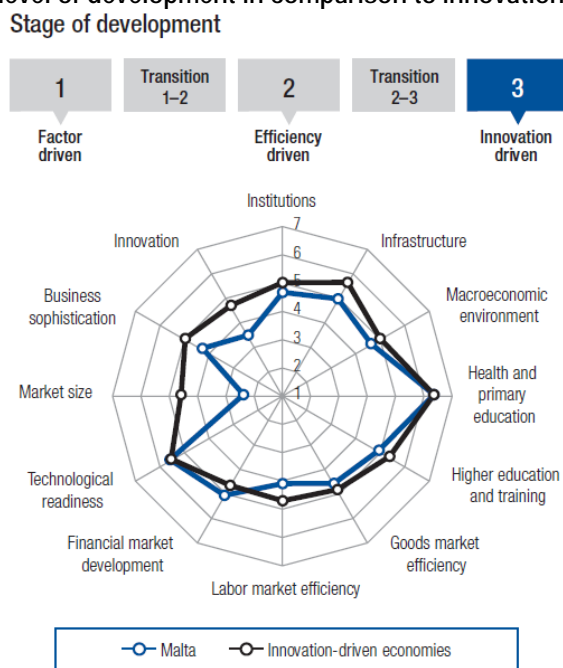
¹⁷ Following the so-called "VAT package" adopted by the council in Council Directive 2008/8/EC of 12 February 2008, Malta's attractiveness as a location for remote gaming could diminish. Malta currently exempts from VAT such activities. The new Council Directive stipulates that as of 2015 VAT must be charged on the basis of where the customer is located. Since several Member States do not apply a blanket exemption to gaming, service suppliers established in Malta will have to charge and account for VAT where this is applicable. Any VAT advantage gained by choosing Malta as a location for remote gaming will thus disappear.

However, price competitiveness improved after the crisis. The real effective exchange rate, a measure of the economy's price competitiveness against a group of competitor countries, appreciated notably before the crisis also reflecting the nominal appreciation of the euro against the US dollar (see Figure 7, Panel A). Following 2009, the nominal exchange rate depreciation, which is particularly relevant for Malta given that a significant part of exports goes outside of the EU, and moderate price growth, resulted in improving price competitiveness. This trend is also confirmed by dynamics of the ECB's Harmonised Competitiveness Indicator¹⁸, which looks at a country's price competitiveness vis-à-vis the other euro area Member States and the euro area's 20 main trading partners (see Figure 7 above, Panel B).

Overall, the economy does not appear to suffer from lack of competitiveness. The economy underwent a structural shift away from traditional manufacturing and towards higher technology activities, mainly in services, in a relatively smooth way. The restructuring was job-rich and thus able to absorb a significant increase in labour participation, in particular as more and more women entered the labour market. While remaining well below the EU average (at 57.6% and 41% in 2011 for the total population and for women, respectively), the employment rate in Malta thus increased substantially since the beginning of the decade, especially for women (7.9 pps). Export market shares increased, mainly in services, but also in some segments of the trade of goods. Price and cost competitiveness have improved following the crisis, thereby supporting an export-led recovery of the economy and a further improvement in the current account balance. A stable regulatory environment and a relatively cheap and skilled labour force certainly contributed to these favourable developments, although skill shortages in some growing sectors, such as financial services, have resulted in upward pressure on wages, which may hamper competitiveness going forward.

According to the Global Competitiveness Report (GCR)¹⁹, competitiveness is defined as "the set of institutions, policies, and factors that determine the level of productivity of a country". In turn, productivity is said to determine the rates of return obtained by investments, which is a key driver of economic growth. Put simply, greater productivity enhances both the level and the potential for economic growth, thus increasing the level of prosperity which can be earned by the economy. The GCR lists no less than twelve pillars which are in some way determinants of competitiveness. These pillars, although not mutually inclusive, are important to differing degrees depending on the stage of economic development of a particular country. For instance factor-driven economies would find it worthwhile to focus on basic requirements such as the development of institutions and ensuring macroeconomic stability, whilst innovation driven economies, having already a framework of basic necessities would find it more beneficial to focus on business sophistication and research and development.²⁰

Figure 8 - Malta's level of development in comparison to innovation driven economies



2.1.5 Labour Market

During the twelve months to October 2012, the Maltese labour market recorded a relatively positive performance, as reflected by the increasing participation rates and employment levels and the relatively low and stable unemployment rate.

Table 5 - Unemployment rates in Malta

¹⁸ http://www.ecb.int/stats/exchange/hci/html/hci_MT_2013.en.html

¹⁹ The Global Competitiveness Report 2012–2013. World Economic Forum. 2012 http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2012-13.pdf

²⁰ A perspective on current issues. Why enhancing competitiveness is the main challenge facing economies today. Insight. Annual publication. December 2012. KPMG. Original source: World Economic Outlook Publication.

<http://www.kpmg.com/MT/en/IssuesAndInsights/ArticlesPublications/Documents/Insight%20December%202012.pdf>

UNIT		REFERENCE PERIOD ²¹					
		2006	2007	2008	2009	2010	2011
Unemployment rate	3 years avg.	7.1	6.9	6.5	6.5	6.6	6.8
Quarterly data							

Indeed, as shown in

Table 6 below, full-time employment increased by 2,113 or 1.4 per cent to 152,501 while the labour force increased by 2,588 or 1.6 per cent to 159,514. The increase in the gainfully occupied population was underpinned by an increase of 1,940 in the number of females, while the number of males in full-time employment rose by 173. However, the number of unemployed persons increased by 475 such that the unemployment rate increased from 4.2 per cent in October 2011 to 4.4 per cent in October 2012.

Table 6 - Labour Force Survey Indicators

	2010 Oct-Dec	2011 Oct-Dec	2012 Oct-Dec
Activity Rate	60.5	61.4	63.6
Male	77.5	77.9	77.7
Female	42.8	44.4	49.0
Employment Rate	56.3	57.3	59.5
Male	72.0	73.0	73.1
Female	40.0	41.1	45.4
Unemployment Rate	6.8	6.6	6.5
15-24	13.7	13.6	12.8
25+	5.5	5.2	5.3

During the period under review, the share of direct production employment in total employment continued to decline whereas the share of market services continued to increase, in line with the trend registered in recent years. This reflected a decline in direct production employment of 590 or 1.6 per cent to 36,915 while market services employment increased by 2,762 or 2.5 per cent to 115,026. The most significant increases were recorded in education, health, computer programming, legal and accounting activities as well as gambling and betting activities. On the other hand, the most significant declines were recorded in construction, the manufacture of fabricated metal products and air transport (the latter reflecting early retirement schemes offered to employees within a major company within the sector).²²

2.1.6 The role of SMEs

The growth of SMEs is a key driver of EU growth given that Europe's 23 million SMEs currently contribute more than 50% of the total value added in the non-financial business economy and about two-thirds of total employment. In addition, SMEs provided 80% of all new jobs in Europe in the past five years²³. Small businesses are particularly important since they bring into the markets innovative products or techniques to the market.

The role of SMEs in Malta is even more pronounced. In Malta almost all businesses (c. 99.9%) fall under the EC definition of an SME²⁴. Moreover, Malta accounts for the largest share of micro-firms out of all firms in the EU, since micro-firms represent 95 out of every 100 local businesses. These micro-firms account for slightly more than one third of the private sector employment. In fact, with an average of about 3 persons per business, Malta is referred to by the EC as being "*quintessentially a small business economy*". Malta's SMEs contribute to about two-thirds of total value added, which is notably higher than the EU-27 average of circa 58% as shown in

Table 7 below. Micro enterprises contribute circa 26% of total Malta GDP.

Table 7 - Share of SMEs²⁵

²¹ Imbalance scorecard. European Commission. 2011

http://epp.eurostat.ec.europa.eu/portal/page/portal/excessive_imbalance_procedure/imbalance_scoreboard

²² Economic Review. April 2013. Ministry of Finance.

<http://mfin.gov.mt/en/The-Budget/Documents/The%20Budget%202013/Economic%20Review%202013.pdf>

²³ European Commission (2011), *An action plan to improve access to finance for SMEs*

²⁴ According to the EC, an enterprise must meet the stipulated headcount and satisfy either the 'annual turnover' or the 'balance sheet total' criterion in order to be considered an SME.

²⁵ Malta Business Bureau – Market gaps in access to finance. April 2013.

	Number of Enterprises - 2011			Employment - 2011			Value Added - 2011		
	Malta		EU27	Malta		EU27	Malta		EU27
	Number	Share	Share	Number	Share	Share	Billion (€)	Share	Share
Micro	28,468	95.1%	92.2%	39,922	34.4%	29.6%	1.0	26.3%	21.2%
Small	1,170	3.9%	6.5%	24,211	20.9%	20.6%	1.0	14.7%	18.5%
Medium	239	0.8%	1.1%	24,290	20.9%	17.2%	1.0	23.6%	18.4%
SMEs	29,877	99.9%	99.8%	88,423	76.3%	67.4%	3.0	64.5%	58.1%
Large	44	0.1%	0.2%	27,535	23.7%	32.6%	2.0	35.5%	41.9%
Total	29,921	100.0%	100.0%	115,958	100.0%	100.0%	5.0	100.0%	100.0%

Malta's business sector is exceptional in the EU context due to its small size, and it is the small size of the market that naturally defines the pattern of this sector. Hence, it is no surprise that, since micro firms make up 95 out of 100 businesses with fewer than 10 employees, Malta accounts for the largest share of micro-firms out of all firms in the EU. They account for 39,000 employees, or slightly more than one third of private sector employment. In terms of industrial sectors, services and trade make up the major share. These two sectors together account for 77% of all SMEs (EU: 75%), 73% of employment (EU: 60%) and 82% of the total value-added created (EU: 66%). Construction and manufacturing, on the other hand, play a lesser role in Malta's SME sector and in the economy as a whole. These results are determined by a number of specific service activities, such as distributive trades and food and accommodation, including tourism.

Given Malta's overall economic set-up, its particular geographic location and the small size of its economy, it is interesting that it should account for a relatively large share of high and medium-to-high tech manufacturing firms, as well as knowledge intensive services firms. Hence, almost one third (32%) of SME employees work in high-tech or high to-medium-tech manufacturing firms (EU: 21%), contributing 30% of value added in manufacturing (EU: 30%). Knowledge-intensive services account for slightly less employment than in the EU on average (22% to 25%), although - with 37% to 31%² - Malta leads the EU-average in terms of the value-added created in those service industries. So far, Malta's SME sector has been much less affected by the crisis engulfing the Eurozone. Even the sharp and sudden downturn in employment and turnover immediately after the outbreak of the crisis in 2009 that occurred in most other EU Member States is hardly visible in Malta's SME statistics. The forecasts for the foreseeable future, i.e. until the end of 2012, suggest a stabilisation in the current levels of the three main indicators, i.e. the number of businesses, employment and value-added.

2.2 Identification of priority and well-performing sectors

In identifying the priority and well performing sectors in Malta, a number different data sources were consulted. Economically significant sectors were observed from a number of different sources including the official national position as presented in two key strategies recently published by the Government of Malta as well as the EU and global level reports. Data on Malta's natural (wild) industry clusters and the state of cluster development as well as personal observations and experience were taken into account in this identification process. Based on this evidence, priority sectors with the potential to foster niches that could become the basis for Smart Specialisation areas are recommended.

Attempts were made to investigate Eurostat²⁶ as a data source for national and comparative statistics. It was found that data availability on Malta was limited in terms of type and extent of available data as well as the recency of the information.

A detailed review of the available statistics on competitiveness of the Maltese economy indicated that the relatively small size of the archipelago on a European scales, may lead to flawed conclusions to be drawn. In contrast with many larger members states where multi-level governance is commonplace at national, NUTS 1, 2 and 3 levels, Malta has only one NUTS2 region. This makes the aggregated statistical data less anonymous. Some indicators also fluctuate wildly from one year to the next simply due to variation in sale by one large company or recruitment or loss of a senior researcher at a university department.

In addition, Malta uses its small size in land and population to its advantage by being more opportunistic in using its agility as well as legislative and regulatory flexibility to attract new sectors and industries. This is nowhere more evident than in the generic pharmaceuticals manufacturers being attracted to Malta due to certain derogations from the EU regulations negotiated at the time of accession. Another example is the fiscal advantages in registering shipping²⁷ that not only has made Malta the 2nd largest maritime flag in Europe (2010) but also the preferred home for super yachts. Today the Maltese Aircraft Registration Act (2010), is creating a similar attractive jurisdiction for aviation services in Malta²⁸.

http://issuu.com/malta_business_bureau/docs/mbb_study_-_market_gaps_on_access_to_finance

European Commission (2012), Annual Report on EU SMEs http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/performance-review/files/supporting-documents/2012/annual-report_en.pdf:

European Commission (2012), SBA Fact sheet 2012 – Malta http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/performance-review/files/countries-sheets/2012/malta_en.pdf Note: Estimates for 2011, based on 2005-2009 figures from the Structural Business Statistics Database (Eurostat)⁵

²⁶ <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/>

²⁷ Malta – A Guide to Ship Registration, Transport Malta, <http://live.transport.gov.mt/admin/uploads/media-library/files/Reg%20Note.pdf>

²⁸ Plotting Your Flight Plan? Aviation in Malta, PWC 2011, http://www.pwc.com/en_MT/mt/publications/assets/Plotting_Your_Flight_Plan_-_March_2011a.pdf

This ability to use its small size and legislative flexibility to be opportunistic in attracting new industries makes forecasting future trends even more difficult. Coupled with the fact that statistical indicators do not tell the full story there are significant number of areas that local knowledge, an objective observation and detailed narrative, therefore, must accompany the statistical analysis in order to ensure that anomalies are explained and numbers are put in context.

2.2.1 Priority sectors identified through national policies

There is a plethora of policies and strategies in Malta relating to different aspects of R&I. These range from umbrella strategies to sector specific ones. Examples include “National Strategic Plan for Research and Innovation” covering the scientific research priorities and “Vision 2015 and Beyond: A Path to a Knowledge Based Economy - Exploiting Business Innovation Opportunities” which is more focused on business innovation agenda. In addition Tourism policy, Manufacturing Research Strategy and Digital Gaming Strategy have sector specific remits. This proliferation of strategies could be seen as fragmentation in the decision making process.

National Strategic Plan for Research and Innovation

The most recent version of the plan was published 2011 for consultation and sets the agenda for science, research and innovation for Malta for the 10-year period to 2020. Its predecessor covered the period 2007-10.

The responsibility of formulating the plan lies with Malta Council for Science and technology (MCST) who, with relatively modest resources, not only manages the national research and innovation programmes but also oversees the process of formulation, development and champions the implementation of the National Strategic Plan for Research and Innovation.

An earlier version of the Plan (2007-2010) established the national vision and mission for research and innovation through seven strategic principles to allow R&I to thrive in Malta. These principles were:

1. addressing national concerns (such as water, energy and the environment) through state-funded R&I;
2. smart specialisation – focussing resources and efforts on selected areas of economic importance;
3. building a supporting framework to enable SMEs to innovate successfully;
4. exporting locally-generated R&I;
5. expanding Malta’s science, engineering and technology human capital base.
6. supporting collaboration and knowledge transfer between academia and industry;
7. developing a national culture which is more supportive of entrepreneurship, risk-taking and innovation.

Table 8 - Priority areas for National Strategic Plan for R&I

Research and Innovation Priority Areas ²⁹	Supplementary & Implementation Strategies
ICT	National ICT Strategy – Smart Island (2008-2010) & ICT Strategic Plan 2009-12, Digital Gaming Strategy
Value Added Manufacturing and Services	National Research Strategy for Manufacturing in Malta ³⁰
Energy and Environment	Draft Energy Policy for Malta
Health and Biotechnology	Draft Health Research and Innovation Strategy ³¹

These are extremely broad and generic topics to provide any meaningful insights into the development of a smart specialisation strategy for the country. Specific implementation strategies have been developed to better identify specific niches that are well worth investigating. These niches include aircraft maintenance, financial services, on-line gaming and pharmaceuticals which address the desire within the policy making circles to follow the current trend in almost every country to prioritise “value-added sectors” and “knowledge intensive industries”. If the approach is not carefully assessed and implemented this rush towards “knowledge economy” could take place at the expense of the existing mainstay of economy that may be categorised as “traditional”.

Vision 2015 and Beyond: A Path to a Knowledge Based Economy

In addition to R&I priority areas, the Maltese Government identified a number of industries and sectors to help diversify the local economy. These were set out in the document ‘Vision 2015 and Beyond: A Path to a Knowledge Based Economy³²’ as a workable strategy for the development of key industries. The seven sectors in which Malta wishes to become a centre of excellence, include a mix of both “traditional” and non-traditional sectors including:

Table 9 - Potential Areas for making Malta a centre of Excellence

Potential areas as centres of Excellence	Identified niches for development
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²⁹ National Strategic Plan for Research & Innovation <http://mcst.gov.mt/files/uploaded/National%20Strategy%20DRAFT.pdf>

³⁰ Malta Council for Science & Technology - Development of a National Research Strategy for Manufacturing in Malta –Detailed Report 2010 http://www.manufacturingresearch.eu/documents/MCST%20Detailed%20Report_for%20Public%20Consultation.pdf

³¹ DRAFT National Strategy for Health Research & Innovation 2012. MCST.

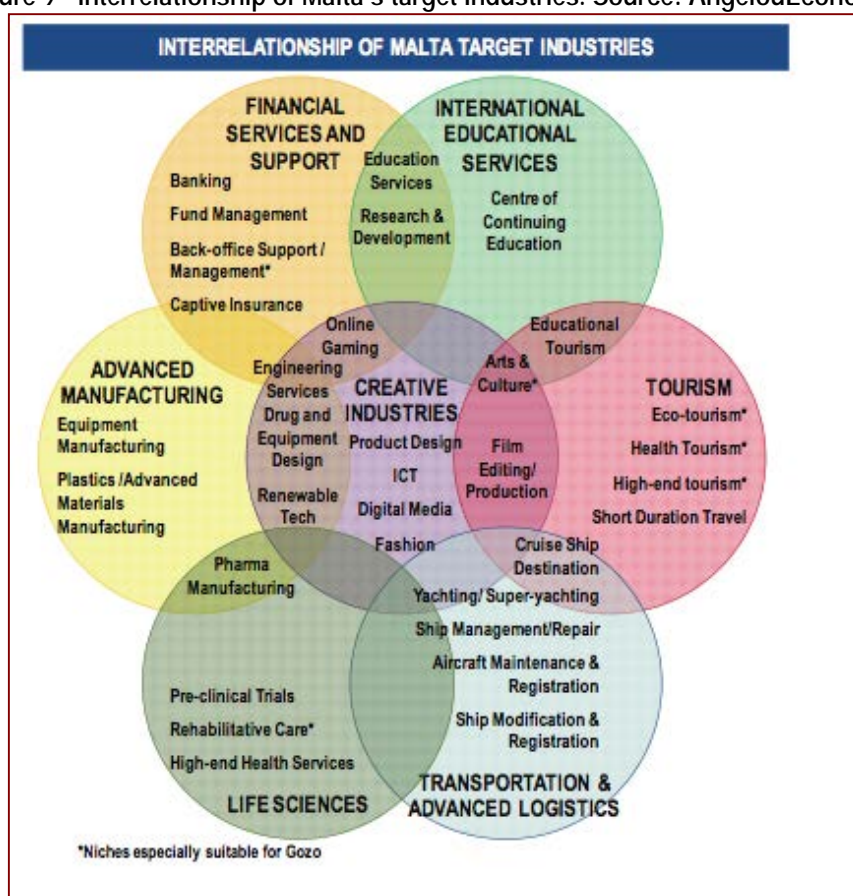
http://www.mcst.gov.mt/sites/default/files/pa_documents/draft_health_strategy.pdf

³² Vision 2015 and Beyond: A Path to a Knowledge Based Economy – Report 2: Target Industry Analysis Malta Enterprise / AngelouEconomics, 2010

Creative industries	Information and Communications Technology, Digital Media, Design, Renewable Energy and Efficiency, Arts and Crafts, On line gaming, Film Editing and Production and Fashion
Financial services	Banking, Funds Management, Captive Insurance and Trusts
Tourism	Cultural Tourism, Eco Tourism, Educational tourism, Cruise Ships Destination, Shorter Duration Travel and Association Conferences
Advanced Manufacturing	Aircraft Modification, Engineering Services, Plastics/ Advanced Materials
International Education Services	Educational Services for Tourism including Language Schools, Centre of Continuing Education
Life Sciences / Health Services	Pharmaceuticals, Pre-Clinical Trials , Health Tourism, Rehabilitation Care
Transportation and logistics	Merchant Shipping, Related Shipping Services, Ship Management and Registration, Yachting /Super Yachting Services, Yachting Crew Training, Ship Repair

The detailed identification of potential areas for development and specialisation as well as mapping out the inter-relatedness of these areas provides a very good insight and a starting point for the development of the RIS3 strategy.

Figure 9 - Interrelationship of Malta's target Industries. Source: AngelouEconomics



National Reform Programme (NRP) 2013

The National Reform Programme (NRP)³³ represents a central pillar of the European Semester, which ensures Member States align their budgetary and economic plans with the Stability and Growth Pact³⁴ and the Europe 2020 strategy³⁵. Malta's National Reform Programme sets out its agenda for structural reform and growth. It features a number of new measures aimed at enhancing Malta's competitiveness, boosting growth and jobs whilst also improving social cohesion. These measures are meant to address both the Country Specific Recommendations for Malta issued by the European Council last July and the national Europe 2020 targets. The NRP 2013 is rather limited and vague in its ambitions towards building further on the great progress achieved and envisages the following new and extended measures:

- Preparation of an Innovation Strategy for Smart Specialisation which is expected to be completed by the third quarter of 2013.
- Centre to Strengthen Research on Business and the Self-employed which will introduce the concept of entrepreneurship at the University of Malta and also provide the necessary teaching programmes through which the University infrastructure can support

³³ Malta's National Reform Programme under the Europe 2020 Strategy . April 2013. Ministry of Finance.

http://ec.europa.eu/europe2020/pdf/nd/nrp2013_malta_en.pdf

³⁴ http://ec.europa.eu/economy_finance/economic_governance/sgp/index_en.htm

³⁵ http://ec.europa.eu/europe2020/index_en.htm

start-up businesses with the intent of then facilitating the move to the Science Park, for example. This project kicked off in 2012 and will end in 2014. The budget allocated is of €1,331,530.

- Internationalisation Scoping Exercise which aims to identify opportunities for Maltese researchers to be engaged in international cooperation opportunities. The exercise started in October 2012 and is expected to be completed by end 2013. The budget allocated for this measure is €150,000.

While the strategy acknowledges difficulties in specific areas like the labour market for researchers and gender equality/mainstreaming in research the proposed measures remain vague but commits to undertake the necessary studies as part of the R&I strategic plan 2020 to study this issue in more depth, so that the right policy mix is put in place on the basis of evidence gathered. A similar deficiency is noted related to 'Optimal circulation, access to and transfer of scientific knowledge' however no tangible solution is offered towards addressing the absence of any local repositories hampers the achievement of this objective.

Manufacturing Research Strategy

The MCST published a consultation document related to the "Development of a National Research Strategy for Manufacturing in Malta"³⁶ in 2010 which served to promote and facilitate R&I in the manufacturing sector. The Strategy was also approved by Cabinet in December 2012, however it is important to note that Malta Enterprise did not approve this document. According to a report there is high growth potential in a number of technologies relevant to the Manufacturing Industry which include:

- Advanced Engineering Materials;
- Nano-Electronics;
- Smart Systems Integration;
- Development of new steel technologies in the Automotive and Construction Sectors;
- New Analytical and Manufacturing Technologies for the Food Industry;
- Textiles based on speciality fibres, functionalisation of textile materials and related process and bio-based materials;
- Research and Development in Photonics with a focus on the use of optical technologies.
- Photovoltaic Solar Energy Technology including PV Cells and Modules, Balance of System Components and Concentrator System;
- Robotics including Robotics Systems, Components and miniaturised Robotics and Advanced Behaviours
- Research and Development in the chemicals industry including Industrial
- Biotechnology, Materials Technology and Reaction and Process Design.

To an outsider, the Strategy appears to reflect the aspiration and desires of the academic and research community rather than that of the bulk of the manufacturing sector in Malta. The report, however, identified a range of weaknesses in four areas of the Maltese innovation eco-system that need addressing, chiefly through public policy. Some of these areas of weakness, not uniquely Maltese, have been addressed through various policy actions since the publication of the strategy. Example include establishment of the knowledge transfer office at the University of Malta and the new R&D schemes. The Table below highlights some of the areas of concerns identifies by the report.

Table 10 - Weaknesses in Malta's Manufacturing Research Environment

<i>Human Resource Factors</i>	<i>Incentives and Financing Factors</i>
<ul style="list-style-type: none"> ▪ A high school drop-out rate which limits the uptake of students at the post-secondary and tertiary levels of education; ▪ Low supply of Science and Technology Professionals at Undergraduate Level; ▪ Low supply of Science and Technology Professionals at Post Graduate and Doctoral Level; ▪ Low levels of Youth Educational Level Attainment; ▪ Lack of an appropriate formalised structure for lifelong learning and continued professional development for Science and Technology Professionals; ▪ Limited collaborative efforts between industry and academia; ▪ Limited access to adequate courses on entrepreneurial skills by Science and Technology Graduates; ▪ Limited Opportunities for carrying out research on an international scale; ▪ Limited career opportunities and for career advancement for current and prospective researchers; ▪ In the absence of appropriate career opportunities, the country is characterised by poor retention levels of 	<ul style="list-style-type: none"> ▪ The absence of Venture Capital and Business Angel Organisations that could potentially finance relevant entrepreneurial activities of researchers; (need to pledge personal assets) ▪ Low levels of Government expenditure on Research and Development as compared to other countries in the EU ▪ Limited private sector opportunities available for financing research and development activities of SMEs and FDI; ▪ Limited availability of state funding for research and development activities of SMEs and FDI (which however is likely to have been rectified as a result of a number of R&D schemes that have been recently published on-line); ▪ Limited funds made available by MCST for Fundamental and Basic Research. The fund currently stands at € 1,300,000; ▪ Limited incentives are being provided to encourage the retention and attraction of researchers to Malta; ▪ Inadequate financial instruments and mechanisms that are made available by financial institutions which are incompatible with the needs of Entrepreneurial Ventures; ▪ Lack of availability of funding for financing research

³⁶ Development of a National Research Strategy for Manufacturing in Malta – Detailed Report. Malta Council for Science & Technology. 5th October 2010. http://www.manufacturingresearch.eu/documents/MCST%20Detailed%20Report_for%20Public%20Consultation.pdf

researchers who are highly mobile and move to other destinations to seek better and more financially rewarding opportunities;	infrastructures;
<i>Research Infrastructures</i>	<i>Linkages and Partnerships</i>
<ul style="list-style-type: none"> ▪ A weak policy and legislative framework that does not encourage the development of Research and Development activity in the manufacturing Industry in Malta; ▪ Lack of an appropriate Intellectual Property Rights Framework to safeguard interests of stakeholders; ▪ A limited number of patents currently being filed in Malta; ▪ Limited funding available for infrastructures; ▪ Significant levels of Government Induced Costs are being generated due to bureaucracy; ▪ Limited/No Access to specialised laboratories which are internationally accredited; ▪ The absence of appropriate Blue Sky Research Centres; ▪ Limited Emphasis on the development of Business Incubation Centres and Science and Technology Parks; ▪ Lack of a Competitive Tertiary Education Sector; ▪ Absence of appropriate Research and Design Schools; ▪ Lack of Availability of appropriate Teaching Factories to be used to bridge the gap between industry and academia; ▪ Limited or no access to consulting specialists that may support SMEs in their Research and Development Effort (more recently Malta Enterprise has launched a scheme to address this gap); ▪ Limited or no access to appropriate databases of knowledge. 	<ul style="list-style-type: none"> ▪ Limited or no incentives made available for the development of knowledge transfer partnerships; ▪ Lack of clear demarcation of Intellectual Property Rights between Industry, Academia, Government and other players; ▪ The utilisation of postgraduate and doctoral students on research projects spearheaded by industry is limited to the constraints of the academic programme timeframes which are incompatible with the more urgent deadlines of industry; ▪ Lack of trust for co-operation amongst SMEs operating in the same sectors thereby limiting the potential for joint research initiatives; ▪ The existence of limited successful cases of collaborations. No local case studies for R&D collaborations in the Manufacturing Sector could be identified by the Stakeholders; ▪ Lack of available financial incentives necessary to encourage the formation of linkages between Small and Medium Sized Enterprises and Foreign Direct Investors; ▪ The absence of a mechanism for enabling SMEs to identify the R&D needs of Foreign Direct Investors with a view to develop complementary services in the process; ▪ No proper framework for the development of Public Private Partnerships in Research and Development in Malta as a whole;

Digital Gaming Strategy

A Digital Gaming Strategy³⁷ was released in early 2012. Work on this strategy started in May 2011 when Malta Enterprise (ME), on behalf of the Digital Games Initiative Group comprising ME, The Malta Council for Science and Technology, the University of Malta (UoM), and the Creative Economy Working Group, started working on the development of a report that would guide a national policy in the setting up of a Digital Games (DG) Industry in Malta. The aim of this report³⁸ was to attract foreign direct investment and find ways of stimulating, supporting, and expanding the local games industry in Malta.

Clearly this indicates that this is an ideal area for Malta to invest in especially in view of the related variety potential in this domain due to the increase number of related companies in advertising, localisation, editing, audio, legal, and finance which gives indications of an early stage industry framework for outsourcing and collaborative work that could expand. The strong IT industry with over 200 operations in Malta provides a sound technical context for games development work, experienced technical staff available with specialist skills relevant to the growth areas of the games industry including analytics and data mining expertise. The report describes the need to use Malta's areas of strength to ensure that we can continue to attract foreign direct investment (FDI) and build connections with our neighbouring regions including North Africa.

The Strategy explores the transferable skills and related variety with Film and online Gambling industries in Malta which will be examined later in this document. The Strategy also presents a detailed timetable for measures to be implemented to enable growth in the Digital Gaming Industry in Malta over the next 3 years. See Annex for the timetable.

Recommendations of relevance to the RIS3 effort include the following:

1. Attract global games companies through the establishment of fiscal and other support measures that are tailored for the needs of this industry. Information about these measures should be disseminated using the appropriate media and at international events and conferences;
2. Encourage local games start-ups through grants, aiding Angel Investment and using specialist training courses;
3. Enhance education through the design of new targeted courses, and promote the research activity undertaken in this industry;
4. Nurture a games eco-system: Support for the local DG Industry, including fiscal incentives to attract foreign interest in joining the local market should be maintained for over 5 years;
5. Games Areas for Malta to specialise in: In this report, the areas suggested that should be focused on included: Mobile, Tablet, PC, Console-Downloadable Casual, Flash and other browser games which require smaller teams. This sector of games

³⁷ A Digital Strategy for Malta. Malta Enterprise. <http://www.maltaenterprise.com/sites/default/files/Digital%20Strategy%20for%20Malta.pdf>

³⁸ http://www.maltaenterprise.com/sites/default/files/publications/adigitalgamingstrategyformalta_-_report.pdf

includes the growing areas of Freemium and Micro-transaction games.

Health Research and Innovation Strategy

The Health Research and Innovation Strategy³⁹ published in 2012 by the MCST is intended to:

- serve as a medium to long term reference and motivational tool for researchers, policy makers, civil society, and health care professionals, managers and workers.
- address the needs of patients and general public through the implementation of measures which enhance the quality of the health sector while reducing health inequality. Patients are an integral part and focus of the research process which influences the design and implementation stages of the strategy.
- develop a network/platform to bring together stakeholders, which can be used as a springboard for launching national initiatives and public-private sector partnerships in R&I.
- serve as a guide for basing Government and EU Structural Fund allocations in this sector.

The strategy demonstrates that the total expenditure on R&D in the sector remained fairly constant between 2005 and 2009 in financial terms. When expressed as a percentage of total R&D expenditure, however, it has been in constant decline (see table below). The figures for 2010, while still provisional, indicate a significant increase in R&D expenditure on health and medical sciences, brought about by major investments in research infrastructures in the higher education sector.

Table 11 - Public Health Research Expenditure in Malta in € million

Source: Eurostat (March 2012).

Year	Total Health R&D	Govt Health R&D	HE Health R&D	BE Health R&D	Total R&D in all disciplines	Health as a % of total R&D
2005	5.99	0	1.59	4.4	27.71	21.61
2006	7.51	0.02	1.76	5.74	31.25	24.03
2007	5.44	0.004	2.22	3.21	31.58	17.23
2008	5.45	0.009	2.16	3.28	32.69	16.67
2009	5.19	0.009	2.12	3.06	31.67	16.39
2010	N/A	0.012	3.25	N/A	38.61	

Recommendations of relevance to the RIS3 effort include the following:

Goal 1 - Towards a vibrant and sustainable health research and innovation ecosystem.

Recommendation 1: Set up a National Governance Framework for Health R&I

Recommendation 2: Increase Funding for Health R&I

Recommendation 3: Ensure enhanced access to health research facilities

Recommendation 4: Enhance Use of Public Procurement to stimulate R&I

Goal 2 - Building the necessary capacity and competence for high quality research to improve well-being

Recommendation 5: Attract high quality researchers

Recommendation 6: Support Capacity-building and forward planning

Recommendation 7: Build critical mass and enhancing the potential of researchers.

Goal 3 - Supporting evidence-based policy making in human health: outreach and take-up.

Recommendation 8: Ensure Dissemination and Take-up of results

Recommendation 9: Enable Access to research results and new knowledge

Goal 4 - Leveraging internationalisation opportunities for economic growth and innovation in the health sector

Recommendation 10: Invest in competitiveness and job creation

Aquaculture strategy for Malta

A preparatory study⁴⁰ was contracted by the Malta Aquaculture Research Centre (MARC), Ministry for Resources and Rural Affairs (MRRA) in 2011 in order to inform the preparation of an aquaculture strategy for Malta, with the overall objectives stated as:

- To lay down a structured path for sustainably developing aquaculture in Malta
- To identify the domains that are essential for a profitable and sustainable industry in Malta

Recommendations of relevance to the RIS3 effort include the following:

³⁹ DRAFT National Strategy for Health Research & Innovation 2012. MCST.

http://www.mcst.gov.mt/sites/default/files/pa_documents/draft_health_strategy.pdf

⁴⁰ An Aquaculture Strategy for Malta – Final Draft Report. Preparatory study and recommendations prepared for the Ministry of Resources and Rural Affairs, Government of Malta. University of Stirling. March 2012. <http://www.mrra.gov.mt/loadfile.ashx?id=1bb77c1f-f3a5-43fd-974d-23b46d44f605>

Final Draft Report Annexes. <http://www.mrra.gov.mt/loadfile.ashx?id=d1c5074d-38ce-49b0-a85d-e421e4ba2c8e>

Strategic Environmental Assessment on Malta's Aquaculture Strategy. <http://www.mrra.gov.mt/loadfile.ashx?id=0bb10a3f-23f7-4724-84e8-75fede3efcc9>

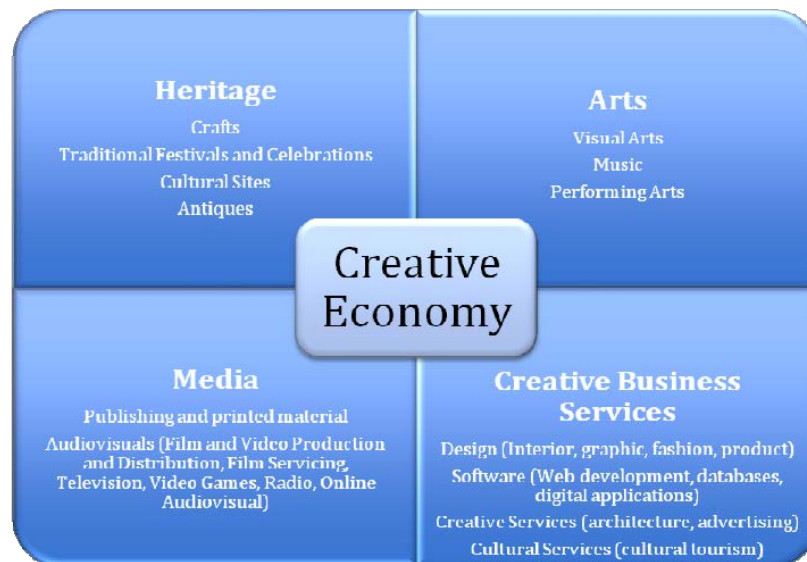
Broad strategic objectives and desired outcomes

- **Improved regulation** - a clear policy on site locations and standard conditions for all operators
- **Improved operation** - farms operating according to the principles of best management practice
- **Improved environmental monitoring** - to limit to what constitutes adverse impacts
- **Better innovation** - Facilities, funding and human resources for applied research

National Strategy for the Cultural and Creative Industries

Malta's Creative Economy Working Group defines the Cultural and Creative Industries - these are Heritage, Arts, Media and Creative Business Services - as the pillars of Creative Economy⁴¹.

Figure 10 - The creative economy as defined by the Creative Economy Working Group (Malta):



The National Strategy for the Cultural and Creative Industries builds on the National Cultural Policy and Vision 2015 and in summary, it proposes to:

- Strengthen the remits of the Malta Council for Culture and the Arts, the Malta Film Commission, the Malta Crafts Council and the National Book Council
- Consolidate the educational framework and invest in creativity-oriented educational institutions and initiatives
- Ensure that creative individuals and enterprises are assisted to find their route to market
- Position Malta as an attractive, contemporary and stimulating creative hub within the Mediterranean region.

The impact of the Industry on Malta's economy is clearly significant but together with the definition of the sector itself, the actual economic impact is difficult to quantify with sectoral data. The strategy highlights that there are 3600 enterprises in these industries, employs 7500 people (5% of working population), growing at an average 9% per annum, although many of the statistics used are over 6 years old (2005, 2007). [It] "generates €47.5 million from tourism, contributes to 4% of GDP, is similar in size to the construction industry, and slightly less than the financial intermediation services. Since 2010 the cultural and creative industries received €15.4 million additional Government investment reaching a total investment of €26.5 million in 2011". Our assessment, however, puts the current level of employment in these sectors around 5,000 (source: NSO 2013)⁴².

2.2.2 Priority sectors identified through economic indicators

Contribution to GDP, GVA and employment (NSO data)

The data from the Malta National Statistics Office were used to identify statistically strong sectors based on their role in the national economy in terms of their contributions to the GDP and GVA as well as employment. The definition of economic sectors and differing levels of aggregation in the available data makes identification of important economic niches difficult. That is because these specialised niches utilise the areas of sector overlaps and industry interrelatedness as their basis.

Table 12 - Economically significant sectors

Economically significant sectors	By Gross value added by industry % (2012 100%= €5.9 bn) ⁴³	By Full-time employment ⁴⁴

⁴¹ (Malta) Draft National Strategy for the Cultural and Creative Industries, <http://www.creativemalta.gov.mt/>

⁴² NSO News Release Gainfully Occupied Population: December 2012, published 07-May-2013

⁴³ NSO News Release Gross Domestic Product: 2012, 11 March 2013

http://www.nso.gov.mt/statdoc/document_view.aspx?id=3472&backUrl=news_by_date.aspx%3fretainCriteria%3dtrue

⁴⁴ NSO News Release Gainfully Occupied Population: December 2012, published 07-May-2013

Services including retail trade; transportation; accommodation and food	21.8	41,600 (28% ⁴⁵) of which 9,600 (6.5%) accommodation and food, 9000 (6%) transportation and Storage
Manufacturing	12.5	19,830 (13%)
Services including arts, entertainment and recreation,	11.2	4,008 (2.7%)
Professional, scientific and technical services	10	7,516 (5%)
Financial and insurance	8.1	6,949 (4.6%)
Information and communication	5.2	4,974 (3.3%)

Exports and traded goods and services

A relevant indicator of competitiveness use in the EU context is the index of revealed comparative advantage (RCA) The index compares the share of a given sector's exports as proportion of the total manufacturing exports of that country or region against the share of the same sector's total exports in the total manufacturing exports of a group of reference countries (e.g. the EU). Values higher than 1 mean that a given industry performs better than the reference group, and is interpreted as a sign of comparative advantage. The weakness in the RCA is that it focuses on cost advantage, the ability to produce a good or service at a lower cost than its competitors rather than differentiation. In order to achieve a Competitive Advantage both elements of lower cost and differentiation are needed for the comparison.

Although exports and international trade are not direct proxies for performance indicators of a sector, they are clear indicators of the types of good and services that the economy specialises in and can compete successfully in a global market. Simple overview of the RCA of Malta's key sectors indicates relative strength in sectors such as Computers & electronics, Pharmaceuticals, Textiles, and electrical equipment as measured against the EU 27⁴⁶. Majority of these sectors correspond easily with the priorities set out by Malta's different national strategies.

Table 13 - Top 10 Sectors RCA in manufacturing in 2010: Malta⁴⁷

		Malta	EU-27
c26	Computers, electronic & optical	3.05	0.57
c32	Other manufacturing	1.83	0.77
c21	Pharmaceuticals	1.52	1.65
c27	Electrical equipment	1.33	0.97
c22	Rubber & plastics	1.29	1.19
c13	Textiles	1.14	0.67
c18	Printing	1.10	1.88
c10	Food	0.96	1.09
c30	Other transport eq.	0.91	1.21

The past decades have seen the growing importance of services in international trade: financial services, professional services, transport, environmental services, etc. A limited number of member states hold a very strong position in the export of their services relative to physical goods. Nowhere is this difference more observable or significant to the country's economy than that of Malta⁴⁸.

Figure 11 - The weight of exports of services in total exports; comparison 1995-2008

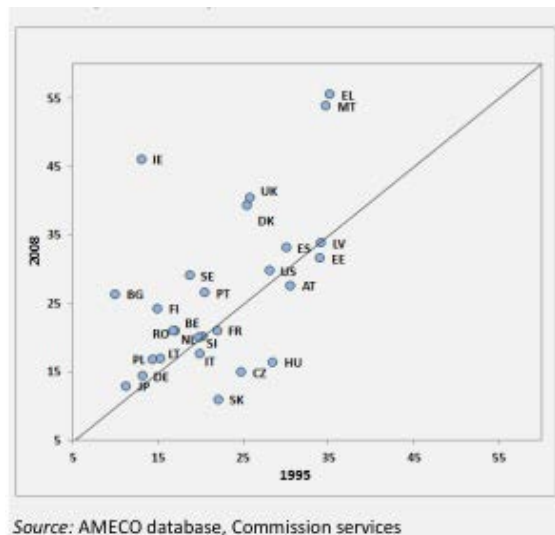
http://www.nso.gov.mt/statdoc/document_view.aspx?id=3512&backUrl=news_by_topic.aspx

⁴⁵ 100% = 151,676, ibid

⁴⁶ EU industrial structure 2011 - Trends and Performance, European Commission ISBN 978-92-79-20733-4

⁴⁷ Table 7.9.1: Revealed comparative advantage index in manufacturing industries in 2010 - EU countries, Japan and Brazil, China, India and Russia. European Competitiveness Report 2012. http://ec.europa.eu/enterprise/policies/industrial-competitiveness/competitiveness-analysis/european-competitiveness-report/index_en.htm

⁴⁸ European Competitiveness Report 2012, Commission Staff Working Document SWD(2012)299 final - http://ec.europa.eu/enterprise/policies/industrial-competitiveness/competitiveness-analysis/european-competitiveness-report/files/ecr2012_full_en.pdf



Malta has outstanding comparative advantage in sectors relating to personal cultural and recreational services. This unusually sizable sector must be further investigated for possible opportunities for Smart Specialisation niches.

Table 14 - RCA in top 5 services activities in 2010: Malta⁴⁹

	Malta	EU-27
Personal, cultural and recreational services	46.84	1.63
Finance	0.89	1.12
Other business services	0.63	1.10
Insurance	0.55	1.13
Communication	0.42	1.12
Computer and Information	0.22	1.16

2.2.3 State of Cluster Development

The results from the desk research identified a very limited number of statistical clusters in the country, although those identified proved to be highly significant. Malta's economy appears to be dominated in fact by Tourism and Financial Services, with some presence of other sectors such as Transportation and logistics, ICT, manufacturing including generic pharmaceuticals. The figures were checked with local experts, which - given the small size of the economy - clarified that in some cases the figures correspond to a few large FDI operations.

Malta ranked 63rd in the INSEAD/World Economic Forum's Executive Opinion Survey 2010–2011 of 133 countries⁵⁰. The survey results were based on the responses to three survey questions on the role of clusters in the economy. The questions were: (1) In your country's economy, how prevalent are well-developed and deep clusters? (2) In your country, how extensive is collaboration among firms, suppliers, partners, and associated institutions within clusters? (3) In your country, what is the state of formal policies supporting cluster development?

The last report from the EU Commission DG Enterprise and Industry on statistical analysis of European clusters⁵¹ which was drafted in cooperation with DGs Regio and RTD in 2007, identified hospitality, transportation, finance, IT and medical as the 5 top natural clusters in Malta. Even though the report is somewhat out of date these clusters largely continue to be significant in Maltese economy. For more recent information the European Cluster Observatory (www.clusterobservatory.eu), funded by the European Commission, which lists significant employment sectors in Europe, was consulted. For Malta for example MARSEC-XL - Marine Software Engineering Cluster of Excellence, appears to be the only significant organised cluster (<http://www.marsec-xl.com>) in the country. As inclusion of clusters and cluster organisations in the database depends on regions volunteering the information, the accuracy and consistency cannot be relied on. From the policy prospective the concept of cluster development is relatively new in Malta, although the provisions in legislation has been in place for some sectors for some times. The Smart Island Strategy⁵² included Cluster Development Programme as one of MITA's targets. The Malta IT Agency's (MITA) strategic coverage makes the Agency responsible

⁴⁹ Table 7.10: Revealed comparative advantage index in service industries in 2010- EU countries, US, Japan and Brazil, China, India and Russia. European Competitiveness Report 2012.

http://ec.europa.eu/enterprise/policies/industrial-competitiveness/competitiveness-analysis/european-competitiveness-report/index_en.htm

⁵⁰ The Global Innovation Index 2012 Report, INSEAD, <http://www.globalinnovationindex.org/gii/main/fullreport/index.html>

⁵¹ DG ENTERPRISE AND INDUSTRY REPORT - Innovation Clusters in Europe: A statistical analysis and overview of current policy support - <http://ec.europa.eu/enterprise/newsroom/infocentre/detail.cfm?id=1072>

⁵² The Smart Island - the National ICT strategy for Malta 2008 – 2010, <http://www.epractice.eu/files/media/media1798.pdf>

for engaging with multiple stakeholders to devise a Clusters Framework⁵³. In the absence of any national approach to cluster based economic development MITA seem to ably lead the way in Malta. Their engagement in transnational initiatives such as INTERREG 4C Pooling4clusters (<http://www.pooling4clusters.eu/>) should enable the Agency and Malta to leapfrog over many other EU regions.

