

## Foreword

This has been an eventful year. I am very grateful to a number of people for believing in the Institute and its potential to develop projects, study programmes and research programmes. I am also very excited to report that within the first year of activity of the Institute we managed to engage a number of departments and faculties in our quest to encourage interdisciplinary research.

With the projects that we managed to initiate during this year the Institute can look forward to more exciting outputs and events to disseminate the research carried out so far. This year's investment in research projects will provide the Institute with good examples of high quality research which it can publish and publicise. This we hope will attract more research interest, both from individual students wishing to pursue formal studies as well as individuals that wish to collaborate with the Institute on interdisciplinary research topics.

During the first year we not only strengthened the human resources but also the infrastructure for research and we look forward to new premises once construction commences. The year came to an end with another good news, that of being elected on Senate as representative of Institutes and Centres alongside Prof. Henry Frendo from the Institute for Maltese Studies.

I now invite you to read about the Institute's achievements over the past year and to look forward, as I do, to the new challenges lying ahead.

Dr Maria Attard  
Director, Institute for Sustainable Development



*Front cover image: Surface representation of spatial analysis on point data*

## Introduction

The Institute for Sustainable Development was established in the summer of 2009. The Statute of the new Institute as approved by Senate is attached as Annex 1. In October of the same year Dr Maria Attard was appointed Director and the Board governing the Institute was appointed. In the first three months the work of the Institute focused on the capacity and infrastructure building.

The Board of the Institute first met on the 7th of October 2009. During this meeting a number of key decisions were taken in respect to some of the projects which the Institute would work on during its first year. This included the development of study programmes, provision of services to Government and third parties, research and publication and capacity building.

### The Board of the Institute

Chairman Professor Juanito Camilleri; Vice-Chair and Director Dr Maria Attard; Appointed by Senate Prof. Richard Muscat; Appointed by Council Dr John A. Schembri, Appointed by the Faculty of Economics Management and Accountancy Dr Gordon Cordina; Appointed by the Faculty of Engineering Prof. Simon Fabri; Appointed by the Faculty of the Built Environment Prof. Alex Torpiano; Appointed by the Faculty of Science Dr Sandro Lanfranco; Appointed by the Faculty of Information and Communication Technology Dr Eng. Saviour Zammit.

This report outlines the work and achievements of the Institute for Sustainable Development during the period October 2009 and September 2010.

### Aims of the Institute

- (a) to assist by interdisciplinary research in the realisation of national plans to improve the infrastructure, productivity, entrepreneurship and the quality of life in Malta;
- (b) to provide advice and assistance on issues of sustainable development in Malta;
- (c) to promote the use of, and deploy Geographic Information Systems and other information systems as a tool for decision support and strategic planning;
- (d) to promote and catalyse science and technology commercialisation, the creation of start-ups and new business ventures, and the transfer of innovation and technology to industry;
- (e) to organise undergraduate and postgraduate courses within the scope of the Institute subject to the Statutes and Regulations of the University;
- (f) to network and liaise with similar, university institutions and centres for sustainable development overseas; and
- (g) to disseminate the knowledge acquired by publication, seminars and teaching programmes.

## **The University of Malta Institute for Sustainable Development**

### **The Administrative Office**

The Institute was initially located in Binja Cassar Pullicino on the Msida Campus but was later moved to new premises outside the Msida Campus at Regional Building, Triq I-Imhalled Paolo Debono. These are temporary offices until new premises are constructed purposely on campus. Plans for the new premises have been submitted and approved and it is hoped that the Institute will move back to campus by 2012.

### **The Institute's Human Resources**

Ms Stephanie Stellini took up the position of Graduate Trainee within the Institute to support the administration in December 2009. Following this appointment a Call for Applications was issued for the position of a resident academic. The call was issued in December 2009 and Ms Thérèse Bajada was appointed as Resident Assistant Lecturer in January 2010. She later joined the Institute in April. In September 2010 Ms Bajada enrolled at UCL's Civil, Environmental and Geomatic Engineering Department to pursue her PhD studies. Her research will focus on developing a spatial model to predict the sustainability of the public transport network in Malta. She aims to complete her PhD studies on a part-time basis over a period of five years. She was subsequently awarded a MGSS scholarship to support her studies.