Starting later than other EU countries in adopting cluster-based economic development may prove an advantage for Malta. Policies of many regions and nations that saw cluster development as a means of implementing 60's style industrial policies to subsidise ailing industries and to fund inspirational or politically expedient sectors are now becoming unravelled. Malta is in an excellent position to bring the learning from others' experiences into designing its own interventions in this area.

2.2.4. Significant sectors in Malta

This section highlights the most significant economic sectors in Malta based on the data gleaned from sources defined in the above sections. In order to avoid confusion the sector names are defined either by the classification given by the applicable strategy document in Malta or by their NACE categories. In cases of ambiguity NACE categories take precedence.

The "Creative Industries" classification was, however, much more difficult to define and it appears to include sectors which may have tenuous links through "creativity" and are hard to group together elsewhere. It covers the range of sectors from ICT and digital media to craftsmanship and handicraft to fashion, film editing and renewable energy. The rationale for such a categorisation is that these sectors "utilise knowledge to produce new products or solutions". This criterion for classification is unhelpful as all businesses, regardless of their sector must utilise knowledge to produce their products and services for their survival and long term sustainability. Sectors in this category have been studied here on their individual merit. For the purposes of this report the term "creative sector" will be used to denote businesses that require artistic, craft, heritage or cultural endeavour in producing their products and services.

Tourism Sector

Tourism sector is by far the largest contributor to the Maltese economy. In 2011 tourists spent a total of €1.23 bn contributing around 19% to the island's GDP (of €6.5bn)⁵⁴. The majority of the tourists continue to be from the United Kingdom with a steady rise in numbers from other target countries or regions of France, Italy, Scandinavia, Germany and Spain.

The Tourism Industry consists primarily of service sector jobs including the food and hotel services at one level and the production of live entertainment, providing recreational and sports facilities to museums and heritage to educational and language tourism services on the other. The Industry has traditionally been considered as low wage sector, which provides employment for the low skilled and part time workers but it has the ability and the potential to move up the value chain by offering premium tourism experience and targeting higher-end tourists.

Although the aims and objectives of the Vision 2015 are to move the tourism industry into more premium and value added niches, targeting higher-end clientele thus creating the same or even more income from fewer number of visitors, there is no evidence in the Tourism Policy for Maltese Island 2012-16 that this is widely supported. In fact some measures such as increasing tourist numbers and the increase in low cost carriers, runs counter to the objectives of hosting "higher-end" and "better quality tourists".

The Vision 2015 and Beyond has identified the following niches with potential for development:

- Eco Tourism – to take advantage of the increasing awareness and demand from the travellers for responsible tourism respecting the natural environment and improvement of the wellbeing of the local people.
- Arts and Cultural Tourism –using cultural tourism to celebrate, preserve and promote Malta's unique heritage as increasing number of travellers are interested in learning more about the country's lifestyle, culture and history.
- Medical/Health Tourism – Malta has an excellent heritage in healthcare since the Order of St John (Knights Hospitaller) settled on the island early in 16th century and the Sovereign Military Order of the Knights of Malta built the most advanced hospital in its time. In more recent times the World Health Organisation has ranked Malta's healthcare system as fifth in the world. This coupled with the English speaking population and favourable weather, Malta is increasing its profile as a destination for health tourism.
- Educational Tourism – Over the past few years Malta has become a destination for those who want to learn English, raising the number and the quality of language education institutions. The Federation of English Language Teaching Organisations (FELTOM) has taken a lead in working with the Government to oversee the over 40 language schools and ensure their quality. The potential for this niche runs beyond the language teaching in Malta but the expansion of their institutions globally. The scope is not limited to language teaching as Education tourism would involve broader programmes in which participants travel to a location with the primary propose of learning about that place.

⁵³ Malta IT Agency Recommendation Plan Pooling4Clusters Intereg Project, Daniela Busuttill Dougall October 2012
https://www.mita.gov.mt/MediaCenter/PDFs/1_MT%20Preliminary%20Recommendation%20Plan.pdf

⁵⁴ Tourism Policy for the Maltese Islands 2012/2016, <https://secure2.gov.mt/tsdu/downloads/tp12-16.pdf>

- Cruises - The niche in cruise tourism continues to grow globally in spite of the economic crises of 2008/9. In 2011 for example 556,564 passengers came to Malta on board cruise ships, an increase of over 13% from the previous year⁵⁵.

Table 15 - Market segments of main cruise liners arriving in Malta

Market Segment	Cruise Companies	Segment Share (Jan – July 2011)
Low end	Pullmantur, Costa Cruises, MSC, Disney Cruise Line, NCL, Louis Cruises, Thomson Overseas, Fred Olsen Cruises	53%
Medium end	Ibero Cruceros, Tui Cruises GMBH, Aida Cruises	24%
High end	Silversea Cruises, Sea Cloud Cruises, Elegant Cruises Companies des Iles du Ponant	22%

Source: Port of Valetta⁵⁶

Malta already has a higher proportion of high-end market segment of cruise industry compared with other Mediterranean destinations (Barcelona 8%, Izmir 4% and Alexandria 2%)⁵⁷. Cruise passengers who become day visitors to the island tend to focus on cultural heritage aspects with higher spending. The Malta Tourism Authority has developed plans and supports partnership initiatives aimed at promoting the cruise-and-stay niche market in Malta. These initiatives are already undertaken in collaboration with the Malta International Airport, Valletta Port Cruise and cruise liner operators.

This niche has immense potential for innovation and growth in Malta, which of all tourism sub-sectors, puts the least strain on limited local natural resources. It also has a fairly well developed local value chain and Malta Cruise Network (MCN) is a well-established coordinating body akin to a formal cluster organisation. MCN was set up in late 2004 as an independent body to act as the focal point for local stakeholders and as a coordinating voice in the delivery of a quality product and service to the cruise-line sector. Its responsibility is to define, develop, deliver and promote a sustainable cruise industry for Malta⁵⁸.

Manufacturing Sectors

Manufacturing in Malta is a very significant sector, employing almost 20% of the workforce and contributing over 15 % to the GDP and is composed of a number of niche areas. These include the sub-sectors such as food production and computer, electronic and optical products. The detailed breakdown of the top ten sub-sectors by employment is shown in table 16 below⁵⁹.

Table 16 - Employment by sub-sector in manufacturing

Sub-Sector	Employment 2011 average	Employment 2012 average
Manufacture of food products	2,425	2,431
Manufacture of computer, electronic and optical products	2,303	2,216
Other manufacturing	1,879	1,930
Manufacture of rubber and plastic products	1,595	1,592
Printing and reproduction of recorded media	1,331	1,324
Manufacture of furniture	1,247	1,210
Manufacture of fabricated metal products, except machinery and equipment	1,315	1,179
Manufacture of other non-metallic mineral products	1,183	1,158
Manufacture of basic pharmaceutical products and pharmaceutical preparations	850	980
Manufacture of motor vehicles, trailers and semi-trailers	963	962

Manufacture of food products - The production of food products in Malta is the largest manufacturing sub-sector and is dominated by micro-enterprises. In 2011 of 90% of 508 businesses employed less than ten people with only one firm employing more than 250⁶⁰.

The sector appears to serve the domestic market and in spite of its large size it does not feature strongly in statistics relating to the export and internationally traded products nor does it support a strong research and innovation base.

⁵⁵ Tourism Policy for the Maltese Islands 2012/2016, <https://secure2.gov.mt/tsdu/downloads/tp12-16.pdf>

⁵⁶ Valletta Waterfront. <http://www.vallettawaterfront.com>

⁵⁷ Public-Private Dialogue for Sector Competitiveness and Local Economic Development: Lessons from the Mediterranean Region 2011, A report produced by The Cluster Competitiveness Group, S.A. for the Public-Private Dialogue program of the Investment Climate Department of the World Bank Group. <http://www.publicprivatedialogue.org/papers/>

⁵⁸ Public-Private Dialogue for Sector Competitiveness and Local Economic Development: Lessons from the Mediterranean Region 2011, A report produced by The Cluster Competitiveness Group, S.A. for the Public-Private Dialogue program of the Investment Climate Department of the World Bank Group. <http://www.publicprivatedialogue.org/papers/>

⁵⁹ NSO News Release Gainfully Occupied Population: December 2012, published 07-May-2013

http://www.nso.gov.mt/statdoc/document_view.aspx?id=3512&backUrl=news_by_topic.aspx

⁶⁰ Total employment figures: Gainfully Occupied Population 2002–2011, http://www.nso.gov.mt/statdoc/document_file.aspx?id=3365

Manufacture of computer, electronic and optical products - This sub-sector is dominated by the manufacture of electronics and micro-electronics systems and components in an industry built around ST Microelectronics. ST Microelectronics was the result of merger between SGS Microelectronica of Italy and Thomson Semiconductors of France. Since its formation ST has been one of the world's top ten semiconductor suppliers. The range of products that have passed through the Malta plant in Kirkop has evolved from "commodity" integrated circuits back in 1981 to among the industry's most complex ones in CMOS, BiCMOS and MEMS technologies, drawing upon the latest developments in surface mounting that are necessary for the most sophisticated and vast applications in the semiconductor field. This amounts to over 1,500 types of assembled and tested products on a regular basis. These products target various sectors in the ever-increasing electronics market, from data processing to telecommunications to consumer applications and automotive – sectors that are considered strategic both for STMicroelectronics and the European economy.

There are significant opportunities in Microelectronics as a Key Enabling Technology to strengthen other priority sectors on a horizontal basis.

Pharmaceutical Sector - The industry is dominated by manufacturers of generic pharmaceuticals with a number of producers of active pharmaceutical ingredients and producers of healthcare products and services. Employment in Pharmaceuticals industry currently accounts for 1% of all private sector job in Malta⁶¹ and contributes €200m by value to the Maltese exports accounting for some 5.5% of total exports. In 2008, the sector undertook most R&D in the enterprise sector, representing nearly a quarter (24.8%) of all business R&D expenditure⁶².

It is undeniable that pharmaceutical companies have initially been attracted to Malta primarily by a legal framework allowing the development of generic drugs in advance of patent expiry (the Roche Bolar exemption⁶³). They are, however, becoming increasingly embedded in the local economy. Although there is little research on compound design and formulation in Malta, drug delivery methods and particle design are likely to be the key niches in this industry.

Manufacture of rubber and plastic products - This manufacturing activity is one of the most significant within the sector employing 1600 (Table 7 above). Some of the key players in this industry although foreign owned and established in Malta as FDI businesses originally, are now well embedded in the country. For example Playmobil, a family owned German firm⁶⁴ now well known for its unique and familiar toy figures and accessories, was established in Malta as long ago as 1971 manufacturing toy walkie-talkies, telephones, cash registers. The company now employs over 1000 people in Malta and has recently invested €15m in new machinery and an upgrading of facilities in the country⁶⁵. Playmobil has recently explored a modest cross over to tourism sector by establishing the Playmobil Funpark in Malta⁶⁶. Another significant player is Baxter Malta, manufacturer of medical and clinical plastics who currently employ 600 people. There is increasing pressure to move their manufacturing to a lower cost location in North Africa⁶⁷. Baxter, however, plans to transfer its global research & development activities to Malta⁶⁸ and they already invest around €3m per annum in this area making them one of the most significant R&D investors in Malta.

Merit-Malta one of Europe's leading manufacturers of automotive switches and electrical accessories is another key players and has become the largest manufacturing employer in Malta. (Source: interview with Marco Abela of Malta Enterprise, 28 May 2013). Malta has modest academic research capability in the field but taking into consideration the materials, polymer, composites and manufacturing expertise in faculties of Engineering and Science there is potential to building on these pockets of strength.

Printing and reproduction of recorded media Sectors - Printing continues to increase its importance to the economy of Malta and its employment. It is dominated with three major players Lewis Press (focus on pharmaceuticals packaging), Gutenberg Press and De la Rue (bank notes).

Scope for developing an innovation driven niche within the print industry seems limited as the industry relies on large scale and capital intensive printing presses and equipment that are typically produced by a limited number of specialist manufacturer elsewhere. There is also little scope for innovation in the products as in many cases their design and material selection is carried out by larger clients own resources.

Financial Sector

Since Malta's accession to the European Union the financial sector has expanded very rapidly, particularly though a marked increase in attracting Foreign Direct Investment (FDI)⁶⁹ (See Figure 6 above). The Sector has become a significant contributor to

⁶¹ Malta: The hub for world-class Pharmaceutical Companies, KPMG 2011,

<https://www.kpmg.com/MT/en/IssuesAndInsights/Doing%20Business%20in%20Malta/Documents/Pharmaceutical%20companies.pdf>

⁶² DRAFT National Strategy for Health Research & Innovation 2012. MCST, http://www.mcst.gov.mt/sites/default/files/pa_documents/draft_health_strategy.pdf

⁶³ Roche Bolar exemption is a derogation negotiated specifically with the European Union during Malta's accession. The Roche Bolar rule effectively bars patent holders from stopping third parties who are using the product for purely experimental or scientific research, or when the act is done for purposes related to the development and presentation of information regarding the production, use or sale of medicinal or pharmaceutical products. (Fenech & Fenech Advocates, Malta)

⁶⁴ <http://www.playmobilmalta.com/>

⁶⁵ <http://www.timesofmalta.com/articles/view/20130107/local/playmobil-to-invest-15m-in-malta.452317>

⁶⁶ Playmobil Funpark, <http://www.playmobilmalta.com/funpark/page.aspx?id=200>

⁶⁷ <http://www.timesofmalta.com/articles/view/20130322/local/Baxter-to-lose-97-workers.462465>

⁶⁸ <http://www.timesofmalta.com/articles/view/20130107/local/playmobil-to-invest-15m-in-malta.452317>

⁶⁹ In-depth Review for Malta, Commission Staff Working Document SWD (2013) 120 final, 10/04/2013, http://ec.europa.eu/europe2020/pdf/nd/ldr2013_malta_en.pdf

employment in Malta. According to Malta Financial Service Authority, in 2010 it employed⁷⁰ over 6,300 people directly and almost 1500 more in a range of related industries particularly in professional services such as accountancy, legal services and computing. Financial sector contributed around €0.5 bn to the Maltese GVA in 2012 making it economically very significant for Malta. The sector has benefited significantly from innovation in associated fields such as telecommunication and information technology. It is unlikely that the sector in itself will provide a significant niche as RIS3 specialisation candidate but there is a wide scope for innovation in its overlapping areas with other sectors such as ICT and professional services.

ICT Sector

Malta prides itself in moving from outsourcing most of its ICT requirements abroad to exporting of its own ICT services in just over ten years. Huge investments were carried out at all levels in ICT resulting in Malta having a modern infrastructure with one of the highest broadband access in EU. The ICT sector has long been considered as one of the sectors that can contribute towards the development of the Maltese economy. There is a significant presence of local and foreign systems development companies in Malta. In fact, a number of European firms have set-up base to capitalise from the cultural and economic advantages that Malta has to offer.

An important development in this area has been the recent announcement by Government on the agreement reached to establish a SmartCity@Malta. The new SmartCity@Malta will include a new fully-fledged ICT and Media Smart City on the models developed in Dubai. This project will also be accompanied by new state-of-the-art use of the environment of the site where it will be located, with the development of a hotel and other activities to help attract knowledge-based operations.

The sector and its associated sub-sectors employ around 5,000 people⁷¹ and contributed just over €300m (5%)⁷² to the GVA in 2012 and it has been identified as a key target for development including attraction of FDI. As the economic impact of the sector moves from ICT-producing to ICT-user sectors, ICT would be most effective as a contributors the Maltese economy as an enabling technology to enhance and differentiate one of the other, more established sectors such as financial services or tourism through its application. Sub-sectors enjoying particular success in Malta are shown in Table below.

Table 17 - Information and Communication Sub-sectors enjoying particular success in Malta. Source: NSO

Sub-Sector	By employment (2012)
Publishing activities	577
Motion picture, video and television programme production, sound recording and music publishing activities	250
Programming and broadcasting activities	387
Telecommunications	1,522
Computer programming, consultancy and related activities	1,817
Information service activities	421

The sector has a strong R&I base in Malta and it currently takes the lion's share of all EU Framework Programmes funded research in the country. Some significant niches that cross over the sector but are not well defined through the NACE categories include digital content provision, online gaming and online gambling.

Maritime, Sea-Related and Off-shore Sectors

The geographic location of the Maltese archipelago, in middle of the Mediterranean Sea between Europe and North Africa, has had a significant effect on the country's economy throughout its long history. Its strategic geographical position made Malta a base for those who wished to control trade and communications between the two continents. Over the centuries a number of important economic sectors have developed as result of this unique geographic advantage and they have played a very important role in Maltese economy throughout its history. In spite of its size and significance, its contribution to the economy is not easy to measure as it consists of a wide range of industries and sectors straddling standard NACE categories. Nevertheless a country report on Malta's maritime cluster puts its contribution to employment in excess of 20,000 jobs⁷³. The value add to the national GDP of Malta is calculated at over 11%. Nowhere in Europe have maritime and sea-related industries made a greater contribution to the economy and employment of the country than in Malta.

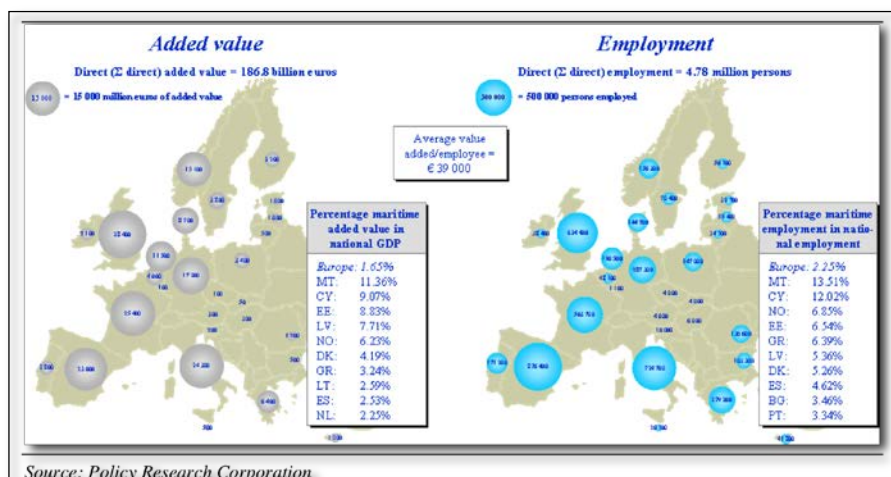
Figure 12 - Added value and employment for all sea-related sectors in the EU and Norway

⁷⁰ Achieving a Global Reach, Malta Financial Services Authority - Strategic Plan 2011-2014, <http://www.mfsa.com.mt/pages/viewcontent.aspx?id=47>

⁷¹ Total employment figures: Gainfully Occupied Population 2002–2011, http://www.nso.gov.mt/statdoc/document_file.aspx?id=3365

⁷² NSO News release Gross Domestic Product: 2012, http://www.nso.gov.mt/statdoc/document_view.aspx?id=3472

⁷³ The role of Maritime Clusters to enhance the strength and development of European maritime sectors, Commissioned by the European Commission (DG MARE) November 2008, http://ec.europa.eu/maritimeaffairs/documentation/studies/clusters_en.htm



An econometric exercise carried out through Malta's Marine Sector 2020 Foresight exercise suggests that the marine sector's contribution to the economy even higher with a share of 14% of the total GDP.⁷⁴ For the sake of convenience in analysis for the Foresight report the industry has been broken down to three areas of Traditional maritime sectors, Coastal and sea-related (marine) recreation and tourism, and Fisheries. This report also highlights a fourth, small but rapidly growing area with significant scope for R&I in Marine technologies and Biotechnology.

The key sectors within this industry are examined in the following sub-sections.

Traditional maritime sectors – this is by far the largest segment and include shipping, shipbuilding and recreational boating. The Maltese Shipping Register is now (2011) the largest merchant flag in Europe and seventh worldwide by Clarkson Research Services, deemed as one of the leading providers of statistical services in the maritime sector. Malta has also become the preferred choice for super-yacht registration and 2011 saw the Maltese flag registered an increase of 18.6% over the previous year so that by the end of the year 300 superyachts were flying the Maltese Flag.⁷⁵

Coastal and sea-related (marine) recreation and tourism - these sectors and their significance to the economy of Malta and any potential niches for application of R&I and specialisation have been discussed in the section on Tourism sector in earlier in this chapter.

Fisheries – these include **maritime and inland fishing; fish processing and aquaculture**. The fish processing industry in Malta is very limited. This relates mainly to aquaculture harvesting and packing with little or no value added. There is also some limited activity relating to captured fish (both local and imported, fresh and frozen). In this case some activity in terms of slicing, filleting, portioning, rewrapping and smoking takes place. The main reason why this activity has remained rather limited is that the local catch usually consists of high-value fish which is consumed in its fresh state or exported.

According to the Food and Agriculture Organization of the United Nations ⁷⁷, Aquaculture in Malta is marine-based and consists of the capture based aquaculture of the Atlantic bluefin tuna (*Thunnus thynnus thynnus*), as well as the culture of European seabass (*Dicentrarchus labrax*) and Gilt-head seabream (*Sparus aurata*) with a small production of Meagre (*Argyrosomus regius*). The scope for export driven growth is enormous with the bluefin tuna being exported mainly to Japan and seabass and seabream to Europe, mainly Italy. In 2010, seabass and seabream production, was 1,857 tonnes whilst the Atlantic bluefin tuna production was 5,035 tonnes (NSO, 2011).

There is much scope for specialisation here as the sector already has a strong R&I base in the country and many research projects are currently underway. The national body for aquaculture research is the Malta Aquaculture Research Centre (MAR) who manage the pilot marine hatchery focusing on research into aquaculture species diversification. This is done in collaboration with Malta Fishfarming Ltd. (MFF) a private company, through the Amberjack Project, a joint venture agreement for the study of spawning and juvenile rearing methods for *Seriola dumerili*. This collaboration has been extended for a further five years to 2016. Apart from this research, MAR also participated in the SELFDOTT Project, an EU funded project under the 7th Framework Programme for the domestication of bluefin tuna.

With limited availability of space and natural resources in Malta, environmental issues take priority. An environmental impact assessment is required before aquaculture development is initiated. A long term Aquaculture Strategy for Malta has been drafted for the assessment of the current and future situation of aquaculture in Malta.

⁷⁴ Malta's Marine Sector 2020. Foresight Brief No. 061. The European Foresight Monitoring Network.

<http://www.foresight-platform.eu/brief/efp-brief-no-61-malta%E2%80%99s-marine-sector-2020/>

⁷⁵ Malta Becomes the Largest Ship Register in Europe, Seventh Worldwide. 2012. http://www.ccmalta.com/news/malta_largest_ship_register_in_europe

⁷⁶ http://live.transport.gov.mt/admin/uploads/media-library/files/TM%20Annual%20Report%202011_low%20res.pdf

⁷⁷ Food and Agriculture Organization of the United Nations, National Aquaculture Sector Overview for Malta

http://www.fao.org/fishery/countrysector/naso_malta/en

Small but R&I intensive niches -

- Marine Biotechnology: exploitation of new biomaterials from indigenous species; targeting value added and modified fish food as well manufacturing sea plant extract as an ingredient. ICP⁷⁸ (The Institute of Cellular Pharmacology Ltd.) for example, produces vegetal extracts for human and animal use in large scale for the pharmaceutical, nutraceutical, cosmetics and veterinary industries
- Marine observations, monitoring and forecasting: improved marine observing and in select niche areas of marine-related activities.
- Marine Energy and Resources: exploiting available technologies for alternative energies e.g. offshore wind farming; exploring the potential for national RTDI contributions in environmental technology developments aimed at harnessing resources, including technology applications for cost-effective resource extraction, reduction of environmental impacts etc.

Health Sector

The history and heritage of Malta has been intertwined with healthcare since early its days. (see section on Health Tourism above). The healthcare system in Malta has been ranked by the World Health Organisation⁷⁹ as the fifth in the world. The sector employs over 12,000 people in Malta. There are also many high profile Maltese diasporas within the healthcare profession across the world, many of whom return home for the last phases of their careers. Although they do not always appear on statistics, their contribution to the further development of this sector is vital.

Life sciences and Healthcare has been identified by the Vision 2015 and Beyond as one of the seven priority areas for development and significant investment has already been made in the Life Sciences Park⁸⁰, whose foundation stone was laid as recently as February 2013⁸¹. The park is being developed speculatively and its final focus of is not going to be determined until its anchor tenant has been identified.

The niches identified in the Vision include Pharmaceutical Manufacturing (already covered above), Rehabilitative care, Pre-clinical Trials and High end Health Services. Additional potential niches for development include:

- **Bio-banking and Genetics** - as a small island with relatively small population Malta already has a very good medical records system and excellent availability of data
- **Rare diseases and birth defects** – As abortion is illegal in Malta, abnormal pregnancies run the full course which together with excellent medical records and data availability could lead into identification and treatment of these diseases. There is enormous potential from across the globe for such a research-based activity, particularly in the Arab world. The ERDF funded Health Biotechnology Facilities at the University of Malta has also been aligned to such developments⁸².
- **Equine Health** – is this a less explored niche within the sector and worthy of further investigation. Although it has been mentioned by one of interviewees for this report, the body of supporting evidence seems scarce.

In spite of a continuous fall in R&D intensity in the sector since 2005 (see sub-section on Health Research & Innovation Strategy), the sector offers many potential opportunities for R&I excellence and there are clearly many areas for development for the specialised niches in this sector.

Aviation Sector

Like the maritime sector, the need for connectivity and good communications for a small island in the middle of the Mediterranean has been the major contributor to the growth of this sector in Malta. The legislative and fiscal incentives for aircraft registration have also played a key role.

One of the main drivers of this industry has been the signing of a joint venture agreement in 2002, between Air Malta and Lufthansa Technik AG. This served as an impetus to further develop the aviation industry in Malta. In fact in 2009, SR Technics SR Technics, part of the Mubadala Aerospace MRO network announced its intention to set up operation in Malta further strengthening the potential of Malta's aviation sector. Since the start of its operations in October 2010, SR Technics employs 150 local engineers and technicians⁸³. Despite its relative youth, the sector is reasonably well developed, offering a range of services including commercial passenger aviation, maintenance, repair and overhaul, aircraft registration, flight training, product development on unmanned aircraft vehicles, aero-maritime links and VIP services. The Government of Malta has outlined its ambition to develop the local industry into an aviation cluster.

⁷⁸ <http://www.icpconcepts.com/>

⁷⁹ The World Health report, The world health report - Health systems financing: the path to universal coverage, 2010, http://www.who.int/whr/2000/media_centre/press_release/en/

⁸⁰ Setting up a life sciences centre in Malta, EU Commission, Inforegio 2011, http://ec.europa.eu/regional_policy/projects/stories/details_new.cfm?pay=MT&the=45&sto=2212&lan=7®ion=ALL&obj=ALL&per=2&defl=DE

⁸¹ PM lays foundation stone of life sciences park, Times of Malta 25/02/2013, <http://www.timesofmalta.com/articles/view/20130225/local/pm-lays-foundation-stone-of-life-sciences-park.459105>

⁸² Strategic Report Cohesion Policy 2007-2013 Malta pp129-133, Planning and Priorities Co-ordination Division, Office of Prime Minister, December 2012. http://ec.europa.eu/regional_policy/how/policy/strategic_report_en.cfm

⁸³ Times of Malta, July 2012, <http://www.timesofmalta.com/articles/view/20120731/local/certification-for-sr.430983>

Thanks to the Maltese Aircraft Registration act (2010), today it is creating a similar attractive jurisdiction for aviation services, as its predecessor did for shipping and superyacht registration in Malta⁸⁴. The Aircraft Registration and Operation (AOC) sector has since become an important contributor to the establishment of the aviation cluster.

The list of actual and potential services offered to aviation industry includes: technical monitoring and support, advanced engineering solutions to aircraft owners and operators, maintenance repairs and overhaul (MRO), aircraft registration and operation, aircraft management and aeronautical engineering services, aircraft sales services, insurance cover, fuel supplies, the organisation of hangar space, office space, flight planning and flight operations financial services for the aviation industry and flight training.

This is a young and immature industry in Malta with a great potential to become a significant contributor to the economy of the Island. It is, however, less clear how this industry could become a specialised niche where many regions across the European Union offer a similar environment – bar the fiscal incentives for registration. It is even more difficult to identify areas of high R&I intensity as aircraft maintenance is very much a procedure driven process, dictated by the manufacturers' and airlines' exacting operational manuals and legislative directives regarding the aircraft safety.

Cultural and Creative Industries

At the start of this section, the definition the industry was set out in order to avoid confusion between Creative Industries as defined in the Vision 2015 & Beyond which includes sectors such as ICT, renewables & energy efficiency, arts and crafts, etc. and Cultural and Creative Industries as set out by the draft National Strategy for the Cultural and Creative Industries, both discussed in previous sections.

These industries are defined by four separate sectors namely heritage, arts, media and creative business services. Assessing their economic impact is not without complication as the sectors cross boundaries of standard classification categories. For the purposes of this report efforts were made to assess the level of the employment in the related sectors (Arts, entertainment and recreation and its sub-categories as well as creative businesses including advertising agencies) from primary sources. The latest data from NSO indicated around 5,000 people were employed in these sectors in 2012⁸⁵. This report, however, adapts the economic data presented in the Industries Draft Strategy which put the employment around 7,600 people in over 3,600 enterprises. Although the latest figures refer to 2007, the Industry accounts for 4% of the national GDP⁸⁶.

Social Sector

Social businesses are an emerging sector in the EU. They relate to undertakings whose primary objective is to achieve social impacts, rather than generate profits for shareholders or other stakeholders. Being socially innovative and often newly created businesses, they are mostly composed of a large population of SMEs, facing problems of access to finance similar to all other small businesses. In Malta, it is estimated that there are around 750 organisations which potentially fulfil the function of a social enterprise: 394 voluntary organisations, 236 sports clubs, 63 band clubs, and 57 cooperatives¹⁰². It is also estimated that Malta has a voluntary sector that employs more than 4,300 people (in addition to a voluntary base of more than 24,000 people) and generates around €68 million a year. About 85% are micro organizations, about 10% are small organizations and the remaining 5% are medium-sized¹⁰³. These enterprises are generally registered as business structures (such as co-operatives), but a legislation is currently being drafted to provide the legal and regulatory framework for such social businesses.

2.2.5. Summary of Priority Sectors and Industries in Malta

Section 2.2.4 above provides a comprehensive overview of all economically significant sectors in Malta. There is a wide diversity in the types and number of sectors which is more visible in non-service and manufacturing based sectors. The analysis, local knowledge and economic trends lead the authors to conclude that not all sectors can offer significant niches for specialisations. The reasons for not including some sectors in the final list varies widely. Food production for example is the largest manufacturing sector in Malta but does not exhibit any of the characteristics of a niche industry. The sector is dominated by micro firms employing less than 9 people, mainly artisanal, with only one larger firm. The sector primarily serves the local market and does not have significant exports nor is it active in the fields of research, innovation and engagement with the search base in the country or outside.

Other sectors are less open and shut cases as they exhibit some characteristics of having niches as potential smart specialisation. Aviation for example falls into this category. The nascent sector relies on favourable legislation and fiscal environment for its growth. Its technology base is driven by two significant Foreign Direct Investors in aircraft maintenance. Although there is great scope for vocational and high level technician training, as the industry currently stands, there is limited scope for engagement with the research base. Over time this sector may develop a unique or special characteristic, differentiating it from other the aircraft maintenance facilities in Europe.

Based on the analysis earlier in this section, the following sectors provide a good starting point for exploring candidates for smart specialisation in Malta.

- Tourism Sector
- Manufacture of computer, electronic and optical products -

⁸⁴ Plotting Your Flight Plan? Aviation in Malta, PWC 2011, http://www.pwc.com/en_MT/mt/publications/assets/Plotting_Your_Flight_Plan_-_March_2011a.pdf

⁸⁵ NSO News Release Gainfully Occupied Population: December 2012, published 07-May-2013

⁸⁶ (Malta) Draft National Strategy for the Cultural and Creative Industries, <http://www.creativemalta.gov.mt/>

- Pharmaceutical Sector -
- Manufacture of rubber and plastic products -
- Financial Sector
- ICT Sector
- Maritime, Sea-Related and Off-shore Sectors
- Health Sector
- Cultural and Creative Industries
- Renewable and resource efficient

2.3 Links with scientific capabilities and priorities

The following section gives a brief overview of Malta's R&I outputs.

Research, Technological Development and Innovation in Malta

According to the latest NSO publication on R&D⁸⁷ during 2010, the total expenditure on R&D activities amounted to €42.0 million, which is a substantial increase of €10.2 million from 2009, but this however brings Malta's total spend to only 0.68% of GDP in 2010, and 0.73% in 2011.

The Business Enterprise sector contributed 62.3% to total R&D, whereas the Higher Education and Government sectors contributed 34.0 per cent and 3.7 per cent respectively. The higher outlay was driven by an increase in recurrent expenditure of €5.9 million, mainly as a result of higher labour costs and other recurrent expenditure in the Business Enterprise sector. Moreover, more outlays on capital expenditure by €2.9 million were also recorded for the Higher Education sector, reflecting additional investment at the University of Malta in instruments and equipment and in land and buildings, mainly financed through EU funds. Labour costs represented 64.1 per cent of total expenditure, whereas other recurrent expenditure and capital projects had a share of 24.1 per cent and 11.8 per cent respectively.

Table 18 - Total R&D Expenditure as a % of GDP* (2010)

	€ 000s		
	2008	2009	2010
Government Sector (GOV)	1,320	1,503	1,549
Business Enterprise Sector (BES)	21,438	20,124	26,157
Higher Education Sector (HES)	9,926	10,134	14,292
Total R&D expenditure	32,685	31,761	41,997
% of GDP*	0.56	0.54	0.68

* Source: Gross Domestic Product as published in News Release No. 111/2012⁸⁸

Overall, Malta's R&D expenditure in 2010 was focused on engineering and technology, followed by (since 2008) natural sciences. Medical and health sciences was the third largest R&D expenditure field and is the only major field of science clearly exhibiting a significant downward trend in expenditure between 2005 and 2009.

Table 19 - Total expenditure on R&D by major field of science (2010)

⁸⁷ Research and Development in Malta. National Statistics Office. News Release 149/2012 - 2 August 2012.

http://www.nso.gov.mt/statdoc/document_file.aspx?id=3376

⁸⁸ Gross Domestic Product: Q1/2012. NSO http://www.nso.gov.mt/statdoc/document_file.aspx?id=3336

		Natural sciences	Engineering and Technology	Medical sciences	Agricultural sciences	Social sciences	Humanities	Not elsewhere classified	Total
Government Sector	2008	115	88	9	785	256	0	68	1,320
	2009	104	165	9	946	180	79	20	1,503
	2010	115	38	6	1,130	226	30	3	1,549
Business Enterprise Sector	2008	7,536	9,822	3,280	118	95	0	588	21,438
	2009	7,145	9,364	3,061	150	100	0	303	20,124
	2010	10,107	12,946	2,244	117	115	9	620	26,157
Higher Education Sector	2008	1,118	1,866	2,157	84	2,940	1,670	92	9,926
	2009	1,167	1,978	2,116	90	2,972	1,715	96	10,134
	2010	1,636	4,039	3,251	153	3,207	1,905	102	14,292
Total	2008	8,769	11,775	5,445	987	3,291	1,670	747	32,684
	2009	8,415	11,507	5,186	1,187	3,253	1,794	419	31,761
	2010	11,858	17,023	5,500	1,399	3,548	1,944	725	41,997

The EU 3 % target and further national targets have mobilised increasing resources for R&D. The national 2020 R&D targets set up by member states in 2010 are ambitious but achievable and would bring the EU R&D intensity to 2.7–2.8 % of GDP in 2020, close to 3 % in 2020. The following graph gives an idea on how Malta compares with other Member States and other countries in terms of R&D as a share of GDP (R&D intensity).

Figure 13 - R&D Intensity 2000 and 2009 for key countries⁸⁹

⁸⁹ Innovation Union Competitiveness Report 2011. European Commission.
http://ec.europa.eu/research/innovation-union/index_en.cfm?section=competitiveness-report&year=2011

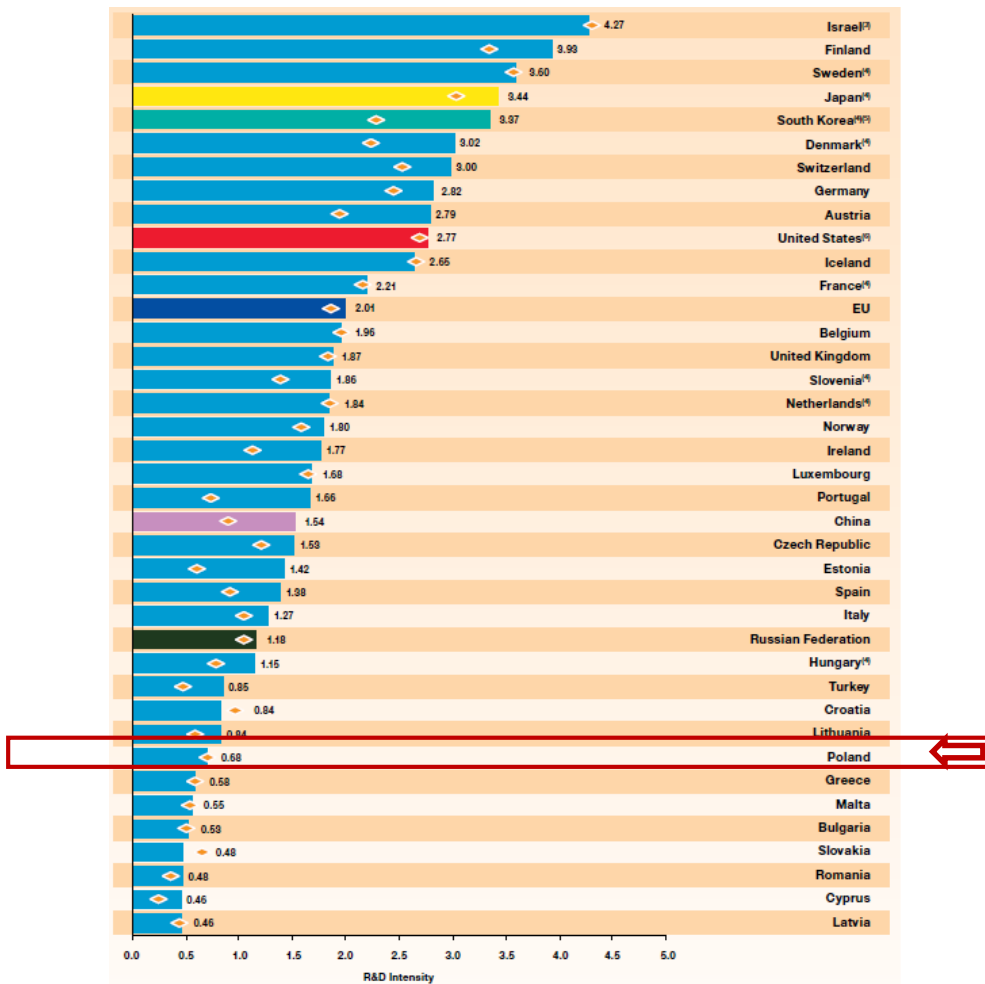
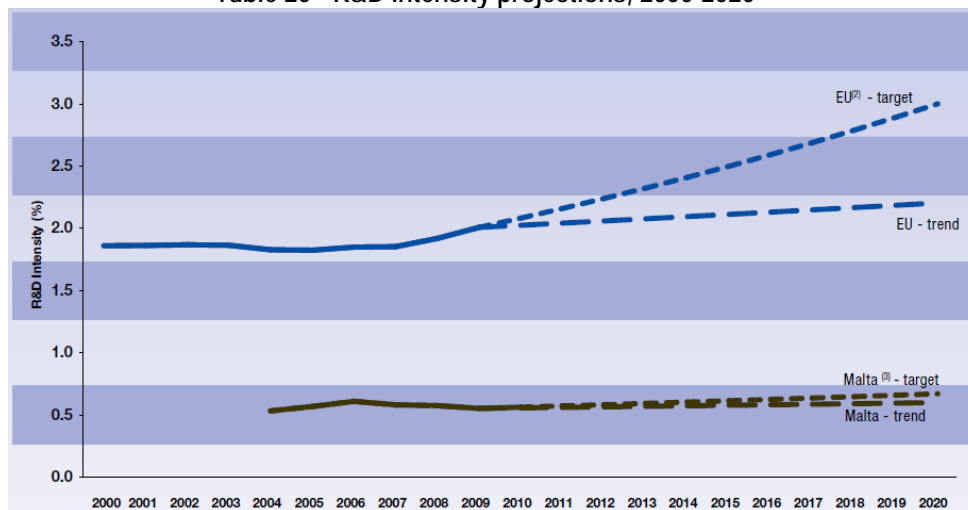


Table 20 - R&D Intensity projections, 2000-2020⁹⁰



It is also important to point out that in 2010, 1,836 employees were engaged in R&D work, with the highest R&D employment rate being within the higher education sector, at 933 employees, followed by the business enterprise sector, at 825 employees. There was a predominance of men among researchers and technicians.

Table 21 - R&D employment by major field of science

⁹⁰ Overall review of EU Member States and Associated countries. Country profile – Malta. Innovation Union Competitiveness Report 2011. European Commission. http://ec.europa.eu/research/innovation-union/index_en.cfm?pg=country-profiles§ion=competitiveness-report&year=2011

	Government Sector			Business Enterprise Sector			Higher Education Sector			Total		
	2008	2009	2010	2008	2009	2010	2008	2009	2010	2008	2009	2010
Total	69	91	78	616	612	825	1,005	864	933	1,690	1,567	1,836
Males	42	65	53	487	501	682	647	531	563	1,176	1,097	1,298
Females	27	26	25	129	111	143	358	333	370	514	470	538
Full-time	47	54	46	502	492	673	0	0	0	549	546	719
Males	32	40	33	389	400	557	0	0	0	421	440	590
Females	15	14	13	113	92	116	0	0	0	128	106	129
Part-Time*	22	37	32	114	120	152	1,005	864	933	1,141	1,021	1,117
Males	10	25	20	98	101	125	647	531	563	755	657	708
Females	12	12	12	16	19	27	358	333	370	386	364	409
Researchers	42	50	47	277	274	359	768	621	671	1,087	945	1,077
Males	19	28	25	233	238	323	554	438	467	806	704	815
Females	23	22	22	44	36	36	214	183	204	281	241	262
Technicians	16	17	13	279	272	345	67	73	74	362	362	432
Males	16	17	12	207	210	271	58	61	62	281	288	345
Females	0	0	1	72	62	74	9	12	12	81	74	87
Support staff	11	24	18	60	66	121	170	170	188	241	260	327
Males	7	20	16	47	53	88	35	32	34	89	105	138
Females	4	4	2	13	13	33	135	138	154	152	155	189

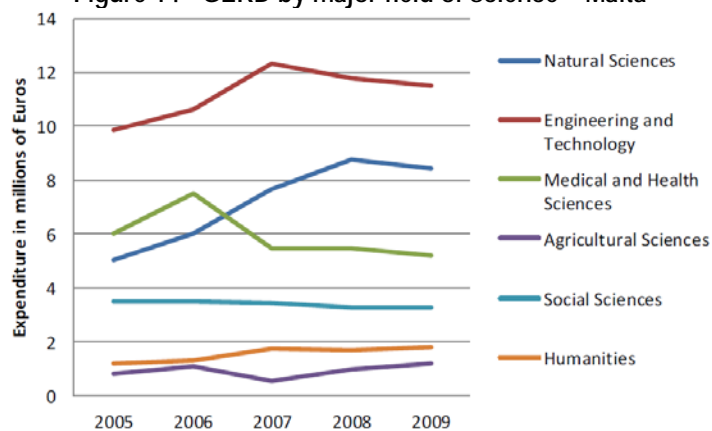
* Spending a proportion of their working time on R&D activities

The following sections provide a breakdown of the major statistical indicators related to R&D.

GERD

Gross domestic expenditure on research and development (GERD) refers to the total intramural expenditure on research and development performed on the national territory during a given period. Unfortunately the latest R&D GERD figures⁹¹ only get as far as 2009, but these also confirm the 2010 figures indicated in Table 19 above.

Figure 14 - GERD by major field of science – Malta



BERD

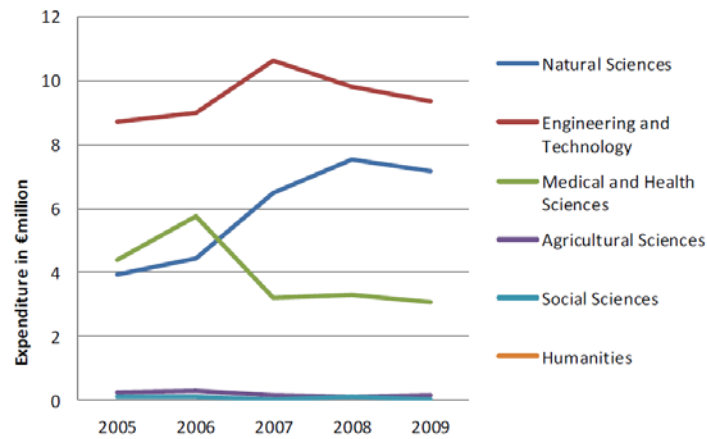
Business enterprise expenditure on R&D (BERD) covers R&D activities carried out in the business sector by performing firms and institutes, regardless of the origin of funding. The business enterprise sector includes:

- All firms, organisations and institutions whose -primary activity is the production of goods and -services for sale to the general public at an economically significant price.
- The private and not-for-profit institutions mainly serving them.

The trends in BERD for the three top major fields of expenditure generally reflect the GERD trends, indicating a high degree of contribution by the private sector to R&D expenditure in these areas. Business expenditure on R&D in medical and health sciences has also been decreasing over the past years.

Figure 15 - BERD by major field of science – Malta

⁹¹ DRAFT National Strategy for Health Research & Innovation. MCST. October 2012. http://www.mcst.gov.mt/sites/default/files/pa_documents/draft_health_strategy.pdf

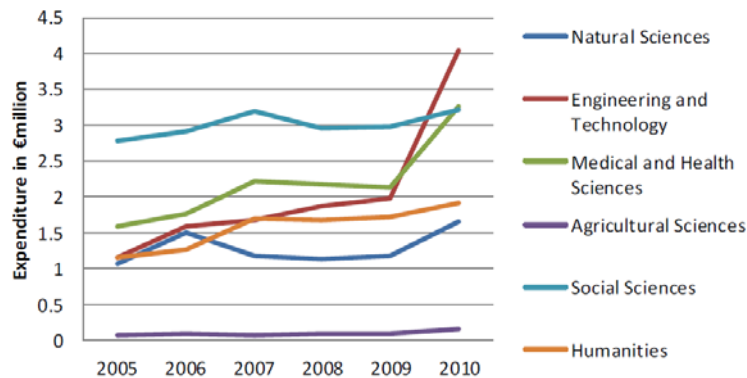


HERD

Higher Education Expenditure on R&D (HERD) refers to the expenditure of R&D performed in the higher education sector and includes both publicly and privately funded R&D.

Higher education expenditure yields a somewhat different picture of expenditure by major field of science. Between 2005 and 2009, R&D in medical and health sciences was second only to social sciences (although the difference in expenditure between the two was not insignificant). Data for 2010 indicates the emergence of engineering and technology as the field where most expenditure was undertaken, most likely due to the expenditure on new/upgrading of laboratories (which the social sciences are less likely to require). In 2010, R&D expenditure on medical and health sciences reached that for social sciences possibly due to infrastructural expenditure as well.

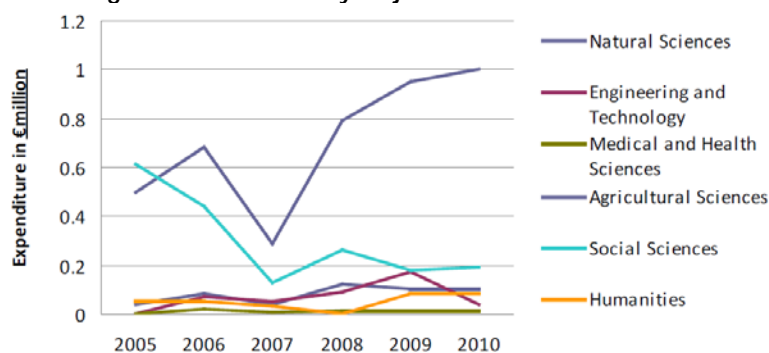
Figure 16 - HERD by major field of science – Malta



GOVERD

Government Expenditure on Intramural R&D (GOVERD) refers to expenditure in R&D performed in the Government sector. The situation in terms of government expenditure is very much a complete reversal of previous graphs. This could however be more a reflection of the difficulty to collect R&D data from the health ministry rather than a true reflection of the situation on the ground. The scale of expenditure is also much smaller than BERD and HERD.

Figure 17 - GOVERD by major field of science – Malta



GBAORD

Government budget appropriations or outlays for R&D (GBAORD) are the funds committed by the central government for R&D. Total government outlays are current outlays (e.g. current consumption, transfer payments, subsidies) and capital outlays. Table 22 below shows the Government Budget Appropriations or Outlays for R&D (GBAORD) by socio-economic objective. For 2011, the highest outlays are recorded for R&D activities related to Health (€3.2 million), Industrial Production and Technology (€2.9 million) and Culture, Recreation, Religion and Media (€2.6 million).

Table 22 - Government Budget Appropriations or Outlays for Research and Development (GBAORD) €000s

Socio-economic objective	2008	2009	2010	2011
Exploration and exploitation of the earth	0	0	0	4
Environment	1,142	1,209	1,801	1,655
Exploration and exploitation of space	0	0	0	0
Transport, telecommunication and other infrastructures	78	152	0	13
Energy	10	12	168	206
Industrial production and technology	1,635	1,691	3,906	2,897
Health	1,735	1,785	3,111	3,184
Agriculture	535	579	769	796
Education	0	1,006	1,234	1,475
Culture, recreation, religion and media	113	1,687	2,155	2,575
Political and social systems, structures and processes	3,785	1,354	1,491	1,789
General advancement of knowledge	15	0	2	1
Defence	0	0	0	0
TOTAL	9,047	9,475	14,637	14,595

Overall performance in research, innovation and competitiveness is presented in the table below. These indicators relate knowledge investment and input to performance or economic output throughout the innovation cycle. They show thematic strengths in key technologies and also the high-tech and medium-tech contribution to the trade balance. The table includes a new index on excellence in science and technology which takes into consideration the quality of scientific production as well as technological development. The indicator on knowledge-intensity of the economy is an index on structural change that focuses on the sectoral composition and specialisation of the economy and shows the evolution of the weight of knowledge-intensive sectors and products and services.

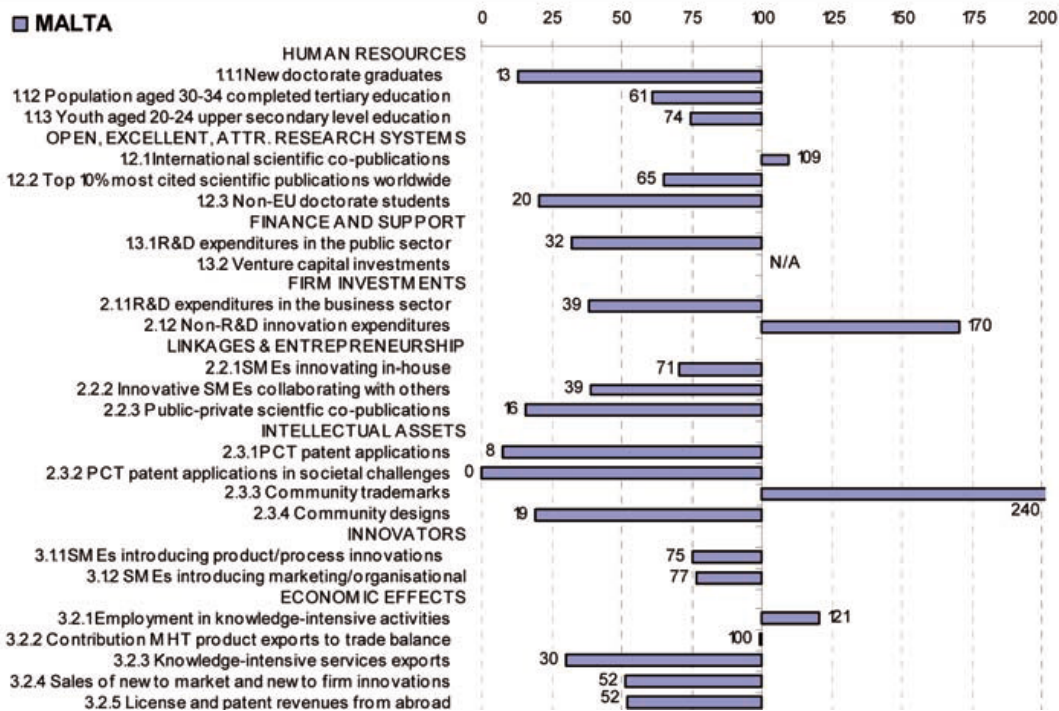
Table 23 - Overall performance in research, innovation and competitiveness⁹²

Investment and Input		Performance/economic output	
Research	<i>R&D intensity</i>	<i>Excellence in S&T</i>	
	2011: 0.73% (EU: 2.03%; US: 2.75%)	2010: 17.53 (EU:47.86; US: 56.68)	
	2000-2011: +4.68% (EU: +0.8%; US: +0.2%)	2005-2010: +4.07% (EU: +3.09%;US: +0.53)	
Innovation and Structural change	<i>Index of economic impact of innovation</i>	<i>Knowledge-intensity of the economy</i>	
	2010-2011: 0.35 (EU: 0.612)	2010: 54.45 (EU:48.75; US: 56.25)	
		2000-2010: +2.67% (EU: +0.93%; US: +0.5%)	
Competitiveness	<i>Hot-spots in key technologies</i>	<i>HT + MT contribution to the trade balance</i>	
	ICT, Bio-medical technologies	2011: 0.92% (EU: 4.2%; US: 1.93%)	
		2000-2011: -14.37% (EU: +4.99%; US:-10.75%)	

Despite the clear progress made Malta still scores very low and far from the EU average on most of the R&D metrics, with some interesting improvements, as indicated in the figures below.

Table 24 - Relative strengths and weaknesses in innovation performance 2011

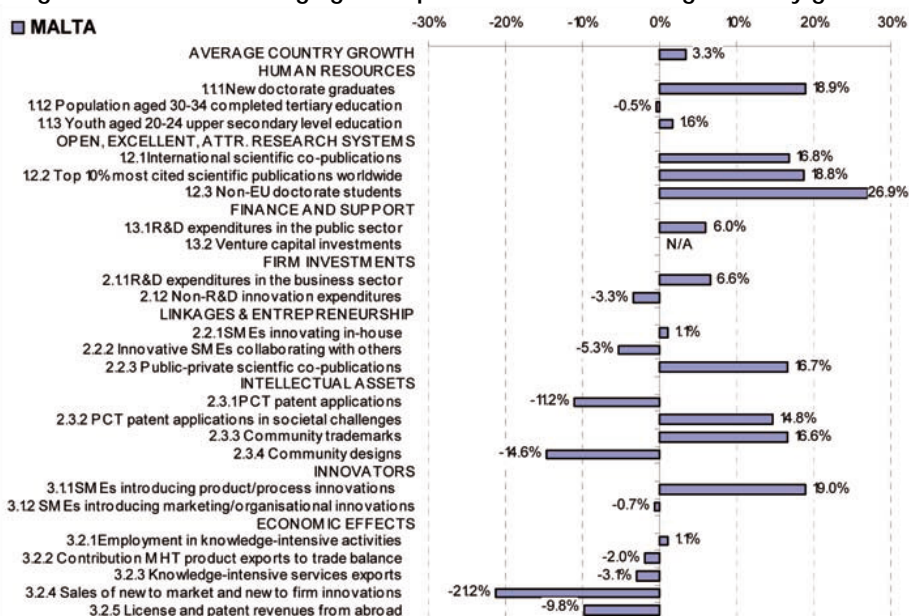
⁹² Research and Innovation performance in EU Member States and Associated countries. Innovation Union progress at country level. 2013



Indicator values relative to the EU27 (EU27=100)

However it is relevant to note that according to the latest Innovation Scoreboard (2013) Malta has experienced the fastest growth of all Member States for Most cited publications, Public-private co-publications and SMEs introducing product or process innovations. Growth performance in 'Open, excellent and attractive research systems' is well above average and in 'Firm investments' and in 'Economic effects' well below average.

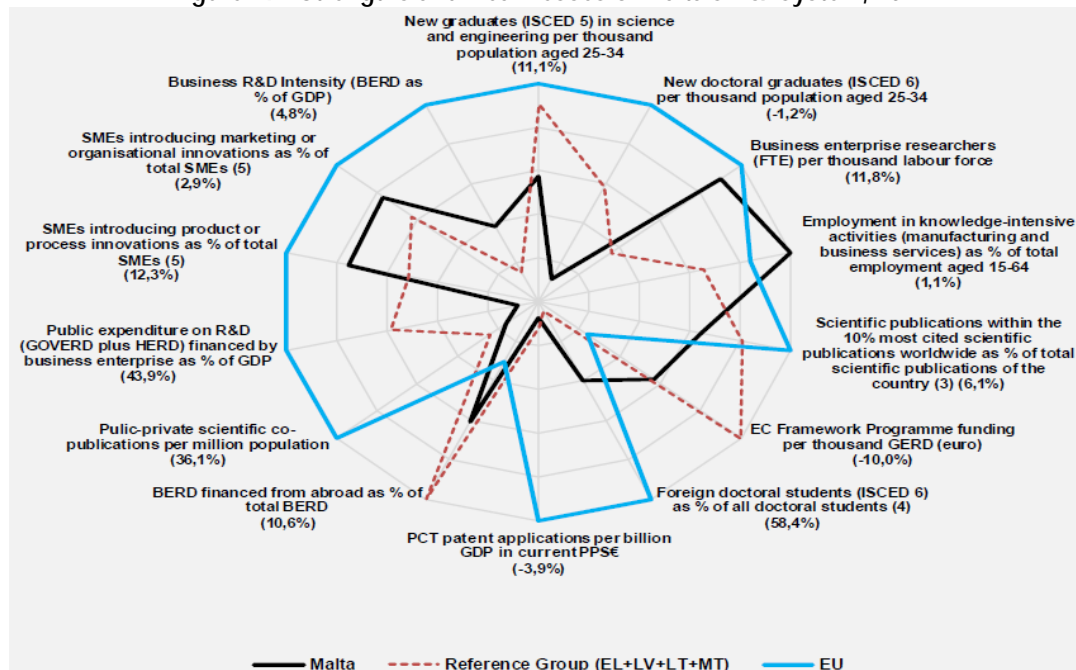
Figure 18 - Annual average growth per indicator and average country growth



Although the supply of human resources for science and technology is below both the EU and the reference group averages, the average annual growth in the numbers of graduates per thousand population aged 25 -34 has been quite high. Malta's share of employment in knowledge-intensive activities is higher than the EU average reflecting the dominance of high-tech multinationals in the private sector. Knowledge creation as reflected in the production of highly-cited scientific publications and public-private scientific co-publications and in the number of PCT patent applications is far below the EU average indicating a low scientific base, although the establishment of the University of Malta Knowledge Transfer Office in 2009 is already contributing to the reversal of this trend. Indeed, since its inception, the office has taken over the maintenance of the 3 patents owned by University and oversaw the filing of 8 additional patents with the Malta Patent Office, the UK IP Office and WIPO. Malta's reliance on the EC Framework Programme as a source of funding is shown in its above average level of EC funding. Innovative activity by SMEs is above the reference group average but below the EU average.

Similarly the graph below illustrates the strengths and weaknesses of Malta's R&I system. Reading clockwise, it provides information on human resources, scientific production, technology valorisation and innovation. Average annual growth rates from 2000 to the latest available year are given in brackets.

Figure 19 - Strengths and weaknesses of Malta's R&I system, 2011



Note: In brackets: average annual growth for Malta, 2000-2011

These below EU average results are primarily due to Malta's particular circumstances as a small island state and an economic structure organised around the service sector, which is dominated by micro enterprises with less than 10 employees, and that naturally limits the capacity of the country to increase its overall R&D intensity.

These challenges were acknowledged in Malta's National Reform Programme 2011-2020⁹³, and the R&I strategy has made relevant attempts at resource concentration and specialisation within four sectors identified in the National Strategic R&I Plan 2007-2010, namely:

- ICT,
- energy and environmental technologies,
- health
- and value-added manufacturing and services.⁹⁴

In this regard, both a Health Research and Innovation Strategy for Malta⁹⁵ and a Manufacturing research strategy were launched in 2011 and 2012. Similar efforts have also been undertaken in the area of Digital Gaming⁹⁶.

Other factors that contribute to Malta's R&I limited progress is the inherent R&I capacity, not only in terms of funding allocations for the national R&I programme, and capital investments for strengthening infrastructures. More importantly is the limited supply of human resources with adequate competences and skills where for instance Malta is below the EU27 average when it comes to new PhD graduates and numbers of researchers. However there are indications that Malta has achieved rapid growth rates of new doctoral graduates over the past five years⁹⁷. Another challenge being addressed is the low linkages between industry and academia. Consequently given the size of the country and the capacity of the research system, Malta needs to specialise its R&D investments in particular niche fields where the system can achieve sufficient critical mass to support the local economy. Presently, Malta has identified health and biotechnology, energy and environmental technologies, ICT and value added manufacturing and services as potential areas to focus on.

On a more positive note however, Malta has ranked 16th in the GII 2012⁹⁸ and is 1st among the 16 countries added to the GII this year. Malta achieves 4th position in the Output Sub-Index which measures the results of two pillars of innovative activities within the economy namely knowledge and technology outputs and creative outputs. It also ranked 27th in the Input Sub-Index which measures five enabler pillars of the economy namely institutions, human capital and research, infrastructure, market sophistication, and business sophistication. Its 1st rank in creative goods and services, with good scores across all indicators, is in large measure the reflection of its appeal as a tourist destination, which has a direct impact on the production and consumption of recreation and culture. Although labour productivity is still low at 0.5% (ranked 99th), Malta achieves 5th and 6th positions in new businesses and the

⁹³ http://ec.europa.eu/europe2020/pdf/nrp/nrp_malta_en.pdf

⁹⁴ Overall review of EU Member States and Associated countries. Country profile – Malta. Innovation Union Competitiveness Report 2011. European Commission. http://ec.europa.eu/research/innovation-union/index_en.cfm?pg=country-profiles§ion=competitiveness-report&year=2011

⁹⁵ <http://www.mcst.gov.mt/about-us/news/health-research-and-innovation-strategy-malta>

⁹⁶ A Digital Gaming Strategy for Malta. A Report to guide a National Policy in the setting up of a Digital Games Industry in Malta in accordance with a range of references. Digital Gaming Strategy for Malta Report Version 2.0.1. February 2012. Malta Enterprise.

http://www.maltaenterprise.com/sites/default/files/publications/adigitalgamingstrategyformalta_-_report.pdf

⁹⁷ European Innovation Scoreboard 2013. <http://ec.europa.eu/enterprise/policies/innovation/facts-figures-analysis/innovation-scoreboard/>

⁹⁸ The Global Innovation Index 2012 http://www.wipo.int/export/sites/www/econ_stat/en/economics/gii/pdf/chapter1.pdf

adoption of certificates of conformance with the ISO 9001 quality standard, leading to 10th position in knowledge impact. The country's two major strengths, however, are its 3rd and 6th positions in knowledge absorption and diffusion. The major areas of concern are its low rankings in Human capital and research and in investment.

Figure 20 - Innovation Efficiency Index rankings (high-income countries/economies)

Rank	Country/Economy	Efficiency Score	Efficiency Rank	Input Rank	Output Rank	Difference	Region Group	Rank	Population (US\$ millions)	GDP per capita (current PPP\$)	
1	Malta	1.03	4	27	4	23	EUR	2	0.4	25,782.7	■
2	Switzerland	1.01	5	4	1	3	EUR	3	7.8	43,508.6	■
3	Estonia	0.93	8	24	8	16	EUR	5	1.3	20,182.1	■
4	Netherlands	0.92	9	15	3	12	EUR	6	16.7	42,330.7	■
5	Germany	0.91	11	23	7	16	EUR	7	81.4	37,935.5	■
6	Sweden	0.88	18	3	2	1	EUR	9	9.4	40,613.8	■
7	Slovenia	0.88	20	32	22	10	EUR	10	2.0	29,179.1	■
8	Czech Republic	0.87	22	31	23	8	EUR	11	10.5	25,933.8	■
9	Iceland	0.83	28	19	12	7	EUR	12	0.3	38,079.6	■
10	Luxembourg	0.83	29	14	10	4	EUR	13	0.5	84,829.3	■

For further analysis of Malta's current R&I scenario, the latest 2011 and 2012 Erawatch Country reports for Malta⁹⁹ is very comprehensive and identifies the structural challenges faced by national innovation systems. They further analyse and assess the ability of the policy mix in place to consistently and efficiently tackle these challenges. The annex of the reports gives an overview of the latest national policy efforts towards the enhancement of European Research Area.

In conclusion, clearly the ranking of research investment is as follows:

2010	Engineering and Technology	Natural sciences	Medical sciences	Social sciences	Humanities	Agricultural sciences	Not elsewhere classified	
Ranking	1	2	3	5	6	4	7	TOTALS
R&D expenditure	17,023,000	11,858,000	5,500,000	3,548,000	1,944,000	1,399,000	725,000	4,199,7000
R&D employment	626	407	231	299	165	61	47	1836

2.4 Consider scenarios regarding S&T areas to be developed and strengthened

The draft regulation for European Regional Development Fund (ERDF 2014-20) sets "strengthening research, technological development and innovation" as its first investment priority with a specific focus on:

- research and innovation infrastructure (R&I) and capacities to develop R&I excellence and promoting centres of competence, in particular those of European interest;
- promoting business R&I investment, product and service development, technology transfer, social innovation and public service applications, demand stimulation, networking, clusters and open innovation through smart specialisation;
- supporting technological and applied research, pilot lines, early product validation actions, advanced manufacturing capabilities and first production in Key Enabling Technologies and diffusion of general purpose technologies;

These priorities in the future of regional development, which is based on research, innovation and technological development, require the right framework conditions in order to strengthen the science and technology base and develop the absorptive capacity within the key innovation actors including businesses.

Cluster policies

The section 2.2.3 examined the state of cluster development in Malta and concluded that although a number of natural clusters exist within the Maltese economic landscape, the policy aspect is still in its infancy. The most concrete action in this direction has been

⁹⁹ Erawatch Country reports 2011: Malta. JRC Scientifica dn Policy reports. 2013. Joint Research Centre.

http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/reports/countries/mt/report_0005?searchType=simple&tab=reports&orden=Title&reverse=false&num=5&country=mt

Erawatch Country reports 2012: MALTA http://s3platform.jrc.ec.europa.eu/documents/10157/120308/CR2012_MT.pdf

Malta Information Technology Agency's (MITA) involvement in the INTERREG project Pooling4clusters¹⁰⁰. The project concluded with a number of country specific recommendations for Malta. These included the necessary steps in embarking on cluster based economic development policies in Malta. The report proposed three "Pillars" of activity namely:

Pillar 1– Dedicated Funding for a pro-Clustering Ecosystem – Policy development and support, on the ground activities and financing.

Pillar 2 – Paradigm shift – Training, study visits and funding stakeholders

Pillar 3 – Establishing a Competence Centre – Development of physical infrastructure.

Even today in Europe, competence in cluster based economic development remains a craft rather than a profession. The similarity to craft stems from the notion that each practitioner develops his/her approach and shares (teaches) these skills gleaned through experience to others through mutual learning platforms such as EU funded initiatives or consulting activities. The Directorate General for Enterprise and Industry (DG ENTR) of the European Commission brought together the most experienced people and organisations in Europe to identify and set up a meaningful set of quality indicators and peer-assessment procedures for cluster management particularly to address this lack of a professional and systematic approach in Europe¹⁰¹. DG ENTR supports consortia of regional and national authorities responsible for cluster policy development to participate in these training programmes through the Competitiveness and Innovation Framework Programme (CIP)¹⁰². As Malta embarks on its cluster policy journey it has an opportunity to engage with this programme and key managers in MITA have already expressed their interest in this initiative. In parallel it is also recommended to further develop the industrial zones, the science parks, the incubators and business innovation centres that factor in potential clustering opportunities (as is being planned for the Life Science Park, and Smart City) - while offering professional added-value services to tenants and providing incentives for the establishment of incubators and clusters that will allow the hosting and growth of selected sectors.

Public Procurement for Innovation

The official EU definition of public procurement is "*The process used by governments, regional and local public authorities or bodies governed by public law (financed, supervised or managed for more than 50% by public authorities) to obtain goods and services [including construction] with tax payer money.*"¹⁰³ Governments at central and sub-central levels are significant purchasers of goods and service and in 2010 Malta's total expenditure by the government and the utility sectors on works, goods and services as a percentage of GDP stood at around 13.6% of GDP¹⁰⁴. Malta has a centralised public procurement system that is administered by the Contract Department and the award criteria for procurement below EU thresholds are based on the cheapest technically compliant or Most Economically Advantageous Tender (MEAT)¹⁰⁵. Unfortunately the reality in Malta¹⁰⁶ suggests that in view of the inherent size of the islands, the supplier base is too small and the low level of competition tends to favour lowest price offers using goods and services developed elsewhere, which ultimately reduces the incentive to innovate and not always provides a product/service that is not necessarily appropriate for local needs. Moreover, local firms, which are mainly family run SMEs, may lack resources to innovate or cooperate, and usually locked-in to networks of suppliers. Similarly major contracts or contracts for particular areas that rely on external expertise such as IT are normally sourced from abroad which implies that while in general the majority of suppliers are local; from a value perspective the balance between local and foreign suppliers may be largely biased in favour of foreign suppliers. Consequently it is recommended that Malta starts moving towards a framework that facilitates Innovative Procurement and which attempts to induce innovation within public spend by specifying levels of performance or functionality that are not achievable with 'off-the-shelf' solutions, and hence require an innovation and R&D to meet the demand. In fact Malta's specific needs may create niche markets that could be exploited in other settings, for example small scale energy systems or innovative waste water recycling processes.¹⁰⁷

By putting innovation at the core of its public procurement practices, Malta can create an opportunity to leverage the substantial investment that has been made in R&D schemes and to create better value for money in public services, through achieving efficiencies, improved productivity, quality, faster response times and reduced whole life costs. Public procurement of innovation can also be used strategically to provide a robust home market to prove the viability of new products or services for long- term export success and to gain referrals from the public sector, while supporting domestic firms facing strong international competition. ¹⁰⁸

Interest in this approach is likely to increase as a result of the Innovation Union initiative and other supporting measures from the European Commission like the new EU procurement directives which go some way towards providing the possibility for innovation. Typical candidates for innovative procurement could include for instance:

¹⁰⁰ Regional Recommendation Plan for Malta https://www.mita.gov.mt/MediaCenter/PDFs/1_Abridged%20plan.pdf

https://www.mita.gov.mt/MediaCenter/PDFs/1_MT%20Preliminary%20Recommendation%20Plan.pdf

¹⁰¹ European Cluster Excellence Initiative (ECEI) <http://www.cluster-excellence.eu/>

¹⁰² Call on Cluster Excellence, http://ec.europa.eu/enterprise/newsroom/cf/itemdetail.cfm?item_id=6578&lang=en&title=Call-on-cluster-excellence-

¹⁰³ Factsheet – The Lead Market Initiative.

http://ec.europa.eu/enterprise/policies/innovation/policy/lead-marketinitiative/files/ppn_factsheet_en.pdf

¹⁰⁴ http://ec.europa.eu/internal_market/publicprocurement/docs/indicators2010_en.pdf

¹⁰⁵ <http://www.publicprocurementnetwork.org/docs/ItalianPresidency/Comparative%20survey%20on%20PP%20systems%20across%20PPN.pdf>

¹⁰⁶ http://ec.europa.eu/internal_market/publicprocurement/docs/modernising_rules/cost-effectiveness_en.pdf

¹⁰⁷ Policies for Research and Innovation in Small Member States to Advance the European Research Area (ERA-PRISM).

<http://www.eraprism.eu/documents/4.4%20and%204.5%20del%20public%20procurement.pdf>

¹⁰⁸ Using Public Procurement to Stimulate Innovation and SME Access to Public Contracts. Department of Enterprise, Trade & Employment (DETE). July 2009.

<http://etenders.gov.ie/Media/Default/SiteContent/LegislationGuides/Report%20of%20the%20Procurement%20Innovation%20Group.pdf>

<http://etenders.gov.ie/Media/Default/SiteContent/LegislationGuides/25.%20Buying%20Innovation%2010%20Step%20Guide.pdf>

- Dynamic traffic management
- Public space
- Facility management and buildings
- Management of water systems
- Electricity in mobility
- Raw materials and waste management
- Public health
- Safety and security

Various Commission documents¹⁰⁹ provide some interesting insight on how innovation friendly public procurement can occur, and could include the following efforts:

- Expanding the know-how and skills of policy, operational and procurement professionals in innovative procurement
- Professionalising the procurement function within the public sector and raising the role and profile of the function.
- Supporting know how and coaching to enable policy and procurement professionals to identify unmet needs and address them through specific innovative procurement projects,
- Providing practical support to innovative procurers,
- Information sharing, case examples, guidelines, trainings
- Establishing networks for exchange of best practice, particularly at level of local authorities¹¹⁰
- Availability of gap funding to enable take up of innovative solutions
- Sub-dividing contracts into lots and thereby further opening the way for SMEs to participate will broaden competition.
- Subcontracting opportunities should be encouraged and made more visible.
- Contracting authorities should avoid disproportionate qualification and financial requirements in their tender documents

Public-private partnerships

A serious effort should be undertaken to make better use of public-private partnership (PPP) models as a way of involving the private sector in various government service offers or required infrastructure. MCST and government, via the Public-Private Partnership Unit¹¹¹, should carry out a thorough study to identify the services and the respective infrastructures that can benefit the local economy most and are in line with the RIS3 strategy; and which can be built and maintained by using innovation delivery mechanisms like PPPs in ways that involve the private sector in both the implementation and provision of various social needs in a sustainable way. Furthermore this would ensure that public projects are more efficient since the private sector is typically more incentivized to further improve the services offered and improve efficiency. Malta already has had a number of success stories with PPPs like the older persons care sector¹¹², the general maintenance of public areas and gardens¹¹³ and more recently the Malta National Aquarium¹¹⁴.

Open Innovation Platforms

Open innovation is defined as “the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively.”¹¹⁵ Providing support towards open innovation platforms (OIPs) that support the entire innovation chain (from funding, to product development, pre-production, and market placement) and mobilise the largest possible number of beneficiaries can be an excellent way of encouraging innovation growth within different sectors of the market, and this very same ability to connect people with the right resources on a common platform can create an ongoing, evolving community of innovators.

A recent RIS 3 report for Greece¹¹⁶ in fact suggests that potential support efforts to empower OIPs could include the following actions which may also be applicable to Malta:

- Sectoral support and cluster programmes, targeted towards smart specialisation technologies, which support companies in selected sectors and technology fields.

¹⁰⁹ “Linking Innovation and Public Procurement: Options for the new European Plan for Innovation”. DG Enterprise and Industry. October 2009.

http://ec.europa.eu/enterprise/policies/innovation/policy/lead-market-initiative/pp_workshop_en.htm

http://ec.europa.eu/enterprise/policies/innovation/policy/lead-market-initiative/files/conference/main-outcomes_en.pdf

Public procurement as a driver for innovation and change. December 2007. VINNOVA <http://www.vinnova.se/upload/EPIStorePDF/vp-07-03.pdf>

¹¹¹ <http://mfin.gov.mt/en/home/Pages/The-Public-Private-Partnership-Unit.aspx>

¹¹² <http://www.caremalta.com/CareMalta/AboutUs/tabid/742/Default.aspx>

¹¹³ <http://elcmalta.com/About>

¹¹⁴ <http://www.mta.com.mt/page.aspx?id=211>

¹¹⁵ Henry Chesbrough, Executive Director for open innovation at University of California Berkeley.

<http://facultybio.haas.berkeley.edu/faculty-list/chesbrough-henry>

¹¹⁶ RIS3 National Assessment: Greece. December 2012. Technopolis.

http://www.technopolis-group.com/resources/downloads/reports/RIS3_Greece_National_Assessment_Report_Feb2013.pdf

- Spin-off platforms, bringing together funding, research capabilities, public IPR, and production/management skills for new knowledge-intensive firms.
- Technology learning platforms and incubators for start-ups, offering combined learning of new technologies, funding, innovation support, and location premises.
- Clusters of innovation, enabling collaborative product development, production and marketing within localised production systems and value chains.
- Crowd-sourcing platforms, for user-driven innovation, product design, marketing of products and services, and crowd-funding.
- Innovation promotion and export support platforms, for product promotion and placement into global markets.

Resource efficiency

Productivity growth, which is the main driver of the growth potential over the medium run, is supported by having a favourable business environment that encourages entrepreneurship and investment.¹¹⁷ In fact one of Malta's strengths is the number of companies that are especially geared up towards making short runs of complex items with high value-added, and that are capable to change certain specifications from client to client in a very short time. Clearly Maltese industry has been rather clever in ensuring a constant reduction in the operational costs of business to be able to meet price competitiveness challenges within a competitive and difficult demand scenario. This is not only applicable to the manufacturing industry but also to other important contributors to the economy like tourism, however it is important to note that the focus of the measures across sectors and industries tend to vary considerably based on the relative importance of the resources relevant to those sectors. According to a 2010 study undertaken by ECORYS¹¹⁸, despite the varying degrees of importance of each resource for each sector or industry, there seems to be two types of resource efficiency namely:

- **First order measures:** were the most prominent across all sectors, e.g. increasing or maintaining the high share of recycling of materials rates, use of green and intelligent information technology along the production cycle, the use of green business models, etc. However, there were obvious barriers to their wider use, such as the lack of access to finance, lack of knowledge and lack of sharing and dissemination of best practices. Therefore, there is still room to increase their further adoption;
- **Second order measures:** were less used, but they do occur. There is evidence for companies introducing new substitutes of material, .e.g. the use of renewable (bio-based) materials, especially in packaging, investment in R&D, etc. This finding implies that many companies have already exploited their "first order learning" opportunities and are moving towards a "second order" level of learning. Both the lack of finance and access to knowledge and information were also barriers to the further implementation of these measures.

In practical terms, this notion implies that firms will not move to second order measures unless they exploit the potential gains from the implementation of the "first order measures". Furthermore it has been noted that companies seem to adopt those measures that focus on optimising the use of the "same" resources; but rarely did companies try to increase the effectiveness of that resource's use. This would entail a focus on the use of using 'better suited resources' rather than on the use of the 'same resource right'. This has implications on policy making and encourages an approach that would go beyond the efficiency of the "existing/same" resource and that would focus on the potential opportunities that can be created by simply thinking "outside the box" and the introduction of new substitutes that can replace the heavy reliance on natural resources. As such, research, development and innovation (R&D&I) are key instruments to achieve this vision by introducing alternative materials, new product designs, and products with new and more sustainable characteristics.¹¹⁹ Based on this reflection, the ECORYS document makes numerous policy solutions as potential directions for action towards resource efficiency in Malta and should be encouraged via targeted policy solutions:

- Support Maltese industries to increase resource effectiveness and use the right materials by focusing on research development and innovation to introduce alternative material, new products designs and products with more sustainable characteristic.
- Increase support to material efficiency by using materials correctly right, which would entail adopting measures that maximise the use of the "same material". This would include recycling, industrial symbiosis, and measures towards cradle to cradle approach.
- Introducing economy-wide Eco-Efficiency indicators that can be measured at the firm level.
- Address the current barriers to resource efficiency, leading to the following recommendations:
 - a) Enhancing a circular economy and increasing synergies among industries to address the misalignment of incentives problem by enhancing the industrial symbiosis, reforming the current waste legislations and the introduction of a single market for waste and recycling across the EU;
 - b) Considering Market Based Instruments (MBIs) to address the lack of incentives problem; reforming taxes and subsidies to support resource efficiency, green procurement and resource pricing are all market based instruments that can be used;
 - c) Improving access to finance to address the problem of lack of incentives;

¹¹⁷ Macro-Structural Bottlenecks to Growth in EU Member. July 2010. Directorate-General for Economic and Financial Affairs States.

http://ec.europa.eu/economy_finance/publications/occasional_paper/2010/pdf/ocp65_en.pdf

¹¹⁸ Study on the Competitiveness of the European Companies and Resource Efficiency. July 2011. ECORYS http://ec.europa.eu/enterprise/policies/sustainable-business/files/competitiveness_of_european_companies_150711_en.pdf

¹¹⁹ http://ec.europa.eu/enterprise/policies/sustainable-business/sustainable-industry/resource-efficiency/index_en.htm

http://www.spire2030.eu/uploads/Modules/Documents/spire-roadmap_broch_march_2013_final.pdf

http://www.ecomanufacturing.eu/fileadmin/KUNDENORDNER/ecomanufacturing/Redaktion/Downloads/Guide_to_resource_efficiency_in_manufacturing.pdf

- d) Using benchmarks and performance levels to address the problem of lack of incentives, to help the adoption of first order measures;
- e) Adopting measures towards changing consumers' behaviour in order to address the lack of market demand problem through launching information campaigns, marketing (including control on green commercial claims); and labelling schemes;
- f) Further support to R&D for innovation to address the limits of Best Available Technology (BAT) problem and to enhance the
- g) use of second order measures;
- h) R&D support for the development of green business models for businesses;
- i) Dissemination of good practices through industry platforms and networks to address the lack of access to information and knowledge problem through closer linkages between all actors including technology suppliers and enlarged industry platforms and networks;
- j) Better definition of the term resource efficiency (and thus communication on resource efficiency) and the introduction of an action plan to address the problem of unclear EU policies;
- k) Improving the separation of waste at source for a better quality waste to address the horizontal barriers, through the installation of effective waste management systems and the appropriate infrastructure at municipal levels.

Access to Finance

One of the main challenges for SMEs in Malta is the inability to raise enough capital to support their business venture which creates a 'Financing Gap'. Two recent reports by the Malta Business Bureau elaborate further to on this issue. A report on access to finance¹²⁰ published highlights that as many as 30% of local enterprises find it difficult to raise the finance required to further their development. The key problem enterprises are facing is that a limited range of financing options is available. 72% of SMEs in the start-up phase are currently using 'traditional' lending products such as loans and overdrafts when these are not necessarily the best solution for companies that are going through their stage of development'. Furthermore, currently no business angel networks, nor a venture capital fund has been formed and they do not seem part of local strategies. It is recommended to support the creation of regional business angel networks and give incentives to venture capital funds with professional standards and co-investment funds to invest in regional business opportunities.¹²¹ The MBB report suggests the following potential solutions for further financing instruments by economic sector.

Economic sectors	Manufacturing	Retail/ distribution	Hospitality	Innovative/ creative industries
Scope for financial instruments	<ul style="list-style-type: none"> ✓ Further scope for grants ✓ Further scope for financial instruments – given reliance on bank financing, loans and loan guarantees are likely option ✓ Equity instruments for high value-added manufacturing 	<ul style="list-style-type: none"> ✓ Significant interest in loan guarantee financial instrument ✓ Scope for extending loan guarantee product, or combining it with other forms (loan + loan guarantee, risk-sharing, grant + loan guarantee) ✓ Minimal scope for VC funds 	<ul style="list-style-type: none"> ✓ Significant interest in loan guarantee financial instrument ✓ Scope for extending loan guarantee product, or combining it with other forms (loan + loan guarantee, risk-sharing, grant + loan guarantee) ✓ Minimal scope for VC funds and other third party private equity 	<ul style="list-style-type: none"> ✓ Further scope for grants, especially for R&D and start-ups ✓ Further scope for financial instruments – loans and loan guarantees, but also risk-sharing hybrid forms ✓ Equity instruments for innovative companies in all lifecycle stages ✓ Potential for VC funds ✓ Crowd funding for creative/ cultural concepts

The report titled "The Allocation of EU Structural Funds in Aid of Private Enterprise"¹²² also suggests that during the 2007-2013 programming period only €70 million of the €855 million (8%) EU cohesion policy funds committed to Malta was directly made available to private enterprise. This investment, as a proportion of the GDP, was around 3.2% lower than that of the EU average, which translates into €200 million a year. They also suggest that an increase in the allocation of structural funds to businesses would offset a downward trend in local private investment that was experienced in recent years. The MBB report also makes reference to other studies proving that investment in the private sector yields higher rates of economic growth. Consequently the proportion of cohesion funds invested in the private sector must grow drastically, recommending an allocation of around €180 to €200 million in order to provide the right balance between reducing the gap and ensuring sufficient demand for the allocated funds.

¹²⁰ Market gaps in access to finance and the feasibility of new financing instruments in the EU addressing the credit needs of Maltese business. MBB. April 2013. http://issuu.com/malta_business_bureau/docs/mbb_study_-_market_gaps_on_access_to_finance

¹²¹ Market gaps in Access to Finance in Malta. February 2013. Ernst and Young.

https://www.bov.com/filebank/documents/16_Market%20Gaps%20to%20Access%20to%20Finance%20in%20Malta%20MBB%20-%20EY%20Presentation%20-%20Workshop%2028022012%20v3.pdf

¹²² The Allocation of EU Structural Funds in Aid of Private Enterprise. MBB. July 2013.

<http://www.mbb.org.mt/Articles/Article.aspx?Section=newsroom&ArticleId=3394&Article=More+EU+funds+should+be+invested+into+private+enterprise>

2.5 Take particular account of “related variety” in reinforcing smart specialisation.

Although dominated by tourism industry there are many different types of variety - related and unrelated - and diversity in Maltese economy. A great degree of complementarities in terms of common requirements in skills, material and competencies is observed in the economic sectors, which if identified and exploited, would lead to a better performance of not only these sectors but also the whole economy and the state of economic development.

For the purposes of this report a number of data sets were considered including those of Regional Sectoral Specialisation Indices and input-output model. As the most recent relevant data set relates to period up to 2008¹²³, a more qualitative approach was called for. Boschma defines¹²⁴ related variety as “industrial sectors that are related in terms of shared or complementary competences”. Three types of relationships exist between variety and economic development namely knowledge spillovers, breadth of sector portfolio and finally the rate of increase of the sector variety over time¹²⁵. The three elements of variety could be summarised as follows - **Knowledge spillover** is about the rate of growth of industries; they tend to grow faster if the local industrial structure is relatively diversified (Jacobs externalities – see Boschma) and if the degree of competition is relatively diversified too (Porter). The **breadth of sector portfolio** and variety creates a degree of protection for the economy and employment from downturn in demand for one or more sectors within it. The **rate of growth of the sector portfolio** concerns the long-term impact of emergence of new sectors that can provide employment for the labour force that have been made redundant due to demise of other sectors, thus reducing the risk of structural unemployment.

The topic has been the subject of detailed academic studies over the past two decades and there is a significant body of literature available as references. As this report is not intended to be a comprehensive literature review nor it is meant to analyse and compare different approaches to economic development or the relative merits of related or unrelated variety in economic growth. It only observes and considers the implications these varieties on specialisation in Malta in this section.

Knowledge Spillovers

Section 2.2 details many of the economically significant sectors in Malta highlighting many areas of technology and or knowledge spillover. The document *Vision 2015 and Beyond*¹²⁶ also clearly sets out these areas of emerging sectors. Areas such as medical tourism and arts and cultural tourism are well documented where the firms in one sector have already identified opportunities offered by the developments in another, some time apparently unrelated industry. Some areas well worth further investigation for specialisation are considered here.

Related connectedness in Digital, Online and Remote Gaming and Content

This industry which is an excellent example to demonstrate the transferable skills and knowledge spillovers, has grown rapidly since 2000 doubling the number of people it employs and increased its share in gross value added by around 8 percentage points. Today the industry, which was created in the meeting point of many sectors, artistic, cultural and ICT among others, is well established and no longer considered as an emerging sector. It has a lobby voice in Digital Games Initiative Group and its own national strategy in Digital Gaming Strategy¹²⁷ published in 2012 (covered elsewhere in this report).

The development of the sector is providing a fertile environment for similar and complementary sectors to develop and flourish in Malta. One notable area is Malta's film industry, which for a long time has enjoyed a reputation and a strong position as a film location, which relied more on the natural environment of the Islands with little added value locally as highlighted in the Digital Gaming Strategy. There is little expertise or reputation for film related technical skills or infrastructure. Areas of synergy with the Digital Gaming industry have already been recognised. The type of skills and competencies in developing digital content is not only transferable but also it is readily available and applicable to the film production and post-production activities. By the same token technical infrastructure for gaming industry such as motion capture and sound studios, particularly publicly funded ones, could become shared resources for both industries.

Related Connectedness in Tourism Sector

Tourism as the largest economic sector and the most significant employer exhibits many areas with potential for cross sector development and exploiting both related and unrelated varieties. Many areas with potential for specialisation have already been highlighted in this report. These include niches such as Health tourism which draws on the strong health care base which has been ranked by the World Health Organisation as the fifth in the world, cultural and heritage tourism which brings together skills and physical infrastructure from tourism, ICT, cultural heritage, museums to build a new niche if not a new industry.

Other opportunities for exploitation of variety is likely to be the that of cruise tourism, marine related industries including shipbuilding and existence of some of the deepest dry docks in Europe and Malta's position as a favourable shipping flag to turn the country into major base not only for cruise ship visits but also to prove a base for this sector.

¹²³ Labour market sector specialisation at regional level,

http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Labour_market_sector_specialisation_at_regional_level

¹²⁴ Related variety and regional growth in Italy, Ron Boschma & Simona Iammarino, September 2007, <http://onlinelibrary.wiley.com/doi/10.1111/j.1944-8287.2009.01034.x/abstract?deniedAccessCustomisedMessage=&userIsAuthenticated=false>

¹²⁵ Related Variety, Unrelated Variety and Regional Economic Growth, Koen Frenken, Frank Van Oort & Thijs Verburg, Regional Studies Volume 41, Issue 5, 2007, <http://www.tandfonline.com/doi/abs/10.1080/00343400601120296#.UbwsPPaG2TU>

¹²⁶ *Vision 2015 and Beyond: A Path to a Knowledge Based Economy – Report 2: Target Industry Analysis Malta Enterprise / AngelouEconomics*, 2010

¹²⁷ A Digital Strategy for Malta. Malta Enterprise. <http://www.maltaenterprise.com/sites/default/files/Digital%20Strategy%20for%20Malta.pdf>

Whether there are significant opportunities for knowledge creation and R&I in these economic niches remains to be investigated when formulating the RIS3 strategies.

Breadth of Sector Portfolio – The priority and well-performing sectors in Malta, particularly those within the knowledge intensive sectors are identified in section 2.2. above. Overall there is a good spread of employment across sectors¹²⁸ and this diversification may act as a shock absorber for any economic down turns either in a specific sector or in the economy as whole.

Rate of growth of the sector portfolio – The Maltese stock of business sectors is a growing one and new ones continue to be identified and developed. The recent years, particularly due to Malta's accession to the European Union, have seen new and different businesses sectors becoming established in the country. These sectors and their genesis in Malta have been discussed briefly in section 2.2.4. Examples include generic pharmaceutical manufacturing, gaming and aviation.

Closer examination of these sectors leads to the conclusion that these new sectors have emerged principally through public sector policy and intervention rather than organically and through entrepreneurial discovery. Pharmaceuticals manufacturing, which today is a well-established sector was referenced as an emerging sector, in need of special attention as recently as December 2006¹²⁹. The public sector intervened by initially creating favourable legislative environment, then by providing incentives and most recently by dedicating space and resources to a Life Sciences Park (Source: Malta Enterprise).

Another "new" business sector in Malta is aviation, discussed in section 2.2.x above. Again the sector has enjoyed similar special conditions created by public policy, first by enacting favourable legislations in aircraft registration, then by providing incentives, particularly to Foreign Direct Investors and most recently providing additional fiscal incentives for key employees of the firms in this sector through Maltese Inland Revenues rules on "Highly Qualified Persons"¹³⁰

Sectors emerging primarily through public policy do play a key role in Maltese economy, particularly its diversification and variety. The increased variety may act to shield the economy, particularly employment in sectors, from sector specific economic shocks. This approach to "creating" new sectors appears to work well in Malta for two reasons. First, although the Government exercises a type of "picking winners" the selection seems to be based on the existing competences already present in related industries – e.g. aviation and tourism. Exploring and exploiting these related varieties ensures the negative aspects of picking winners, such as ignoring the local growth potential, can be avoided. Second, concrete steps were taken in embedding and anchoring these emerging sectors in the economy through creation of hard and soft infrastructure including suitable premises and requisite skills development.