In March 2010 Dr Eng. Saviour Zammit (Lecturer in the Faculty of Information and Communication Technology) was appointed as Coordinator of the Science and Technology Entrepreneurship Unit within the Institute. Over the summer he attended the European Entrepreneurship Forum, a week long summer school to develop his knowledge in this area and widen the network of contacts with other European institutions. The Institute funded partially the cost of attendance for this summer school.

## **Community Outreach**

### **The Institute Website**

In order to externalise and reach out to the University community but also to the larger public the Institute dedicated a lot of its administrative resources to develop the Institute's website. The Institute's website contains reference to almost all the work that the Institute engaged in over its first year of work. Sections in the website include:

- The Homepage which provides an introduction to the Institute, the latest news, and direct links to the study programmes (Courses) offered by the Institute;
- An About page containing the link to the Institute Statute, the composition of the Board and a brief bio of the Director;
- A Staff page containing the contact details and link to personal pages of the staff compliment of the Institute;
- A News page listing all the news events published by the Institute;
- An Events page providing information on the various events organised by the Institute;
- A Research page where interested researchers wishing to carry out research with or at the Institute can download the Guidelines for the Preparation of Research Proposals;

- A Links page which lists interesting and relevant websites;
- A page dedicated to the European Joint Research Centre initiatives and events;
- A Working Papers page where until now interested researchers can download the Guidelines for the Preparation and Submission of Working Papers to the Institute's Working Paper Series;
- A Media Coverage page which lists the instances where the Institute was reported on the media;
- A Green Travel Plan Initiative page where staff and students at the University can refer to the developments on the University's Green Travel Plan.



Pages from the Institute's Homepage link to the recently launched study programmes, including the Diploma in GIS and the MSc by Research which contains information about the study programme as well as the Student Handbook, Dissertation Guidelines, Graduate Log Book and information for students.

Future pages will include the development of a Projects page including progress and publications related to specific research projects, some of which are described in this report.

[www.um.edu.mt/isd](http://www.um.edu.mt/isd)

## The Institute in the Media

The Institute received media coverage in the form of printed press and radio in 2010. Most media covered the launch of the Institute and the main initiatives undertaken throughout this year. Interviews and articles in the media also featured in local media. Below is the list for this first year.

### Press Releases

#### Summer School in Geographic Information Systems

A summer school on Spatial Data Management and Geographic Information Systems (GIS) was recently held at the University of Malta (UOM) campus, Msida. It was organised by the UOM's Institute for Sustainable Development in collaboration with University College London's (UCL) Department of Civil, Environmental and Geomatic Engineering, and the University of Portsmouth's Geography Department. The summer school was attended by a group of delegates who had the opportunity to apply GIS using spatial statistical techniques, available in GIS software, and investigate aspects of data quality. It included a number of lectures complemented by hands-on sessions. Delegates comprised workers from utility companies and government agencies as well as researchers interested in developing skills in this area of study. The teaching faculty consisted of Maria Attard (UOM), Muki Haklay (UCL), Helena Titheridge (UCL), Claire Ellul (UCL), Kate Jones (Portsmouth) and Thérèse Bajada (UOM).

*Times of Malta 25th July 2010; Il-Ġens Illum 14th August 2010*

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#### New Courses Master of Science by Research

The Institute for Sustainable Development (ISD) of the University of Malta is offering a Master of Science (by research) from October. The programme focuses on individual research and candidates will be encouraged to apply technology tools to model, predict and forecast particular behaviour, phenomena, policies which are in line with the institute's objectives as well as particular streams identified in the government's ICT strategy for Malta. Through literature reviews, students will demonstrate the importance and relevance of their research to the area of study, compute statistics and interpret results. This course will enable students to report on subject knowledge in their dissertation as well as examinations linked to the taught component of this programme of study. Through the development of research in innovative areas of study, students will be able to develop intellectually in niche areas, establish new areas of research within the institute and transfer skills and knowledge to the industry and/or government. Students will be expected to demonstrate key skills such as the handling of spatial and/or non-spatial data, academic report writing and time management. They will also be expected to use case studies in their research and model performance, trends and forecasts of particular phenomena, which will then be reported in the dissertation. They will also develop skills in application or development of technology to support policy-making and strategy, which are currently in high demand in the industry. Interested candidates should prepare a proposal following the guidelines which can be found at the ISD website. Interested participants are to refer to the University website for online application. Further details about the programme can be obtained at [www.um.edu.mt/isd](http://www.um.edu.mt/isd), by e-mailing [isd@um.edu.mt](mailto:isd@um.edu.mt), or by calling 2340 3403.