¹²⁸ NSO News Release Gainfully Occupied Population: December 2012, published 07-May-2013

http://www.nso.gov.mt/statdoc/document_view.aspx?id=3512&backUrl=news_by_topic.aspx

¹²⁹ National Strategic Reference Framework, Malta 2007 – 2013, December 2006,

http://mfin.gov.mt/en/home/popular_topics/Documents/National%20Strategic%20Reference%20Framework/NSRF.pdf

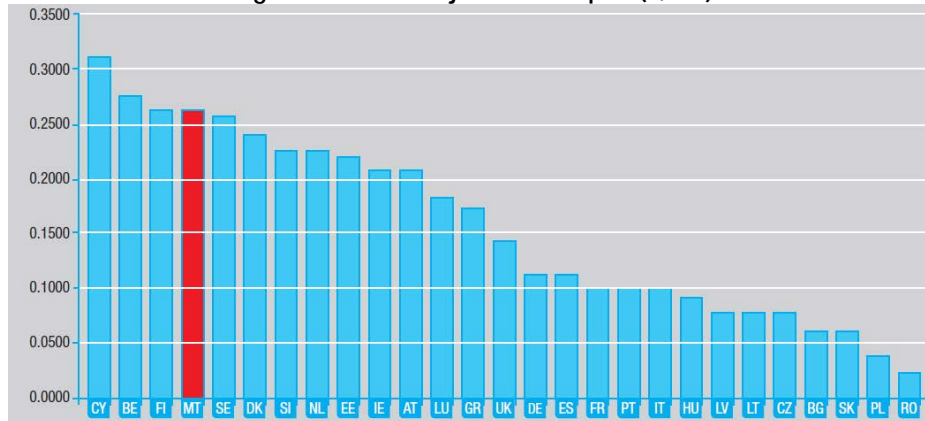
¹³⁰ Tax Guidelines on Highly Qualified Persons Rules, Inland Revenue, <http://www.ird.gov.mt/taxguides/qualifiedpersons.aspx>

3. Examine scope for synergies between cohesion funding and Horizon 2020

3.1 Malta's Participation in FP7/relative performance

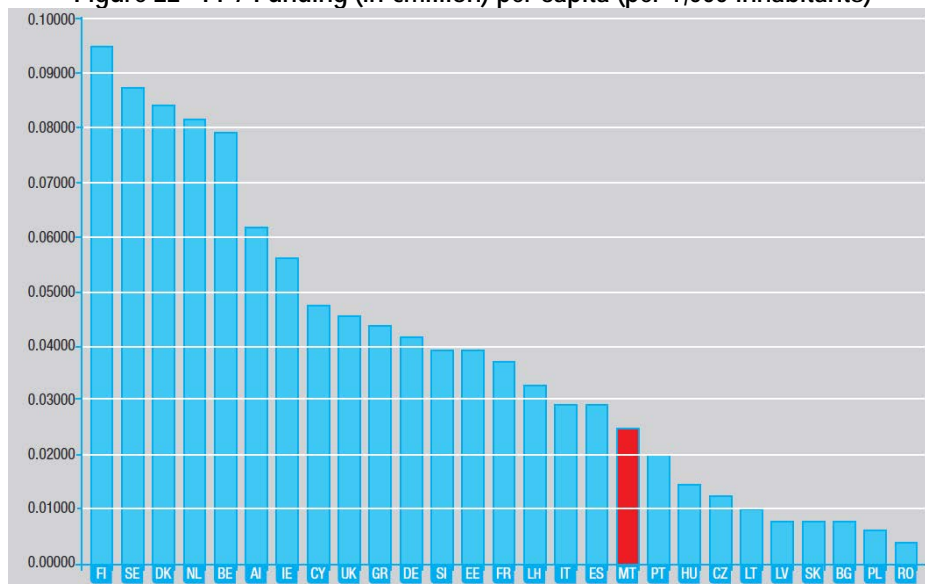
The Seventh Framework Programme (FP7) is the main financial tool through which the European Union (EU) supports Research and Development (R&D) activities covering all scientific and technological disciplines. According to data presented in the "Fifth FP7 Monitoring Report, 2011"¹³¹ published by the European Commission in 2012, Malta ranked 6th amongst the EU-27 Member States in terms of number of FP7 participants per capita.

Figure 21 - FP7 Projects Per Capita (1,000)



On the other hand Malta ranks in 18th place when comparing the participation in terms of FP7 funding in millions of Euro per capita, as indicated in the figure above.

Figure 22 - FP7 Funding (in €million) per capita (per 1,000 inhabitants)



However this ranking might have changed slightly since according to the latest FP7 country profile for Malta¹³², as at the end of February 2013, a total of 681 eligible proposals were submitted in response to 381 FP7 calls for proposals involving 794 applicants from Malta (0.19% of EU-27) and requesting EUR 132,68m of EC contribution (0,09% of EU-27). The remaining profile is being reproduced below.

Among the EU-27 Malta (MT) ranks:

- 26th in terms of number of applicants and
- 27th in terms of requested EC contribution

Success rates

The MT applicant success rate of 19.6% remains slightly lower than the average EU-27 applicant success rate of 21%.

The MT EC financial contribution success rate of 10.4% is lower than the EU-27 rate of 19.4%. Specifically, following evaluation and selection, a total of 128 proposals were retained for funding (18.8%) involving 156 (19.6%) successful applicants from Malta and requesting EUR 13.76m (10.4%) of EC financial contribution.

¹³¹ Fifth FP7 Monitoring Report 2011. EC. August 2012. http://ec.europa.eu/research/evaluations/pdf/archive/fp7_monitoring_reports/fifth_fp7_monitoring_report.pdf

¹³² 1.02 MT FP7 Country Profile. 26th February 2013. European Commission. Internal Communication

Among the EU-27, Malta (MT) ranks:

- 17th in terms of applicants success rate and
- 25th in terms of EC financial contribution success rate.

Signed grant agreements

As of February 2013, Malta (MT) participates in 130 signed grant agreements involving 2.461 participants of which 150 (6.10%) are from Malta benefiting from a total of EUR 515,66m of EC financial contribution of which EUR 14,36 m (2.79 %) is dedicated to participants from Malta.

Among the EU-27* in all FP7 signed grant agreements, Malta (MT) ranks:

- 28th in number of participations and
- 28th in budget share

SME performance and participation

The Maltese SME applicant success rate of 13.98% is lower than the EU-27 SME applicant success rate of 20%.

The Maltese SME EC financial contribution success rate of 11.39% is lower than the corresponding EU-27* rate of 19.69%.

- Specifically, 379 MT SME applicants requesting EUR 65,96m
- 53 (13.98%) successful SMEs requesting EUR 7,51m (11.39%)

In signed grant agreements, as of 2013/02/26,

- 41 MT SME grant holders, i.e., 27,33% of total MT participation
- EUR 5,92m, i.e., 41,24% of total MT budget share

ERC Principal Investigators and Marie Curie Fellows

1 Maltese Principal Investigator(s) (0.04% of the total 2683 Principal Investigators for EU-27*) benefit from EUR 2,44m (0.06% of the total EUR 4.281,65m for EU-27*).

4 Maltese Marie Curie Fellow(s) (0,09% of the total 4526 Marie Curie Fellows for EU-27*) benefit from EUR 0,56m (0,08% of the total EUR 705,65m for EU-27*).

Top 5 collaborative links with:

1. ES - Malta (211)
2. IT - Malta (195)
3. UK - Malta (193)
4. DE - Malta (171)
5. FR - Malta (168)

A careful analysis of the overall signed grant agreements until the 3rd March 2013, and sorted according to the highest project costs and EC financial contribution (see table below), suggests that Malta's major success areas in the Cooperation and Capacities programme are:

- | | | |
|----|--|-------------|
| 1. | Research for the benefit of SMEs | Capacities |
| 2. | ICT | Cooperation |
| 3. | Transport | Cooperation |
| 4. | Science in Society. | Capacities |
| 5. | Security | Cooperation |
| 6. | Food, agriculture and fisheries and Biotechnology. | Cooperation |

Table 25 – FP7 Signed agreements for all funding schemes March 2013 (ranked by budget)

Specific Programme	Priority Area	Signed grant agreements with at least one participant in the selection	Project cost for all participants in selection (euro)	EC financial contribution to all participants in the selection (euro)
COOPERATION	Research for the benefit of SMEs	25	4,687,772	3,459,426
COOPERATION	Information and Communication Technologies	13	2,312,839	1,813,673
COOPERATION	Transport (including Aeronautics)	7	1,682,425	1,310,578
COOPERATION	Science in Society	9	1,406,460	1,252,186
COOPERATION	Security	8	1,174,776	1,003,216

COOPERATION	Food, Agriculture and Fisheries, and Biotechnology	6	1,103,844	837,307
COOPERATION	Marie-Curie Actions	10	830,332	743,771
COOPERATION	Socio-economic sciences and Humanities	10	774,843	625,216
COOPERATION	Nanosciences, Nanotechnologies, Materials and new Production Technologies - NMP	5	772,800	714,745
IDEAS	Space	5	693,826	523,098
CAPACITIES	Energy	3	488,612	369,491
PEOPLE	Activities of International Cooperation	4	480,671	428,599
COOPERATION	Environment (including Climate Change)	7	477,288	373,092
COOPERATION	Research Infrastructures	11	419,453	299,158
CAPACITIES	Health	3	342,628	289,331
CAPACITIES	Support for the coherent development of research policies	2	280,560	250,882
CAPACITIES	General Activities	1	48,428	43,181
CAPACITIES	Research Potential	1	28,080	25,038
CAPACITIES	European Research Council			
CAPACITIES	Regions of Knowledge			
EURATOM	Fusion Energy			
EURATOM	Nuclear Fission and Radiation Protection			
	Total	130	18,005,635	14,361,986

However judging Malta's success in FP7 by budget alone has certain limitations and a ranking according to the number of participants suggests Research Infrastructures and Socio-economic sciences are also of direct interest to Malta.

Table 26 - FP7 Signed agreements for all funding schemes March 2013 (ranked by participants)

Specific Programme	Priority Area	Signed grant agreements with at least one participant in the selection	Project cost for all participants in selection	EC financial contribution to all participants in the selection
			(euro)	(euro)
COOPERATION	Research for the benefit of SMEs	25	4,687,772	3,459,426
COOPERATION	Information and Communication Technologies	13	2,312,839	1,813,673
COOPERATION	Research Infrastructures	11	419,453	299,158
COOPERATION	Socio-economic sciences and Humanities	10	774,843	625,216
COOPERATION	Marie-Curie Actions	10	830,332	743,771
COOPERATION	Science in Society	9	1,406,460	1,252,186
COOPERATION	Security	8	1,174,776	1,003,216
COOPERATION	Transport (including Aeronautics)	7	1,682,425	1,310,578
COOPERATION	Environment (including Climate Change)	7	477,288	373,092
COOPERATION	Food, Agriculture and Fisheries, and Biotechnology	6	1,103,844	837,307
COOPERATION	Nanosciences, Nanotechnologies, Materials and new Production Technologies - NMP	5	772,800	714,745
IDEAS	Space	5	693,826	523,098
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CAPACITIES	General Activities	1	48,428	43,181
CAPACITIES	Research Potential	1	28,080	25,038
CAPACITIES	European Research Council			
CAPACITIES	Regions of Knowledge			
EURATOM	Fusion Energy			
EURATOM	Nuclear Fission and Radiation Protection			
	Total	130	18,005,635	14,361,986

3.2 Key thematic sectors of participation

Up to the present date, trends for Malta show a modest participation rate in the FP programme, and for most of the FP7 objectives, Maltese entities seem to qualify as having low competence in specific domains and hence a low share. The results of the survey and desk reviews pertaining to this study have shown that there is a fair mix of Maltese public, educational and research institutions,

foundations and other non-profit organisations, as well as commercial firms that are active in FP R&D projects. However, SME participation still remains a challenge due to lack of human and financial resources. Similarly, it was noted that while Malta was active in a substantial number of projects these are mostly Coordination and Support Actions that are not specifically contributing to actual R&D efforts as is typically the case with Integrated Projects for instance.

The value added that may be obtained through the opportunities available in FP participation by far outweigh the threats that are hindering Malta's increased participation. What is required at this stage are actions which can further increase the value added of Malta's FP participation. Typical actions in this regard include:

- Launching an **educational campaign** among local R&D entities promoting the opportunities on offer through participation in FP projects and providing an explanation of the rules of the programme.
- Establishing an **efficient national structure** providing advice, support and guidance to local organisations that show an interest in submitting a proposal within one of the FP7-ICT Theme areas. The support should also include courses on project management, financial budgeting and resource mapping.
- Increasing the **funds** available for helping local entities realise their R&D plans and projects.
- Setting a strategy for encouraging more local experts in entering R&D activity and thus increasing the **human capital base** for research activity.
- Reduction in the level of **bureaucracy and excessive administration** load that exists during the proposal submission, evaluation process and project duration stages to encourage more entities to submit proposals to FP.

It is through these actions that Maltese organisations and researchers will be given a helping hand in increasing their participation within FP7 calls. Improvement in these areas can go a long way in increasing overall participation in the FPs. However closer analysis of these projects that are undertaken, shows clearly that Maltese FP participants are not involved in high end projects that require substantial infrastructure. Consequently improved research infrastructures as proposed in the R&I Plan could increase even further Malta's FP participation in R&D Collaborative Projects (IPs).

The following sections attempt to provide a breakdown of each focus area. For a complete list of projects please refer to the Annex.

1. Research for the benefit of SMEs

After a careful review of projects that were awarded funding (FP7 – SME call), it is clear to the authors that the any technical expertise that can be noticed at face value is primarily in the area of **fisheries** and **electronics systems/circuit design**, however it is not clear whether the research is actually being undertaken by the local partner or if they are the research beneficiary. It is also important to note that unfortunately the bulk of projects in this domain are by far originating from a cluster of two companies registered locally and which to our knowledge are being investigated by the EC's audit services. This creates a doubt on this apparent strength and should be taken into consideration when and if efforts are made to support this particular 'strength'.

2. ICT

ICT Knowledge generation and utilisation in Malta comes in different forms, including participation in collaborative EU funded programmes such as the 6th and 7th Framework, Structural Funds and Interreg Programmes, as well as development and innovation work by or for industry and the public sector.

It is clear from this review that the significant increase in ICT infrastructure over the past fifteen years, and the establishment of a Faculty of IT has resulted in a considerable increase in ICT researchers. The bulk of ICT research and the accumulation of critical mass are prevalent particularly at the University of Malta. This is reflected in the number of research projects (excluding CSAs) undertaken, papers published in international journals and presented at international conferences, over the last years. The quality of publications is evidenced by the large number of citations by other authors that are reported in the Science Citation Index. For a country of its size, Malta shows very good promise in ICT R&D as shown by the modest amount of ICT R&D projects that have been undertaken or are in progress. A substantial amount of R&D projects are also being undertaken within the private sector, however it seems that most of these efforts remain isolated and fragmented, and not aimed at establishing critical mass but rather competitive advantage.

From an overall perspective, it can be concluded that ICT R&D activity in Malta is well distributed among the various FP7-ICT Theme challenges and objectives. The FP7 ICT focus seems to be in the areas of **digital libraries, assisted living & active ageing, e-health, ambient intelligence, and technology enhanced learning**. Apart from the FP7 projects it seems clear that Maltese entities have high potential and competence in a good number of ICT domains, namely **semantics, dependable systems & runtime verification**¹³³, **intelligent information management**, and **ICT for governance** amongst others, however these competences are not reflected in FP7 statistics as yet.

A strong base of expertise was observed to be originating at the UoM, but what stands out is the absence of IT related public bodies like MITA despite the significant ICT R&D that is being undertaken in-house within the public sector, primarily fuelled by Malta's drive towards better e-Government services. Nonetheless the potential is certainly there especially in niche ICT areas like e-government, artificial intelligence, semantics and cultural heritage digitisation to name a few. The establishment of various ICT R&D schemes offered by the MCST and Malta Enterprise in the form of competitive R&D investment seem to be reaping results, especially in establishing working links between industry, academia and the public sector but certainly more can be done.

3. Aeronautics and air transport

¹³³ <http://www.cs.um.edu.mt/svrg/>

This priority is also giving some very interesting results however it is important to keep in mind that this effort is extremely localised to the Department of Electronic Systems Engineering¹³⁴ within the Faculty of Engineering, which is participating in developing cockpit solutions/applications and optimal flight trajectories for the aeronautical industry. Nonetheless there is a clear opportunity to capitalise on this niche research directed to the aeronautical industry and should be given the necessary resources to become a Centre of Excellence in this domain.

4. Science in Society

It is evident from the relatively numerous results under the SiS priority, that government's efforts to popularise and communicate science have had an impact also on the participation of Maltese entities in this area. Governmental is itself involved in a majority of the funded projects, and also the number of non-governmental actors involved in **science communication and popularisation** is increasing. These efforts should help address the low number of young people interested in pursuing a career in science and technology. It is however important to note that only one of the projects listed below was a coordinated project, with all the rest being CSAs- one of which is actually coordinated by a Maltese partner.

5. Security

This priority is also dominated by promising pockets at the University of Malta, more specifically the Department of Information Policy & Governance¹³⁵ at the Faculty of Media & Knowledge Sciences and the Mediterranean Academy of Diplomatic Studies¹³⁶. These projects are primarily focused on **diplomacy and conflict resolution, legal frameworks for privacy-enhanced convenient technologies and smart surveillance systems** thanks to an established collaboration with Maltese academics based at the University of Groningen.

6. Food, Agriculture and Fisheries, and Biotechnology

Efforts under this priority are entirely focused on fisheries, and are a natural progression for existing competence in aquaculture and fish farming activities in Malta. These projects are driven by the Malta Aquaculture Research Centre¹³⁷ at the Ministry for Rural Affairs and the Environment, and involve a few private entities. This line of research is mostly focused towards developing **self-sustainability in aquaculture, and the propagation of Atlantic Bluefin tuna species in captive conditions, rearing larvae and to produce fingerlings for further grow-out in suitable pens out at sea**¹³⁸. This process is now complete and offers a lot of potential for Malta's economy. This competence in fisheries has also been noted in the Research for the Benefit of SMEs priority as discussed above.

3.2.1. Summary of R&D Priorities for potential Smart Specialisation

The following table attempts to bring together the outstanding economic sectors identified in Section 2 of the report, and matches the FP7 competencies identified from Maltese participation in FP7 till March 2013. It also attempts to identify other areas of Smart Specialisation locally that are not apparent in Malta's FP participation but are actually areas of specialisation with a relative critical mass and number of publications, that are either funded by the National R&I programme or via other means locally, or simply identified by Government as areas of interest. While every effort has been undertaken to ensure a comprehensive review, this review is by no means exhaustive, and it is strongly recommended that MCST undertakes an extensive survey of the knowledge stock and research bases being undertaken locally in order to guide an RIS policy decisions more carefully.

¹³⁴ <http://www.um.edu.mt/eng/ese/research>

¹³⁵ <http://www.um.edu.mt/maks/ipg>

¹³⁶ <http://www.um.edu.mt/medac>

¹³⁷ http://vafd.gov.mt/malagri_rescen

¹³⁸ <https://sites.google.com/site/selfdottpublic/news>

Table 27 – Suggested areas for potential Smart Specialisation

	Tourism Sector	Pharmaceutical Sector	Manufacture of computer, electronic and optical products	Manufacture of rubber and plastic	Financial Sector	ICT Sector	Maritime, Sea-Related, Off-shore Sectors	Health Sector	Creative Sector	Renewable and resource efficient
Tourism Sector								Health Tourism, Processed foods	Heritage conservation	Energy efficiency
Pharmaceutical Sector		Generics		Low-run value added manufact., materials applic., printing		Algae/plant extracts				
Manufacture of computer, electronic and optical products		Energy efficiency	Energy efficiency, advanced composites	Low-run value added manufact.,		Electronic circuit Design				
Manufacture of rubber and plastic products		Energy efficiency	Energy efficiency, advanced composites/materials	Low-run value added manufact., advanced composites/materials, printing						
Financial Sector						Online betting, banking apps				
ICT Sector	Digitised Heritage				Safeguarding against financial loss, user-experience degradation, complex systems	Runtime verification, dependable systems, AI, Avionics	Marine systems and software, Advanced logistics	Telemedicine, Active Ageing	Digital Media	

Maritime, Sea-Related, Off-shore Sectors	Cruise, Coastal Yachts		Monitoring instrumentation			Marine Software, Instrumentation	Bunkering, Oceanography, natural sciences			Wave, floating PV, Solar, Deep sea turbines
Health Sector	Health tourism	Drug Delivery, Early stage clinical trials				Bio Banking	Marine Biotech, Aquaculture			Aquaculture
Creative & Cultural Sector	Cultural Tourism, Conservation/restoration					Online Gaming, digital content			Science Popularisation	
Renewable and resource efficient	Eco tourism, room/energy management systems						Offshore renewable Energy			Water RO & reuse

3.3 Allocation of funding under cohesion policy, notably in terms of capacity building; absorption capacity and constraints

Malta is well on its way in the implementation of cohesion policy for the 2007 - 2013 period, with 80% of available funds allocated to specific projects. The slight delay in the financial uptake of the funds compared to the EU average is primarily due to slower implementation of selected projects on the ground. As at 31 October 2012, the absorption situation with regard to the European Regional Development Fund (ERDF), the Cohesion Fund (CF) and the European Social Fund (ESF) was as follows¹³⁹:

- CF: EUR 103 million (36.4 %) has been paid out of a total allocation of EUR 284 million. This includes an advance payment of EUR 30 million. All CF commitments up to 2009 have already been paid (86 % without the advance payment).
- ERDF: EUR 144 million (32.5 %) has been paid out of a total allocation of EUR 444 million, including an advance payment of EUR 40 million. 90 % of the total ERDF commitments up to 2009 have already been paid (65 % without the advance payment).
- ESF: EUR 31 million (28 %) has been paid out of a total allocation of EUR 112 million, including an advance payment of EUR 10 million. All ESF commitments up to 2009 have already been paid (87 % without the advance payment).

As for the 2014-2020 period, Malta has managed to negotiate circa €1.128 billion in funds for Malta in the next financial period covering the EU's budgets from 2014 to 2020, which compares well with the €1.115 billion Malta was allocated during the current 2007-2013 period.¹⁴⁰ This means that Malta has secured a total of €914 million in funds under cohesion and agriculture. Had Malta retained its convergence (Objective 1) status under the 2014-2020 financial period, it would have received €892 million under these two headings. The deal will therefore actually be a slight increase (€22 million) in these policy areas than would have been the case had it remained an Objective 1 region. Moreover, there is recognition of the permanent handicaps of island member states in the conclusions, in line with the Lisbon Treaty.

However at this stage it is important to keep in mind that the European Parliament passed a resolution which rejected the Multi Financial Framework not in terms of requesting a cut to the budget, but on the grounds that it wanted more balance. Consequently final figures might change.

The data on projects funded under the Priority Axis 1 (PA1), Enhancing Knowledge and Innovation (ERDF) were analysed to find out the type of R&I projects being funded through Cohesion Policy 2007-13. The latest available report to the monitoring committee¹⁴¹ indicates that €108m of the €120m available funds have been committed to 22 major projects with over €91m already contracted. The latest list of approved projects and beneficiaries¹⁴², lists 19 projects with 4 additional schemes managed by Malta Enterprise appearing in the approved Schemes list¹⁴³. Of the 19 projects, 18 were found to be heavily biased towards research related capital expenditure. These were construction and premises projects, purchase or refurbishment of equipment or both – that is a new or refurbished premises being equipped and/or furnished. Softer, revenue based schemes such as industry–university links, graduate placement and technology transfer schemes, Knowledge transfer, commercialisation of research or proof of concept activities are conspicuous by the absence in the list of strategic projects.

Over €20m of the funds are managed by Malta Enterprise in four approved grant schemes (ERDF Innovation Action Grant Scheme has two strands: Environment and Innovation). These are simply grants to businesses for undertaking projects in this area including e-business development or research and development activities. These schemes are promoted through a web portal <http://www.20millionforindustry.com/>.

The Strategic Report on Cohesion Policy 2007-2013¹⁴⁴ lists the outputs and indicators for the funds while the latest available Annual Implementation Report (2011)¹⁴⁵ provides global headline data on projects. The Country Report on Achievements of Cohesion Policy¹⁴⁶ carried out in 2010 reports that of the 16 projects implemented in this priority axis, the University of Malta managed 11, all of them geared to improving and developing the environment and energy resources, ICT, high value-added manufacturing and services and biotechnology in healthcare. The University now manages 13 such projects in this Priority Axis with a total value of over €40m which may show the institution's over-reliance on these funds. According to an article in Bank of Valetta Review, the university's annual Capital expenditure over the period 2002 – 2009 has never exceeded €2m¹⁴⁷.

Absorption capacity and constraints

¹³⁹ Commission reply E-009027/2012 to Parliamentary question. <http://www.europarl.europa.eu/sides/getAllAnswers.do?reference=E-2012-009027&language=EN>

¹⁴⁰ Successful closure of negotiations for Malta on multiannual financial framework for 2014-2020: total EU funding of €1128 million over the next seven years. Government of Malta Press Release Issue. Date: Feb 09, 2013. Reference Number: PR0190.

<https://gov.mt/en/Government/Press%20Releases/Pages/2013/February/08/pr0190.aspx>

¹⁴¹ OPI Annual Implementation Report presentation, PPDD, http://www.ppcd.gov.mt/monitoring_committees_all_funds

¹⁴² OP I - List of Approved Projects and Beneficiaries. 31/05/2013, <http://www.ppcd.gov.mt/file.aspx?f=369>

¹⁴³ OP I - List of Approved Aid Schemes and Intermediate Bodies. <http://www.ppcd.gov.mt/file.aspx?f=544>

¹⁴⁴ Strategic Report Cohesion Policy 2007-2013 Malta pp129-133, Planning and Priorities Co-ordination Division, Office of Prime minister, December 2012

¹⁴⁵ OPI Annual Implementation report 2011, pp66-69 http://www.ppcd.gov.mt/links_and_downloads

¹⁴⁶ Expert Evaluation Network delivering policy analysis on the performance of cohesion policy 2007-2013, task 2: country report on achievements of cohesion policy Malta, Dec 2010, http://ec.europa.eu/regional_policy/sources/docgener/evaluation/pdf/eval2007/country_reports/malta.pdf

¹⁴⁷ Funding: The University of Malta's Main Challenge, Philip von Brockdorff, Bank of Valetta Review, No. 42, Autumn 2010, <https://www.bov.com/filebank/documents/029-042%20P%20von%20Brockdorff%20.pdf>

In terms of absorption constraints of cohesion funding it is important to note that recently the National Audit Office carried out a joint audit which analysed the manner by which simplification measures of structural funds regulations¹⁴⁸ were being transposed into national regulations and managed by the relevant authorities in respect to the 2007-2013 programming period, and specifically the European Regional Development Fund (ERDF) and European Social Fund (ESF) projects. ¹⁴⁹ Of the existent nine simplification measures, NAO noted that Malta had transposed and applied only one, within the Operational Programme corresponding to the ESF. This measure essentially consisted of the recouping of project indirect costs according to a predetermined rate calculated on actual project direct costs. The reason offered by the Planning and Priorities Directorate for not applying the other measures was the time and cost associated with carrying out studies that determine applicable rates and justify the use of such measures.

Furthermore the beneficiaries whose opinions were assimilated into this study alluded to an apparent lacuna in terms of information sharing with regard to project implementation and leadership. All beneficiaries were keen on imparting their knowledge and experience to new and inexperienced Project Leaders who would most likely encounter difficulties already mastered and addressed by other Project Leaders. NAO established that beneficiaries needed greater simplification in terms of record-keeping procedures, as well as an increased overall flexibility in view of complications arising from unforeseen changes in circumstances. NAO noted that beneficiaries were not satisfied with the level of support afforded by their respective line ministries, particularly in the address of arising difficulties and challenges. NAO considers the need to coordinate assistance provided by PPCD and the various involved line ministries as a matter of paramount importance, which if not actively managed, may easily prove to be detrimental to all involved. Other constraints are related to the actual governance of the funds and the strategic planning, which according to various interviews with local government agencies (including the University of Malta), are quite critical of the way these are being administered. Clearly the complexity and immense bureaucracy is a major deterrent as pointed out by the NAO report, however a lot of frustration has been noticed mostly related to the way last minute requests are made to various public bodies in what at times seems to be a panicked rush to replace projects that either fail to materialise, or in order to take up left over funds. This approach tends to take the entities that are approached by surprise, who in turn need to hatch up detailed project plans at the last minute. Besides the impact on the quality and planning of projects submitted in such a quick manner, this approach puts into question the strategic and policy direction of these last minute investments.

Furthermore the PPCD's Annual Implementation Report (2011)¹⁵⁰ reports specific issues encountered during implementation of Priority Axis 1, Enhancing Knowledge and Innovation (ERDF), which all broadly stem from limited absorption capacity. These included delays in procurement process due to the design and vetting of tender dossiers and delays in evaluation and preparation of the contract and capacity issues in beneficiary organisations including the private sector. The significant increase in available funding for R&I type activity will require ramping up in capacity and capability and it is nowhere more evident than the University of Malta, increasing its infrastructure and capital spend many folds over such a short time.

3.4 Stairway to Excellence: using capacity building for improved performance in terms of excellence.

Significant regional disparities across Europe is not a new phenomenon and in fact they are at heart of the European Regional policy. This disparity in research and innovation performance also needs to be addressed. The Capacities strand of the current Framework Programme (FP7) offered a number of possibilities to help address this R&I capability disparity across regions. Regions of Knowledge and Research Potential programmes, for example, supported the less developed regions in partnering with the more developed ones. The Commission's Budget Review in 2010 required a clear division between Research and Innovation and Cohesion policies, thus removing any capacity building activity from Horizon 2020. As a result a new approach is needed to develop and support research and innovation capacities in the regions that lag behind going some way towards reducing the *research and innovation divide* in Europe. The model of Stairways to Excellence, using the synergies between Horizon 2020 and Structural and Cohesion Funds will help build capacity in regions with less developed R&I capability.

Inward and outward mobility schemes

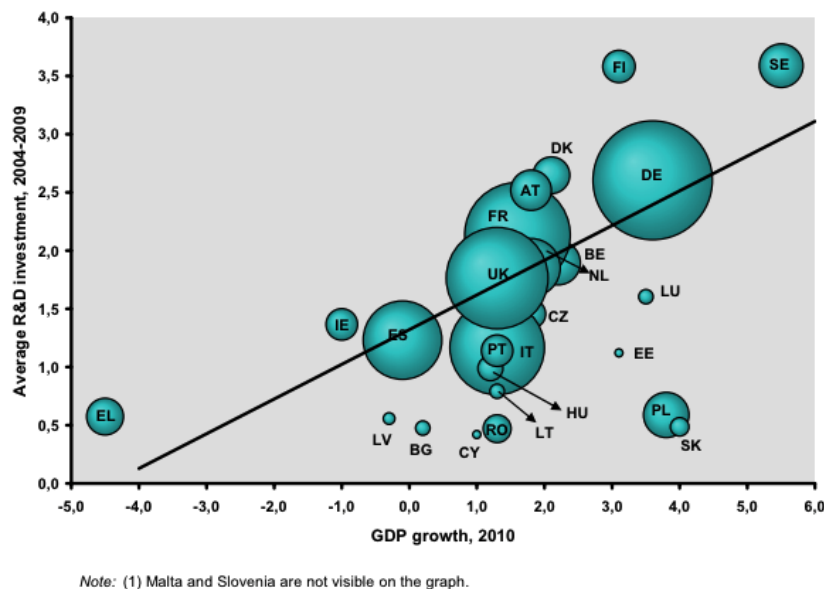
Malta clearly has an R&D intensity which is significantly below the European average and the demand for human resources in STI is also quite moderate especially during the current crisis.

Figure 23 - R&D investment and Economic Recovery
(The size of the bubble reflects the size of the economy as a share of EU GDP).

¹⁴⁸ On 22 December 2010, the European Commission adopted a proposal for a Regulation of the European Parliament and the Council of the European Union on the financial rules applicable to the annual budget of the Union (COM (2010) 815 Final), also known as the EU Financial Regulation.

¹⁴⁹ Performance Audit Report: Simplification of the Regulations in Structural Funds. 18 April 2013. National Audit Office. <http://nao.gov.mt/news.aspx?nid=70>

¹⁵⁰ OPI Annual Implementation report 2011, pp69-70 http://www.ppcd.gov.mt/links_and_downloads



Source: European Commission¹⁵¹

However on the supply side, the share of citizens with tertiary educational attainment, as well as employment in knowledge intensive sectors, is around the average European level. This partially does not necessarily imply an oversupply or mismatch, but simply a relatively smaller research related labour market than other EU countries due to a stagnant demand for highly qualified individuals. Even within the private sector, highly-trained candidates face relatively poorer job prospects in Malta. This lacuna is compounded further by the fact that senior potential students are less likely to engage in research abroad as they are frequently unwilling to displace their families, lose personal contacts in home institutions and there being no tangible need in career development or future promotions. Furthermore, PhD programs when available are usually rather limited in terms of curricula alignment with industry needs, and badly funded by public budgets.

Consequently limited scope and high supply-side competition on research labour markets lead early stage researchers to either not follow academic career tracks and target non-research employment, or continue research abroad, often due to limited PhD programmes available locally - which raises national concerns on excessive brain drain especially at early-stage science careers. Outward mobility has increased in Malta due to participation in EU schemes such as Erasmus (on student level), Marie Curie (on postgraduate levels) and Leonardo da Vinci (on university teacher level) programs, or via the national scholarship schemes.

Evidence on mobility patterns, in particular with respect to destination and source of flows is scarce so an obvious concern in view of the above was the lack of any schemes to support inward mobility indicating that Malta has not really embraced the importance to re-attract nationals working abroad. However an incentive scheme was introduced in the Budget Measures Implementation Act, 2012 for Maltese professionals returning to work in Malta in specific industry sectors, and who have excelled in the manufacturing and research and development sectors. In terms of this new scheme, an eligible individual who is established in a field of excellence and returns as an ordinary resident to Malta may opt to have his income from employment exercised in Malta charged to tax at a flat rate of 15%, as opposed to the normal progressive personal income tax rates of up to 35% and is effective from tax basis year 2012.¹⁵² Barriers to inward mobility include national accreditation requirements of foreign degrees in order to be eligible for post-doc and permanent academic positions, language barriers, informal protection of internal candidates, and instability of working contracts as well as poor promotion prospects.¹⁵³

Support schemes on inward and outward mobility need to be put in place with a focus on early stage researchers and which favour reintegration of nationals and non-nationals carrying out excellent research abroad to high-level positions at national higher education institutions or Government bodies. This could be directed at specific area of strategic importance like Electronic system design, biotech, and natural sciences. Efforts at reinstating a proper Researchers Mobility Centre should be undertaken.

Supporting the transition from doctorate to post-doctoral employment

Malta should continue to build further on the excellent progress achieved in increasing the number of PhD candidates thanks to various EU funded schemes like STEPS and MGSS. The next logical progression is to now support the further advancement of PhD career possibilities by supporting post-doctoral opportunities either in the priority areas identified or by establishing explicit links and

¹⁵¹ State of the Innovation Union 2011, Brussels, 2.12.2011 COM(2011) 849 final,

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0849:FIN:en:PDF>

¹⁵² Legal Notice 111 of 2013 entitled Repatriation of Persons established in a Field of Excellence Rules, 2013.

<http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lp&itemid=24741&l=1>

¹⁵³ Research study on obstacles to mobility. March 2007. The Employment and Training Corporation. http://etc.gov.mt/Resources/file/Resources/2007%20-%20ETC_Research_Study%20on%20obstacles%20to%20mobility.pdf

Social and Economic Conditions of Student Life in Malta. National Report Malta - EUROSTUDENT IV

(2008 - 2011) http://www.ncfhe.org.mt/uploads/filebrowser/NCHE%20Euro%20Student%20-%20Abridged%20version%20Final_1.pdf

collaboration with industry. The post-doctoral career planning structures that are flexible and creative could be operationalised across the university so that doctorate and post doctorate career planning becomes a reality. PhD supervision is also seen as key to how a post-doctoral career might be planned across the priority disciplines involved in this project. Therefore, the Government and the University should invest in supervisor training which is inclusive of post-doctoral career planning. Support for 2 to 3 year post-doctoral fellowships should be included in the new National R&I programme via competitive calls that look at developing research projects which are of an interdisciplinary nature and that cross the boundaries between different fields of research, pioneering proposals addressing new and emerging fields of research or proposals introducing unconventional, innovative approaches and scientific inventions. Grants could also be offered to candidates in collaboration with local industry partners to award co-funded two to three year Postdoctoral Fellowships. By working closely with an industry partner, fellows would benefit from an enhanced research experience, as well as learn key transferable skills relevant to career formation. Such an effort could provide career paths and impetus for existing and potential doctorate students who may choose to further their professional development, while effectively providing career options for inward and outward mobility while building partnerships around intellectual property and a commercial bottom line. The pharmaceutical/biotech industry could be an excellent starting base to establish opportunities for academic partners to join multinational core research teams of drug discovery for instance.

Such fellowships would also provide the crucial resources to tutor a number of doctorate candidates, thus resolving the current lack of human resources to mentor doctorates and completing the research 'ecosystem'. To make a difference in a global context we suspect that each of these technology platforms would need substantial funding over at least 3 to 5 years to provide the basis of numerous start-ups and licensed projects to large companies. This could lead to clusters of expertise in these sectors that feed off each other thus enabling Malta to retain competitiveness and possibly a regional leadership in niche markets. This would be an ideal way of sustaining excellent pockets of research found across University like the aviation research undertaken by the Department of Electronic Systems Engineering.

Reappointment, should remain at the University's or Industrial Partners' sole discretion, and contingent on the individual's record of achievement or the Fellows' ability to sustain further engagement beyond the grant period by the submission of a new research grant for EU funding. It remains crucial however that university is not discouraged from hiring academic staff with backgrounds from industry due to gaps in (or absence of) publication records and should become more accommodating to non-traditional backgrounds among their academic staff. Ensuring the presence of people with an industrial background within university faculties would facilitate a greater understanding of commercial imperatives and the most effective ways to engage university resources within businesses.

The uptake of a new fellowship programme co-financed by the European Union through the Marie-Curie Action '*Co-funding of regional, national and international programmes*' (COFUND)¹⁵⁴ should be examined and exploited. The aim of this EU initiative is to allow Maltese researchers to obtain a research mobility and career development Fellowship, which will allow them to carry out research at an International Host Organisation of their choice in any country outside Malta for two years ("outgoing phase"), followed by a mandatory one year ("return phase") at a host higher education institute of their choice in Malta.

Teaming for Excellence and Innovation

Teaming of excellent research organisations and institutions and low performing regions in research and innovation (R&I) aims at creating new (or significant upgrade of existing) centres of excellence in low performing regions. Support will be provided for the early stages of the setting up or upgrading, including for development of a business plan. It is planned that the recipient country will support through its Cohesion funds. Depending on the quality and outcome of the business plan the Commission may even provide financial support for implementation stage¹⁵⁵.

The **Twinning of research institutions** will work in a similar way by building links between a low R&I performing institution with at least two internationally-leading institutions in a defined field.

Malta is already taking steps in the teaming and twinning processes and some notable early examples are emerging. The close cooperation between the KU Leuven and University of Malta, Centre of Excellence on Adaptation to Climate Change is one example that could become a model for such initiatives¹⁵⁶, and other past efforts to team up with the Fraunhofer Institutes and the Henri Tudor Public Research Centre, under the auspices of the now defunct EuroMediti¹⁵⁷ effort, should also be explored. This is particularly relevant to the Partial General Approach on the Specific Programme for Teaming/Twinning) conditionality published on 11 December 2012.¹⁵⁸

Unlike many EU regions with poor performance in R&I indicators, Malta has a long tradition of partnering with research base beyond their borders and a strong base of population with tertiary education obtained both at home and major institutions abroad.

¹⁵⁴ http://ec.europa.eu/research/mariecurieactions/about-mca/actions/cofund/index_en.htm

¹⁵⁵ Interaction between Horizon2020 and future Cohesion policy, Presentation, Dimitri Corpakis, EU Commission, Brussels 20/03/2013, http://www.consilium.europa.eu/media/1916259/interactions_horizon_2020.ppt

¹⁵⁶ Teaming for Excellence, Building high quality research across Europe through partnership, Max Planck Gesellschaft. http://www.mpg.de/6877962/WP_Teaming_for_excellence.pdf

¹⁵⁷ http://www.cipmalta.com/Uploads/Resources/2_16_EuroMedITI.pdf+&cd=2&hl=en&ct=clnk&q=mt

¹⁵⁸ Proposal for a Council decision establishing the Specific Programme implementing Horizon 2020 - The Framework Programme for Research and Innovation (2014-2020) 6.1.4. The processes and practices to close the research and innovation divide in Europe.

<http://register.consilium.europa.eu/pdf/en/12/st17/st17029.en12.pdf>

Industry – academia – government research collaboration

A fundamental ambition of Maltese innovation policy is to connect the science base and industry. The main challenge for Malta in this domain is clearly not only about how to increase the transfer of commercial ideas from the university into business alone, but is more about how to raise the overall level of demand by business for research from all available sources. The creation of a resource that could analyse and assist linking industry to universities, and assess the relevance of university research to an industry is crucial. A key requirement for R&I funding is the obligation of having industrial partners working together with academic partners or vice versa. This policy is intended to bring together SMEs with university based research. However, during various meetings with stakeholders active in the R&I programme¹⁵⁹, there seems to be a lot of discontent with this arrangement since in most cases the intentions of academics to publish are at odds with industry's expectations to commercialise. In most of the cases, partners were found simply due to the programme's requirement and driven by the main academic or industry project coordinators since the other partners have no real interest in the research results and just piggy backing.

The lack of government research and collaboration with local research entities and SMEs is also an area of concern, and government should make clear attempts at investing in research capacity in-house or outsourcing research to the local market.

Public procurement

As mentioned earlier there is a drastic need for government procurement to seriously encourage the growth of small technology companies since this can provide an end market and impetus for investment in the commercialisation of research that could be test-bedded locally before it is launched into the international market. For a small economy like Malta's there is possibly greater and more sustainable benefits to be gained by growing and developing small companies into successful medium sized ones than in just attracting large foreign companies or maintaining the locally established big players. Government procurement can really make a difference by providing emerging start-ups with contracts rather than just funding grants; and encouraging innovation through public procurement by making sure that all public procurement acknowledges innovation rather than just market-standard solutions. This can be done by including procurement considerations that are outcome-based and based on whole-life value rather than just price as the current policy dictates. Efforts towards making public procurement more favoured to innovative new ideas that might save money long term need to be embedded, rather than just focusing on short-term upfront costs. Similarly Government must undertake every step possible to ensure that public procurement does take into consideration the wider public benefits of procuring services from small technology companies that have been developed through national or European funds and programmes. A similar effort was undertaken in forcing green public procurement (GPP) as part of the package of measures in the Sustainable Production and Consumption and Sustainable Industrial Policy Action Plan¹⁶⁰ that was relatively successful in principle¹⁶¹. However we are not convinced that MCST has enough impact across Government policy to actually effect the necessary radical changes required to procurement practices in order to drive its specialisation strategy.

There are successful examples of this type of procurement of government research contracts in the UK and US. The Small Business Research Initiative (SBRI) managed by Technology Strategy Board (TSB) in the UK plans to have up to GBP 200m of contracts to be delivered by innovative small firms in 2014¹⁶². In the United States, Small Business Innovation Research¹⁶³ (SBIR) encourages small businesses to engage in Federal Research and Development that has the potential for commercialisation. It earmarking a percentage of Federal R&I spend (2.5%) for small firms. To date the statistics from the initiative are very encouraging as 15,000 small firm, have delivered \$20 billion in research, leading to 50,000 patents involving 400,000 scientist and engineers.

Commercialisation and Internationalisation

New technologies often need to be further developed by substantial teams for a number of years before they are commercial. These teams need to be larger than the research teams which first made the original discovery, and typically need expensive equipment to make the research industrially useful. This requires a dedicated environment with a clear focus for a period of 5 to 10 years. The current restriction within the commercialisation fund to deliver results in 6 to 12 months¹⁶⁴ is undoubtedly questionable. This implies that MCST must not focus too much on the ability to generate revenue within such a short term but instead allow applicants to grow slowly and organically with a focus on developing the necessary capabilities to support innovation.

Furthermore the challenge for Government is how academic or business research can be translated into commercial activity. Despite the problems outlined throughout this report, there are many instances of fruitful collaboration between business and universities. There is no doubt that policies could be put in place to improve the commercialisation of academic science. However, the reality in Malta remains that it is entrepreneurial university alumni rather than research results which play the key role in building successful new S&T companies. This distinction is important as it has serious implications for policy. One measure of success may be an understanding of the extent to which small companies which have serious growth potential, access the commercialisation fund. Structural funds can be used to help smooth the passage of products to market by financing the follow up to Horizon 2020 research projects for example. In addition to the financial risks and big challenges of finding the right commercial or government partners, there is a question as to how far a university should extend its traditional role of teaching and research to encompass commercial activities that others are better placed to do. In view of the strong participation in specific areas like natural and social science it

¹⁵⁹ <http://www.mcst.gov.mt/national-funding/ri-programme/current-ri-programme>

¹⁶⁰ http://ec.europa.eu/environment/eussd/escp_en.htm

¹⁶¹ <https://secure2.gov.mt/eprocurement/green>

¹⁶² <https://www.innovateuk.org/government-contracts-sbri>

¹⁶³ <http://www.sbir.gov/#>

¹⁶⁴ <http://www.mcst.gov.mt/commercialisation>

remains imperative that universities and public research bodies should regard IP created in these domains as a contribution towards supporting wider societal and economic benefits rather than expecting commercialisation to deliver a significant income stream. The value of universities also lies in the people they produce. This applies not only the academics who will engage with cutting edge research but also those who will provide the technical backbone to the knowledge economy. Highly skilled technicians have a valuable role in academic and private sector companies.

4. Identify need to support Research Infrastructures especially ESFRI

The National Research & Innovation Strategy 2007-2010 and the more recent 2013-2020 strategy serves as a reference to guide the areas of specialisation and the roadmap for building national research infrastructures (RIs) in areas of strategic importance for the economy. The main rationale for the Council's investment in international cooperation in R&I is to deploy it as a key resource in order to strategically enhance competitiveness, world class research excellence, and critical mass in key priority areas of national importance. The Council identifies five main reasons to pursue such internationalisation efforts:

- Increase international visibility of Malta's R&I strengths and potential;
- Gain access to required resources, know-how and expertise particularly in support of national capacity-building in R&I;
- Expose our leading researchers (and potential ones) to leading research infrastructures and facilities abroad;
- Attract outstanding researchers (young and experienced) from abroad and provide facilities to retain them in Malta;
- Gain best practice in R&I policy through interactions with leading counterpart organisations.

Consequently local investments in RIs have increased over the last years, mainly related to the upgrading of existing research facilities at the University, the Malta College for Arts, Science and Technology (MCAST) and more recently Institute of Tourism Studies¹⁶⁵ – co-financed through the European Regional Development Fund (period 2007-2013). The principal investment focus has been on upgrading R&D facilities in engineering, natural sciences, renewable energy, supercomputing and health biotechnology; and include a new ICT faculty at the UoM and an €11M investment in a Life Sciences Centre. Furthermore a National Interactive Science Centre at the Bighi Complex in Kalkara has been announced, which underpins the priority our government is giving to science education. The aim of the Centre is to develop a permanent structure where students and the public will be able to immerse themselves in a unique interactive science experience, increasing the take-up of science-related careers and spurring the entrepreneurial spirit of our youths. The Centre, which will be developed at a total cost of €25 million, aims at including interactive galleries, a multi-purpose auditorium, a planetarium, laboratories, workshop spaces, a gadget and coffee shop and landscaped gardens. The content will target distinct areas of the national science curricula, but is also aimed at the general public.

In 2012, the internationalisation drive was given prominence with efforts focusing on the design of a more coordinated approach and the launch of actions to enhance the Council's and Malta's international profile. These related primarily to the identification of key initiatives at EU level which can support the sectoral strategies in health and manufacturing. This led to Malta's participation in a number of Joint Programming Initiatives (JPIs), and the ENIAC Joint Undertaking (ENIAC JU) which are discussed in more detail in a later section.

Malta has also been active in the Competitiveness (Research and Space) Council¹⁶⁶, the European Research Area Committee (ERAC)¹⁶⁷, the Steering Group on Human Resources and Mobility (SGHRM)¹⁶⁸, the Strategic Forum on International Scientific and Technological Cooperation (SFIC)¹⁶⁹, the Euro-Mediterranean Cooperation in RTD (MoCo)¹⁷⁰, the Enterprise Policy Group (EPG) Subgroup on Innovation¹⁷¹ and the E-Infrastructures Policy Forum¹⁷². In addition, support in the form of grants is available for industry to participate in cross-border collaborative research¹⁷³.

4.1 State of play in terms of existing provision and need for support for Research Infrastructures (RI)

According to the ERAWatch Country report published in 2013, there do not seem to be any recent changes in policy objectives and strategies that attempt to access intergovernmental European research infrastructures (RI). However the referral year of this study was 2011, and quite a drive was undertaken since then towards international participation and access to European RIs as indicated in the Draft 2013 - 2020 R&I strategy.

In fact there is encouraging evidence of enhanced coordination between the areas of specialisation of national RIs and national participation in ESFRI. One example is the setting up of a national bio-bank through cooperation between the Council for Science & Technology, Malta Enterprise and the UoM that has led to Malta's participation as an associated partner in the Biobanking and Biomolecular Resources Research Infrastructure (BBMRI) initiative¹⁷⁴. Malta participated in CLARIN - Common Language Resources

¹⁶⁵ New ITS campus set to be built, 23 May 2012 <http://www.independent.com.mt/articles/2012-05-23/news/new-its-campus-set-to-be-built-310451/>

¹⁶⁶ <http://www.consilium.europa.eu/policies/council-configurations/competitiveness?lang=en>

¹⁶⁷ http://ec.europa.eu/research/era/partnership/process/crest_en.htm

¹⁶⁸ http://ec.europa.eu/research/era/areas/researchers/researchers_en.htm

¹⁶⁹ <http://ec.europa.eu/research/iscp/index.cfm?pg=sfic>

¹⁷⁰ http://ec.europa.eu/research/iscp/index.cfm?lq=en&pg=med_part

¹⁷¹ http://ec.europa.eu/enterprise/dg/epg/index_en.htm

¹⁷² <http://www.euroris-net.eu/e-IPF>

¹⁷³ <http://www.maltaenterprise.com/en/support/grants-cross-border-collaborative-research-and-development>

¹⁷⁴ <http://www.bbMRI.eu/>

and Technology Infrastructure¹⁷⁵ through the Department of Computer Science at the University of Malta and is a partner in GÉANT¹⁷⁶, the high-bandwidth, academic Internet serving Europe's research and education community and recent follow-up project called GN3. Malta is also participating in OPENAire, the Open Access Infrastructure for Research in Europe¹⁷⁷ though it has no national or institutional electronic repositories.

According to the latest FP7 data updated till March 2013 Malta is currently participating in quite a number of "Research Infrastructures"¹⁷⁸ projects funded under the FP7 Capacities programme. These include the following projects:

Table 28 - FP7 projects related to Infrastructures

BBMRI	Biobanking and Biomolecular Resources Research Infrastructure	01/02/2008	31/01/2011	CP-CSA-INFRA	UNIVERSITA TA MALTA	HES
CLARIN	Common Language Resources and Technology Infrastructure	01/01/2008	30/06/2011	CP-CSA-INFRA	UNIVERSITA TA MALTA	HES
EURORIS-NET	European Research Infrastructures Network of National Contact Points	01/11/2007	31/10/2011	CSA-CA	OFFICE OF THE PRIME MINISTER	PUB
EUCARD	European Coordination for Accelerator Research and Development	01/04/2009	31/03/2013	CP-CSA-INFRA	UNIVERSITA TA MALTA	HES
GN3	Multi-Gigabit European Research and Education Network and Associated Services (GN3)	01/04/2009	31/03/2013	CP-CSA-INFRA-PP	UNIVERSITA TA MALTA	HES
EUMEDGRID-SUPPORT	Sustainability of eInfrastructures across the Mediterranean	01/01/2010	31/12/2011	CSA-SA	UNIVERSITA TA MALTA	HES
OPENAIRE	Open Access Infrastructure for Research in Europe	01/12/2009	30/11/2012	CP-CSA-INFRA-PP	OFFICE OF THE PRIME MINISTER	PUB
OPENAIRE	Open Access Infrastructure for Research in Europe	01/12/2009	30/11/2012	CP-CSA-INFRA-PP	MINISTRY FOR RESOURCES AND RURAL AFFAIRS	PUB
JERICO	Towards a joint European research infrastructure network for coastal observatories	01/05/2011	30/04/2015	CP-CSA-INFRA	UNIVERSITA TA MALTA	HES
SEADATAN ET II	SeaDataNet II: Pan-European infrastructure for ocean and marine data management	01/10/2011	30/09/2015	CP-CSA-INFRA	UNIVERSITA TA MALTA	HES
EURORIS-NET+	European Network of National Contact Points for Research Infrastructures moving forward	01/10/2011	30/09/2013	CSA-CA	OFFICE OF THE PRIME MINISTER	PUB
EURORIS-NET+	European Network of National Contact Points for Research Infrastructures moving forward	01/10/2011	30/09/2013	CSA-CA	MINISTRY FOR RESOURCES AND RURAL AFFAIRS	PUB
OPENAIRE PLUS	2nd-Generation Open Access Infrastructure for Research in Europe	01/12/2011	30/05/2014	CP-CSA-INFRA-PP	UNIVERSITA TA MALTA	HES

Other RI projects of note from the above list include the **SeaDataNet II** - Pan-European Infrastructure for Ocean and Marine Data Management¹⁷⁹ project which aims to upgrade the SeaDataNet infrastructure into an operationally robust and state-of-the-art Pan-European infrastructure for providing up to-date and high quality access to ocean and marine metadata, data and data products originating from data acquisition activities by all engaged coastal states. Malta is also active in the **JERICO** – Towards a Joint European Research Infrastructure Network for Coastal Observatories – project which proposes a Pan European approach for a European coastal marine observatory network, integrating infrastructure and technologies, contribute to the international and global effort on climate change research (GEOSS), provide coastal data inputs for operational ocean observing and forecasting, and also to answer to some of the needs of the environmental research and societal communities.

Malta is also participating in the **GN3**¹⁸⁰ project - 'Multi-Gigabit European Research and Education Network and Associated Services' which operates, upgrades and evolves the pan-European Research and Educational Network infrastructure (the GÉANT network) interconnecting the European National Research & Education Networks – NRENs and the innovative network services offered to the European R&E community.

¹⁷⁵ <http://www.clarin.eu/>

¹⁷⁶ <http://www.geant.net/Pages/default.aspx>

¹⁷⁷ <https://www.openaire.eu/>

¹⁷⁸ http://cordis.europa.eu/fp7/capacities/research-infrastructures_en.html

¹⁷⁹ <http://www.seadatanet.org/>

¹⁸⁰ <http://grnet.net/default.asp?pid=1&la=2>

Joint Programming

The High Level Group for Joint Programming (GPC - Groupe de Programmation Conjointe)¹⁸¹ is responsible for identifying the themes for joint programming across Europe. During 2012, the Council enhanced its commitment in the GPC by increasing its level of participation at both GPC and at JPI levels. The GPC also recently finalised the Biennial Report 2012¹⁸² which aims at providing details of the main activities carried out and an assessment thereof in order to give guidance to ERAC, the Council and the Commission regarding follow up requirements and options of the work carried out by the GPC itself. The major instrument to deliver on this remit is the use of **Joint Programming Initiatives (JPIs)** which aim to reduce fragmentation in R&D and tackle the challenges that cannot be solved solely on the national level and allows MS to participate in those joint initiatives where it seems useful for them. The MS are also expected to reform national R&I systems to implement joint programming. When JPIs launch actions where funding is required, this is mainly guaranteed via national sources with some support for research governance by European RTD Framework Programme funding. JPIs do not receive Framework Programme funding for research projects as such but there is an added potential of funding through the creation of Framework Programme and future Horizon 2020 consortia. Currently, Malta has been granted observer status in two of the ten JPIs. These are the Joint programming Initiative on **Neurodegenerative Diseases (JPND)**¹⁸³ and the **Joint Programming Initiative on Antimicrobial Resistance (JPIAMR)**¹⁸⁴. JPND is a Member State-led initiative that aims to increase coordinated research investment between participating countries aimed at finding causes, developing cures, and identifying appropriate ways to care for those with neurodegenerative diseases while JPIAMR aims to foster trans-national cooperation in antimicrobial drug resistance. Malta is also a founding member of another JPI called **Urban Europe**¹⁸⁵ which was led by Transport Malta. This JPI aims to transform urban areas to centres of innovation and technology, realize eco-friendly and intelligent intra- and inter-urban transport and logistics systems, ensure social cohesion and integration, reduce the ecological footprint and enhance climate neutrality.

Joint Undertakings (JUs)

The European Commission, through FP funding, supports the establishment of long-term public-private partnerships in the form of Joint Technology Initiatives (JTIs)¹⁸⁶. These are implemented through the creation of legal entities called Joint Undertakings (JUs). Members of a Joint Undertaking include the European Commission, a not-for-profit industry-led association, and, in some cases, Member/associated States. Small and medium-sized enterprises (SMEs), research organisations (including universities) and corporate members are all welcome to join the industrial associations. By joining forces and pooling resources, industry, especially SMEs, can accomplish far more than through individual effort. From a practical point of view, members can vote in elections, participate in key decisions, and shape the policies and evolution of the Strategic Research Agenda. Participation in JUs provides access to an extensive network of respected research partners. Several Joint Undertakings were set up for a period up to 31 December 2017, aimed at mobilising and pooling European, national and private efforts. The Commission and Member States that are part of the Joint Undertakings will annually commit funds from their research budget. Industry will commit matching in-kind contributions and funds 50% or more of the total costs of the projects to carry out the research. Malta is currently involved in the **ENIAC Joint Undertaking**¹⁸⁷ which is a public-private partnership focusing on Nano electronics that brings together Member/Associated States, the Commission, and AENEAS (an association representing European R&D actors in this field). Nano electronics, as well as nanotechnology in general, has been identified as one of the Key Enabling Technologies (KETs) behind the future innovative products and services and it is amongst the technologies that are generally considered as the main supporters of European industrial competitiveness and sustainability in the future. It will drive and be driven by innovative high-tech applications in communication and computing, transport, health care and wellness, energy and environmental management, security and safety, and entertainment. The ENIAC JU was set up in February 2008 and will allocate grants throughout 2013 and will execute the projects selected for funding till 31 December 2017. The total value of the R&D activities generated through this partnership upon its conclusion is estimated at €3 billion.

In 2012, a call for proposals for a KET Pilot Line was opened. Eligible proposals for this call were those that showed the use of an innovative technology to develop innovative products, meet social challenges, and establish a new, realistic R&D environment, a facility capable to manufacture demonstrators in small volume in order to establish their value and potential, while including a deployment plan to a real life European manufacturing site. The legal entities from Malta eligible for funding included commercial companies, higher education institutions and non-profit research institutions. One of the projects submitted for ENIAC's call for proposals for a KET Pilot Line was the Lab4MEMS project, a project coordinated by ST Microelectronics s.r.l. (Italy). **Lab4MEMS**¹⁸⁸

¹⁸¹ <http://www.consilium.europa.eu/policies/era/gpc>

¹⁸² European Research Area Committee. High Level Group for Joint Programming. 2012 Biennial Report. 7 February 2013
<http://register.consilium.europa.eu/pdf/en/13/st01/st01301.en13.pdf>

¹⁸³ <http://www.neurodegenerationresearch.eu/>

¹⁸⁴ <http://www.jpiamr.eu/>

¹⁸⁵ <http://www.jpi-urbaneurope.eu/>

¹⁸⁶ http://ec.europa.eu/research/jti/index_en.cfm?pg=home

¹⁸⁷ <http://www.eniac.eu/web/index.php>

¹⁸⁸ <http://www.lab4mems.upb.ro/>

aims to develop novel, innovative manufacturing methods for various materials, including magnetic and piezo materials, and packaging technologies for state-of-the art microelectromechanical systems (MEMS) devices, sensors, and 3D packaging. Lab4MEMS proposes the implementation of two pilot lines one in ST's facility in Agrate (Milan) Italy and the other in ST's facility in Malta. Following an evaluation of their proposal, and a complex voting procedure, Lab4MEMS was ranked second in ENIAC's evaluation of the proposals submitted under the KET Pilot Line Call. The Lab4MEMS project involves 21 multinational partners receiving a total of €28million over the next 2.5 years. Lab4MEMS will continue to be coordinated by STMicroelectronics s.r.l. (Italy). The total cost for implementing part of the project in Malta is €4.5million and the funding will be split between various sources: 15% will be provided by the JU, 50% by industry (in this case, STMicroelectronics, Malta), and 35% will be made available through National funding.

Malta is also involved in the **Fusion for Energy (F4E) Joint Undertaking** which is created specifically to support fusion research and development initiatives in Europe and provide Europe's contribution to ITER. ITER is the world's largest scientific partnership that aims to demonstrate fusion as a viable and sustainable source of energy. During 2012, the MCST served on a dedicated configuration of the Governing Board relating to the annual assessment of the organisation, and took advantage of the **Fusion For Energy (F4E) Summer Student Programme in 2012** which enabled students to participate and gain some experience in the daily work of F4E, for periods of 2 to 3 months. During 2012, two Maltese students from the University of Malta, attended the F4E summer student programme. Jean-Paul Vella worked on the software for the IVVS (in-vessel viewing system) simulator for the ITER remote handling system and Anne-Marie Muscat worked in the Technical Support Services of F4E.

4.2 Situation of RI of European interest under European Strategy Forum on Research Infrastructures (ESFRI)

ESFRI is the European Strategy Forum on Research Infrastructures¹⁸⁹, which is a strategic instrument to develop the scientific integration of Europe and to strengthen its international outreach. The Forum, composed of representatives nominated by research ministers of Member States, has the responsibility to ensure the European research infrastructure meets the need on its scientists and researchers.

The Forum reviews, updates and publishes a roadmap for the requirements of large scale research infrastructure in Europe (RI) that typically could not be developed, built or operated by one nation alone.

Malta is a member of the Forum and is represented by Prof. Joseph Micallef of the Department of Microelectronics and Nanoelectronics in the Faculty of ICT at University of Malta. Maltese scientist and researchers can have access to a range of the European research facilities across a range of scientific disciplines.

The country is participation in the preparatory phases of large scales research facilities through ESFRI. These are CLARIN (<http://www.clarin.eu>), the Common Language Resources and Technology Infrastructure a virtual research organisation and BBMRI, the Biobanking and Biomolecular Resources Research Infrastructure (<http://bbmri.eu/>). Malta is also a member of the Sea Data Net II, the European Infrastructure For Ocean & Marine Data Management (<http://www.seadatanel.org>). These projects and others have been detailed in the section 4.1 above.

There appear to be no plans for bidding to host or construct one of the IRs from the ESFRI roadmap in Malta¹⁹⁰

4.3 Current support for RI under cohesion policy (spending category 2) and future plans

As mentioned earlier, the Maltese government has focussed on using Structural funding primarily to build national research capacity or the upgrade of existing research infrastructure (RI) at the University of Malta including efforts towards Analytical Chemistry, Biomedical Engineering, Electromagnetic RTDI facilities, an ICT Faculty (including research facilities. Malta has become a founder member of BBMRI through the University of Malta as it seeks to develop an 'expert centre' with interests in the Euro-Mediterranean neighbourhood. The MCST has also managed to establish collaborative agreements with international research organizations such as *Conseil Européen pour la Recherche Nucléaire* (CERN)¹⁹¹, the European Space Agency (ESA) and the European Molecular Biology Laboratory (EMBL)¹⁹² for access to research infrastructures.

Clearly the EU programs on R&I have turned out to be very effective for Malta in providing access to (new and existing) infrastructures of (new) users, and Malta has shown very encouraging progress in utilising FP7 funding dedicated to research infrastructures. These

¹⁸⁹ http://ec.europa.eu/research/infrastructures/index_en.cfm?pg=what

¹⁹⁰ ESFRI Strategy Report and Roadmap Update 2010, http://ec.europa.eu/research/infrastructures/pdf/esfri-strategy_report_and_roadmap.pdf#view=fit&pagemode=none

¹⁹¹ <http://home.web.cern.ch/>

¹⁹² <http://www.embl.de/>

access projects have potential to generate a continuous stream of research activities which form an important component in the constant renewal of research at facilities and of their improvement and upgrade, and creating incentives for doctorate students to participate in consolidated frameworks.

Nevertheless, given that the implementation roadmap of the European Strategy Forum on Research Infrastructures (ESFRI) is to be largely financed from Member States' budgets, the Maltese government is concerned that it stands to be marginalised in view of its limited capacity to finance these infrastructures and actually use them. Concerted effort at the EU level is necessary to address this issue by allowing small countries free / subsidised access to research infrastructures (physical or virtual)¹⁹³. Furthermore a number of research infrastructures projects are currently considering moving to the European Research Infrastructure Consortium (ERIC)¹⁹⁴ status. Once again the issue of contribution to the management costs could make it prohibitive. One approach to solving this problem is to look at the possibility of the EU itself funding the management costs of ERICs.

4.4 Scope for connections with related RI in other countries and regions in ERA

Malta believes that information sharing and consensus building on common goals and approaches could help Member States and the EU to better coordinate their international Science and Technology (S&T) cooperation actions. To this end, the Strategic Forum on International Cooperation is a key platform, as expressed in its mandate to " (...) facilitate the further development, implementation and monitoring of the international dimension of ERA by the sharing of information and consultation between the partners with a view to identifying common priorities which could lead to coordinated or joint initiatives, and coordinating activities and positions vis-à-vis third countries and within international fora. The Horizon 2020 Legislative Package also has a role to play in streamlining the EU's priorities for international cooperation while allowing the individual Member States to pursue bilateral coordination according to national needs and priorities.

The achievement of the ERA 2020 Vision¹⁹⁵ represents a common challenge for all Member States towards achieving an area where knowledge moves freely. The challenges in the development of ERA are numerous, ranging from sub-criticality caused by fragmentation of research efforts to mobility boundaries. In addition to all this, the horizontal European challenges and the vertical interpretation challenges are all taking place in a rapidly changing environment which is many a time characterised by sudden changes bringing about uncertainty and apprehension. The economic crisis is one recent example of such shocks to the system. Consequently prioritisation in the ERA context must consider potential actions with a high degree of sensitivity to the different circumstances and starting positions of different Member States, wherein framework conditions can actually be implemented in Malta in a way that fits the context of its national circumstances and constraints. This implies that while all stages of the R&D phase can benefit from a more coordinated approach, it is clear that efforts aimed at addressing common issues are especially suitable for Malta which can benefit immensely from networking with research teams elsewhere, or pooling of research funds, while building synergies and complementarities.

The lack of critical mass in Malta due to our geographical circumstances makes it harder for Government to ensure that Malta gets a fair return from cross border research funding, and the tendency is usually to retain national or structural funding towards building national capacity instead of collaborative research with other Member States.

Malta believes that the factors which can facilitate cross-border operation of joint research programmes are (among others) critical mass in research teams, availability of national funding, greater awareness of research being funded or ongoing, a strong Intellectual Property Rights (IPR) framework, alignment and complementarity of research themes receiving funding to enhance synergies and avoid overlaps, together with a strong networking framework.

Undoubtedly Malta still needs to focus its policies and measures on building the necessary structures, capacities and specialisation, however it should also attempt to exploit the research opportunities offered at the cross border level, specifically in areas like joint research activities, pan-European research infrastructures and researcher mobility.

FP7 has provided a vision for the future of European RIs by harmonizing actions among Member States through the ESFRI procedures, and in particular the roadmap for RIs. However, the full potential impact of RIs on ERA is restricted by existing funding limitations. Within these limitations several recommendations may be considered:

- Develop synergies of RIs with educational and training opportunities within EU programmes targeted to young researchers (ITN,

¹⁹³ ERA Framework Public Consultation: Areas of untapped potential for the development of the European Research Area (ERA). Position of the Government of Malta. http://ec.europa.eu/research/era/pdf/contributions/malta-position-era-framework_en.pdf

¹⁹⁴ The Community legal framework for a European Research Infrastructure Consortium (ERIC) entered into force on 28 August 2009. This specific legal form is designed to facilitate the joint establishment and operation of research infrastructures of European interest. http://ec.europa.eu/research/infrastructures/index_en.cfm?pg=eric

¹⁹⁵ http://ec.europa.eu/research/era/index_en.htm

Marie Curie)

- Encourage industry participation through collaboration in JRAs
- Exploit industry/academia exchange schemes
- Encourage the development of satellite installations in collaborating countries which may undertake pilot projects, training initiatives, and complementary services.¹⁹⁶
- Foster cooperation and networking with key regional and third countries through thematic and geographic targets.

5. Examine governance issues incl. CSR for R&I

5.1 Governance of R&I system

Since March 2013, responsibility for research and innovation policy in Malta lies within the Ministry of Education and Employment, and is entrusted to the Malta Council for Science and Technology as the lead policy advisory body to Government on science, technology, research and innovation with a dedicated Parliamentary Secretary for Research, Innovation, Youth & Sport. This is the umpteenth shift of ministerial responsibility towards the incorporation of R&D&I within Government structures and it is yet unclear as to what extent the new administration will attach importance to R&I as a driver to build a knowledge-based economy, and how this will influence the cross-cutting nature and requirement of R&I across all the various ministries. The main public bodies responsible for driving research and innovation apart from the Malta Council for Science & Technology (policy advisory and implementing body), are Malta Enterprise (implementing body for business R&I support measures), the University of Malta (and to a lesser degree, MCAST and ITS), as the main research performer and most certainly the Ministry of Education itself in its role to support higher education and the R&I system. Through their respective policies and the funding they administer, the OPM Policy and Priorities Coordination Department (PPCD)¹⁹⁷ as well as the Ministry for Finance¹⁹⁸ influence the unlocking of resources for R&I. For the latest list of government ministries and entities please refer to Annex.

Despite the excellent progress made, the recurrent theme across the business community is the need for a clear vision from the new Government and administration to provide confidence into the future. Without a definite commitment from Government, both local and international setups locally remain uncertain about making further financial commitments and risk necessary towards innovation. There needs to be a coherent strategy across the whole public administration and in order to provide the local business community with confidence in where they might expect Government innovation support for the medium and long term—whether through procurement, R&D focus or fiscal policies.

Whether innovation policy is well addressed within the same research policy is also a matter of concern and from our point of view it seems that innovation remains an afterthought in local strategic policy and is hardly coherent across the various ministries. Innovation policy should go further and unambiguously distinguish itself from research policy/support, while having dedicated funds/programmes designed to better innovation growth, but not at the expense of the research budget. Flexibility in policy design remains of essence to ensure that Government can foresee drastic or niche market/economic changes worldwide and rectify policy in a fast manner.

Governance of R&I programme

While there is an overwhelmingly appreciation for the National R&I fund and MCST's governance of this scheme, there is clearly a consistent call for funding to be increased since this is deemed insufficient and subject to strong competition.

Furthermore the apparent lack of impact assessments of the past R&I programmes makes it rather difficult to assess the real added value obtained from the funding dedicated.

Similarly it is crucial that the new Government has a coherent plan on how to engage the research base (people, facilities and intellectual property) within the R&I 2013 -2020 agenda. The current situation is fragmented and confusing which makes it difficult for small businesses to engage with.

On a similar note government needs to undertake a serious effort to study the adequacy of the national infrastructure for R&I, benchmarked specifically against nations and sectors with which we compete and how it intends to remedy structural short-comings. We recommend that MCST seriously examines the role of existing and potential public sector research institutions within the research and innovation ecosystem in more detail.

RIS 3 Governance

With the natural end of the 2007-2010 National R&I Strategic Plan¹⁹⁹, a new draft R&I strategic plan draft was issued for public consultation in December 2011. The draft strategic plan for 2011 – 2020²⁰⁰ will provide a policy framework for the coming decade,

¹⁹⁶ http://ec.europa.eu/research/evaluations/pdf/archive/fp7-evidence-base/experts_analysis/c.%20fotakis_-_research_infrastructure.pdf

¹⁹⁷ <http://www.ppcd.gov.mt>

¹⁹⁸ <http://mfin.gov.mt/>

¹⁹⁹ National Strategic Plan for Research and Innovation: 2007—2010. Building and Sustaining the R&I Enabling Framework. 2006 Malta Council for Science and Technology. <http://www.mcst.gov.mt/files/uploaded/R&Istrategy.pdf>

²⁰⁰ Malta's National Strategic Plan for Research Innovation 2011 -2020. Malta Council for Science and Technology.

and attempts to take into account progress made and address the deficiencies identified. However its finalisation has been delayed in view of new requirements for compliance with ex-ante conditionalities²⁰¹ under the proposed new Cohesion Policy Framework 2014-2020²⁰².

To date, comments received during the public consultation were reviewed and where necessary, updates to the text were made. In addition, statistics and text describing on-going work are being regularly updated. Work on the preparation of the smart specialisation strategy has also been undertaken. Arrangements have been made with DG REGIO to engage Prof. Luke Gheorghiu²⁰³ from Manchester University to further support the entrepreneurial process of discovery which should lead to finalisation of the smart specialisation aspect of the new strategy. Additionally, consultations on niches where Malta has strength and potential are being explored through further statistical analyses and consultations (one to one meetings, workshops, and focus groups) with the private, public and academic sectors as well as social partners. Over 20 meetings with different stakeholders within the public sector as well as social partners have been undertaken. Regular dialogue with the academic sector is also ongoing. An initial workshop for the private sector was held in February 2013 and this is being followed up through one-on-one meetings and focus group meetings. A series of such focus groups was undertaken over the period April-May 2013, and the authors attended as many of these focus groups as possible.

Salient conclusions of MCST's Focus Groups with stakeholders

A wrap-up of the conclusions reached based on MCST's focus groups identifies numerous potential priority areas, namely:

- Tourism marketing and digitisation of heritage
- Maritime Services cluster
- Aerospace cluster
- Health-related initiative
- Resource efficient buildings
- Modernisation platform for high value added manufacturing (horizontal cluster)
- Creative space and supporting measures
- ICT
- Climate change adaptation

In view of the numerous recommendations made by attendants (please refer to Annex for a complete list of salient points raised with the Focus Groups), there were a number of issues common to most groups, namely:

- Dissemination and commercialisation support
- International cooperation
- Investment in education and skills (from technical skills, re-skilling, CPD to post-doctoral schemes)
- Access to finance
- Intellectual property support
- Linkages with the academic sector
- Climate knowledge
- Easier access to funding schemes – less bureaucracy

5.2 Situation of relations and cooperation between authorities responsible for R&I and cohesion policies and programmes

From our discussions with stakeholders it is clear that MCST is taking the lead for the RIS effort. The recent change in Government has effectively displaced a lot of key people, up to the Permanent Secretary level, which has made it harder for top-level participation/feedback in the RIS 3 debate. Consequently most Ministries, with their new staff compliments, seem to be still getting to grips with the new ministerial reshuffles, governance and the RIS concept. Nonetheless MCST seems to be quite in control of the consultation process and effectively bringing the relevant entities up to speed on the necessities and implications of this effort. Major players in this effort also include Malta Enterprise which is on the ball with the RIS effort and is contributing meaningful positions towards Malta's industrial needs. The University of Malta has also geared up effectively to make sure its interests are well represented, and have a very clear approach towards its interests and vision towards Malta's RIS potential. Similarly the Planning and Priority Coordination Directorate is also active in this crucial effort. Further comments on how the R&I and cohesion policy governance are not possible since it is yet unclear how the new administration plans to approach the sector.

<http://mcst.gov.mt/files/uploaded/National%20Strategy%20DRAFT.pdf>

²⁰¹ Guidance on Ex Ante Conditionalities. European Commission March 2013.

http://ec.europa.eu/regional_policy/what/future/pdf/preparation/part2_guidance_ex-ante_conditionalities_guidance.pdf

²⁰² http://ec.europa.eu/regional_policy/what/future/index_en.cfm

²⁰³ <http://www.manchester.ac.uk/research/mbs/luke.georghiou/>

5.3 Situation of latest Country Specific Recommendations where relevant (Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Poland & Spain)

The Commission has issued five country specific recommendations (CSRs) to Malta to help it improve its economic performance.²⁰⁴ Unlike the CSRs for some of the other countries (Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Poland and Spain), the CSRs issued to Malta are not directly related to R&I. Their societal implications, however, could become a policy driver for R&I in the country. The CSRs for Malta are in the areas of:

1. Sustainable public finances and tax compliance

The slippages in its fiscal deficit observed at the end of 2012 (3.3%) puts Malta further away from bringing its public finances back onto a sustainable path. Malta should correct this trajectory in a growth-friendly manner. Malta has adopted some measures to improve tax compliance but they must be properly implemented to achieve results. Malta has moreover taken no relevant action to reduce indebtedness in corporate taxation.

2. Sustainable pension and healthcare systems

Malta's public finances are expected to be unsustainable in the medium to long-term due to a projected increase in age-related expenditure. Spending on pensions, as well as healthcare, is expected to add further stress to the public coffers. To counter this Malta should accelerate its ongoing pension reform, link retirement age with life expectancy, promote private pension savings, develop a comprehensive ageing strategy and increase cost-effectiveness in the healthcare sector.

3. Education, skills and family-friendly measures

Malta needs to make the best possible use of its greatest asset – human capital. The country however has one of the lowest employment rates in the EU (63.2%). Malta still has a very high number of early school leavers (22.6%), while the number of students attaining tertiary education is relatively low (22.4%). The number of women actively at work also remains very low (46.9%). Malta should therefore continue to take measures to address skills gaps and facilitate the integration of women in the labour market through providing affordable child-minding facilities.

4. Energy supply, efficiency and renewables

Malta's energy sector poses a significant challenge to its competitiveness: it mainly depends on one source of energy (imported oil), it suffers from an inefficient transmission system, and the contribution of renewables is the lowest in the EU (0.1%). While Malta has announced further plans to address these issues, there remains room for improving efficiency and reducing emissions through the promotion of renewable energies, including transport.

5. Financial sector and efficiency of the judiciary

The exposure to the real estate market of Malta's core domestic banks needs to be closely monitored and relevant measures should be put in place. While other banks operating from Malta have limited links with its domestic economy, they account for 790% of its GDP and therefore these should be strictly supervised to prevent the accumulation of imbalances. Certain shortcomings in Malta's judicial system need to be addressed, notably the length in resolving non-criminal cases, as these could affect the banking sector in times of economic difficulties.

²⁰⁴ http://ec.europa.eu/europe2020/europe-2020-in-your-country/malta/country-specific-recommendations/index_en.htm
http://ec.europa.eu/europe2020/making-it-happen/country-specific-recommendations/2012/index_en.htm

6. Consider scope for transnational and interregional collaboration

6.1 Transnational cooperation a cornerstone of FP7 and Horizon 2020

Clearly the reality for Malta remains that it is practically impossible to facilitate all the stages from idea to market within such a small economy, and this can only be overcome through transnational cooperation and internationalisation efforts. However transnational cooperation within FP7 and Horizon 2020 inherently has problems for small islands states, namely²⁰⁵:

- Current FP/Horizon programmes do not necessarily offer sufficient support for non-R&D based innovation which remains crucial for a country that is highly reliant on service sectors such as tourism).
- Strengths in sectors such as software for instance, where innovation can come from new configurations and applications of existing technologies, is also problematic since very few local organisations have the necessary means to identify/ promote innovations of this nature.
- Mobility of researchers is desirable but limited facilities and critical mass requires they maintain a balanced two-way flow of researchers and avoid brain-drain. Specialisation is both a necessity and a risk for Malta as it increases vulnerability to sectoral downturns which could result in shifts in competitive advantage to other locations.
- Harmonised policies may be beneficial to the EU as a whole but may not meet the specific needs of small countries – e.g. inappropriate benchmarks.
- Additional governance requirements to promote cooperation can also create extra pressures on governance within small countries.

6.2 Scope for greater transnational and interregional cooperation in the domain of R&I under cohesion policy

Transnational and interregional cooperation for research, development and Innovation is the cornerstone of the EU RD&I activities and the successive European Framework Programmes and the Horizon 2020 in the future, are intentionally designed to be carried through transnational collaboration. Malta's role in these initiatives have been highlighted and detailed in the above section.

Although not directly related to R&I projects and initiatives the Interregional Cooperation Programme (INTERREG) provides a platform for national, regional and local policy actors to exchange and transfer their experiences and jointly develop approaches and instruments that improve the effectiveness of regional development. INTERREG C (currently in its IVth round) which is the most applicable strand of the programme for Malta, focuses on two priorities: *Innovation and Knowledge Economy* and *Environment and risk prevention*.

A recent EURADA report²⁰⁶ observed that many projects in this programme are not sufficiently focused on proactively addressing some of the common European weaknesses in the field of innovation, these are access to finance, markets, talent, regional intelligence, cooperation (between stakeholders and at cross sectoral frontiers) and internationalisation policies and contribute to economic modernisation. The report also identifies a persistent gap between the achievement of INTERREG IVC projects and the mainstreaming of their results in the national or regional policy levels. The report, however, found that project partners were addressing common challenges in their regional innovation strategy and were exchanging numerous ideas and tools on how to achieve improvements both at framework conditions and at support services levels.

Malta has been an active participant in the current programme INTERREG and different public organisations and institutions have been partners in 23 of the 204 projects approved²⁰⁷ by the Joint Technical Secretariat (JTS) of the INTERREG IVC. Malta, however, has not led any of these projects in this programme. The full list of these projects is provided in the table below.

The process and the learning from some of these projects have been extremely important to policy debate in Malta. One notable example is Malta's participation in the POOLING4CLUSTERS²⁰⁸ project which is now completed and region/country specific policy imperatives have been drawn up. MITA's recent cluster development priority (covered elsewhere in this report) has its roots firmly in this project.

In addition to INTERREG, Malta also participates effectively in the region-specific initiatives on trans-national collaboration such as Italia Malta Programme, MED Programme and European Neighbourhood and Partnership Instruments (ENPI).

Table 29 – Malta's participation in INTERREG IVC Projects (2007 – 2013)

Acronym	Project Title	Theme
1. GreenInfraNet	Green Infrastructure Network	Biodiversity and preservation of

²⁰⁵ http://www.um.edu.mt/_data/assets/pdf_file/0020/127406/Cassingena_Harper_J.pdf

²⁰⁶ Results of the experiment in programme-level capitalisation on INTERREG IVC projects in the subtheme innovation, research and technology development, EURADA 2010, http://www.interreg4c.eu/focus_capexperiment_final_report.pdf

²⁰⁷ Interreg IVC website - <http://www.interreg4c.eu/chercheProjet.html?page=1>

²⁰⁸ <http://www.pooling4clusters.eu/>

2.	<u>AT FORT</u>	Atelier European Fortresses - Powering Local Sustainable Development	Cultural heritage and landscape
3.	<u>Hybrid Parks</u>	Hybrid Parks: Combining abilities, creating synergies and enhancing the	Cultural heritage and landscape
4.	<u>CERTESS</u>	European Cultural Routes - Transfer Experiences, Share Solutions	Cultural heritage and landscape
5.	<u>GreenITNet</u>	Green IT Network Europe	Energy and sustainable transport
6.	<u>D-AIR</u>	Decarbonated Airport Regions	Energy and sustainable transport
7.	<u>4 POWER</u>	Policy and Public-Private Partnerships for Offshore Wind Energy	Energy and sustainable transport
8.	<u>POOLING4CLUSTERS</u>	Best shared services for regional cluster initiative needs	Entrepreneurship and SMEs
9.	<u>ICER</u>	Innovative Concept of Eco-accommodation approach in rural Regions	Entrepreneurship and SMEs
10.	<u>Young SMEs</u>	Sharing Interregional knowledge to define Supporting Programmes for	Entrepreneurship and SMEs
11.	<u>EuroScreen</u>	EUROPEAN SCREEN DESTINATIONS	Entrepreneurship and SMEs
12.	<u>BOO-Games</u>	Boosting European Games Industry	Entrepreneurship and SMEs
13.	<u>ECOREGIONS</u>	ECOREGIONS	Innovation, research and technology
14.	<u>IN-EUR</u>	Measuring INnovation among EUROpean Subregions	Innovation, research and technology
15.	<u>RSC</u>	Regions for Sustainable Change	Natural and technological risks
16.	<u>ICT-VN</u>	Promotion of ICTs usage by SMEs as an enabler of Value Networks	the Information Society
17.	<u>DC</u>	DIGITAL CITIES: A network for rapid and sustainable ICT regional adoption	the Information Society
18.	<u>EVITA</u>	Exchange, Valorisation and Transfer of regional best policy measures for SME support on IT and e-business Adoption.	the Information Society
19.	<u>Medi[at]TIC</u>	Regional Policies for Information Society and ICT development in the	the Information Society
20.	<u>GRISI PLUS</u>	Geomatics Rural Information Society Initiative PLUS	the Information Society
21.	<u>Pre-waste</u>	Improve the effectiveness of waste prevention policies in EU territories	Waste management
22.	<u>SHARP</u>	Sustainable Hydro Assessment and Groundwater Recharge Projects	Water management
23.	<u>LakeAdmin</u>	Regional administration of lake restoration initiatives	Water management

Source: INTERREG IVC

The current Interregional Cooperation Programme focuses on joint policy learning and development between regional and local authorities. The European initiatives that provided the opportunities for transnational and interregional cooperation between the key researchers, innovation actors and public authorities to work together at ground level are now being rethought. These include programmes such as the Regions of Knowledge and Research potential of Convergence Regions under the Capacities strand of the current FP7 programme. After the Commission's 2010 Budget Review which required a clear separation between Research and Innovation and Cohesion policies, removed any capacity building activity from Horizon 2020, it is likely that interregional cooperation and capacity building could become a part of any future Interregional Cooperation Programme under cohesion policy. This should provide a stronger impetus for Malta's engagement with the future versions of the INTERREG programme. To what extent Malta's Operational Plan (OP), which is currently being drafted, supports this change in approach is unknown.

6.3 Benchmarking and emerging specialisation trends

The RIS3 strategy for Malta is being drafted at the same time as this report and the authors have not been able to examine any of the early drafts or see the work in progress. It is therefore assumed that emerging areas of specialisation would be in line with those of the key policy documents of *Vision 2015* and the *National Strategic Plan for R&I*, both covered in detail elsewhere in this report. The potential areas of specialisation emerging from this report's analysis of the Priority Sectors and Industries are highlighted in section 2.5 of this report.

The European Commission through Smart Specialisation Platform has created a valuable knowledge resource on the topic. The platform develops and shares information, guidelines and instructions for developing the strategy. In addition it creates an environment not only for sharing of good practice and benchmarking (e.g. EYE@RIS3 database) but also through peer reviews of the strategies. As the drafting of the RIS3 Strategy for Malta is being done in parallel to this report the extent of true engagement with the Smart Specialisation Platform is unclear. The authors are not aware of any draft strategies being submitted for peer review.

There is anecdotal evidence that certain “myths” and misinformation exist in a limited number of national/regional authorities responsible for formulating the RIS3 strategies, particularly in the newer member states. This report raises the awareness of these myths and recommends that authorities responsible for the drafting of RIS3 strategy in Malta have cognisance of their existence and avoid their propagation.

Myth Number 1 - the EU Commission has a preference for a certain type of specialisation particularly in the area of new technology – nano & microtechnologies, Bio and life sciences, energy and environmental technologies and of course ICT. This is preventing some from exploring their true areas of specialism, which they may consider as mundane and traditional assuming that such niches would be dismissed.

Myth Number 2 - There is list of specialism and a quota attached to each – there can only be a certain number of regions with specialisation in a specific theme.

Myths Number 3 - There must be a direct and visible link between the Smart Specialisations identified and selected in the country or region and the priorities of the Horizon 2020.

The existing RIS3 guidelines, documentations and the discussions with the Commission officials²⁰⁹ have ruled out all these myths. It is ultimately the responsibility of the authorities responsible for developing the Operational Plans (OP) for the Cohesion Funds to make sure there is consistency between the OP and the RIS3 priorities. It is clearly more important that the selection of the themes and niches have been based on sound evidence and thorough analysis. Again as the drafting of the OP nor the Smart Specialisation Strategy were completed at the time of writing, it is not possible to find out to what degree these synergies have been explored and exploited.

²⁰⁹ Informal discussion with a number of members of the DG Regio Unit for Competence Centre Smart and Sustainable Growth

7. Top-level recommendations and concerns

This study has brought to the fore a number of overarching issues and barriers that are faced by local players in a variety of research and innovation sectors. Each of these organisations expressed concerns and needs which vary from sector to sector, and which are often predicated by the size of the business. This creates tangible concerns towards a Smart Specialisation approach for the Maltese islands, and the overarching concerns and recommendations are being presented below. However it is important to note that there is a tangible risk that Malta tries to provide support to all high performing sectors by primarily providing cross-cutting support measures, without actually making any hard choices or actually discriminating positively toward certain existing strengths and opportunities within the various sub-sectors. Malta needs to be somewhat more ambitious in its vision, and not dilute the RIS opportunity/funding in order to maintain the status quo and appease all players. While cross cutting measures for all sectors remain of paramount importance, it is nonetheless imperative that Malta also does take strategic and calculated risks in order to establish certain pockets of excellence. Similar ad-hoc efforts have already been undertaken (for instance the focused call for floating photovoltaic projects under the 2012 R&I programme), and the same should be done for key R&D areas under the RIS conditionality that offer potential for substantial economic return. Such areas which exhibit existing economic returns and existing world class research within FP7 are few and apart in Malta however areas like fish farming research directed at tuna hatching and related oceanography research, historical conservation, e-government and dependable systems, and avionics research stand out as discrete but potential opportunities for RIS. MCST should undertake a thorough exercise to identify the existing knowledge stock and research bases that can have tangible implications to already strong economic sectors. Ambitious plans like the Life Sciences project should always be coupled by tangible R&D programmes, and related efforts that are now defunct like EuroMediti²¹⁰ and MARSEC should be revisited.

Top-Level Recommendations and Concerns

1. At the heart of a smart specialisation strategy is the question of identifying regional strengths for innovation support. However it is clear from the meetings held with stakeholders that the practical implications of a smart specialisation strategy are not very clear among the concerned public body officials. Even one of the founders of the Smart Specialisation concept admits that although it has political salience, its theoretical framework remains modest, leading to risks of misunderstanding and abuse.²¹¹ Furthermore there is concern that the RIS strategy could ultimately be sabotaged by top-down decisions in favour of political expediency, which could ultimately have a negative impact on decisions or investments already made at the national level in the recent past.

2. Legitimate concerns are also prevalent as to the extent towards which this specialisation will be focused and how it would affect available funding outside of the preferred/identified priority sectors. This is of very specific concern to the local business community in view of the prevalence of SMEs operating in very different fields, and every effort should be made to support SMEs from every viable sector with more generic sources of public or structural funding. The risk of focusing too much on certain sectors alone could well serve to strengthen disproportionately the existing key players while undermining a level playing field for other sectors and increasing the dependency of those key players. Consequently an appropriate balance has to be found between specialisation and diversification in order for RIS to work in Malta.

3. One of Malta's strengths in the last decade has certainly be its penchant and disposition towards being flexible, and reacting quickly to market or economic changes that occurred locally and worldwide. This same disposition must be maintained within the RIS strategy which should be considered as an evolving strategy with scope for continuous adaptation and quick ad hoc reorientations. At present there is a risk that much of the handholding being provided could become counterproductive and preclude flexibility.

4. Capacity-building is central to the success of the RIS initiative, especially for countries like Malta which has very limited experience in research and innovation strategy-building and a somewhat embryonic R&I support framework and infrastructures. Consequently capacity-building remains crucial for ensuring the implementation of a RIS strategy and Malta has a long way to go in order to ensure the necessary top-level ownership, assembly of strategic partnerships, setup of implementation teams, the inclusion of expertise from the private sector, and the development of policy staff and expertise. This suggests that unless Malta does not keep building capacity as a first step, it could easily run the risk of not having the foundations on which to build a holistic and practical RIS strategy. Structural Funds must continue to play a continued role in capacity-building and institutional set-up that could in turn make RIS strategy effective. The reality of the local situation dictates that a considerable focus needs to be retained on investing in the

²¹⁰ EuroMediti was an enabling Platform for Euro-Med technology transfer whose aim was to accelerate the development or adaptation of innovative, regionally critical, sector focused technologies for the emerging states of the Southern Mediterranean, North Africa and the Middle East market. MARSEC-XL is or was a Living Lab in Marine Software & Systems Engineering.

²¹¹ Foray D (2012) *Types of Strategies for Smart Specialisation*, Presentation at the 2nd TIP Workshop on Smart Specialisation Strategies for Innovation-driven Growth, OECD, 10-11 May 2012, Paris.

development of human capital more generally in order to create the initial conditions for strategic innovation support, while addressing gaps in existing support mechanisms, such as in the field of knowledge transfer or innovation-friendly public procurement.

5. It is crucial that the focus of Malta's RIS strategy does not over emphasise exclusively on high technology sectors alone, and MCST must ensure that any sectors or potential clusters selected actually have economic growth potential, and that innovation support can be effective. In Malta this could imply the application of process technologies or ICT to traditional industries or low R&D industries, so long as there is an opportunity for growth. These may be service industries such as tourism or creative industries, or could be primary industries such as marine or financial services in Malta. The focus must make very hard decisions on which economic sectors show the best opportunities for growth and are more likely to receive investment.

6. The selection of priorities needs to be made on the basis of some existing strength or expertise rather than aspiration or wish list which ultimately implies a focus on sectors that have a strong production base or even a resource base which is not being exploited and for which there is an economic demand. Malta runs the risk of selecting sectors based simply on the strongest research base typically within small clusters at University and this could provide a very limited basis for a RIS strategy and not necessarily lead to a successful strategy. Strengths identified need to be outstanding which can only be identified via competitive benchmarking with other regions.

7. Malta must look to diversify its economic activities based on existing strengths and areas of expertise primarily by diversifying into areas of related expertise, and simply use the core knowledge base of the existing industry to target other industries within that same value chain (related variety). Tangible examples of this related variety might be the diversification from shipbuilding for instance into offshore aquaculture platforms based on existing engineering / materials expertise; or developing a food processing based tourism industry related to a cluster of high quality local products like wine or tomato growing. The application of innovation in a particular sector to raise productivity could easily be bought in from elsewhere, or a product of indigenous research efforts that leverage existing expertise to solve local problems and that has export potential to similarly afflicted regions. The main emphasis must remain the identification of new niches based on the Malta's strengths and that facilitate opportunities in related industries or markets.