*Times of Malta 25th July 2010*

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### **Finding our position**

Dr Maria Attard, Director of the Institute for Sustainable Development, tells Michael Vella how Geographic Information Systems and interdisciplinary research can lead to better decision-making.

### **Interview**

*Technology Sunday, Sunday Times 23rd May 2010*

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### **Happy Buzzword Fetishists**

Dr Leo Brincat shares his opinion about Sustainable Development and the launch of the Institute.

### **Opinion**

*Times of Malta 27th January 2010*

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### **University sets up Institute for Sustainable Development**

The university this morning officially launched its institute for sustainable development which aims to offer an opportunity for collaboration of different stake holders in the application and development of support strategies for decision making. Director Maria Attard said the primary objective of the institute was to assist, through research, in the realisation of national plans to improve infrastructure, productivity, entrepreneurship and quality of life in Malta. It also aimed to provide advice and assistance on issues of sustainable development as well as promote and catalyse science and technology commercialisation, the creation of start-ups and new business ventures and the transfer of innovation and technology to industry. University rector Juanito Camilleri said the institute aimed at collaborating with leading institutions to develop study programmes and post-graduate research for the creation of a knowledge based economy and society. It would act as an incubator on campus. Prof. Camilleri said the university was looking at creating a post-graduate programme to help the commercialisation of ideas and innovation emerging from within the university through feasibility studies and business plan formulation and the development of new business ventures. "This institute will make the University of Malta more relevant to the socio-economic development of our country," he said. Prime Minister Lawrence Gonzi spoke on the importance of sustainable development. He said the university had transformed itself from just a supplier of human capital to an institution which responded to the country's needs, coming up with specific courses in the principle economic drivers of the country. The government, he said, was investing €3.5 million a day in the social development of the country through welfare programmes, education and free health care. In the context of sustainable development he mentioned the rent and Mepa reforms, saying the latter aimed to achieve more consistency and enforcement through better use of land. "Sustainability is all about duty and obligation, not only towards the present generations but even more for future generations. "National competitiveness in a globalised world hinges on research which has economic value," he said. He commended the university's initiative and said that the institute would become a reference point for research.

*Times of Malta 22nd January 2010; di-ve.com 22nd January 2010; www.maltastar.com 22nd January 2010*

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### **Promoting an informed debate**

Anne Zammit debates the importance of information for decision making whilst covering the launch of the Institute for Sustainable Development

*Sunday Times 31st January 2010*

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The Institute's Launch at the Aula Magna, Old University Building, Valletta

## Radio

### **The Institute for Sustainable Development on Research Matters III, Campus FM**

Dr Maria Attard was interviewed by Patricia Camilleri about the Institute for Sustainable Development on Research Matters, a radio programme aired on Campus FM. The webcast is available on <http://www.um.edu.mt/comms/servicesresources/radioprogrammes#researchmatters3>

### **The Institute for Sustainable Development on Radju Malta**

Dr Maria Attard was interviewed by Andrew Azzopardi about Sustainable Development on Radju Malta - February 2010

## Participation in conferences and events

### **Mainstreaming Small-State Studies in Higher Education**

**24th November 2009, University of Malta, Msida, Malta**

Dr Maria Attard and Dr John Schembri (Geography) presented 'Small is beautiful: Geography at the Forefront of Island Studies'.