8. In addition to the two key policy documents, namely Vision 2015 and the National Strategic Plan for R&I, there appears to be a plethora of different policies and strategies in Malta relating to different aspects of R&I. These range from umbrella strategies to sector specific ones. Well over a dozen such documents were identified, some of which were no more than lobby documents produced by interest groups. This proliferation of strategies could be seen as fragmentation in the policy making and decision taking processes. It is recommended these strategies are consolidated and only a very limited number (say 2) of strategy documents formulated in an inclusive way with buy-in from all key stakeholders, are feed into the RIS3 (or OP) process. There may be additional sectoral implementation or action plans.

9. The case of Malta dictates that although the focus of the RIS strategy is focused on the internal market and local needs, the strategy must ensure that the sectors involved are empowered to operate in a more European or global dimension, and can learn by networking with competing clusters and regions with complementary interests. Consequently Malta's RIS strategy should facilitate the exchange with other regions however the drive to connect players in commercial sectors must be focused on the concrete supply of the required knowledge that build on existing networks rather than by formal regional agreements with no tangible or immediate benefits. So regions should look to develop partnerships where appropriate but also help firms in wider networking to obtain the support which is right for them and maximises their opportunities for growth.

10. The R&I programme should be encouraged to review its national policies and research programmes in view of Malta's low RD&I intensity, with the objective to enhance the national programmes/strategies, and to align them with the ERA initiatives (namely JPIs). Similarly specific evaluation criteria related to the growth/commercialisation potential of different business sectors during calls for proposals would need to be introduced to reap the RIS results expected and make a difference to business development at the grass roots. This also implies a clear effort to be undertaken towards impact assessments of the current and past R&I funded projects in order to compare the effectiveness of different policy measures which to date has been informal and never undertaken properly.

11. To encourage Malta's participation in Joint Programming initiatives, supporting measures aiming for effective alignment, implementation and coordination of its research programme should be provided, with a reciprocal implementation of relevant policy measures at the national level and accompanied by adequate financial and administrative commitment from the Government.

12. Malta should be encouraged to use cohesion (structural) funds at their disposal as a contribution to JPIs or other forms of transnational cooperation programmes; and to establish meaningful partnership between countries at different levels of RD&I intensity. Clearly Malta has much more to gain from territorial cooperation with the Northern countries rather than Southern Mediterranean countries where R&D intensity is inherently limited and offers limited opportunities for inbound technology transfer.

13. There is a visible gap in the provision of support mechanism in some phases of the knowledge creation to knowledge anchoring cycle, particularly in the Knowledge Exploitation and Anchoring phases. The recent initiatives such as a move towards cluster based development, MCST Commercialisation Programme and the establishment of a Knowledge Transfer Office by University of Malta are the recent steps taken to address this gap. In order to embed R&I in the business fabric of the country it is recommended that support mechanisms, particularly those through financial engineering are developed. These may include use of "JEREMIE style" financial instruments, risk sharing finance facility or national Seed Corn or Venture Capital Funds aimed at early stage R&I based business. It is recommended that a "Proof of Concept" type fund is also considered in order to encourage researchers to embark on the commercialisation of their research results more actively

14. It is recommended that the authorities charged with the formulation of the RIS3 strategy for Malta develop an early stage and meaningful relationship with the Smart Specialisation Platform, created by the EU Commission to develop and share information, guidelines and instructions for developing the strategy. Early stage engagement could ensure that good practice is shared and efforts are benchmarked. By the same token submitting for a peer review process will help avoid blind alleys.

A1. Suggested Questions and themes for interviews²¹²

Decision-making and Governance:

To find out how the processes works – how is the economic development and business support policy particularly for research, innovation and entrepreneurship is decided.

- What is the input from the user communities, particularly the businesses?
- What type/sizes of business are engaged in the process.
- To what extent lobby orgs and business associations exert influence.
- What is the process for identifying future opportunities in business sectors.
- Does public sector have a systematic approach for industry need analysis
- Are strategic analysis tools used or is the process based on brain storming
- Is this process used as a basis for resource allocation for R&I investment?
- What is the extent of industry involvement in this process
- How responsive is the process.

Contribution of science base to economic development

This group of questions, mainly directed at the Higher Education / research organizations is to check what is their contribution to the local economy, in what form and to what extent (intensity);

- Human resources: Focus on educating / vocational training;
- Entrepreneurship: Promoting entrepreneurship; Developing new businesses (spin offs);
- Leveraging knowledge from: Marketing project outcomes; Technology transfers; Small business consulting;
- Managing infrastructure including: Pre-incubators, incubators/ Science/Technology parks; Laboratories shared with regional players; International large-scale science facilities and labs.
- Economic coordination by means of active participation in structures such as: Clusters; University/SME interfaces, Seed capital funds;
- Assessment / quantification of contribution to economy
- Development of public-private partnerships
- Talent attraction.

Knowledge roundabout

The next theme looks for how knowledge life cycle works and who is responsible to offset the knowledge stock of the region;

- Existing knowledge: people, traditions, industries, know-how, patents
- Creation of new knowledge: research, experimentation, living labs, imitation, adaptation
- Customisation of knowledge: Foresight, Market intelligence, Stakeholder interaction
- Exploitation of knowledge: Licensing, Innovative products/services, Start-ups (inc. spin-outs), Clusters
- Anchoring Knowledge: partnership, knowledge transfer, talent attraction knowledge take-up by enterprises
- Leakage: Relevance of RDTI, Outsourcing, Offshoring, Delocation.

Strength of the commercialisation process

This theme elicits information on how the commercialisation of research results is speeded up, what is being done and who is doing what, what should be done;

- Turning the knowledge/idea into a potential commercial application: Scanning of ideas, technology assessment & "ferreting", mentoring/coaching, IPR valorisation, entrepreneurship support, tax holidays and incentives
- Identifying the readiness of SMEs: Scanning the innovation capacity, partnership strength, market intelligence
- Incubation (V incubators) VC/seed funds availability

Flow of knowledge

The last theme is about how to better manage the knowledge flow between regions, based on the fact that regions cannot always be the top champions in knowledge creation in every sector.

- Mobility: participation in networks, attending conferences, coaching/ mentoring/ training, joint publications
- Internationalisation: exhibitions/fairs, conferences/workshops, technology showcases, internationalisation of clusters
- Technology transfer: purchase of patents, licensing, spin out attraction
- Business driven flows: joint research, joint ventures, co-development, prototyping and testing, staff mobility, consultancy services, soft landing packages.

²¹² Adopted from an idea developed by EURADA, <http://eurada.org>

A2. Cohesion Fund Beneficiaries

Programming Period 2007-2013

Beneficiary	Project Title	Project Eligible Amount
Water Services Corporation	CF 116 - Malta South Sewage Treatment Infrastructure	€ 67,968,030
Transport Malta	CF 117- Improvement of the TEN-T Road infrastructure (PHASE I)	€ 46,447,990
WasteServ Malta Ltd	CF 118 - Rehabilitation and Restoration of Closed Landfills	€ 26,224,382
WasteServ Malta Ltd	CF 119- Mechanical and Biological Treatment Plant	€ 31,411,102
Ministry for Sustainable Development, the Environment and Climate Change	CF 120 - National Flood Relief Project	€ 52,809,134
WasteServ Malta Ltd	CF 123- Setting up of the Gozo Waste Treatment and Transfer I Facility	€ 8,642,717
Transport Malta	CF 124- Refurbishment of the Valletta and Marsaxlokk main breakwater	€ 10,867,996
Transport Malta	CF 125- Improvement of the TEN-T Road Infrastructure (PHASE II)	€ 49,840,345
Transport Malta	CF 198- Cirkewwa Ferry Terminal	€ 10,683,282
Transport Malta	CF 260- Refurbishment and upgrading of Deep Water Quay	€ 27,041,159
WasteServ Malta Ltd	CF 266- Extending Waste Separation & Collection Services in the Maltese Islands.	€ 2,593,937
WasteServ Malta Ltd	CF 312 - Development of a Hazardous Waste Storage Facility	€ 4,913,920

A3. ESF beneficiaries

Programming Period 2007-2013

Project Reference No.	Beneficiary	Project Title	Project Eligible Amount
1.123	Curriculum Management and e-Learning Department	Training Support for the e-Learning Programme (ESF 1.123)	€445,194
1.125	University of Malta	Creating a Knowledge Transfer Framework and Technology Entrepreneurship Training Programme (ESF 1.125)	€1,331,530
1.130	Malta College for Arts, Science and Technology	Making VET Education More Relevant and Attractive (ESF 1.130)	€5,547,130
1.131	The Secretariat for Catholic Education - Archdiocese of Malta	Training Educators for Diversity (TED) (ESF 1.131)	€2,931,379
1.225	Directorate for Lifelong Learning	Successful Masters Scholarships (SMS)	€2,169,257
1.227	National Commission for Higher Education (NCFHE)	Making Quality Visible	€650,104
1.228	Directorate for Quality and Standards in Education(DQSE)	Design of Learning Outcomes Framework, associated Learning and Assessment programmes and related Training	€2,989,081
1.229	Foundation For Educational Services	Skills Acquisition for Children and Adolescents	€119,878
1.19	Medical Association of Malta	Online e-Learning Management System for Post-graduate Medical Training Activities (ESF 1.19)	€130,279
1.209	Ministry for Gozo	Training courses for the educational sector in Gozo (ESF 1.209)	€99,287
1.21	Curriculum Management and e-Learning Department	Parents and Teachers Fusion ICT Training Programme (ESF 1.21)	€485,050
1.211	Malta Postgraduate Medical Training Centre, Department of Health	ePortfolio for Postgraduate Medical Training (ePmt) (ESF1.211)	€316,807
1.22	University of Malta	Research Analysis and Training for Enhancing the University Library (ESF 1.22)	€433,942
1.23	Ministry for Gozo	Higher education courses to address skills mismatches in Gozo (ESF 1.23)	€163,288
1.24	Directorate for Educational Services	Career Guidance Capacity Building (ESF 1.24)	€115,130
1.25	Directorate for Lifelong Learning	Strategic Educational Pathway Scholarships - STEPS (ESF 1.25)	€9,934,333
1.28	Malta Qualifications Council	Accrediting Quality Vocational Training (VOPACK) (ESF 1.28)	€379,775
1.29	Malta Qualifications Council	Valuing all Skills for the Labour Market (SKILLSPLUS) (ESF 1.29)	€353,048
1.31	Heritage Malta	Wood CPR: Education & Training in Wood Conservation Restoration (ICMCH) (ESF 1.31)	€285,867
1.33	Malta College for Arts, Science and Technology	Increasing ICT Student Capacity in Malta (ESF 1.33)	€4,852,967
1.34	Malta College for Arts, Science and Technology	Addressing skills mismatches in the aviation maintenance industry (ESF 1.34)	€2,126,878
1.36	Malta College for Arts, Science and Technology	Professional development programmes for MCAST staff & student's top-up degrees (ESF 1.36)	€5,916,005
1.40	Malta Council for Science and Technology	Science Popularisation Campaign (ESF 1.40)	€544,310
2.11	Malta Tourism Authority	Developing Leaders for Change and Innovation in Tourism (ESF 2.11)	€3,141,529
2.12	Malta Information Technology Agency	Second Step (ESF 2.12)	€669,425
2.137	San Pawl Local Council	Train to Succeed (ESF 2.137)	€99,943
2.139	Malta College for Arts, Science and Technology	Increasing Accessibility, Flexibility and Innovation to MCAST Life-Long-learning Course Offer (ESF 2.139)	€7,240,669
2.141	Institute of Tourism Studies (Gozo)	Skills Upgrading for the Tourism Sector in Gozo (ESF 2.141)	€139,887

2.186	Malta Film Commission	Re-Skilling of Workers for the Local Film Industry (ESF2.186)	€499,067
2.204	Malta Communications Authority - MCA	NETWORKED: ICT competences for better employability and work force adaptability (ESF2.204)	€417,128
2.201	Employment and Training Corporation	Enhancing Employability through Training (EET) (ESF2.201)	€3,374,780
2.4	Employment and Training Corporation	Employability Programme (ESF 2.4)	€5,339,631
2.65	Employment and Training Corporation	Training Aid Framework (TAF)	€8,851,620
2.7	Ministry for Gozo	Training Courses to enhance Employability and Adaptability of the Workforce (ESF 2.7)	€46,968
2.72	Malta Communications Authority - MCA	EPITOME - Empowerment Programme for IT use: Outreach for Micro Entrepreneurship (ESF 2.72)	€362,351
2.78	Malta Tourism Authority	Retaining and Attracting People within Tourism through Diversity Management (ESF 2.78)	€308,801
2.84	Kunsill Lokali Hamrun	Promoting Life-Long Learning amongst Civil Society Organizations' Voluntary Staff (ESF 2.84)	€2,756
2.85	Malta College of Arts, Science and Technology (MCAST)	Linking Industrial Needs and VET to Optimise Human Capital (ESF 2.85)	€353,382
3.102	Malta College for Arts, Science and Technology	Inclusion for Employment (ESF3.102)	€7,180,681
3.105	Kummissjoni Nazzjonali ghal Persuni b'Dizabilita' (KNPD)	Promoting the Social Inclusion of Disabled persons with Challenging Behaviour (ESF3.105)	€402,409
3.108	Dar Guzeppa Debono	LWIEN (ESF3.108)	€431,881
3.110	Paola Local Council	Better Future: Promoting an Equal & Inclusive Labour Market (ESF3.110)	€312,419
3.113	Employment and Training Corporation (ETC)	Employment Support for Persons with Disabilities (ESF3.113)	€661,816
3.114	Employment and Training Corporation (ETC)	Employment in the Social Economy (ESF3.114)	€1,095,172
3.42	Kummissjoni Nazzjonali ghal Persuni b'Dizabilita' (KNPD)	An Independent living training service for disabled people in Malta (ESF 3.42)	€398,794
3.43	Commission on Domestic Violence	Dignity for Domestic Violence Survivors (ESF 3.43)	€459,714
3.47	National Commission for the Promotion of Equality (NCPE)	Unlocking the female potential (ESF 3.47)	€649,232
3.48	Foundation for Educational Services (FES)	Lifelong Learning for enhanced employability for parents (LLEEP) (ESF 3.48)	€100,821
3.49	Student Services Department	Training of Inclusion Coordinators for Secondary Education (ESF 3.49)	€66,649
3.52	Wasteserv Malta Ltd	Care creates changes in people's lives (ESF 3.52)	€624,948
3.54	Hal Kirkop Local Council	REACH- Opportunities close to home (ESF 3.54)	€193,894
3.56	Occupational Health and Safety Authority (OHSA)	Specialised research on OHS and the development of OHS accreditation (ESF 3.56)	€413,574
3.59	Employment and Training Corporation (ETC)	Nista': The benefits of sharing life's responsibilities campaign (ESF 3.59)	€1,258,662
3.60	Employment and Training Corporation (ETC)	Youth Employment Programme (ESF 3.60)	€817,797
3.61	Foundation for Social Welfare Services (FSWS)	E4L: Embark for Life - Labour market integration of socially excluded youth (ESF 3.61)	€786,069
3.62	Foundation for Social Welfare Services (FSWS)	ME2 - Integration of persons with a disability in the labour market (ESF 3.62)	€1,297,403
3.64	Employment and Training Corporation	Employment Aid Programme (EAP)	€12,200,000
3.66	Paulo Freire Institute	Ic-Cavetta - Maltese Literacy Toolkit for employment and education inclusion (ESF 3.66)	€105,292
3.71	Richmond Foundation	Impact Assessment of Mental Health on Employment for Policy Development (ESF 3.71)	€67,014
4.100	Centre for Policy Research and Training (CDRT)	Developing Core Skills in the Public Service (ESF4.100)	€3,369,862
4.152	Malta Council for Science and Technology	Capacity Building for MCST (ESF4.152)	€293,279

4.159	Management Efficiency Unit (MEU)	Development Quality Management in the Public Administration through CAF (ESF4.159)	€313,370
4.163	Ministry for Fair Competition, Small Business and Consumers (MFCC)	Training of Consumer and Competition Officials and Awareness Campaign (ESF4.163)	€534,024
4.164	Restoration Directorate (Project Design & Implementation Department - MRRA)	Time to Consolidate (ESF4.164)	€114,070
4.174	Department of Health	Training Health Care Professionals for Integrating Acute and Community Care (ESF4.174)	€726,477
4.175	Department of Health	Capacity Building for Medical Physics Services in Malta (ESF4.175)	€1,552,820
4.180	Operations & Programmes Implementation Directorate	Enhancing Data Protection Compliance in the Public Service (ESF4.180)	€328,176
4.181	Department for Local Government	Improving Public Governance and Management at Local Level (ESF4.181)	€223,421
4.182	Malta Competition and Consumer Affairs Authority (MCCAA)	Strengthening the Office for Competition for better functioning markets (ESF4.182)	€117,447
4.189	Ministry for Gozo	Continuous Training and Development for the Public Sector in Gozo (ESF4.189)	€214,842
4.86	Malta Employers Association	Capacity Building for Equipping and Representing Micro Businesses Employers (ESF4.86)	€242,437
4.87	Management Efficiency Unit (MEU)	Developing the Maltese Public Sector's Capacity to Implement Better Regulation (ESF4.87)	€1,433,013
4.94	Malta Council for Economic and Social Development	Closer to Europe (ESF4.94)	€467,323
4.97	Employee Relations Directorate, Management and Personnel Office (MPO)	Employee Support Programme (ESP) for Public Employees (ESF4.97)	€543,288
4.98	Centre for Policy Research and Training (CDRT)	Strengthening IMU's and other related functions through Specialist Training Programmes (ESF4.98)	€1,613,983

A4. ERDF beneficiaries
Programming Period 2007-2013

Project Title	Beneficiary	Project Eligible Amount
Malta Industrial Parks	ERDF 001 - Upgrading and Embellishment of Industrial Estates	€ 16,568,200
University of Malta	ERDF 011 - Furnishing and Equipping of Chemistry & Biology Building Extensions	€ 777,229
University of Malta	ERDF 012 - Developing an Interdisciplinary Material Testing and Rapid Prototyping R&D Facility	€ 4,336,401
University of Malta	ERDF 017 - Construction, Finishing and Equipping of ICT Faculty Building	€ 16,476,489
University of Malta	ERDF 018 - Strengthening of Analytical Chemistry, Biomedical Engineering and Electromagnetics RTDI Facilities	€ 1,540,411
Gharb Local Council	ERDF 022 - Wied il-Mielah - towards an ecologically and culturally sensitive, sustainable tourism	€ 566,789
Ministry for Gozo	ERDF 024 - Upgrading of Villa Rundle Gardens	€ 1,951,562
Ministry for Gozo	ERDF 031 - Upgrading of Zewwiega Waterfront	€ 3,947,841
Heritage Malta	ERDF 032 - Archaeological Heritage Conservation Project	€ 9,163,522
Malta Tourism Authority	ERDF 033 - Tourism Zone Upgrade with landscaped urban spaces and other facilities	€ 14,004,464
Restoration Department	ERDF 039 - Restoration and Rehabilitation of Historical Fortifications of Malta and Gozo	€ 32,268,510
Employment and Training Cooperation	ERDF 045 - Extension of ETC Skills and Development Centre (phase 2)	€ 515,212
Ministry for Gozo	ERDF 047 - Reconstruction of part of Xlendi Road and Ta' Pinu Road	€ 4,645,097
Transport Malta Roads and Infrastructure Directorate	ERDF 048 - Upgrading of Arterial and Distribution Roads	€ 12,273,263
Malta College for Arts Science & Technology	ERDF 054 - Multimedia Training Centre at MCAST's Institute of Art and Design	€ 2,200,713
Malta College for Arts Science & Technology	ERDF 056 - Upgrading and expansion, MCAST Institute of Mechanical Engineering at Malta/Gozo	€ 1,506,102
University of Malta	ERDF 057 - Junior College Building Extension	€ 1,169,875
Ministry of Education, Culture, Youth and Sports	ERDF 058 - Purchase of Science and technology laboratory equipment for state schools	€ 1,246,341
Malta College for Arts Science & Technology	ERDF 62 - Language Lab with Contact Centre facility at MCAST Institute of Business and Commerce	€ 275,397
University of Malta	ERDF 064 - Construction and Equipping of University Computing Services Centre Building	€ 7,950,962
Malta College for Arts Science & Technology	ERDF 065 - Expansion of MCAST Institute of Electrical and Electronics Engineering	€ 651,991
Malta College for Arts Science & Technology	ERDF 066 - Computer systems and computer labs at MCAST Malta and Gozo	€ 256,100
Ministry for Gozo	ERDF 068 - Upgrading of Operating Theatre and Setting Up of Radiology Unit	€ 3,626,049
Kummissjoni Nazzjonali Persuni b'Dizabilita'	ERDF 072 - Construction and Equipping of an Independent Living Centre	€ 711,084
University of Malta	ERDF 076 - Refurbishing the Signal Processing Laboratory within the Department of CCE	€ 461,622
University of Malta	ERDF 077 - Electrical Energy and Efficiency Laboratory for the University of Malta	€ 608,722
University of Malta	ERDF 078 - Upgrading of Giordan Lighthouse global Atmospheric Watch (GAW) Research Station	€ 444,824
University of Malta	ERDF 079 - Setting up of Mechanical Engineering Computer Modelling and Simulation Laboratory	€ 385,458
University of Malta	ERDF 080 - A Super Computer Laboratory for the University of Malta	€ 468,983
University of Malta	ERDF 081 - Enhancing the Health Biotechnology facilities at the University	€ 3,963,153

University of Malta	ERDF 082 - Modernizing the University of Malta's Control Systems Engineering Laboratory	€ 528,883
MCST	ERDF 083 - Manufacturing Research Platform	€ 654,725
Malta Competition and Consumer Affairs Authority	ERDF 087 - Developing National Metrology Capacity in Support of Industry	€ 695,412
Malta Resources Authority	ERDF 088 - Promotion of renewable energy sources in the domestic sector	€ 16,932,025
Malta College for Arts Science & Technology	ERDF 101 - Installation of Renewable Energy Sources at MCAST	€ 464,147
Housing Authority	ERDF 102 - Energy-Smart Authority	€ 41,380
Projects Development and Coordination Unit (PDCU)	ERDF 104 - Stronger Cottonera Communities - The Citizen's right to accessibility and mobility	€ 9,179,032
The National Library of Malta	ERDF 109 - Digitization Strategy and Framework for the National Library of Malta	€ 155,543
Foundation for Information Technology Accessibility	ERDF 114 - Maltese Text to Speech Synthesis	€ 420,780
Ta' Pinu National Shrine	ERDF 140 - Discovering Cultural & Religious Tourism in Gozo	€ 344,092
Fondazzjoni Belt Victoria	ERDF 142 - The Making of a People- A Cultural and Historical Eco-Museum	€ 910,400
San Lawrenz Parish Church	ERDF 147 - Restoration of San Lawrenz Church to Enhance Cultural Tourism	€ 331,685
Fondazzjoni Wirt Artna	ERDF 151 - RE.VI.VE - Renewed Visitor Venues	€ 1,993,189
Malta Aviation Museum Foundation	ERDF 155 - Construction of Main Exhibition Hangar and Run Off Water Reservoir	€ 292,729
MEPA	ERDF 156 - Developing National Environmental Monitoring Infrastructure and Capacity	€ 4,265,418
Ministry for Home Affairs and National Security	ERDF 159 - eServices: Accessibility for all (eXS4ALL)	€ 17,204,262
Malta College for Arts Science & Technology	ERDF 164 - Masterplan: development of Applied Science and Business and Commerce Institutes	€ 9,654,992
Grand Harbour Regeneration Corporation	ERDF 183 - Vertical Connection: Better Accessibility through Innovation and Cleaner Transport	€ 2,488,530
Bishop Conservatory Secondary School	ERDF 189 - Educational Infrastructure Development at Bishop's Conservatory Secondary School - Phase II	€ 261,455
University of Malta	ERDF 192 - Photovoltaic System at the University of Gozo Centre	€ 67,894
Diocese of Gozo	ERDF 193 - Gozo Diocese's contribution to turn Gozo into an Eco-island	€ 63,984
Ministry for Health	ERDF 196 - Mater Dei Oncology Centre	€ 44,302,722
Malta Enterprise	ERDF 199 - Setting-up a Life Sciences Centre	€ 22,003,226
Ministry of Finance, Economy and Investment	ERDF 200 - JEREMIE - Joint European Resources for Micro to Medium Enterprises	€ 10,000,000
Hal-Balzan Local Council	ERDF 205 - Regenerating Balzan square and implementing a Tourist Heritage Trail	€ 484,793
Marsascala Local Council	ERDF 212 - The Regeneration of the Tourism Market in Marsascala	€ 365,199
Hal-Tarxien Local Council	ERDF 213 - Sustainable Tourism in a Village of Culture & Heritage	€ 356,318
Birkirkara Local Council	ERDF 221 - Birkirkara Heritage Route - Discovering our past by uncovering Historical Gems	€ 500,344
Valletta Local Council	ERDF 226 - Peacock Gardens - Cultural Urban Landscapes for Tourism Sustainability	€ 855,721
Private Schools Association	ERDF 228 - Green Energy Schools	€ 788,799
San Gaetano Parish	ERDF 229 - Investing in Eco-Friendly Technology for Energy and Leading by Example	€ 14,809
B'Kara LC	ERDF 230 - B'Kara - Energy Generation and Conservation Project	€ 47,104
Holy Family Home	ERDF 234 - Holy Family Home - Energy Generation and Conservation Project	€ 24,942
Sisters of Charity of St. Jeanne Antide	ERDF 235 - Stepping-Up Energy Saving Measures in 2 Provincial Schools	€ 33,435

Ghajnsielem Band Club	ERDF 236 - Photovoltaic Panel System at Ghajnsielem Band Club	€ 56,162
Leone Band Club	ERDF 238 - PV system for the Leone Band Club	€ 101,779
Oratory Don Bosco	ERDF 239 - Installation of Photovoltaics System on Oratory Don Bosco	€ 21,217
Saura Home	ERDF 243 - Saura - Energy Generation & Conservation Project	€ 56,222
Grand Harbour Regeneration Corporation	ERDF 244 - Fort St. Elmo Heritage Experience - Museum and Rampart Walk	€ 15,345,000
Heritage Malta	ERDF 245 - Fort St. Angelo Heritage Experience	€ 13,390,000
Ministry for Gozo	ERDF 246 - Implementing of Cittadella Masterplan recommendations- Gozo	€ 11,960,000
Victoria Local Council	ERDF 249 - Setting of an Integral, Archaeological and Historical Trail in Victoria	€ 1,305,000
Transport Malta	ERDF 256 - MODUS: Encouraging Modal Shift in Land Transportation	€ 9,941,561
Ministry for Gozo	ERDF 261 - Renewable Energy Facilities in Educational and Vocational Institutions in Gozo	€ 2,259,903
Ministry for Health	ERDF 262 - Carbon Footprint Reduction at the Gozo General Hospital	€ 2,815,002
Xaghra United Football Club	ERDF 268 - Green Football in Xaghra	€ 26,821
Archdiocese of Malta	ERDF 271 - Renewable Energy Systems for Parishes Network	€ 794,521
Disalced Carmelite Fathers	ERDF 274 - Conserving Energy for a Sustainable Future	€ 189,083
Franciscan Capuchin	ERDF 275 - Taking Action! Installing RES	€ 117,164
Zghazagh Azzjoni Kattolika	ERDF 276 - Reducing ZAK House's Carbon Footprint	€ 22,890
Neptunes Waterpolo & Swimming Club	ERDF 277 - Neptunes Renewable Energy	€ 55,325
Ghaqda Muzikali San Gorg	ERDF 278 - Ekokazin	€ 21,020
The Malta Hospice Movement	ERDF 279 - Reducing the Carbon Footprint	€ 6,946
Tennis Club Kordin	ERDF 280 - Tennis Club Kordin goes ECO	€ 46,377
Daughters of the Sacred Heart	ERDF 281 - Decided to get Smarter	€ 168,383
St. Jeanne Antide Foundation	ERDF 283 - Taking it another STEP	€ 90,269
Sliema Band Club	ERDF 284 - Moving Towards a Greener Tomorrow	€ 45,052
Gozo Diocese	ERDF 285 - Gozo Diocese's Continued Contribution to Eco- Gozo Concept	€ 74,309
The Malta Council for Science and Technology (MCST)	ERDF 311 - National Interactive Science Centre (NISC)	€ 12,000,000

A5. European Territorial Cooperation Programmes beneficiaries
Programming Period 2007-2013

Programme	Project	Malta Partner	Budget
			ERDF / ENPI Share €
Interreg IVC Programme	DC	MGTIL	66,078.52
Interreg IVC Programme	RSC	MEPA	103,077.56
Interreg IVC Programme	EVITA	Fondazzjoni Temi Zammit (FTZ)	148,398.57
Interreg IVC Programme	Pre-Waste	WasteServ Malta Ltd	111,503.00
Interreg IVC Programme	POOLING4CLUSTERS	MITA	101,357.74
Interreg IVC Programme	ICT-VN	MCA	145,265.00
Interreg IVC Programme	SHARP	Local Councils' Association (LCA)	93,224.60
Interreg IVC Programme	ICER	MGOZ	161,330.00
Interreg IVC Programme	AT FORT	Paola Heritage Foundation	150,098.44
Interreg IVC Programme	IN-EUR	LCA	129,858.41
Interreg IVC Programme	BOO-Games	FTZ	85,115.26
Interreg IVC Programme	Lake-Adm	FTZ	119,850.00
Interreg IVC Programme	GreeITNet	MIEMA	111,504.58
Interreg IVC Programme	ECOREGIONS	MIEMA	65,190.75
Interreg IVC Programme	Hybrid Parks	Poala LC	149,087.45
Interreg IVC Programme	GreenInfraNet	Ghajnsielem Local Council	63,703.68
Interreg IVC Programme	GRISI PLUS	LCA	69,542.75
Interreg IVC Programme	Euro Screen	FTZ	142,990.09
Interreg IVC Programme	CERTESS	Department of Local Government	117,867.80
Interreg IVC Programme	D-AIR	Transport Malta	94,445.37
Interreg IVC Programme	Young SMEs	Malta Enterprise	51,708.02
Interreg IVC Programme	4POWER	MIEMA	71,789.21
Interreg IVC Programme	Medi@TIC	LCA	96,149.45
Med Programme	Developmed	Paragon Europe	108,541.60
Med Programme	Philoxenia	LCA	228,173.77
Med Programme	Biolmed	Mgarr Local Council	117,172.50
Med Programme	I.C.E	FTZ	190,981.99
Med Programme	RIMED	FTZ	152,150.00
Med Programme	TRANSit	FTZ	157,997.15
Med Programme	Medpan North	MEPA	120,700.00
Med Programme	Inflowence	FTZ	152,804.50
Med Programme	2Ihs Clusters	Isla Local Council	117,300.00
Med Programme	Iktimed	FTZ	93,500.00
Med Programme	Losamedchem	LCA	144,151.50
Med Programme	Mediwat	MRA	136,000.00
Med Programme	SEATOLAND	FTZ	119,000.00
Med Programme	SEATOLAND	Birgu Local Council	115,600.00
Med Programme	Enerscapes	MIEMA	294,950.00
Med Programme	Cyp.Fire	Mgarr Local Council	123,250.00
Med Programme	Medeea	MIEMA	156,281.00
Med Programme	CreaMed	FTZ	85,000.00
Med Programme	Medstrategy	Pembroke Local Council	143,225.00
Med Programme	OSDDT-Med	Pembroke Local Council	106,964.00
Med Programme	MEID	FTZ	88,400.00
Med Programme	Agriles	Ministry for Gozo	43,828.12
Med Programme	Limit4Weda	MIEMA	139,825.00
Med Programme	MARIE	LCA	112,625.00
Med Programme	MARIE	UMAR	93,942.00
Med Programme	ELIH-MED	MIEMA	473,705.00
Med Programme	MEDS4MS	University of Malta	218,810.40
Med Programme	MEDS4MS	Rempec	243,678.00
Med Programme	FutureMed	Transport Malta	observers
Med Programme	Med Net	Transport Malta	290,000.00
Med Programme	Homer	LCA	115,578.75
Med Programme	ENERGEIA	FTZ	tbc
Med Programme	E2STORMED	LCA	tbc
Med Programme	MER	MIEMA	tbc

Med Programme	ZEROWASTE	Wasteserv	tbc
ENPI Programme	Med-Algae	MIEMA	53,535.25
ENPI Programme	Med-Algae	FTZ	178,568.90
ENPI Programme	Joussour	PBS	90,271.99
ENPI Programme	Heland	University of Malta	326,960.91
ENPI Programme	Heland	FTZ	122,084.64
ENPI Programme	SW-MED	MRA	124,153.27
ENPI Programme	SW-MED	MGOZ	110,963.42
ENPI Programme	Medjellyrisk	University of Malta	281,123.94
ENPI Programme	Marenostrum	IRM	409,854.42
ENPI Programme	Scow	LCA	387,702.03
Italia Malta Programme	The Hub	University of Malta	161,911.81
Italia Malta Programme	ProMed	MRRA	291,142.00
Italia Malta Programme	ProMed	VITIMALTA (Organizzazjoni Produtturi Gheneb Ghall-Inbid Malta)	97,155.00
Italia Malta Programme	ProMed	University of Malta	168,725.00
Italia Malta Programme	T-Cheesimal	University of Malta	289,923.95
Italia Malta Programme	Lithos	Heritage Malta	228,419.82
Italia Malta Programme	Gardmed	UoM (Argotti Botanical Gardens)	176,810.11
Italia Malta Programme	Gardmed	Floriana Local Council	106,762.45
Italia Malta Programme	Sibit	Malta Tourism Authority	78,004.50
Italia Malta Programme	Sibit	LCA	78,004.50
Italia Malta Programme	Obimed	Gharb Local Council	124,865.00
Italia Malta Programme	Obimed	Maltese Italian Chamber of Commerce	134,300.00
Italia Malta Programme	Obimed	Malta Tourism Society	28,900.00
Italia Malta Programme	Archaeotur	Mosta Local Council	351,475.00
Italia Malta Programme	Archaeotur	Heritage Malta	134,045.00
Italia Malta Programme	Archaeotur	Malta Tourism Authority	80,325.00
Italia Malta Programme	Archaeotur	Rabat Local Council	69,615.00
Italia Malta Programme	Moriso	Malta Resources Authority	130,572.75
Italia Malta Programme	Moriso	Water Services Corporation	118,702.50
Italia Malta Programme	Remasi	Heritage Malta	98,260.00
Italia Malta Programme	Panacea	St Lawrence Local Council	159,846.72
Italia Malta Programme	Panacea	University of Malta	204,735.86
Italia Malta Programme	Simbiotic	Ministry for Gozo	137,146.82
Italia Malta Programme	Simbiotic	University of Malta	351,573.60
Italia Malta Programme	Resi	MRA	107,103.74
Italia Malta Programme	Resi	University of Malta	107,692.96
Italia Malta Programme	Calypso	University of Malta	508,530.35
Italia Malta Programme	Calypso	Transport Malta	121,313.70
Italia Malta Programme	Calypso	Civil Protection Dept	23,158.25
Italia Malta Programme	Calypso	Armed Forces of Malta	25,844.25
Italia Malta Programme	Vamos Seguro	University of Malta	94,714.65
Italia Malta Programme	Respira	Ministry for Health, Elderly and Community Care	293,882.40
Italia Malta Programme	Waterfront	University of Malta	73,177.10
Italia Malta Programme	PORTPVEV	Transport Malta	701,250.00
Italia Malta Programme	PORTPVEV	Ministry for Resources and Rural Affairs	637,500.00
Italia Malta Programme	Biodivalue	University of Malta	185,985.61
Italia Malta Programme	Biodivalue	GAL Xlokk	185,985.61
Italia Malta Programme	Streets	University of Malta	212,107.00
Italia Malta Programme	Streets	Transport Malta	424,214.00
Italia Malta Programme	Vienergy	University of Malta	177,664.12
Italia Malta Programme	Vienergy	Ministry for Resources and Rural Affairs	387,630.80
Italia Malta Programme	Crim Safri	MCAST	219,164.70
Italia Malta Programme	Crim Safri	MIEMA	219,164.70
Italia Malta Programme	IMAGENX	Ministry of Health	617,086.82
Italia Malta Programme	IMAGENX	University of Malta	386,206.00
Italia Malta Programme	IMAGENX	MCST	204,948.60

Italia Malta Programme	Simit	University of Malta	298,094.29
Italia Malta Programme	Simit	Civil Protection Dept	362,547.12
Italia Malta Programme	PIM Energethica	Mellieha Local Council	271,796.00
Italia Malta Programme	PIM Energethica	LCA	194,140.00
Italia Malta Programme	PIM Energethica	WasteServ Malta Ltd	582,420.00

A6. FP7 Beneficiaries

Proposal Call	Project Acronym	Project Title	Project Start Date	Project End Date	Project Funding Scheme	Project EC Financial Contribution	Number of Partners in the Project	Participant Legal Name	Participant Role	Participant Activity Type
FP7-2012-NMP-ENV-ENERGY-ICT-EeB	EE-WISE	Energy Efficiency Knowledge Transfer Framework for Building Retrofitting in the Mediterranean Area	01/10/2012	30/09/2014	CSA-SA	1199984	13	PROJECTS IN MOTION LIMITED	Participant	PRC
FP7-2012-NMP-ENV-ENERGY-ICT-EeB	NEWBEE	Novel Business model generator for Energy Efficiency in construction and retrofitting	01/10/2012	30/09/2015	CP-TP	3350000	17	Acrosslimits Limited	Participant	PRC
FP7-AAT-2007-RTD-1	HIRF SE	HIRF Synthetic Environment	01/12/2008	31/05/2013	CP-IP	17799956	44	UNIVERSITA TA MALTA	Participant	HES
FP7-AAT-2008-RTD-1	ALICIA	All Condition Operations and Innovative Cockpit Infrastructure	01/09/2009	31/08/2013	CP-IP	27813675	42	UNIVERSITA TA MALTA	Participant	HES
FP7-AAT-2008-RTD-1	ODICIS	ODICIS - One Display for a Cockpit Interactive Solution	01/05/2009	30/04/2012	CP-FP	3595087	9	UNIVERSITA TA MALTA	Participant	HES
FP7-AAT-2008-RTD-1	FUSETRA	Future Seaplane Traffic - Transport Technologies for the Future	01/12/2009	31/08/2011	CSA-SA	397772	6	Harbour Air (Malta) Limited	Participant	PRC
FP7-AAT-2012-RTD-1	ACROSS	Advanced Cockpit for Reduction Of Stresses and workload	01/01/2013	30/06/2016	CP-IP	19482059	35	UNIVERSITA TA MALTA	Participant	HES
FP7-Adhoc-2007-13	FP7 SMES EA SCHEME	Development of the implementation modalities for the establishment of a new externalised Exploratory Awards scheme for SMEs	01/12/2007	30/06/2008	CSA-SA	499198	26	MALTA ENTERPRISE	Participant	PUB
FP7-Adhoc-2007-13	TRANSCOSME	Transnational Cooperation of the European Network of NCP SME	01/02/2008	31/12/2012	CSA-SA	2367397	41	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-COH-2007-2.2-OMC-NET	ERA-PRISM	Policies for Research and Innovation in Small Member States to advance the European Research Area	01/06/2009	30/09/2011	CSA-CA	1008328.53	11	OFFICE OF THE PRIME MINISTER	Coordinator	PUB
FP7-COH-2007-2.2-OMC-NET	CIA4OPM	Optimising the policy mix by the development of a common methodology for the assessment of (socio-) economic impacts of RTDI public funding	27/03/2009	26/03/2011	CSA-CA	990458	15	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-ENERGY-2008-1	C-ENERGY	Connecting Energy NCPs A Pro-Active Network of National	01/05/2009	30/04/2010	CSA-CA	299856.01	27	OFFICE OF THE PRIME MINISTER	Participant	PUB

		Contact Points in the Seventh Framework Programme under the Energy Theme								
FP7-ENERGY-2009-1	DIGESPO	Distributed CHP generation from Small Size Concentrated Solar Power	01/01/2010	31/10/2013	CP	3278174	7	PROJECTS IN MOTION LIMITED	Participant	PRC
FP7-ENERGY-2009-3	C-ENERGY +	Connecting Energy NCPs Plus A Pro-Active Network of National Contact Points in the Seventh Framework Programme under the Energy Theme	01/05/2010	30/04/2013	CSA-CA	999996	21	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-ENV-2007-1	CLIMATEWATER	Bridging the gap between adaptation strategies of climate change impacts and European water policies	01/11/2008	31/10/2011	CSA-SA	956932.03	11	MALTA RESOURCES AUTHORITY	Participant	PUB
FP7-ENV-2007-1	ENV-NCP-TOGETHER	Environment NCPs cooperating to improve their effectiveness	01/01/2009	31/12/2013	CSA-CA	2799365.84	29	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-ENV-2008-1	MESMA	Monitoring and Evaluation of Spatially Managed Areas (MESMA)	01/11/2009	31/10/2013	CP-IP	6568842	21	MINISTRY FOR RESOURCES AND RURAL AFFAIRS	Participant	PUB
FP7-ENV-2010	VISION RD4SD	Producing a shared vision on how to harness Research & Development for Sustainable Development	01/12/2010	30/11/2013	CSA-CA	984188.86	25	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-ERANET-2007-RTD	NET - HERITAGE	European network on Research Programme applied to the Protection of Tangible Cultural Heritage	01/10/2008	30/09/2011	CSA-CA	1989993.85	16	HERITAGE MALTA	Participant	PUB
FP7-ERANET-2008-RTD	ICT-AGRI	Coordination of European Research on ICT and Robotics in Agriculture and Related Environmental Issues	01/05/2009	31/03/2014	CSA-CA	2237008.26	19	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-ERANET-2009-RTD	SEAS ERA	Towards integrated European marine research strategy and programmes	01/05/2010	30/04/2014	CSA-CA	1999927.61	21	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-HEALTH-2007-A	HEALTH-NCP-NET	Coordination Action for Reinforcing the Health National Contact Points Network	01/05/2008	30/04/2013	CSA-CA	1999973	20	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-HEALTH-2007-B	OTC SOCIOMED	Assessing the over-the-counter medications in primary care and translating the theory of planned behaviour into interventions	01/12/2009	31/05/2012	CP-FP	967185	12	Mediterranean Institute of Primary Care	Participant	REC

FP7-HEALTH-2012-INNOVATION-1	RD-CONNECT	RD-CONNECT: An integrated platform connecting registries, biobanks and clinical bioinformatics for rare disease research	01/11/2012	31/10/2018	CP-IP	11997111	27	UNIVERSITA TA MALTA	Participant	HES
FP7-ICT-2007-1	METABO	Controlling Chronic Diseases related to Metabolic Disorders	01/01/2008	31/08/2012	CP-IP	7544798	25	WORLD MATCH LIMITED	Participant	PRC
FP7-ICT-2007-1	IST-AFRICA 2008	IST-Africa 2008 - 2009, Regional Impact of Information Society Technologies in Africa	01/09/2007	31/10/2009	CSA-SA	868456	9	THE COMMONWEALTH NETWORK OF INFORMATION TECHNOLOGY FOR DEVELOPMENT	Participant	REC
FP7-ICT-2007-1	SMARTMUSEUM	Cultural Heritage Knowledge Exchange Platform	01/01/2008	28/02/2010	CP-FP-INFISO	1485000	9	HERITAGE MALTA	Participant	PUB
FP7-ICT-2007-2	ARTREAT	Multi-level patient-specific artery and atherogenesis model for outcome prediction, decision support treatment, and virtual hand-on training	01/09/2008	31/01/2013	CP-IP	7108834	23	WORLD MATCH LIMITED	Participant	PRC
FP7-ICT-2007-3	SOCIONICAL	Complex Socio-Technical System in Ambient Intelligence	01/02/2009	31/01/2013	CP-IP	5299998	17	Civil Protection Department - Ministry of Home Affairs	Participant	PUB
FP7-ICT-2007-3	IDEALIST2011	Trans-national cooperation among ICT National Contact Points	01/10/2008	30/09/2011	CSA-CA	2995160	40	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-ICT-2009-4	TRANSFORM	Translational research and patient safety in europe	01/03/2010	28/05/2015	CP-IP	7540000	22	Mediterranean Institute of Primary Care	Participant	REC
FP7-ICT-2009-4	ICT VENTUREGATE	Innovative solutions for enabling efficient interactions between SMEs in ICT projects and innovation investors	01/02/2010	31/01/2012	CSA-SA	396680	7	PARAGON LIMITED	Coordinator	PRC
FP7-ICT-2011-7	OPENIOT	Open Source blueprint for large scale self-organizing cloud environments for IoT applications	01/12/2011	30/11/2014	CP-FP-INFISO	2455000	8	Acrosslimits Limited	Participant	PRC
FP7-ICT-2011-7	MICHELANGELO	Patient-centric model for remote management, treatment and rehabilitation of autistic children	01/10/2011	30/09/2014	CP-FP-INFISO	2871997	8	Acrosslimits Limited	Participant	PRC
FP7-ICT-2011-7	IDEALIST2014	Trans-national cooperation among ICT NCPs	01/10/2011	30/09/2014	CSA-CA	3999000	25	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-ICT-2011-8	C2LEARN	Creative Emotional Reasoning Computational Tools Fostering Co-Creativity in Learning Processes	01/11/2012	31/10/2015	CP-FP-INFISO	2400000	7	UNIVERSITA TA MALTA	Participant	HES