### **Transportation Research Board, Annual Meeting Washington DC, USA**

**11th – 14th January 2010, Washington DC, USA**

Dr Maria Attard presented a poster 'Smeed Report Requirements of a Road Pricing System: The Case of Valletta, Malta' in collaboration with Prof. Stephen G. Ison, Transport Studies Group, Loughborough University, UK.

### **Peer Learning Activity on New Skills for New Jobs: changing skills and competences and dialogue between HEIs and private/public employers**

**8th – 10th March 2010, The Hague, Netherlands**

Dr Maria Attard attended the Peer Learning Activities organised and funded by the European Commission. Dr Attard was accompanied by Ms Kirsten Miller from the National Commission for Higher Education, Malta.



### **Sustainability and Quality of Life**

**24th March 2010, University of Malta, Msida, Malta**

Ms Thérèse Bajada presented her PhD at the post-graduate forum held during this event.

### **Negotiating Climate Change: After Copenhagen**

**12th April, 2010, University of Malta, Msida, Malta**

A talk was held by the Maltese Ambassador on Climate Change, Mr Michael Zammit Cutajar. Ms Thérèse Bajada attended the talk and discussion.

### **GIS Research UK (GISRUK) Conference**

**13th – 16th April 2010, London, UK**

Dr Maria Attard attended this conference organised by University College London.





**EUROGEO Conference**

**7th – 8th May 2010, Prague, Czech Republic**

Dr Maria Attard attended the annual meeting and conference of EUROGEO, the European Association of Geographers. In 2009 she was elected vice-president of the Association. She delivered a presentation entitled 'Applying Sustainability through Geography'.



**Technology, Innovation & Commercialisation Workshop**

**23rd August 2010, University of Malta, Msida, Malta**

On Monday the 23rd August 2010 the Director Institute for Sustainable Development, Dr Maria Attard and the E-Unit Co-ordinator Dr Eng. Saviour Zammit attended a one day workshop entitled "Technology, Innovation & Commercialisation Workshop" organized by the Corporate Research and Knowledge Transfer Office of the University. Presentations were delivered by Douglas Thomson of Illetrop Ltd and Samantha Gallagher of ISIS Enterprise – Oxford University research commercialization arm.

**Workshop on Interoperability CEN/TC 287 Geographic Information European Standards**

**14th September, 2010, St Julians, Malta**

The Malta Standards Authority hosted this year the CEN/TC 287 meeting on the Interoperability Standards for Geographic Information. Ms Thérèse Bajada and Dr Maria Attard attended the workshop.



**Developing National Environmental Monitoring Infrastructure and Capacity,**

**16th September, 2010, University of Malta, Msida, Malta**

Presentation of the ERDF156 project lead by the Malta Environment and Planning Authority in partnership with the University of Malta amongst other agencies of Government. Ms Thérèse Bajada attended the presentation whilst Dr Maria Attard chaired the session.

**National Environmental Policy Stakeholder Meeting**

**17th September, 2010, St Julians, Malta**

The stakeholder meeting held to discuss the recently published issues paper. Ms Thérèse Bajada attended the meeting.



## Entrepreneurship Unit

The Entrepreneurship Unit (E-Unit) was set up to act as a centre of excellence in Entrepreneurship at the University of Malta. It aims to train students and staff in the science and art of Entrepreneurship using a participant centred, hands-on approach, by leveraging entrepreneurship expertise at the University of Malta and seasoned entrepreneurs. The E-Unit will also seek to co-ordinate start-up and venture capital funds for the development of an indigenous high-tech, science and technology based entrepreneurship sector. The Unit is coordinated by Dr Eng. Saviour Zammit.

The following activities were undertaken during 2010 to further these objectives.

### Visit to University College London (UCL), UK

Between the 28th and 30th of April 2010, a University of Malta delegation comprising the Rector, the Director of the Institute for Sustainable Development, the Director Corporate Research and Knowledge Transfer, and the Entrepreneurship Unit Co-ordinator visited UCL to hold discussions about possible collaboration on the setting up of a technology transfer office and the establishment of a hands-on entrepreneurship education and training programme.



### Meetings were held with a number of UCL officers including:

- Dr Anne Lane, Executive Director, UCL Business PLC;
- Mr Tim Barnes, Executive Director, UCL Advances;
- Dr Dave Chapman, Deputy Head of Department, Dept. Of Management Science & Innovation, Deputy Director of UCL advances and Course Director for the MSc in Technology Entrepreneurship;
- Dr Muki Haklay, Senior Lecturer in Civil, Environmental and Geomatic Engineering, Director, Chorley Institute;
- Prof. May Cassar, Director, Centre for Sustainable Heritage.

### European Entrepreneurship Colloquium

Dr Eng. Saviour Zammit, attended the European Entrepreneurship Colloquium from the 11th July to the 17th July 2010, in Barcelona, Spain. EEC 2010 is co-funded by the European Commission and managed by the European Forum for Entrepreneurship Research (EFER). The colloquium focused on the teaching of financial aspects of entrepreneurship and was attended by over 70 participants from 20 different countries.



The attendance to the meeting was part financed by the Institute for Sustainable Development and was a first forage into the development of an academic program for the teaching of Entrepreneurship skills to the University's Science and Technology graduates and educators.

### ESF fund application

The E-Unit Co-ordinator collaborated with the Director, Corporate Research and Knowledge Transfer of the University, Dr Eng. Anton Bartolo, to submit an application for ESF funding. The application aims to set up and operate a two year intensive training programme in Technology Entrepreneurship. A brief of the training programme follows.

### Intensive Training Programme in Technology Entrepreneurship

The University of Malta will organize a series of eight intensive training courses targeting fifteen promising entrepreneurs per module. The modules will be repeated annually for two years. The modules covered shall include:

- Module 1 Entrepreneurial Technology Ventures
- Module 2 Technological Creativity and Innovation
- Module 3 Business feasibility planning for Entrepreneurship
- Module 4 Marketing for Technology Entrepreneurs
- Module 5 Management of Entrepreneurial Projects
- Module 6 Management of High-Technology organisations
- Module 7 Strategy for Technology Ventures
- Module 8 Risk management in Technology Ventures
- Module 9 Technology Venture Mentoring

*(The titles of the modules may change as determined by an initial study)*

### Entrepreneurship Unit website

The E-Unit Website has also been set up to facilitate communication and networking within University and beyond. It consists of the following sections: Home Page, About Us, Staff, News, Entrepreneurship at the UoM, Training Programs, Resources for Entrepreneurs, Research at the E-Unit and Links.



## Research Activities

The E-Unit is collaborating with the Faculty of ICT and Engineering to develop research into GIS-related Applied Practical Tasks (APTs) and Final Year Projects (FYPs) for students.

The first completed APT was submitted and examined successfully in July 2010, and was entitled: Mappit! – An application to integrate mobile GPS technologies with mobile Apps and web services.

The following GIS related final year projects will be developed as from October 2010:

- On Demand Transport System;
- Travel Information System;
- Intelligent Campus Parking System.