FP7-ICT-2011-8	ILEARNRW	Integrated Intelligent Learning Environment for Reading and Writing	01/10/2012	30/09/2015	CP-FP-INFISO	1800000	7	UNIVERSITA TA MALTA	Participant	HES
FP7-INCO-2007-1	MIRA	Mediterranean Innovation and Research Coordination Action	01/01/2008	31/01/2013	CSA-CA	3991044.14	32	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-INCO-2007-3	BS-ERA.NET	NETWORKING ON SCIENCE AND TECHNOLOGY IN THE BLACK SEA REGION	01/01/2009	31/12/2012	CSA-CA	2191788	18	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-INCO-2009-1	PACE-NET	Pacific - EU Network for science and Technology	01/05/2010	30/04/2013	CSA-CA	1399476	11	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-INCO-2012-1	MED-SPRING	Mediterranean Science, Policy, Research & Innovation Gateway	01/02/2013	31/01/2017	CSA-CA	3999944.85	28	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-INFRASTRUCTURE RES-2007-1	BBMRI	Biobanking and Biomolecular Resources Research Infrastructure	01/02/2008	31/01/2011	CP-CSA-INFRA	4999305	55	UNIVERSITA TA MALTA	Participant	HES
FP7-INFRASTRUCTURE RES-2007-1	CLARIN	Common Language Resources and Technology Infrastructure	01/01/2008	30/06/2011	CP-CSA-INFRA	4100000	36	UNIVERSITA TA MALTA	Participant	HES
FP7-INFRASTRUCTURE RES-2007-1	EURORIS-NET	European Research Infrastructures Network of National Contact Points	01/11/2007	31/10/2011	CSA-CA	1799971.74	37	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-INFRASTRUCTURE RES-2008-1	EUCARD	European Coordination for Accelerator Research and Development	01/04/2009	31/03/2013	CP-CSA-INFRA	10000000	39	UNIVERSITA TA MALTA	Participant	HES
FP7-INFRASTRUCTURE RES-2008-2	GN3	Multi-Gigabit European Research and Education Network and Associated Services (GN3)	01/04/2009	31/03/2013	CP-CSA-INFRA-PP	93000000	34	UNIVERSITA TA MALTA	Participant	HES
FP7-INFRASTRUCTURE RES-2009-1	EUMEDGRID-SUPPORT	Sustainability of einfrastructures across the Mediterranean	01/01/2010	31/12/2011	CSA-SA	740000	14	UNIVERSITA TA MALTA	Participant	HES
FP7-INFRASTRUCTURE RES-2009-1	OPENAIRE	Open Access Infrastructure for Research in Europe	01/12/2009	30/11/2012	CP-CSA-INFRA-PP	4169927	39	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-INFRASTRUCTURE RES-2009-1	OPENAIRE	Open Access Infrastructure for Research in Europe	01/12/2009	30/11/2012	CP-CSA-INFRA-PP	4169927	39	MINISTRY FOR RESOURCES AND RURAL AFFAIRS	Participant	PUB
FP7-INFRASTRUCTURE RES-2010-1	JERICO	Towards a joint european research infrastructure network for coastal observatories	01/05/2011	30/04/2015	CP-CSA-INFRA	6500000	27	UNIVERSITA TA MALTA	Participant	HES
FP7-INFRASTRUCTURE RES-2011-1	SEADATANE T II	SeaDataNet II: Pan-European infrastructure for ocean and marine data management	01/10/2011	30/09/2015	CP-CSA-INFRA	6000000	44	UNIVERSITA TA MALTA	Participant	HES

FP7-INFRASTRUCTURE-2011-2	EURORIS-NET+	European Network of National Contact Points for Research Infrastructures moving forward	01/10/2011	30/09/2013	CSA-CA	949984	17	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-INFRASTRUCTURE-2011-2	EURORIS-NET+	European Network of National Contact Points for Research Infrastructures moving forward	01/10/2011	30/09/2013	CSA-CA	949984	17	MINISTRY FOR RESOURCES AND RURAL AFFAIRS	Participant	PUB
FP7-INFRASTRUCTURE-2011-2	OPENAIREPLUS	2nd-Generation Open Access Infrastructure for Research in Europe	01/12/2011	30/05/2014	CP-CSA-INFRA-PP	4200000	41	UNIVERSITA TA MALTA	Participant	HES
FP7-KBBE-2007-1	BIO-NET	A Network of National Contact Points providing cutting-edge NCP services to the Knowledge Based Bio-Economy research community	01/09/2008	31/08/2012	CSA-SA	2193579	26	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-KBBE-2007-1	SELFDOTT	From capture based to SELF-sustained aquaculture and Domestication Of bluefin tuna, Thunnus thynnus	01/01/2008	30/11/2011	CP-FP	2979966	14	MINISTRY FOR RESOURCES AND RURAL AFFAIRS	Participant	PUB
FP7-KBBE-2007-1	SELFDOTT	From capture based to SELF-sustained aquaculture and Domestication Of bluefin tuna, Thunnus thynnus	01/01/2008	30/11/2011	CP-FP	2979966	14	MFF LTD	Participant	PRC
FP7-KBBE-2008-2B	PREVENT ESCAPE	Assessing the causes and developing measures to prevent the escape of fish from sea-cage aquaculture	01/04/2009	31/03/2012	CP-FP	2970646	11	UNIVERSITA TA MALTA	Participant	HES
FP7-KBBE-2010-4	CREAM	Coordinating research in support to application of EAF (Ecosystem Approach to Fisheries) and management advice in the Mediterranean and Black Seas	01/05/2011	30/04/2014	CSA-CA	999137	22	MINISTRY FOR RESOURCES AND RURAL AFFAIRS	Participant	PUB
FP7-KBBE-2012-6-singlestage	TRANSDOTT	Translation of domestication of thunnus thynnus into an innovative commercial application	01/04/2012	31/03/2014	CP-TP	892196	8	MINISTRY FOR RESOURCES AND RURAL AFFAIRS	Participant	PUB
FP7-KBBE-2012-6-singlestage	TRANSDOTT	Translation of domestication of thunnus thynnus into an innovative commercial application	01/04/2012	31/03/2014	CP-TP	892196	8	MFF LTD	Participant	PRC
FP7-NMP-2008-CSA-2	NMP TEAM	Improving the services of the NMP NCP Network through Trans-national Activities	01/04/2009	30/09/2011	CSA-CA	998100	15	OFFICE OF THE PRIME MINISTER	Participant	PUB

FP7-NMP-2008-LARGE-2	PROMINE	Nano-particle products from new mineral resources in Europe	01/05/2009	30/04/2013	CP-IP	10999664	33	INTEGRATED RESOURCES MANAGEMENT (IRM) COMPANY LIMITED	Participant	PRC
FP7-NMP-2011-CSA-5	NMPTEAM2	Improving the services of the NMP NCP Network through Trans-national Activities 2	01/02/2012	31/01/2014	CSA-CA	805500	16	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-OCEAN-2011	PERSEUS	Policy-oriented marine Environmental Research in the Southern EUropean Seas	01/01/2012	31/12/2015	CP-IP-SICA	12973123.4	53	UNIVERSITA TA MALTA	Participant	HES
FP7-OCEAN-2011	COCONET	Towards COast to COast NETWORKS of marine protected areas (from the shore to the high and deep sea), coupled with sea-based wind energy potential.	01/02/2012	31/01/2016	CP-IP-SICA	9000000	39	UNIVERSITA TA MALTA	Participant	HES
FP7-PEOPLE-2007-5-1-1-NIGHT	R4A	Art Thou Researching?	01/06/2007	31/10/2007	CSA-SA	68377	1	FONDAZZJONI TEMI ZAMMIT	Coordinator	OTH
FP7-PEOPLE-2007-5-4-NCP	PEOPLENET WORK	Trans-national co-operation among National Contact Points for Marie Curie Actions (People NCP's)	01/08/2008	31/12/2011	CSA-CA	1980877.09	20	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-PEOPLE-2009-IRSES	PMHS	Promoting mental health in schools: building a multi-level, cross national framework	01/01/2011	31/12/2013	MC-IRSES	28800	3	UNIVERSITA TA MALTA	Coordinator	HES
FP7-PEOPLE-2009-NIGHT	R-CITY	Researchers in the City	01/06/2009	30/11/2009	CSA-SA	42000	3	OFFICE OF THE PRIME MINISTER	Coordinator	PUB
FP7-PEOPLE-2009-NIGHT	R-CITY	Researchers in the City	01/06/2009	30/11/2009	CSA-SA	42000	3	WHERE'S EVERYBODY LTD	Participant	PRC
FP7-PEOPLE-2009-NIGHT	R-CITY	Researchers in the City	01/06/2009	30/11/2009	CSA-SA	42000	3	VALLETTA KUNSILLI LOKALI	Participant	PUB
FP7-PEOPLE-2010-ITN	PHYPODE	Physiopathology of decompression : risk factors for the formation of intravascular bubbles during decompression	01/01/2011	31/12/2014	MC-ITN	3397807.22	9	Divers Alert Network Europe Foundation	Participant	REC
FP7-PEOPLE-2010-NIGHT	I3	Imagine, Invent, Influence	01/05/2010	30/11/2010	CSA-SA	60000	3	OFFICE OF THE PRIME MINISTER	Coordinator	PUB
FP7-PEOPLE-2010-NIGHT	I3	Imagine, Invent, Influence	01/05/2010	30/11/2010	CSA-SA	60000	3	WHERE'S EVERYBODY LTD	Participant	PRC
FP7-PEOPLE-2010-NIGHT	I3	Imagine, Invent, Influence	01/05/2010	30/11/2010	CSA-SA	60000	3	FONDAZZJONI TEMI ZAMMIT	Participant	OTH
FP7-PEOPLE-2011-CIG	DITEC	Development of novel Disinfection Technologies for Fresh Produce	15/09/2012	14/09/2016	MC-CIG	100000	1	UNIVERSITA TA MALTA	Coordinator	HES

FP7-PEOPLE-2011-NCP	PEOPLENET WORK+	Trans-national Cooperation among NCPs (NCP)	01/01/2012	31/12/2013	CSA-CA	995864	16	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-PEOPLE-2012-NIGHT	MARES	Mad About Reesarch	01/05/2012	30/11/2012	CSA-SA	55000	1	WHERE'S EVERYBODY LTD	Coordinator	PRC
FP7-PEOPLE-2012-NIGHT	SCIENCE IN THE CITY	Researchers' Night, Malta 2012	01/05/2012	30/11/2012	CSA-SA	70000	5	UNIVERSITA TA MALTA	Coordinator	HES
FP7-PEOPLE-2012-NIGHT	SCIENCE IN THE CITY	Researchers' Night, Malta 2012	01/05/2012	30/11/2012	CSA-SA	70000	5	VALLETTA KUNSILLI LOKALI	Participant	PUB
FP7-PEOPLE-2012-NIGHT	SCIENCE IN THE CITY	Researchers' Night, Malta 2012	01/05/2012	30/11/2012	CSA-SA	70000	5	FONDAZZJONI CENTRU GHALL-KREATIVITA	Participant	OTH
FP7-PEOPLE-2012-NIGHT	SCIENCE IN THE CITY	Researchers' Night, Malta 2012	01/05/2012	30/11/2012	CSA-SA	70000	5	PUBLIC BROADCASTING SERVICES LTD	Participant	PRC
FP7-PEOPLE-2012-NIGHT	SCIENCE IN THE CITY	Researchers' Night, Malta 2012	01/05/2012	30/11/2012	CSA-SA	70000	5	MINISTERU TAL-GUSTIZZJA KONSULTAZZJONI PUBBLIKA U L-FAMILJA	Participant	PUB
FP7-REGPOT-2007-4	RESPOTNET	Trans-national cooperation among Research Potential NCPs	01/01/2008	31/12/2011	CSA-CA	492553.1	16	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-SCIENCE-IN-SOCIETY-2007-1	STEPS	STrengthening Engagement in Public health research	01/01/2009	30/06/2011	CSA-SA	661000	15	SOLIDARITY AND OVERSEAS SERVICE MALTA	Participant	PRC
FP7-SCIENCE-IN-SOCIETY-2007-1	GAP1	Bridging the gap between science and stakeholders: Phase I – Common Ground	01/04/2008	30/09/2009	CSA-SA	648390.04	30	MINISTRY FOR RESOURCES AND RURAL AFFAIRS	Participant	PUB
FP7-SCIENCE-IN-SOCIETY-2007-1	GAP1	Bridging the gap between science and stakeholders: Phase I – Common Ground	01/04/2008	30/09/2009	CSA-SA	648390.04	30	Koperattiva Nazzjonali tas-Sajd	Participant	PRC
FP7-SCIENCE-IN-SOCIETY-2007-1	GAP1	Bridging the gap between science and stakeholders: Phase I – Common Ground	01/04/2008	30/09/2009	CSA-SA	648390.04	30	GHAQDA KOOPERATTIVA TAS-SAJD LTD	Participant	PRC
FP7-SCIENCE-IN-SOCIETY-2007-1	HULDA	Hulda, the European Arts and Sciences Sailing Festival	01/05/2008	31/12/2010	CSA-CA	800000	14	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-SCIENCE-IN-SOCIETY-2007-1	EUROSIS	EUROSIS	01/02/2008	30/06/2010	CSA-CA	1201889.74	35	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-SCIENCE-IN-SOCIETY-2009-1	PRIMAS	Promoting inquiry in mathematics and science education across Europe	01/01/2010	31/12/2013	CSA-SA	2996236	14	UNIVERSITA TA MALTA	Participant	HES
FP7-SCIENCE-IN-SOCIETY-2009-1	ESTABLISH	European Science and Technology in Action Building Links with Industry, Schools and Home	01/01/2010	31/12/2013	CSA-SA	3389648	16	Acrosslimits Limited	Participant	PRC

FP7-SCIENCE-IN-SOCIETY-2010-1	GAP2	Bridging the gap between science, stakeholders and policy makers Phase 2: Integration of evidence-based knowledge and its application to science and management of fisheries and the marine environment	01/04/2011	31/03/2015	CSA-SA	5913773	38	MINISTRY FOR RESOURCES AND RURAL AFFAIRS	Participant	PUB
FP7-SCIENCE-IN-SOCIETY-2010-1	GAP2	Bridging the gap between science, stakeholders and policy makers Phase 2: Integration of evidence-based knowledge and its application to science and management of fisheries and the marine environment	01/04/2011	31/03/2015	CSA-SA	5913773	38	GHAQDA KOOPERATTIVA TASSAJD LTD	Participant	PRC
FP7-SCIENCE-IN-SOCIETY-2010-1	PRI-SCI-NET	Networking Primary Science Educators as a means to provide training and professional development in Inquiry Based Teaching	01/09/2011	31/08/2014	CSA-SA	2836624	17	OFFICE OF THE PRIME MINISTER	Coordinator	PUB
FP7-SCIENCE-IN-SOCIETY-2010-1	PRI-SCI-NET	Networking Primary Science Educators as a means to provide training and professional development in Inquiry Based Teaching	01/09/2011	31/08/2014	CSA-SA	2836624	17	EXOR Group Ltd	Participant	PRC
FP7-SCIENCE-IN-SOCIETY-2011-1	CREATIVELITTLESCIENT	Creative Little Scientists: Enabling Creativity through Science and Mathematics in Preschool and First Years of Primary Education	01/10/2011	31/03/2014	CP-FP	1491900	11	UNIVERSITA TA MALTA	Participant	HES
FP7-SEC-2007-1	WIMAAS	WIDE MARITIME AREA AIRBORNE SURVEILLANCE	01/12/2008	30/11/2011	CP	2737169	14	UNIVERSITA TA MALTA	Participant	HES
FP7-SEC-2007-1	SEREN	SEcurity REsearch Ncp network - phase 1	01/02/2008	31/07/2009	CSA-CA	557692.04	28	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-SEC-2007-1	EU-SEC II	Coordinating National Research Programmes and Policies on Security at Major Events in Europe	01/07/2008	31/10/2011	CSA-CA	2527000	25	Malta Police Force	Participant	PUB
FP7-SEC-2007-1	AMASS	Autonomous maritime surveillance system	01/03/2008	31/08/2011	CP	3450460.2	10	Armed Forces Malta	Participant	PUB
FP7-SEC-2010-1	SMART	Scalable Measures for Automated Recognition Technologies	01/06/2011	31/05/2014	CP	3456017.35	20	UNIVERSITA TA MALTA	Coordinator	HES

FP7-SEC-2010-1	SEREN 2	SEcurity REsearch Ncp network – phase 2	01/04/2011	31/03/2013	CSA-CA	1499546.2 1	26	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-SEC-2011-1	THE HOUSE	Enhancing European Coordination for National Research Programmes in the Area of Security at Major Events	01/03/2012	28/02/2014	CSA-CA	2774300	25	Malta Police Force	Participant	PUB
FP7-SEC-2011-1	RESPECT	RESPECT – Rules, Expectations & Security through Privacy-Enhanced Convenient Technologies	01/02/2012	31/01/2015	CP-FP	3492690.4 5	19	UNIVERSITA TA MALTA	Participant	HES
FP7-SME-2007-1	CLEANFRUIT	High-reliability, non-chemical disinfection system of fruits and vegetables	01/10/2008	31/01/2011	BSG-SME	1000296	10	CHADWICK MUSHROOM FARM LTD	Participant	PRC
FP7-SME-2007-1	SYNCSEN	ULTRA-LOW POWER WIRELESS SENSOR NETWORK FOR METERING APPLICATIONS	01/12/2008	31/01/2011	BSG-SME	1051895.7 5	11	WATER SERVICES CORPORATION - WSC	Participant	REC
FP7-SME-2007-1	SYNCSEN	ULTRA-LOW POWER WIRELESS SENSOR NETWORK FOR METERING APPLICATIONS	01/12/2008	31/01/2011	BSG-SME	1051895.7 5	11	MALTA INDUSTRIAL INNOVATION FOR SMES LIMITED	Participant	PRC
FP7-SME-2007-1	METELCAD	Development of a Cost Effective, Low-Maintenance, On-Line Instrument to Detect Heavy Metal Concentrations in Wastewaters	01/11/2008	31/01/2011	BSG-SME	1015081	9	WATER SERVICES CORPORATION - WSC	Participant	REC
FP7-SME-2007-1	WATER-BEE	Low cost, easy to use Intelligent Irrigation Scheduling System	01/10/2008	30/09/2010	BSG-SME	1107614.2	10	CHADWICK MUSHROOM FARM LTD	Participant	PRC
FP7-SME-2007-1	OLICEMATIC	DEVELOPMENT OF A NOVEL, COST EFFECTIVE TECHNIQUE TO OPTIMISE OLIVE OIL PRODUCTION	01/09/2008	28/02/2011	BSG-SME	853958	10	ELECTRONIC SYSTEMS DESIGN LTD	Participant	PRC
FP7-SME-2007-1	OLICEMATIC	DEVELOPMENT OF A NOVEL, COST EFFECTIVE TECHNIQUE TO OPTIMISE OLIVE OIL PRODUCTION	01/09/2008	28/02/2011	BSG-SME	853958	10	MALTA INDUSTRIAL INNOVATION FOR SMES LIMITED	Participant	PRC
FP7-SME-2007-2	TACMON	DEVELOPMENT OF A LOW-COST INTERACTIVE GRAPHICAL TACTILE DISPLAY CAPABLE OF DISPLAYING TEXTUAL AND GRAPHICAL INFORMATION AS ADVANCED USER INTERFACE FOR THE VISUALLY IMPAIRED	01/11/2008	31/10/2011	BSG-SME-AG	2926833	20	MITTS FOUNDATION FOR INFORMATION TECHNOLOGY ACCESSIBILITY	Participant	OTH

FP7-SME-2007-2	TACMON	DEVELOPMENT OF A LOW-COST INTERACTIVE GRAPHICAL TACTILE DISPLAY CAPABLE OF DISPLAYING TEXTUAL AND GRAPHICAL INFORMATION AS ADVANCED USER INTERFACE FOR THE VISUALLY IMPAIRED	01/11/2008	31/10/2011	BSG-SME-AG	2926833	20	ELECTRONIC SYSTEMS DESIGN LTD	Participant	PRC
FP7-SME-2008-1	ONLY WATER	Autonomous and standardised container-based water treatment unit for production of potable water	16/06/2009	15/06/2011	BSG-SME	1230567	9	TUA ENGINEERING LTD	Participant	PRC
FP7-SME-2010-1	CHAMPI-ON	FULLY AUTOMATIC SYSTEM FOR PICKING AND HANDLING MUSHROOMS FOR THE FRESH MARKET: FROM THE GROWING BED TO THE COOLING STORAGE	01/02/2011	30/04/2013	BSG-SME	1094759.09	8	CHADWICK MUSHROOM FARM LTD	Participant	PRC
FP7-SME-2010-1	PR2.0	Integrated Reputation and Social Media Management Hub to Help Enterprises Manage Dispersed Online Public Information	01/12/2010	30/11/2012	BSG-SME	1050488.01	7	MALTA INDUSTRIAL INNOVATION FOR SMES LIMITED	Participant	PRC
FP7-SME-2010-1	ENVIRON-MENTOR	Facilitating Implementation of the IPPC Legislation through a Web-Based Environmental Consultancy Toolkit	01/11/2010	31/10/2012	BSG-SME	1220917.1	8	MALTA INDUSTRIAL INNOVATION FOR SMES LIMITED	Coordinator	PRC
FP7-SME-2010-1	LOLIGHT	DEVELOPMENT OF A LOW COST, NOVEL AND ACCURATE LIGHTNING MAPPING AND THUNDERSTORM (SUPERCCELL) TRACKING SYSTEM	01/01/2011	31/08/2013	BSG-SME	957601.94	9	VELLA GERA MARK	Participant	PRC
FP7-SME-2010-1	CLEANHATCH	Development and implementation of an innovative cleaning technology for marine and freshwater larval hatchery tanks in recirculating aquaculture systems	01/09/2010	31/12/2012	BSG-SME	791117.8	5	AQUABIOTECH LIMITED	Coordinator	PRC
FP7-SME-2010-1	FISHSCAN	Development of novel system for continuous remote monitoring of weight, growth, and size distribution of fish in aquaculture enclosures	01/06/2011	31/05/2013	BSG-SME	1000000	8	AQUABIOTECH LIMITED	Participant	PRC
FP7-SME-2011	WATERBEE DA	WaterBee Smart Irrigation Systems Demonstration Action	01/07/2011	30/06/2013	CP	1138000	10	CHADWICK MUSHROOM FARM LTD	Participant	PRC

FP7-SME-2011	CARBGROWTH	Maximisation of greenhouse horticulture production with low quality irrigation waters	01/12/2011	30/11/2014	BSG-SME-AG	1864819	11	ST ANDREWS FARM AND BUILDING COMPANY LIMITED LIABILITY	Participant	PRC
FP7-SME-2011	CARBGROWTH	Maximisation of greenhouse horticulture production with low quality irrigation waters	01/12/2011	30/11/2014	BSG-SME-AG	1864819	11	AQUABIOTECH LIMITED	Participant	PRC
FP7-SME-2011	NUTRI-STAT	Real-time, in-situ, N, P, K, pH and electrical conductivity soil-analysis system to facilitate accurate nutrient management	01/01/2012	31/12/2013	BSG-SME	992900	10	MALTA INDUSTRIAL INNOVATION FOR SMES LIMITED	Coordinator	PRC
FP7-SME-2011	CHAMELEON	To develop a cost-effective, fast-to-deploy, low-power and flexible video surveillance system that automatically combines images from multiple cameras to create a 180° panoramic view.	01/01/2012	31/12/2013	BSG-SME	785893	10	MALTA INDUSTRIAL INNOVATION FOR SMES LIMITED	Coordinator	PRC
FP7-SME-2011	COOLSUN	Development of a tri-generation solar heating and COOLing System including the Use of the heat extracted from the adsorption chiller re-cooling circuit	01/11/2011	31/10/2013	BSG-SME	1128787.47	11	DI NATURA LTD	Participant	PRC
FP7-SME-2012	NEXT1KOAT	Novel high performance, waterbased "high solids" and bio-based industrial wood coating	01/01/2013	31/12/2015	BSG-SME-AG	1861000	10	MALTA FURNITURE MANUFACTURERS ORGANISATION	Participant	PRC
FP7-SME-2012	WATERGOLF	Wireless distributed intelligent system for irrigation optimisation and early turf disease prevention and treatment on Golf Courses	01/01/2013	31/12/2014	BSG-SME	1138986	8	MALTA INDUSTRIAL INNOVATION FOR SMES LIMITED	Coordinator	PRC
FP7-SME-2012	FCHR	Fluid Foods Pasteurizer and Homogenizer based on Centrifugal Hydrocavitation Reactor	01/09/2012	31/08/2014	BSG-SME	895000	8	ELECTRICARS LTD	Participant	PRC
FP7-SME-2012	THRIVE-RITE	Natural Compounds to enhance Productivity, Quality and Health in Intensive Farming Systems.	01/08/2012	30/09/2014	BSG-SME	1295999.1	7	CLASADO INGREDIENTS LIMITED	Participant	PRC
FP7-SME-2012	TACMON2	Development of a very low-cost Interactive Graphical Tactile Display as advanced user interface for visually impaired	01/09/2012	28/02/2015	BSG-SME	1716000	14	MITTS FOUNDATION FOR INFORMATION TECHNOLOGY ACCESSIBILITY	Participant	OTH

FP7-SPACE-2007-1	COSMOS	Coordination of Space NCPs as a Means to Optimise Services	01/06/2008	31/03/2012	CSA-CA	1999996	35	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-SPACE-2007-1	MYOCEAN	Development and pre-operational validation of upgraded GMES Marine Core Services and capabilities	01/01/2009	31/03/2012	CP	33800000	60	UNIVERSITA TA MALTA	Participant	HES
FP7-SPACE-2010-1	PANGEO	Enabling access to geological information in support of GMES	01/02/2011	31/01/2014	CP	2404925.23	40	MALTA RESOURCES AUTHORITY	Participant	PUB
FP7-SPACE-2010-1	SIRIUS	Sustainable Irrigation water management and River-basin governance: Implementing User-driven Services	01/10/2010	30/09/2013	CP	2499997	18	INTEGRATED RESOURCES MANAGEMENT (IRM) COMPANY LIMITED	Participant	PRC
FP7-SPACE-2011-1	MYOCEAN2	Prototype Operational Continuity for the GMES Ocean Monitoring and Forecasting Service	01/04/2012	30/09/2014	CP-CSA	27999446.42	59	UNIVERSITA TA MALTA	Participant	HES
FP7-SSH-2007-1	REMC	Religious education in a multicultural society: School and home in comparative context	01/01/2008	31/12/2009	CP-FP	828842	7	UNIVERSITA TA MALTA	Participant	HES
FP7-SSH-2007-1	NET4SOCIETY	Trans-national co-operation among National Contact Points for Socio-economic sciences and the Humanities	01/02/2008	31/01/2011	CSA-CA	2595215	39	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-SSH-2007-1	POINT	Policy Influence of indicators	01/04/2008	30/06/2011	CP-FP	1456724	9	UNIVERSITA TA MALTA	Participant	HES
FP7-SSH-2007-1	CIVISTI	Citizen Visions on Science, Technology and Innovation	01/09/2008	28/02/2011	CP-FP	714292	7	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-SSH-2007-1	EUROBROADMAP	European Union & the world seen from abroad	01/01/2009	31/03/2012	CP-FP	1490076	13	INTEGRATED RESOURCES MANAGEMENT (IRM) COMPANY LIMITED	Participant	PRC
FP7-SSH-2007-1	SESTI	Scanning for Emerging Science and Technology Issues	01/10/2008	30/06/2011	CP-FP	628978	6	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-SSH-2007-1	FARHORIZON	Use of Foresight to Align Research with Longer Term Policy Needs in Europe	01/09/2008	28/02/2011	CP-FP	217874	4	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-SSH-2009-A	CONSENT	Consumer sentiment regarding privacy on user generated content services in the digital economy	01/05/2010	30/04/2013	CP-FP	2599570	19	UNIVERSITA TA MALTA	Participant	HES
FP7-SSH-2010-4	NET4SOCIETY2	Trans-national co-operation among National Contact Points for Socio-economic sciences and the Humanities (SSH NCPs)	01/02/2011	31/01/2013	CSA-SA	1799739	18	OFFICE OF THE PRIME MINISTER	Participant	PUB

FP7-SSH-2012-2	NET4SOCIETY3	Trans-national co-operation among National Contact Points for Socio-economic Sciences and the Humanities (SSH NCPs)	01/02/2013	30/11/2014	CSA-SA	999566	21	OFFICE OF THE PRIME MINISTER	Participant	PUB
FP7-SST-2007-RTD-1	TRANSBONUS	Transport EU-Western Balkan Network for Training, Support and Promotion of Cooperation in FP7 research activities	01/01/2009	31/12/2010	CSA-SA	482848	9	INTEGRATED RESOURCES MANAGEMENT (IRM) COMPANY LIMITED	Participant	PRC
FP7-SST-2012-RTD-1	HILDA	High Integrity Low Distortion Assembly	01/09/2012	31/08/2015	CP-FP	2097445	8	UNIVERSITA TA MALTA	Participant	HES

A7. Salient points of MCST RIS3 focus groups held between April and May 2013

Outcomes of Health Focus Group

Salient points:

1. There is a good level of collaboration between the health professions and other technical areas, which should be leveraged upon. There are several activities ongoing in the medical field at the University of Malta, however no particular health research niches were identified within which Malta can be said to be particularly strong. On the other hand, the interdisciplinarity of research activity centred around health is an identified strength which should be exploited further.
2. There is very little R&I within the health sector which can be targeted specifically at Malta or is uniquely Maltese, so we need to see how best to use available funds within our present set up.
3. The fact that the vast proportion of Malta's health system is state-based may make it more difficult to introduce innovation however if this obstacle is overcome, the potential benefits reaped would be very large.
4. An ageing population presents an opportunity for innovation in active ageing (bringing together various disciplines, from social sciences to engineering, ICT and medicine). Nursing homes can provide set-ups for piloting such innovations.
5. Malta's small size, flat regulatory framework and centralised healthcare system lends it to be marketed as a test bed for healthcare applications (perhaps related to ageing). Good English language skills and IT literate medical profession are assets in this regard.
6. Local SMEs working in the health sector prefer to team up with foreign companies to engage in R&D projects.
7. Innovation in business has to be based on investment in R&D in the tertiary sector (by creating a sustainable research ecology).
8. There are at present limited, if any, links between the pharmaceutical industry and the medical community because their aims are very different. Malta's pharmaceutical industry is composed of generics companies, whose research focus is on new versions of existing drugs, (rather than new drugs). The HR requirements in the pharmaceutical industry at present can be better met by the science faculty rather than the medical one, however skills shortages at doctoral level are still felt. There is also scope to extend the generic pharmaceutical sector in Malta to products like inhalers or patches.
9. Biotech companies can develop higher value added, new drugs (link with Life Sciences Park).
10. There is a need to focus on disease prevention (rather than cure), with a focus on healthy nutrition, possibly linked with wellness tourism. There is a need to gear up for the human resource requirements which will be demanded with the opening of the BioMalta Campus.
11. Malta's network of general practitioners could be a target for innovation in primary healthcare (family doctors as 'micro-enterprises').
12. Innovation in healthcare could be spurred through better use of the large number of existing data. Better data management is a resource for innovation.
13. It is important that priority niches identified receive the necessary political support and be driven in a top-down manner with an intensive, short timeframe for delivering outcomes.
14. The National R&I Programme is over-prescriptive in its requirements for industry-academia collaboration given the lack of synchronicity between the focus of academia and the focus of industry when it comes to health.
15. The importance of accreditation of research laboratories was referred to.

Possible niches:

16. Support to innovation at the intersection between ICT and ageing with possible applications in tourism.

Possible measures:

17. **Dissemination and commercialisation support:** Compared to other disciplines, Malta has good capacity in health research. However there is insufficient support to disseminate research results, manage IP (considered very important) and exploit research outcomes to provide innovative products and services. There is a lack of IP management expertise across the board.
18. **International cooperation:** Maltese researchers need higher exposure to opportunities to engage in international cooperation.
19. Investment in **post-doctoral schemes** – these are a must to complement investments in doctoral positions. Post-docs create the stop gap necessary until employment in industry comes in.
20. **Review of the national R&I programme** to make it more useful for both academia and industry in terms of IP protection and flexibility.

Outcomes of Tourism Focus Groups

Salient points:

1. Tourists are opting for shorter stays. However short-stay tourists (as well as EN students) are not Malta's best target as they have less money to spend. There seems to be little success in attracting these to return for a longer stay.
2. Malta's tourism sector is very much linked to accessibility – it is important to make it easier for tourists to come to Malta (including through easier long-haul connections) and to move around within Malta.
3. There should be more emphasis on the eco-Gozo concept and the link with cruise tourism, especially luxury cruise-liners and boutique cruise liners. A better understanding of cruise tourist preferences is needed.
4. Innovation in marketing is very important, and closely links with the creative industries and ICT. There needs to be a shift from marketing a product/service to marketing an experience.
5. Apart from improving what Malta has to offer via potential niches, there is a need to address the skills base and the level of service being offered. Tourism is a system. Students of all ages, even the youngest, need to be made aware of the economic importance of tourism so that the educational system trains them to be ambassadors for their countries.
6. Before committing to new niches, an impact assessment should be undertaken, not only to look at general economic, environmental and social impacts but also to analyse the impact on the different tourism niches themselves.
7. Too much of what happens is based on requests by lobbies and pressure groups, with the inherent danger of this resulting in a piecemeal approach which is unable to find an appropriate balance between the needs of different niches.
8. The importance of actively strengthening links between different products/services on offer was emphasised.
9. The investment in the BioMalta Campus should generate the skills that can give advantages to the eco-Gozo programme and traditional foods. Culinary standards need to be taken to the next level.
10. Accessing EU funds locally is very difficult due to the excessive bureaucracy, in particular for SMEs. There is a need for more outreach to SMEs to understand the funding available and make it available for the smallest companies which may not have the time/expertise to apply for funds.
11. Understanding the implications of climate change on tourism is very important. Implications such as changing weather patterns, sea level rise and responses such as reduction of a hotelier's carbon footprint are among the many implications which need to be better understood. There is a need for better understanding of climate change impacts on agriculture and oceans, and applying this knowledge to the tourism sector, especially in relation to eco-Gozo.
12. Most tourism activity takes place at SME level. So innovation in tourism requires supporting SMEs to be bold enough to embrace dynamism and innovation. Access to finance is very important to this end.
13. The need for legislative enablers was also mentioned.

Thematic:

14. Older tourists could be a niche market for Malta, given our climatic conditions. Such a niche would be closely tied to healthcare and active ageing. Older tourists are thought of as being more affluent. The impacts of this approach on the provision of healthcare services however need to be carefully considered. There is an opportunity for Malta to position itself as a destination for wellness tourism with a focus on health and lifestyle changes. This concept could be extended to address the increased medical costs of Malta's healthcare system.
15. Reference was made to the importance of tapping into new markets such as China or Muslim tourism. This is naturally linked to facilitation of visa procedures and increased accessibility.
16. In spite of its importance, cultural tourism in Malta is still very much in need of further development. Culture should not be thought of as equivalent to heritage. It also includes contemporary art, for example. Coordination between stakeholders is also important, and unfortunately lacking. Cookery holidays (links with Mediterranean culture) as part of cultural tourism were also mentioned.
17. Reference was made to coastal tourism, and the 2012 Commission communication on coastal development and sustainability.
18. The local community is an important stakeholder in the tourism sector. Some initiatives by local councils can become a tourist attraction. Local communities are the guardians of the stories and the history, and there is clear touristic value to be explored in this regard. However it is important that local communities should have ownership of these initiatives through a bottom-up approach.
19. There is a need to put more emphasis on dying trades.
20. Meetings and conferences travel is an important niche for Malta which could be further enhanced through better marketing. The government sector has an important role to play in this regard. Malta's Presidency in 2017 is an important opportunity to develop this sector further.
21. Artistic tourism was referred to in terms of Malta's potential to host field trips organised by art schools abroad (leveraging on our Mediterranean landscape, safe environment and short travelling distances).
22. Education tourism was referred to, including English language courses for professionals (architects, engineers, etc), and other short courses linked to, for instance, architectural tourism. The University of Malta has started some courses in this regard and the private sector should be allowed to tap into it as well. Specialist ICT certification is now a mature market which is moving on-line so there is very limited scope to pursue it.
23. The benefits of linking cultural heritage, tourism and the creative industries using modern technology were mentioned. References were made to the use of augmented reality and trans-media tools.
24. Innovation in food services – large kitchens in upmarket hotels have the potential to be transformed into laboratories.
25. The importance of capitalising on the opportunity offered by V.18 was mentioned.

Possible niche:

26. Exploiting the related variety at the intersection between tourism, the creative industries and ICT.

Possible measures:

27. **Facilitating the interaction** between different industries towards the common goal of improving Malta's product and marketing thereof. Skills are available in the private sector but currently dispersed.
28. The setting up of **public-private partnerships** (including through EU funds) in support of the tourism sector should be explored.
29. Upgrading of **skills** in the tourism sector (professionalization).
30. **Access to finance** for SMEs wishing to innovate. Ease bureaucratic burden of accessing finance. Seed financing should however be tied to eventual sustainability of the project being funded.
31. The use of **competitions** for innovative ideas whose prize would be commercialisation support.

Outcomes of the Energy focus group meetings

Salient points:

General:

1. Malta can in principle be a showcase/test bed for renewable energy projects in the Mediterranean region. These can be projects developed abroad, which could then lead to companies clustering around them and taking the new technology further (more development than research based). The importance of international cooperation in this regard was mentioned.
2. Besides legal obligations and climate change concerns, there are also economic reasons relating to the country's competitiveness which should spur Malta to focus on energy issues. Dependence on one source of energy makes Malta highly vulnerable to shifts in the energy markets.
3. Investment in innovation in energy is often dependent on significant funding commitments, therefore access to finance is an important enabler in this regard. The concept of public-private partnerships in renewable energy development was proposed as an example of a self-sustaining set up which could be pursued.
4. Innovative solutions are needed when/where there are local dependencies. Solutions need to be tailored to Malta's size and geographical position. Most RES technologies are at present optimised for Northern regions and need 'adaptation' for Mediterranean conditions.
5. **The optimisation of existing technologies for local conditions** and the development of skills to provide ancillary services surrounding deployment of renewables (site assessment, design, etc.) were often mentioned. Linked to this point is the need to also take into consideration the social acceptance of solutions as well as acceptance from a development planning perspective and any environmental impacts.
6. Innovation efforts should focus on the biggest consumers.
7. The importance of public awareness-raising on energy conservation was also mentioned.
8. The potential land-use planning concerns and social acceptability of on-shore RES installations were identified as potential obstacles. Offshore technologies are therefore of particular relevance for Malta, coupled with solutions for accessing such offshore set-ups.
9. There are also legal aspects to innovation which Malta should consider, such as marine and maritime law in the connection of electricity grids and use of Malta's territorial waters.
10. The impacts of climate change on issues related to energy, such as energy generation efficiency, longer summer periods, change in demand patterns, availability of rainwater for aquifer recharge and use of seawater for cooling, require further research.
11. Schemes which support take-up of existing RES technologies may undermine the impact of investment in innovation in RES. Analysing the impact of schemes which have been already implemented are important.

Thematic:

12. **Solar energy is the obvious RES of choice for Malta to focus on**; it is seen as a 'natural fit'.
13. Solar RES solutions in relation to Malta's water shortage problems was also referred to in the context of combined reverse osmosis using solar energy and the use of RES for domestic level water polishing (the associated risks related to this latter potential opportunity were also highlighted). Some mentions of the development of solar powered boats were made. References were made to the EU Mediterranean Solar Plan and recommendations were made that Malta should seek to align its efforts to complement and build on developments in the EU and Mediterranean region and exploit its strategic position as a gateway between Europe and Africa.
14. Wind remains a difficult energy source for Malta to harness due to space limitations and environmental concerns among others.
15. **Systems management and integration (cutting costs, putting systems together in a way which optimises outputs) for innovation.**
16. **Energy efficiency in buildings (including, among others, retrofitting, aesthetic aspects, solar cooling) was a recurring theme in all groups.** The importance of identifying the best solutions for local buildings and weather conditions, support for skills development and pilot projects to evaluate proposed solutions and estimate cost savings were mentioned in this regard. The possibility of retrofitting should however not be used to exonerate new buildings from abiding by energy efficiency standards.

17. **Smart grids (at the interface between ICT and energy, and building on planned power generation developments, RES and automatic meter reading).**
18. Critical infrastructure (focussing on stability and security of a system which brings together a power station, renewable energy sources and Malta's interconnector)
19. Energy efficiency in transport was explored however it was deemed that Malta does not have any real strength or potential in this area.
20. The possibility of further exploiting the conversion of waste to energy was also referred to, however there are severe limitations posed by the small amount of homogenous waste available which would be needed for this purpose.
21. The possibility of wave energy for desalination, floating solar energy solutions, geothermal energy and concentrated solar power were also mentioned.
22. Energy storage, to complement smart grids, is an important technology to be looked into.
23. Alternatively, solutions for home automation to support self-consumption could be looked into (link with the need for ICT innovations).

Possible measures:

24. The available support measures are largely adequate in terms of addressing needs, however more funding – and more dedicated funding- is needed (i.e. we need more of what we already have and have it focussed on energy challenges).
25. The concept of industry-academia collaboration in this area was supported, and the need for facilitating such collaboration through a **platform set-up** was mentioned. However remarks were also made that the R&I Programme 'forces' academia and industry into an often- artificial collaboration which does not yield the intended results. Revisiting the R&I Programme rules in order to facilitate, rather than oblige, collaboration was recommended.
26. Patenting support is considered an important enabler of innovation in this sector.
27. Adopting the principle of 'deliver or lose funding' was suggested.
28. **Procurement for innovation in energy solutions was referred to on numerous occasions.**
29. Linking retail to innovation in funding of future PV Schemes.
30. **Streamlined, simplified procedures for accessing EU funds are needed. Industry should not have to wait indefinitely to receive payments.**
31. Support to infrastructural requirements at the University of Malta in the area of renewable energy and energy efficiency was recommended as a means for building capacity to solve local challenges.
32. **Investment in doctoral and post-doctoral support schemes in the area of renewable energy was recommended, especially in those knowledge gaps which Malta has.**
33. A long-term approach to researching solutions for mass transit in Malta should be adopted with appropriate research funding.
34. Design competitions whose prize would be commercialisation support.
35. Supporting access by the academic sector to EUREKA.
36. **Pilot projects for energy efficiency in buildings in order to identifying the best solutions for local buildings and weather conditions, support skills development and estimate cost savings.**
37. Awareness raising campaigns for the general public, to sensitise on the importance of certification of energy efficiency in buildings.

Outcomes of the High Value Added Manufacturing Focus Groups

Salient points:

General:

1. There is generally a high degree of fragmentation within the manufacturing sector. Companies work largely alone and only cooperate if this cannot be avoided.
2. Reference was made to the reduced competitiveness over time due to increasing costs and moving to biotech to counteract this shift was mentioned. However it was acknowledged that biotech is very capital intensive compared to the local industry presently in Malta. The skills required are also not available.
3. The present educational system provides a good basic platform but specialist needs are hard to come by. On the other hand, a counter-argument was made that Malta cannot afford to specialise too much or risk losing resilience. A lack of skills also at technical level was mentioned. A common concern is the lack of soft skills in young workers.
4. A number of FDI companies may find it very difficult to undertake innovation in the local firm because innovation would be 'dictated' by the mother company and the local firm can only implement it. This situation is particularly acute in the local pharmaceutical sector.
5. Other major stumbling blocks mentioned were IP protection and laboratory facilities.
6. The preferred approach seemed to centre on retaining the present manufacturing sector set up (characterised by many small indigenous SMEs and a few large FDIs) while taking steps to strengthen it and support the creation of new, more high-end start-ups.
7. The manufacturing sector needs to better tap into the international market, which at present, it is not doing effectively.
8. The existing cluster programme (managed by ME) did not work well because it sought to bring together companies working in

the same sector, which is likely to create sensitivities regarding sharing of information.

9. Because of the risks related to investing in innovation, banks are reluctant to provide credit.
10. While other avenues for funding are available, these are often very cumbersome to access and this tends to discourage take up. The long timeframes for receiving payments often mean that a company needs to ensure that it has enough funds not only for its co-funding share of the project but for the full amount.
11. While the JEREMIE scheme was successful, it will expire soon and there appear to be no visible substitutes to it for the present time.
12. Larger companies will not be eligible for aid if Malta loses its Objective 1 status. The implications of this development would need to be closely assessed.
13. Micro and small enterprises might benefit from receiving support for long-term planning of their business.
14. There is scope for collaboration between academia and industry through such measures as clustering, knowledge transfer partnerships, funding of a Chair, etc.

Thematic:

15. There is scope for collaboration in innovation among different firms on common issues of concern which are not directly related to any firm's area of activity, such as energy management and automation. This approach would focus on process innovation and would facilitate collaboration because it reduces the need to share sensitive commercial information and would enable creation of economies of scale around common issues.

Possible niche:

16. As explained above, rather than niches within any sub-sector of the manufacturing sector, there is greater consensus around pooling efforts and resources towards solving issues of concern which pervade the whole sector.

Possible measures:

17. Support for 'horizontal' clusters.
18. Knowledge-transfer partnerships.
19. Innovation vouchers to small companies.

Outcomes of Creative Industries Focus Groups

Salient points:

General

1. The need for a better understanding of the creative industries sector through increased data availability was referred to.
2. While acknowledging that different aspects of the creative economy have different needs, it was felt that at the present time there is not enough evidence to identify sub-sector for added focus. On the other hand, a horizontal approach which supports the sector in general received greater support.
3. There is a lack of standards across the whole sector (possibly linked to the size of the economy). This problem is especially acute in the crafts and food sectors (linked with tourism) as well as in the film/ television sector. However it is also important to ensure that standards set are not such as to stifle innovation.
4. Internationalisation is very importance since Malta's market is too small to allow for economies of scale. In addition, focussing on international market facilitates cooperation between local players who would otherwise be disinclined to cooperate if the focus was centred on the local market. Specific areas within this context included publishing and the music industry.
5. There was no clear agreement on the role played by intellectual property protection. While some perceived the lack of protection as a major problem, others deemed that IP protection actually stifles innovation when compared to open source set ups. It was also argued that with the exception of patents, costs are no always as prohibitive as one would tend to assume. The preferred approach seems to be focussed on sharing ideas within a framework (similar to the Creative Commons approach).
6. The importance of creating performing spaces was referred to.
7. The importance of education (at all levels but especially primary education) as an enabler of the creative economy was emphasised.
8. A strong point which emerged related to the importance of Government's role to lead by example in terms of its procurement and own branding. It is believed that Government's approach to the importance it gives to the creative industries sets the bar for the public's perception and attitude towards same.
9. The need for a dedicated space for different creative industries to come together and have a common reference point was emphasised.
10. There is a need for a good regulatory framework and correct timing of intervention by Government, who in turn depends on contacts with the private sector which should be better structured for effectiveness' and expediency's sake. This consultation framework should extend beyond establishing new initiatives into refining and improving on existing initiatives.

Thematic:

11. The audiovisual sector is going through major changes at present. The shift to digital film making could present an opportunity

for Malta to position itself in the post-production niche, subject to investment in the necessary infrastructure. Necessary expertise is considered to be largely available.

12. The creative industries have an important role to play in improving the brand that is Malta through, inter alia, more use of on-line media. There is therefore scope for improved linkages between tourism and the creative industries.
13. Reference was made to the food sector and its links to creativity, biotechnology and tourism.
14. Game development was identified as an area where important developments have taken place recently (strategy is in place, courses are available). However it was also remarked that this industry is already past its peak abroad.
15. There is scope for support to linking culture and cultural heritage with ICT through digitisation and improved on-line facilities.

Possible niches:

16. There emerged little focus on any particular sub-sector. There was however a large degree of consensus on the importance of putting in place measures which support the creative industries as a whole, as detailed below.