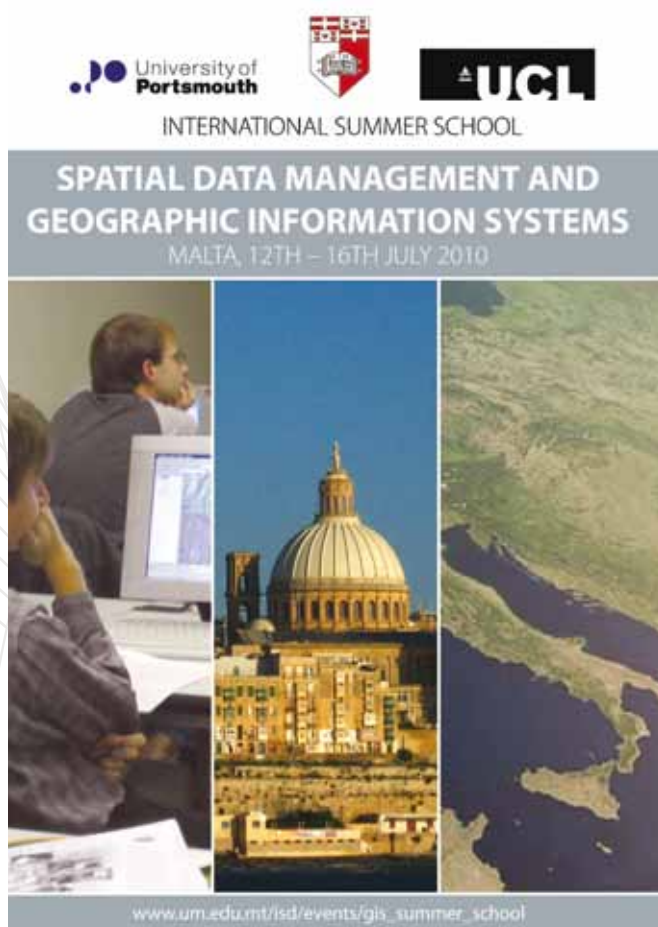
## Short Courses

### International Summer School on Spatial Data Management and Geographic Information Systems

The Institute for Sustainable Development, University of Malta in collaboration with the Department of Civil, Environmental and Geomatic Engineering, University College London (UCL) and the Geography Department, University of Portsmouth, successfully completed a Summer School on Spatial Data Management and Geographic Information Systems which was held between the 9th and 16th of July 2010 at the main Msida Campus.

The Summer School attracted a group of delegates who were interested in handling spatial data in line with the INSPIRE directive but not only. The delegates also had the opportunity to apply GIS using spatial statistical techniques available in GIS software and investigate aspects of data quality. The method used in the delivery of the summer school was a mix of lectures supplemented with hands-on sessions using ArcGIS, SPSS and open source software like PostGIS and Quantum GIS. Candidates also had the opportunity to learn how to handle spatial data using PostgreSQL.

This year's delegates came from utility companies, government agencies as well as researchers interested in developing skills in this very important area of study. The objectives of the summer school were to provide mid-career professionals, undergraduate students and graduates with the skills necessary to handle Geographic Information and the knowledge of how best to apply Geographic Information Systems.



*Lecturers and participants at the Summer School*

[http://www.um.edu.mt/isd/events/gis\\_summer\\_school](http://www.um.edu.mt/isd/events/gis_summer_school)

## Study Programmes

Throughout its first year of operation the Institute submitted for approval of Senate two study programmes. Both study programmes were approved. Below is a brief description of each.

### Diploma in GIS


**Board of Studies:** Dr Maria Attard (Chair), Dr Eng. Saviour Zammit, Mr Michel Camilleri, Dr John A. Schembri

The Institute engaged a team of local and foreign lecturers to deliver this study programmes. Lecturers from University College London, Portsmouth University and Kingston University from the UK were amongst the faculty involved in the teaching of this undergraduate Diploma programme. The programme was designed for part-time studies.

The study programme concentrates around an increasingly important technology which is reinforcing strategy and policy making. This programme of studies provides the first opportunity for formal training for many who are interested in developing skills in this specialised discipline. The study programme is designed in such a manner to effectively expand the student's understanding of GIS. As a result, the course programme incorporates a number of study units aimed at the teaching of basic concepts of GIS and its application alongside hands on sessions that allow the students to effectively apply their new skills.


The number of applicants for the 2010 - 2011 academic year did not satisfy the minimum requirements and the study programme will be re-offered next academic year.

<http://www.um.edu.mt/isd/courses/diplomagis>



The Institute for Sustainable Development of the University of Malta is pleased to announce

## Diploma in Geographic Information Systems



**OBJECTIVES OF THE STUDY PROGRAMME**

The study programme is focused around an increasingly important technology which is underpinning strategy and policy making. Geographic Information Systems are essential support tools that are widely used across a range of applications, from planning to health, from education to environmental management. This programme of studies will provide the first opportunity for formal training for many who are interested in developing skills in this very specialised discipline.

The study programme is designed in such a manner to effectively expand the student's understanding of Geographic Information Systems over the period of study. The course programme therefore includes a number of study units aimed at the teaching of basic concepts of Geographic Information Systems alongside study units aimed at teaching the application of Geographic Information Systems and hands on sessions which will allow the students to effectively apply their new skills.