Possible measures:

17. Public procurement practices which support innovation and quality in the creative industries.
18. Build on Malta's strength in conference hosting in the tourism sector and extend it to include showcasing of creative industries (ex. Design Fairs). Government could provide financial support for such events.
19. Investment in education, to professionalise the sector further, including though addressing management skills in the creative sector.
20. Standardisation (the setting up of a dedicated Council was proposed).
21. Funding:
22. Dedicated grant schemes which are disbursed through intermediary bodies on the basis of merit and excellence (hence the importance of standards). It was also recommended to adopt a two-tiered approach to grants, with part going to larger companies and part going to start-ups.
23. One proposed type of grant was innovation vouchers.
24. Setting up a framework for crowd funding should also be considered.
25. A reference to the lack of venture capital funds was made and it was proposed for Government to support the setting up of venture capital funding through tax breaks.
26. Support for internationalisation, once the different internationalisation needs of different sub-sectors are properly identified.
27. Support for networking ('clustering') among the creative sectors through a dedicated space where information on support available could also be housed. This should be complemented through appropriate training of personnel to act as brokers for innovation within the creative industry. Extending local networks to include diasporas is very important in this regard.

Outcomes of the 'Sustainability in Building Construction' focus group

Salient Points

General:

1. The discussion started with a discussion on Malta's various water challenges and the role which various public players have in this regard.
 - Reference was made on the need to look into the implications of increased salinity of groundwater on crop production and the need to look into crops which are more resilient to salinity.
 - The price of water does not reflect true cost, so a market cannot be created.
 - However, if proper pricing policies, which truly reflect costs, were to be put in place, certain industries which presently extract groundwater freely would face severe economic setbacks.
 - Malta's progress in RO membrane facilities and wastewater treatment plants create scope for selling this knowledge.
 - In general, expertise on water in Malta does exist, but it is not being brought together effectively.
 - Treated wastewater is currently being discharged at sea. There is scope for investment in treated wastewater for agricultural purposes.
2. The meeting also discussed several issues relating to the urban environment:
 - There is scope for innovation in retrofitting of buildings to improve their energy efficiency. Malta needs solutions for the local market, which could also be exported to the Mediterranean region. Most technology in this field is tailored for colder climates.
 - There has been ineffective implementation of the energy efficiency directive in Malta, which affects the demand for solutions and the drive for innovative solutions. There is potential for innovation in principle but there is a lack of clear market opportunities to invest in innovation.
 - Reference was made to the issue of materials used in the construction business and the need for price-competitive alternatives to the Maltese stone which is becoming an increasingly scarce resource.
 - There are as yet no zero-energy buildings in Malta and there is a need for such demonstration projects. The new architecture

faculty building at UoM could be such a pilot.

- Importance of re-skilling of the current workforce.
- Government schemes are often not based on knowledge of the best solutions, so they promote take-up of technologies which might not be optimal for Malta. There is a need for knowledge of what works in the local context.
- Innovation in urban environment design (including transportation modes) was also referred to within the context of urban comfort, especially considering Malta's ageing population.

3. A variety of other issues were raised, including:

- Climate change – it is a real concern and Malta has several competences in the area. However there is little in the way of bringing this expertise together. Concerted research efforts on the impact of climate change on legal, environmental, social and other issues is needed.
- There is scope for research on the impact of connecting renewable energy sources of the electricity grid.
- Marine research – there is significant academic endeavour in the area but with some notable exceptions such as aquaculture, there is no clear economic dividends to be reaped.

Possible measures:

4. Full implementation of green public procurement and innovative public procurement.
5. Awareness-raising on energy efficiency in buildings.
6. Better implementation of legislation to create a demand for innovation.
7. Demonstration projects on energy efficiency in buildings (new and old ones).
8. Re-skilling of the construction sector.

Outcomes of Transport Focus Group

Salient points:

1. Malta's strength is its people. Smaller entrepreneurs could venture into niches which larger companies would not be interested in (overcoming transportation problems at a local level to address local challenges). While there is a need for a concerted approach at the macro level, there also needs to be a place in the system for smaller entrepreneurs coupled with support to bring them together.
2. The need for support for smaller-scale, local solutions (as opposed to grand, large-scale projects) emerged as a strong point.
3. Reference was made to Intelligent Transport Systems, however the local context is largely centred around following developments abroad and seeking ways to latch on to these. However the developments of apps to alert drivers of roads which are closed was considered a potential innovative solution for land transportation in Malta.
4. Stakeholder engagement, including from the private sector, is very important in transport strategic planning, as this is where many experts are to be found.
5. The private sector feels that different public entities appear to be going in different directions – there is a need for stronger coordination between public entities. The strategic policy level is very important because it provides a framework for research and innovation.
6. There is also a need for better linkages between research at the University of Malta and national policies at government level. One should not necessarily determine the other but it is important to exploit research outcome in solving local problems.
7. There is an 'appetite' for innovation in transport - at the academic level, there is excellent work ongoing in avionics, while the Malta Freeport has donated funds to the University of Malta's RTDI Trust Fund.
8. In relation to air/aerospace research, ongoing R&D at the University of Malta focuses on efficiency (in fuel costs, noise reduction, etc.). The applicability of this R&D is largely abroad. There is at present to clearly-perceived link with existing local activities such as Lufthansa Technik, SR Technik, etc.
9. It is important to strengthen intermodal transportation and the use of ICT to facilitate transportation of cargos in transit. Within this context, reference was made to the Marco Polo Programme, whose aim is to co-fund direct modal-shift or traffic avoidance projects and projects providing supporting services which enable freight to switch from road to other modes efficiently and profitably.

Possible measures:

10. Support for doctorates to help momentum and research capacity building in the area, especially in applying/adapting existing solutions abroad to the local context.
11. Concept of a maritime academy, to bring together the educational needs of different aspects of the sector, was mentioned.
12. A lot of innovation that is needed in MT is innovation at the local level by
13. Procurement for innovation in transport.

A8. Key Stakeholder Meetings

University of Malta

In attendance: Prof. Juanito Camilleri - Rector, Prof. Richard Muscat - Pro-Rector, Research and Innovation Rectorate; Dr. Simone Borg, Ramona Saliba Scerri, Policy Executive, MCST.

Major Points Discussed:

RIS3 Dimension

UoM remarks that the RIS3 strategy is very relevant to Malta however such a focus could hamper the flexibility of a micro-state like Malta, and certainly the UoM can only argue that it is virtually impossible for them to select certain priorities to the detriment of others. Consequently they propose a number of horizontal umbrella themes for Smart Specialisation rather than specific application domains which they refer to as Technology systems. These include:

21. Climate Change Adaptation and Sustainable Living

Legal; Financial; Risk Management; Insurance; Economics including Green and Blue Economics; Earth Sciences; Modelling; Engineering and Infrastructure; Architecture and Building Design; Energy, Waste and Water Management; Agriculture; Aquaculture; Biodiversity; Sociological Impact and Wellbeing; Immigration and Migration; Geographic Information Systems; Education and Social Values for Sustainable Living; Island and Small States Studies; Mediterranean Studies and Regional perspective of Climate Change; Eco-Gozo etc.

22. Molecular Medicine and Life Sciences

Molecular Biology; Biochemistry; Pharmaceutical Sciences; Bioinformatics; Bioengineering; Biobanking; Medical and Healthcare Sciences; Healthcare Management; Patient-care; Bioethics; Environmental Health etc

23. Technologies and Systems for Economic Services and Economic Sectors

ICT and Engineering Systems and Technologies for:

Public Administration; Financial Services; Healthcare and Wellbeing Services; Tourism Services; Educational Services; Environmental Services; "Value-Added" and Smart Manufacturing; Systems Engineering, Systems Security and Robustness, Systems Prototyping and Testing.

24. Arts and Design for the Creative Industries

Performing and Visual Arts; Digital Arts and Design; Digital Games; Communication; Media and Cognitive Sciences; Web Technologies; Edutainment; Pedagogical tools; Product design.

Governance

UoM are quite preoccupied with the way the 2007-2013 programming period is governed and admit that despite the numerous meeting with policy bodies like PPCD, they always seem to remain in the dark as to what has been considered or decided at the end of the day. This does not augur well for the UoM since even short-term planning is practically impossible, let alone strategic medium term planning. The UoM admits that in the last programming period they received 55 Million euros since 2004 from Structural and Cohesion funds, however this did not occur by design since the original budget dedicated to University was originally of only 5M Euros in first programming period. The final 55M Euros received consisted in circa 20 M euros for the upgrading of various labs and 35M euros in the ICT and IT services building. The perception is that additional funding was only made available as an afterthought and after certain planned projects in other government bodies failed to materialise, and the authorities required UoM to provide good projects in order to absorb the available funding with unreasonable time-frames for submission. This is also in sharp contrast to funding allocation granted to MCAST, which is focused on remedial education, to the tune of 120 M euros for the building of the new campus.²¹³ Consequently, despite the crucial role of the UoM, the impression remains that the authorities are not very proactive in forward planning and tend to keep major stakeholders in the dark with a subservient attitude. The end result is that UoM is constantly keeping a number of project proposals ready in hand in case the authorities approach them in panic with additional funding opportunities at the last minute.

EU funding and Infrastructure

When one considers that circa 80 Billion are being ploughed in the Horizon 2020 programme, the EU should seriously consider taking a percentage of these funds and provide a one-time injection towards strengthening universities in the small states. The requirement of the University of Malta is of circa 240 Million euros in order to bring it up to par with other European Universities, and this should not be done piecemeal but in close proximity in order to create the necessary infrastructure and critical mass. At present, the country invests around €24 million in stipends per annum. Over a 10-year period, that would amount to €240 million which

²¹³ <http://www.timesofmalta.com/articles/view/20130305/local/first-phase-of-new-mcast-campus-opened.460305>

incidentally is the capital investment required to build the infrastructure needed to prepare the university for the next few decades. A clear programme and budget for how this money would be spent is available in an internal document titled "*Framework Agreement to safeguard the autonomy and financial sustainability of the University of Malta*"²¹⁴. This framework document indicates the following projects, and their costs breakdowns, as a priority in order for the UoM to come at par with other EU universities.

Postdoc and Creative Labs Complex to house:			32,300,000	5,700,000	38,000,000
Post-doctoral Research Centre including Library Archives;					
School of Performing Arts Labs; Digital Game Design and Production Labs					
Clinical and Healthcare Sciences Complex to house:	15,000,000		29,750,000	5,250,000	50,000,000
Faculty of Medicine and Surgery; Faculty of Dentistry;					
Faculty of Health Sciences;					
Multi-Storey Car-Park'					
Extension for Science and Engineering	3,000,000	500,000			3,500,000
Extension for Biomedical Sciences		5,800,000			5,800,000
Refurbishment of Faculty for Social Wellbeing	2,000,000	500,000			2,500,000
Refurbishment of Sports Facilities	1,500,000	1,000,000			2,500,000
New Administration Building	5,000,000				5,000,000
Extension for Faculty of Media and Knowledge Sciences	1,500,000	600,000			2,100,000
Refurbishment of Valletta Campus	4,500,000	700,000			5,200,000
Upgrade of Junior College	2,000,000	400,000			2,400,000
Upgrading of Marsaxlokk Complex	1,500,000	250,000			1,750,000
Equipping Research Centre for Molecular Medicine and Bio-Banking			12,750,000	2,250,000	15,000,000
Refurbishing and Equipping of Thematic Labs			12,750,000	2,250,000	15,000,000
Miscellaneous Equipment and General Upgrade of Precincts	5,000,000				5,000,000
Total	41,000,000	9,750,000	123,250,000	21,750,000	195,750,000

"With these investments the University would have :

- created sufficient space for all faculties, institutes, centres and schools;
- upgraded the facilities for teaching, research, and outreach;
- created the right environment to attract a larger number of international students (2,500 targeted by 2020) and a larger number of local students (15,000 targeted by 2020);
- enhanced its revenue-streams by leveraging its sports, residence, and conference facilities, and through other commercial ventures; and
- migrated to a model in which its revenue is directly related to its cost-base, but, where its cost-base remains competitive."

Currently the UoM is struggling to make basic ends meet (including payroll) and strictly speaking simply provides the basic human resources necessary for local industry and services, however it cannot be considered a research university by any means due to the lack of infrastructure. This is particularly worrying in view of the lack of an indigenous industry and any sizeable setups being primarily a result of foreign direct investment. The lack of research opportunities locally both in industry and UoM make it virtually impossible for home bred R&I to take root here, which could possibly create indigenous industry or services. The lack of research demand from industry is also a problem but recent efforts with the RTDI programme at MCST has started to reap results. However hardly any research is conducted at government level and when there is any, the tendency is to farm it to foreign players rather than UoM and when requests are made these are usually expected free of charge.

EU funding and Post Doctorates

²¹⁴ Framework Agreement to safeguard the autonomy and financial sustainability of the University of Malta. Internal Document. Revised 14th August 2012



Besides the infrastructural investment that is required by the UoM to build capacity in terms of providing physical space and entry-level research labs, the 2nd most crucial element remains to provide the necessary funding for post-doctorate research fellows in order to create the necessary research eco-system. The suggestion is that the Strategic Educational Pathway Scholarships scheme administered by the Ministry of Education and funded under ESF, which in the last call was extended to include doctorate scholarships, should now also be extended to Post-doctorate research fellowships in order to create the necessary eco-system to push basic research to applied research and ultimately to commercialisation. In the United Kingdom, one-quarter (25%) of those who attain doctorates in the natural sciences continue to undertake postdoctoral research. This would create a good incentive for researchers abroad to come to Malta, and conduct further research while managing a number of doctorate students under their wing. This is especially relevant to those areas identified as smart specialisation opportunities, and a first indication suggests that circa 100 k euros would be needed for each post-doc for every 2/3 years, wherein candidates would be expected to mentor research of doctorate students under their wings, provide teaching classes, create links with industry and ultimately report to a principal investigator. Post-docs would thus be provided with seed money for the first 2/3 years until they can source funding in order to retain their contracts. This is the only way Malta can start creating indigenous research and commercialisation opportunities, while alleviating the current teaching load of the existing staff.

Regional or EU dimension?

UoM has justified recommendations to the European Community's territorial co-operation programmes financed through structural funds like the European Regional Development Fund (ERDF). Typical examples include the INTERREG IVC programme and the Italia-Malta programme. The intention of these programmes is to build on the exchange of experiences among partners who are ideally responsible for the development of their local and regional policies. However the comments received suggest that Malta should be able to access funding from all the regions of the EU, rather than specifically the Mediterranean region. Programmes like Italia-Malta and for instance collaboration with Sicily do not really bring added-value in view of the limited resources and expertise in some of the Mediterranean countries, and the UoM would be better served by collaboration efforts with established links in other Northern Europe countries like Belgium (University of Leuven) or the possibility to improve on their collaboration efforts with the League of European Research Universities. <http://www.leru.org>. This is more practical in their opinion to create knowledge transfer between the North and South and within more accessible funding programmes like Interreg. Another relevant concern that should be addressed by the Managing Authority is the limitation in the programme rules that somewhat prohibits existing staff to be paid from these kind of projects, and only new staff costs are eligible, which needs to be addressed.

Further reading:

2020 vision or optical illusion? http://www.um.edu.mt/_data/assets/pdf_file/0012/111090/uom2020.pdf

Time to explore a better funding mechanism for our university. <http://www.independent.com.mt/articles/2012-11-18/news/time-to-explore-a-better-funding-mechanism-for-our-university-400916486/>

Further and Higher Education Strategy 2020 - Recommendations of the National Commission for Higher Education. April 2009.

https://www.nche.gov.mt/MediaCenter/PDFs/1_F&H%20Strategy%202020%20NCHE%20Recommendations.pdf

EU Funding through Structural Funds 2007 – 2013 – University of Malta
Operational Programme I (List last updated: 31st March 2013)

Project Ref no.	Priority Axis	Name of Beneficiaries	Ministry (for Public Sector Organisations)	Name of Operation	Project Description	Public Funding Paid to Beneficiary *				
						Year of Allocation	Year of Final Payment	Amounts Committed €	Total Amounts Paid at the End of the Operation €	Co-financing Rate [European Regional Development Fund] **
	PA1	University of Malta	Ministry for Education and Employment	Furnishing and Equipping of Chemistry & Biology Building Extensions	The project will upgrade the teaching and research facilities at the Departments of Biology and Chemistry both at undergraduate and graduate levels. It will provide the necessary laboratory and field equipment for such facilities, especially in areas such as applied and analytical chemistry, applied and environmental biology and biotechnology.	2008	2011	-	€777,229	85%
12	PA1	University of Malta	Ministry for Education and Employment	Developing an Interdisciplinary Material Testing and Rapid Prototyping R&D Facility	This project is aimed at setting up a materials characterisation and rapid prototyping facility that will improve Malta's research and development potential in new product development and the enhancement of existing products through: D The rapid design and development of innovative products – utilising RP technology D Redesign of existing products	2008	2011	-	€ 4,336,401	85%
17	PA1	University of Malta	Ministry for Education and Employment	Construction, Finishing and Equipping of ICT Faculty Building	The construction, equipping and furnishing of a state-of-the-art building to house the Faculty of ICT as described in section 5 of this document. The building should provide adequate, safe and comfortable facilities, facilitating teaching/tutorial, research, meeting, and basic restorative faculty activities. The building should integrate with and enhance the existing University of Malta architectural landscape.	2009	2013	€ 16,476,489	-	85%
18	PA1	University of Malta	Ministry for Education and Employment	Strengthening of Analytical Chemistry, Biomedical Engineering and Electromagnetics RTDI Facilities	The setting up of a laboratory cluster for research in electromagnetic fields and their applications, a Biomedical Engineering Laboratory and the setting up of a modern analytical laboratory within the Department of Chemistry. The facilities required consist mainly of state-of-the-art	2009	2011	-	€ 1,540,411	85%

					equipment that is required to promote industry-academia research collaboration, and increase the number of graduates in the respective fields.					
57	PA6	University of Malta	Ministry for Education and Employment	Junior College Building Extension	The project involves an extension to the lecturing capacity of the Junior College so to meet with the current overcrowdedness which the College is facing. The said extension will provide for 8 large lecture rooms, 20 tutorial rooms and 2 utility rooms which will help the College accommodate better the 3500 students which at present afflict a building meant to cater for 1500 students (the amounts indicated as calculated in 2006).	2008	2012	-	€1,169,875	85%
64	PA6	University of Malta	Ministry for Education and Employment	Construction and Equipping of University Computing Services Centre Building	The project intends to build and equip a facility that will house state-of-the-art IT educational facilities for use by students as well as incorporate core IT infrastructure and equipment that will serve all University. The building will house a data centre and related infrastructure as well as computer laboratories, training rooms and video conferencing facilities amongst others.	2008	2013	€ 7,950,962	-	85%
76	PA1	University of Malta	Ministry for Education and Employment	Refurbishing the Signal Processing Laboratory within the Department of CCE	This project aims to refurbish the Signal Processing Laboratory within the Department of Communications and Computer Engineering at the University of Malta with state of the art equipment to capture, process and present multimedia signals for various applications within the realm of ICT. The laboratory will be used to train undergraduate and postgraduate students and researchers in this area.	2008	2010	-	€ 461,622	85%
77	PA1	University of Malta	Ministry for Education and Employment	Electrical Energy and Efficiency Laboratory for the University of Malta	The project aims to set-up the infrastructure required for an Electrical Energy and Efficiency Laboratory at the University of Malta through the provision of state-of-the-art equipment concerned with: RES and conventional means of generation; conversion, storage and control of energy and its grid-connection. The project shall also invest in equipment for monitoring of electrical energy, its efficiency, and power quality.	2008	2011	-	€ 608,722	85%
78	PA1	University of Malta	Ministry for Education and Employment	Upgrading of Giordan Lighthouse global Atmospheric Watch (GAW) Research Station	The project consists of upgrading a present instrument measuring facility for atmospheric research at Giordan lighthouse, Gozo and the corresponding laboratory and office facilities at the University Centre, Xewkija, Gozo, to accommodate the increased data throughput and staff required. Space is already available at both Giordan lighthouse and the University Xewkija premises and these will be further developed.	2008	2011	-	€ 444,824	85%

79	PA1	University of Malta	Ministry for Education and Employment	Setting up of Mechanical Engineering Computer Modelling and Simulation Laboratory	Computational modelling techniques have become an important everyday tool in engineering. In spite of its recognized importance, the department of mechanical engineering is still not well equipped. This project aims at setting up a computer modeling and simulation laboratory in the department of mechanical engineering in order to improve the level of teaching and research activity within the department.	2008	2011	-	€ 385,458	85%
80	PA1	University of Malta	Ministry for Education and Employment	A Super Computer Laboratory for the University of Malta	This project aims to build a state of the art computing facility for the University of Malta and for use by research-performing SMEs. This facility will be equipped with the latest modelling software in environmental, discrete element, protein, urban, climate, financial and fluid dynamic modelling. It will also provide a system for the development of multi-core programming and grid computing systems.	2008	2010	-	€ 468,983	85%
81	PA1	University of Malta	Ministry for Education and Employment	Enhancing the Health Biotechnology facilities at the University	This project is aimed at enhancing the Health Biotechnology facility that will improve Malta's research and development potential in the fields of genetics, cellular physiology and pharmacogenomics through: (1) The rapid identification of genetic mutations; (2) The rapid identification of cellular mechanism to identify potential therapeutic targets for the disorders mentioned; (3) provide the tools for National Health projects	2008	2012	-	€ 3,963,153	85%
82	PA1	University of Malta	Ministry for Education and Employment	Modernizing the University of Malta's Control Systems Engineering Laboratory	The project aims to modernize the infrastructure of the Control Systems Engineering Laboratory at the University of Malta through provision of state-of- the-art equipment that is not available in the lab, and replacement of the largely obsolete equipment currently in use. This investment will build up the university's capacity to address modern teaching and research activities in Automatic Control Engineering.	2008	2011	-	€528,883	85%
192	PA4	University of Malta	Ministry for Education and Employment	Photovoltaic System at the University of Gozo Centre	The installation of PV panels on the roof surface area available at the University Gozo Centre. These panels are expected to generate 35,000kWh annually	2010	2012	-	€ 67,894	85%

List of Beneficiaries for Operational Programme II (List Last Updated: 28th March 2013)

1.22	PA1	University of Malta	Ministry for Education and Employment (MEDE)	Research Analysis and Training for Enhancing the University Library (ESF 1.22)	This project aims to transform the University of Malta's library facilities and information services from one primarily based on printed material to a digitalised online format. It is thus proposing to conduct a research study on the requirements of such a system, identify best practices and train staff in this regard.	2008	2012	433,942	85%
1.125	PA1	University of Malta	Ministry for Education and Employment (MEDE)	Creating a Knowledge Transfer Framework and Technology Entrepreneurship Training Programme (ESF 1.125)	The project aims to set up an intellectual property and knowledge transfer framework and introduce an intensive training programme in science and technology entrepreneurship at the University of Malta. It addresses the National Priorities to increase business to academia linkages and to foster an entrepreneurial culture through education.	2011	2014	1,331,530	85%

Malta Enterprise

Meeting Notes

Marco Abela of Malta Enterprise (ME)

Tuesday 28th May 2013

The focus of ME is on "productive activities" and industrialisation

It has a long history and was established before independence

1950s established as the Industrial Development Board

1960s evolved into Malta Development Corporation

2000s Became Malta Enterprise.

ME's objective is "promotion of investment to generate wealth"

Focus is the manufacturing sector as it is still an important contributor to the economy – around 15% plus the supporting sectors and spillovers.

The main interest is in innovation and commercialisation rather than research itself and in terms of EU programmes they lead on Eureka and Eurostars.

ME has a range 34 services from tax relief on R&D to provision of premises. It has the flexibility and agility to package these services together and respond quickly to the need of the firms.

For start-ups for example:

The university has set up their own support for entrepreneurs and have built their own infrastructure for this including an IP office, etc. <implication – stays away from university spin outs?>

ME provides:

- grants (EU funded) for innovative start ups in specific sectors e.g. energy and environment.
- property solutions – a range from incubators to full factories.
- Soft support – using own advisors + a list of approved consultants from a framework contract to provide advice on anything from space audits to finance and beyond.

It is more of first stop-shop than a one stop shop.

Most successful instrument is micro investment grants – provides 35% rebate on any investment in physical production assets or the first year salary of the new employee up to a limit of 30k. Not sector specific.

R&D Tax credits for planned research.

ME has a FDI and talent attraction policy for the key industries – in digital sector for example 10 firms attracted now employ 250 people.

Have identified digital gaming and content as a particular strength – not to be confused with online gambling. Are now in process of building a digital gaming hub as a physical space. It will be made easy for companies to access and move in but the premium incubation services offered will be chargeable.

Other areas of interest are aviation and life sciences –

Aviation is primarily dominated by Lufthansa where they service a range of aircraft (a to c but not e class??). It is run through a set of blue prints and standard procedures sent from HQ which seem to be stifling the natural creativity of Maltese employees – there is no scope for creativity or innovation.

On life sciences the situation is more promising – Physical infrastructure for life sciences has been (is being?) developed. The final focus of the activity is not going to be known until the anchor tenant for the property has been identified. They will then specialise probably around one or more of the following disciplines:

- Genetics – small population with very good medical records and excellent availability of data
- Rare diseases and birth defects – no abortion laws so abnormal pregnancies run the full course + good records and data availability. May be of interest to the Arab world.
- Horses and equine health.

Malta is a good choice for FDI because of

1. good natural environment, sun, sea, night life for young entrepreneurs and developers
2. strong skill base in ICT, English. University just opened the faculty of digital content.

In terms of inter-institutional collaboration, he speaks regularly to MCST, including the development of the RIS3 strategy. He did come across convinced by MCST's handling of the situation and certainly thought the strategy is about scientific research rather than economically strong sectors. He was particularly dismissive of the Manufacturing Research Strategy. (use Vision 2015 instead)

Malta's specialisation is in any premium manufactured good that requires high precision but short runs in micro-electronics and manufacturing. E.g. high quality o-rings for Dowty used in aerospace.
Dependence on ST Microelectronics – ST is no longer the largest employer – that is now Merit(?). ST is now more embedded and anchored in Malta and less bargaining power but still occasionally exercises it.
Printing seems to have over as the biggest industry (by employment?) and is becoming increasingly more important economically.
Larger firms include Lewis (?) press, Gutenberg Press and De la Rue.

Useful reports as references:

- Use Vision 2015 as the main reference
- Economic Survey Report by ME gives detailed GVA analysis.
- Annual Competitiveness Report 2013 – not published yet(?)

ME has no mandate for vocational training but if the need is identified then it would get MCAST or the Uni to provide any specific training. Malta appears well placed in the EU report on innovative public procurement (currently under embargo) – contrary to general belief in Malta. Majority of public procurement tenders still go to the lowest bidder as it is the only assessment criteria. Generally uses ERDF to promote innovation at firm level.

Final word: top speciality of Malta is Resource efficiency, which fits in well with its island location.

Website intro:

Malta Enterprise (ME) is the national development agency responsible for promoting and facilitating international investment in the Maltese Islands by offering investors excellent business opportunities and tailored services. The Malta Enterprise network operates in various countries around the globe, with offices or representation in embassies and consulates in North Africa, the Middle East, Asia, the United States and Australia. The Corporation also coordinates initiatives to promote the Islands' economic growth attractiveness.

Moreover Malta Enterprise is also responsible for the growth and development of Maltese enterprises both locally and beyond our shores. We work hand in hand with our businesses to help them set up, expand, innovate and access global markets; thus sustaining economic growth and retaining and increasing employment.

Together with Malta Industrial Parks Ltd, the Corporation is responsible for the administration and maintenance of various industrial estates and the factories located within.

Malta Enterprise strives to become a Model Agency and to continually improve on the services it offers. Malta Enterprise, work closely with the Better Regulation Unit, to ensure that Better Regulation principles and procedures are applied consistently throughout the Agency.

Eskills Alliance Consultations

On 20th November 2012 the eSkills Alliance²¹⁵ and the IT Business Section of the Chamber of Commerce²¹⁶ organised an eSkills and Innovation Industry Foresight Workshop at the Le Meridien St Julian's Hotel. The event covered four facets of the Maltese ICT landscape, one of which was Research and Innovation as seen from the ICT perspective.

The event saw the involvement of 58 participants, most of which were professionals and entrepreneurs from the local ICT industry. The purpose of the workshop was to give local ICT business leaders the opportunity to influence the basis for the next EU funding period (2014 – 2020) by highlighting the envisaged progression of the sector and the resulting evolution of eSkills and R&I capability requirements. A presentation²¹⁷ about Smart Specialisation approaches recommended by the European Commission in the pursuit of meaningful impacts on regional economies, was another key feature of the event. The workshop on ICT Research & Innovation was also a follow-up of an earlier consultation with stakeholders from the public sector and academia organised by MITA and MCST on 13th March 2012.

ICT Policy Recommendations related to R&I

20. Create incentives (e.g. competitions, funding measures) for using ICT to innovate processes (applying known technology to new business models).
21. The University of Malta should consider developing a business model to support industry collaborations (e.g. subcontract research and development work to the university).
22. Match Faculty of ICT Final Year Projects (dissertations) with research areas of interest to companies.
23. Policies and incentives to strengthen and support the marketing aspect since this is often 70% of the effort involved in commercialising a product (this addresses the lack of marketing know-how by Maltese companies).
24. The University of Malta should consider adopting business-like insights similar to models used by the Mechanical Engineering Department.
25. Formulate policies to shift Malta's focus on products (IP) rather than a Time & Materials charging models; this works in favour of the need to specialise, differentiate and therefore seek a competitive advantage.
26. Government funding to support and sustain research labs for industry collaborations in specific domains (e.g. living labs in the case of ICT – this would also allow Faculty of ICT Final Year Projects to be taken out of their PC-based domain).
27. Factor in creativity and critical thinking (systems thinking, JIT solutions) throughout the entire educational cycle.
28. Creating the right policy stimulus and financial incentive for the deployment of ICT-based energy efficient solutions such as smart metering, water conservation, intelligent lighting, intermodal and intelligent traffic management systems, etc. Opportunities exist for the support of such projects under both centralised (e.g. CIP, FP7 and soon Horizon 2020) and decentralised EU funding programmes (e.g. ERDF).
29. Develop policies to enable small players to combine their knowledge and resources through clustering approaches (to address the silo mentality and mutual distrust one sometimes finds in island-state communities).

Non-R&I related recommendations

11. Strengthen English and Mathematics in schools from an early age.
12. Incentives are needed to increase the supply of office space; follow up on, or emulate, the Mosta Technopark model which was deemed a successful one.
13. Introduce incentives for international exchanges of specialised personnel between Maltese companies and European ones, job shadowing, or attending training (e.g. through the Leonardo Da Vince programme).
14. Create incentives for conversion programmes, e.g. mechanical or electrical engineers to computer engineers.
15. Malta Enterprise should consider a sectoral focus rather than a country-wide one when designing incentives.
16. Introduce tax incentives to overseas venture capitalists.
17. Create incentives for the development of applications that enhance the cultural heritage product for tourism purposes (augmented reality); this may raise the issue of the degree of implementation of PSI for Re-Use by the public sector – i.e. how much public sector information is being made available? e.g. geo-maps, cultural heritage data, demographics, etc.

²¹⁵ <http://www.eskillsalliance.com/about-us/>

²¹⁶ <http://www.maltachamber.org.mt/>

²¹⁷ ICT Research & innovation - An enabler of smart growth. Eskills Alliance Malta. November 2012.
https://www.mita.gov.mt/MediaCenter/PDFs/1_R&I%20PPT.pdf

A9. Research Infrastructures (with reference to European Strategy Forum on Research Infrastructures: ESFRI)

This table contains presents an overview of the state of play of the implementation of the projects on the ESFRI roadmap
ESFRI²¹⁸ Project table February 2012

	Project	Leading country or EIRO ²¹⁹	Participation to the Preparatory Phase	Host country	Legal Status	Funding Commitments Implementation Phase	Official Commitment at Institutional level	Industrial expression of support/ interest
SSH ²²¹	CESSDA	NO	AT DE GR HU LT PT SI ES CH US RO FR FI NO SE	NO	ERIC ²²⁰ 2012	NO SI FI SE	SI	
	CLARIN	NL	AT BG CZ DK EE DE GR HU IT LV LT MT PL PT ES BE IS FR FI RO NO TR SE	NL	ERIC 2011	RO NL FI IT DK	SI	Tilde Ltd (LV)
	DARIAH	NL	CY DK DE GR IE SI FR		ERIC 2012	SI DK IE	SI FR IE	
	ESSurvey	UK	FR BE BG EE DE HU LV PL PT SI ES IS IL CH NO SE	UK	ERIC 2012	NL UK ES SI IE	UK SI SK	
	SHARE	DE	FR AT BE DK GR IE IT PL SI ES IL CH US PT	NL	ERIC 2011	AT ES SI IT	AT PT NL SI DK IT	
ENV	COPAL		FR FI DE GR PL PT RO ES					
	EISCAT_3D	SE	NO FI SE			SE FI		
	EMSO	IT	DE GR IE IT PT ES TR UK NL NO BG PL SE		ERIC 2012	IT	IT	
	EPOS		RO NO CH NL DE FR UK DK IL IS IT ES PT SE			DK	IT	
	EURO ARGO		BG DE GR IE IT PL PT ES NO FR NL	FR	ERIC 2011	FR IT IE	FR IE	
	IAGOS	DE	DE FR UK (WMO)	DE	AISBL 12	FR	FR DE UK	Airlines
	ICOS	FR	BE DE HU ES CH US FR NO NL FI SE	FI	ERIC 2012	FI FR SE		
	LIFEWATCH	NL	BE FI DE GR HU IT PL SK SI ES PT RO FR NO SE	ES	ERIC 2012	ES IT SE	IT SI ES	
SIOS	NO	DE FR NL UK PL FI KR JP CN NO SE ES	NO		NO			
ENERGY	ECCSEL	NO	DE HU CH PL NL FR ES NO	NO		NO		ALLEA
	HIPER	UK	DE PL PT ES RU US ZA FR			UK (for PP)		
	IFMIF/EVEDA		ES					
	JHR	FR	FR ES	FR	CA	FR FI EU(JRC) ES	FR	
	BBMRI	AT	EE FI DE GR HU IE LT MT ES IS BE BG FR IT NO LV CH SE	AT	ERIC 2012	AT NL FI ES SE	NL ES IT	
	EATRIS	NL	DK FI DE GR ES DE FR IT NO SI	NL	ERIC 2012	FI DK ES	FI NL ES SI IT	
	ECRIN	FR	AT BE FI HU CH PL ES FR NL	FR	ERIC 2011	ES UK FR	FR ES UK	

²¹⁸ ESFRI – European Strategy Forum on Research Infrastructures ; http://ec.europa.eu/research/infrastructures/index_en.cfm?pg=esfri

²¹⁹ EIRO - European Intergovernmental Research Organisation (e.g. CERN, EMBL, ESA, ESO)

²²⁰ ERIC - European Research Infrastructure Consortium; http://ec.europa.eu/research/infrastructures/index_en.cfm?pg=eric

²²¹ SSH – Social Sciences and Humanities

BMS	ELIXIR	UK	DK FR DE HU IT LT PL ES NL IS IL NO CH PT SI SE			EMBL FI UK DK ES SE	IT UK SI	
	EMBRIC	IT	IT SE PT UK FR DE NO GR EMBL			EMBL UK (for PP) SE	IT EMBL	
	EU-OPENSREEN		NO DE FR ES SE CZ FI AT PL NL				FI	
	EuroBioImaging	DE	AT BE CZ DE HU IL NO PL PT SE FR ES FI IT TR, CH, Regional: Bavaria, Piemonte				IT	
	European BSL4 Labs	FR	FR IT	FR			IT	
	INFRAFRONTIER	DE	AT CZ DE GR ES FR IT FI PT SE			IT FI UK	IT UK	
	INSTRUCT	UK	AT CZ DK DE IT LT PT IL SE FR ES LV NL FI CH	UK		EMBL FI ES IT UK DK	IT UK	

MATERIALS and ANALYTICAL	EMFL		FR	FR DE NL				
	ESRF UPGRADE	ESRF	FR IT NO DK	FR		ES NO DK FR IT UK SE	IT UK FR SK CH	
	EUROFEL (ex IRUVX-FEL)	IT	DE PL IT			IT	IT SI	
	ESSneutrons	SE	DE IT LV PL CH EE FR ES NO DK SE	SE DK ES		ES SE DK NO IT	FR ES IT CH	
	XFEL	DE	FR IT ES DK CH SE	DE	Gmbh	CN DK FR DE GR IT RU ES CH SE	DE IT FR ES SI SK CH	CH: IKC
	ILL 20/20	ILL	FR IT	FR		ES FR IT UK SE	UK FR IT SI SK CH	

PHYSICS ENGINEERING	CTA		PL ES FR CH	ES US MX NB AR CL ZA				
	E-ELT	ESO	FR IT DK	CL		ESO NL DK SE	IT	
	ELI		BG DE IT LT PL PT ES FR	CZ HU RO UK		RO IT		
	FAIR	DE	FR ES GR SI SE	DE	Gmbh	CN DE ES FI FR UK IN RO RU SI SE	SI FR	
	KM3NeT	GR, IT	CY DE IE ES FR IT GR	GR IT		GR IT NL	IT	
	SKA	UK	DE ES US FR NL SE	AUS+NZ ZA		UK AUS ZA NZ		
	SPIRAL2	FR	BE BG CZ DE HU IT PL ES IL US FR	FR		FR	FR	

CERN Projects	ILC-HiGrade	CERN	US FR ES				
	SLHC	CERN	PL US FR ES			I.O.	

ICT	PRACE (ex HPC)		AT DE GR IT NL CH BE PT BG FR ES NO DK FI SE	Distributed		FR ES IT NL DK FI SE IE	
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A10. PA1 Approved Projects and Schemes OP1 ERDF 31.05.2013

Project Ref. no.	Priority Axis	Name of Beneficiaries	Ministry (for Public Sector Organisations)	Name of Operation	Project Description	Year of Allocation	Year of Final Payment	Amounts Committed €	Total Amounts Paid at the End of the Operation €	Equipping	Build & Equip	Co-financing Rate [European Regional Development Fund]**
1	PA1	Malta Industrial Parks	Ministry for the Economy, Investment and Small Business	Upgrading and Embellishment of Industrial Estates	The project will entail the upgrading of the general environment, service infrastructure and the establishment of communal facilities in five industrial zones, with the aim of enhancing Malta's competitiveness as an industrial location thus contributing to the sustaining of Malta's growing knowledge based economy and promoting and safeguarding jobs in this key strategic sector.	2008	2013	€ 16,568,200	-			85%
11	PA1	University of Malta	Ministry for Education and Employment	Furnishing and Equipping of Chemistry & Biology Building Extensions	The project will upgrade the teaching and research facilities at the Departments of Biology and Chemistry both at undergraduate and graduate levels. It will provide the necessary laboratory and field equipment for such facilities, especially in areas such as applied and analytical chemistry, applied and environmental biology and biotechnology.	2008	2011	-	€777,229	€777,229		85%

12	PA1	University of Malta	Ministry for Education and Employment	Developing an Interdisciplinary Material Testing and Rapid Prototyping R&D Facility	This project is aimed at setting up a materials characterisation and rapid prototyping facility that will improve Malta's research and development potential in new product development and the enhancement of existing products through: D The rapid design and development of innovative products – utilising RP technology D Redesign of existing products	2008	2011	-	€ 4,336,401	€ 4,336,401		85%
17	PA1	University of Malta	Ministry for Education and Employment	Construction, Finishing and Equipping of ICT Faculty Building	The construction, equipping and furnishing of a state-of-the-art building to house the Faculty of ICT as described in section 5 of this document. The building should provide adequate, safe and comfortable facilities, facilitating teaching/tutorial, research, meeting, and basic restorative faculty activities. The building should integrate with and enhance the existing University of Malta architectural landscape.	2009	2013	€ 16,476,489	-		€ 16,476,489	85%
18	PA1	University of Malta	Ministry for Education and Employment	Strengthening of Analytical Chemistry, Biomedical Engineering and Electromagnetics RTDI Facilities	The setting up of a laboratory cluster for research in electromagnetic fields and their applications, a Biomedical Engineering Laboratory and the setting up of a modern analytical laboratory within the Department of Chemistry. The facilities required consist mainly of state-of-the-art equipment that is required to promote industry-academia research collaboration, and	2009	2011	-	€ 1,540,411	€ 1,540,411		85%

					increase the number of graduates in the respective fields.							
76	PA1	University of Malta	Ministry for Education and Employment	Refurbishing the Signal Processing Laboratory within the Department of CCE	This project aims to refurbish the Signal Processing Laboratory within the Department of Communications and Computer Engineering at the University of Malta with state of the art equipment to capture, process and present multimedia signals for various applications within the realm of ICT. The laboratory will be used to train undergraduate and postgraduate students and researchers in this area.	2008	2010	-	€ 461,622	€ 461,622		85%
77	PA1	University of Malta	Ministry for Education and Employment	Electrical Energy and Efficiency Laboratory for the University of Malta	The project aims to set-up the infrastructure required for an Electrical Energy and Efficiency Laboratory at the University of Malta through the provision of state-of-the-art equipment concerned with: RES and conventional means of generation; conversion, storage and control of energy and its grid-connection. The project shall also invest in equipment for monitoring of electrical energy, its efficiency, and power quality.	2008	2011	-	€ 608,722	€ 608,722		85%

78	PA1	University of Malta	Ministry for Education and Employment	Upgrading of Giordan Lighthouse global Atmospheric Watch (GAW) Research Station	The project consists of upgrading a present instrument measuring facility for atmospheric research at Giordan lighthouse, Gozo and the corresponding laboratory and office facilities at the University Centre, Xewkija, Gozo, to accommodate the increased data throughput and staff required. Space is already available at both Giordan lighthouse and the University Xewkija premises and these will be further developed.	2008	2011	-	€ 444,824	€ 444,824		85%
79	PA1	University of Malta	Ministry for Education and Employment	Setting up of Mechanical Engineering Computer Modelling and Simulation Laboratory	Computational modeling techniques have become an important everyday tool in engineering. In spite of its recognized importance, the department of mechanical engineering is still not well equipped. This project aims at setting up a computer modeling and simulation laboratory in the department of mechanical engineering in order to improve the level of teaching and research activity within the department.	2008	2011	-	€ 385,431	€ 385,431		85%
80	PA1	University of Malta	Ministry for Education and Employment	A Super Computer Laboratory for the University of Malta	This project aims to build a state of the art computing facility for the University of Malta and for use by research-performing SMEs. This facility will be equipped with the latest modelling software in environmental, discrete element, protein, urban, climate, financial and fluid dynamic modelling. It will also provide a system for the development of multi-	2008	2010	-	€ 468,983	€ 468,983		85%

					core programming and grid computing systems.							
81	PA1	University of Malta	Ministry for Education and Employment	Enhancing the Health Biotechnology facilities at the University	This project is aimed at enhancing the Health Biotechnology facility that will improve Malta's research and development potential in the fields of genetics, cellular physiology and pharmacogenomics through: (1) The rapid identification of genetic mutations; (2) The rapid identification of cellular mechanism to identify potential therapeutic targets for the disorders mentioned; (3) provide the tools for National Health projects	2008	2012	-	€ 3,963,153	€ 3,963,153		85%
82	PA1	University of Malta	Ministry for Education and Employment	Modernizing the University of Malta's Control Systems Engineering Laboratory	The project aims to modernize the infrastructure of the Control Systems Engineering Laboratory at the University of Malta through provision of state-of-the-art equipment that is not available in the lab, and replacement of the largely obsolete equipment currently in use. This investment will build up the university's capacity to address modern teaching and research activities in Automatic Control Engineering.	2008	2011	-	€528,883	€528,883		85%
83	PA1	MCST	Ministry for Education and Employment	Manufacturing Research Platform	This project establishes a research platform in the area of manufacturing to facilitate and accelerate the transformation of local industry to higher value-added activity. It will also undertake three research projects in areas of general interest to a number of local	2008	2012	-	€ 654,725		€ 654,725	85%

					enterprises to demonstrate the benefits of research and innovation, thus encouraging increased industry involvement in such activities.							
87	PA1	Malta Competition and Consumer Affairs Authority	Ministry for Social Dialogue, Consumer Affairs and Civil Liberties	Developing National Metrology Capacity in Support of Industry	The setting up of new national measurement standards in the areas of: pressure; electricity; time and frequency; as part of the national measurement system. These new metrology standards will satisfy a market gap in measurement capability currently afflicting Maltese SME's. The measurement capability will be accredited and MSA-NMS will participate in EURAMET intercomparisons in the new technical areas.	2008	2013	-	€695,412	€695,412		85%
199**** / ****	PA1	Malta Enterprise	Ministry for the Economy, Investment and Small Business	Setting-up a Life Sciences Centre	The building of a Life Sciences Centre located close to the Hospital and University which will focus on Life Sciences and associated technologies and will incorporate pharmaceutical /biotech laboratories and research facilities aimed at supporting knowledge-based companies. The Centre will increase skills in the sector and drive new FDI and RTD activity and will incubate new enterprises.	2008	2015	€ 22,003,226	-			85%
200	PA1	Ministry of Finance, Economy and Investment	Ministry for the Economy, Investment and Small Business	JEREMIE - Joint European Resources for Micro to	An initiative of the Commission together with the European Investment Bank Group in order to promote increased access to finance for the development	2010	2015	€ 10,000,000	-			n/a

				Medium Enterprises	of micro, small and medium-sized enterprises in Malta.							
305***	PA1	UoM	MEDE	An Electronic System Prototyping Facility at the University of Malta	This project entails the investment in a full electronic prototyping facility at The Department of Electronic Systems Engineering at the University of Malta. This facility enables the complete process of state-of-the-art electronic development to be exercised – i.e. electronic simulation and prototyping, printed circuit board fabrication, electronic component mounting and assembly and electronic test and measurement.	2013	2015	€ 725,396	-	€725,396		85%
310***	PA1	UoM	MEDE	Expanding the Physics and Applied Interdisciplinary Research Activities at the Faculty of Science	This project involves the setting up of four new research laboratories and the purchase of equipment and measurement instruments, to enhance and expand the capabilities of the existing Electromagnetics Laboratory to meet increasing research demands, and to increase collaboration with industry, the Ministry for Health, the Elderly and Community Care and the Occupational Health and Safety Authority.	2013	2015	€ 1,618,633	-	€1,618,633		85%
311	PA 1	The Malta Council for Science and Technology (MCST)	Ministry for Education and Employment	National Interactive Science Centre (NISC)	The NISC will provide a state-of-the-art permanent infrastructure where students, teachers and the general public will be able to immerse themselves in a unique fun, hands-on, interactive science experience in an informal	2013	2015	€ 12,000,000	-		€ 12,000,000	85%

					learning facility. The aim is to being science closer to the target audience and aid in increasing the number of students taking up science subjects at							
									-	#####	€ 28,476,489	€ 69,390,242

* Public Funding in Article 7 of Regulation 1828/2006 refers to EC and national eligible public funding and excludes private contributions.

** Percentage indicated co-financing of total public eligible cost

*** All figures are indicative as the grant agreements are in the process of being finalised

**** All figures are indicative as this is a revenue-generating project