### **Master of Science (by Research)**

**Board of Studies:** Dr Maria Attard (Chair), Ms Thérèse Bajada, Dr Eng. Saviour Zammit, Dr John A. Schembri

The Institute for Sustainable Development started also receiving applications for interested candidates wishing to pursue a Master of Science by research. The programme of study focuses mainly on individual research and candidates are encouraged to apply technology tools to model, predict and forecast particular behaviour, phenomena and policies which are in line with the Institute's objectives.

Candidates are expected to carry out a thorough literature review and write up a dissertation to demonstrate the importance and relevance of the research to the area of study as well as compile data sets, compute statistics and interpret results using technology. This course will enable the candidate to report on subject knowledge as well as examinations linked to the taught components of this programme of study.

Through the development of research in new and innovative areas of study, candidates will be able to develop intellectually in niche areas and contribute to the research areas of interest to the Institute and transfer skills and knowledge to the industry and/or government.

Students are expected to demonstrate key skills such as the handling of spatial and/or non-spatial data, academic report writing and time management. They will also be expected to use case studies in their research and model performance, trends and forecasts of particular phenomena. Students will develop skills in application or development of technology to support policy-making and strategy, which skills are currently in high demand in the industry. Such a programme would give the opportunity for academics to invest in their students.

Five students have been accepted for the 2010-2011 academic year. The research topics are of an interdisciplinary nature and will see the Institute working with the Geography Division of the Mediterranean Institute, the Faculty of Education and the Department of Chemistry within the Faculty of Science. Topics vary from concerns over quality of life, development density, air pollution studies and education as a tool for economic development.

Students will be expected to present their work throughout the duration of their studies and contribute to the Institute Working Paper Series.

A number of documents have been prepared to assist students in applying and monitoring progress during their studies. These include Guidelines for the preparation of research proposals, Graduate Research Logbook that oversees the student's progress throughout his/her studies, a Student Handbook containing important information and Dissertation Guidelines.

*<http://www.um.edu.mt/isd/courses/mscresearch>*



## Projects

### WebGIS Project

The WebGIS Project is defined as a website containing reviewed geographic data about Malta which are easily accessible, with some being available for download for free and which allows for users to view, query and carry out basic analysis on the available geographic data. The concept of a UoM-WebGIS service revolves around the ability of different users to browse through otherwise unexplored and unpublished datasets about various aspects of Maltese society, environment and geography collected by researchers and scientists at the UoM, Government organisations and NGOs, using a user friendly map interface. The WebGIS Project asserts four objectives:

1. Provide access to data to support policy making and strategic planning at national level;
2. Provide access to the academic research output at the University of Malta;
3. Support inward investment through the provision of geographic data;
4. Encourage business start ups.

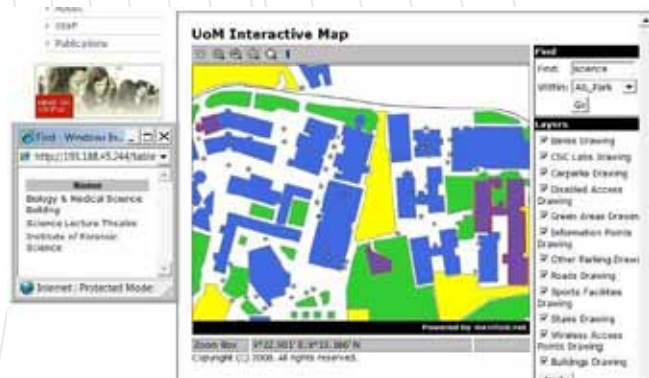
Progress has been achieved in the development of base data which will provide access to census data on geographic layers. It is hoped that the first datasets be available towards the beginning of 2011.

### Campus GIS Project

Geography and ICT students carried out coursework to support the data collection and development of a campus GIS. Information was collected around the Msida Campus about land use, open spaces, waste collection, furniture, WIFI locations, information boards, computer labs and vehicular access. ICT students were engaged through their final year project to develop the interface for the interactive campus map.



Source: Edward Brincat, Final Year BSc IT student



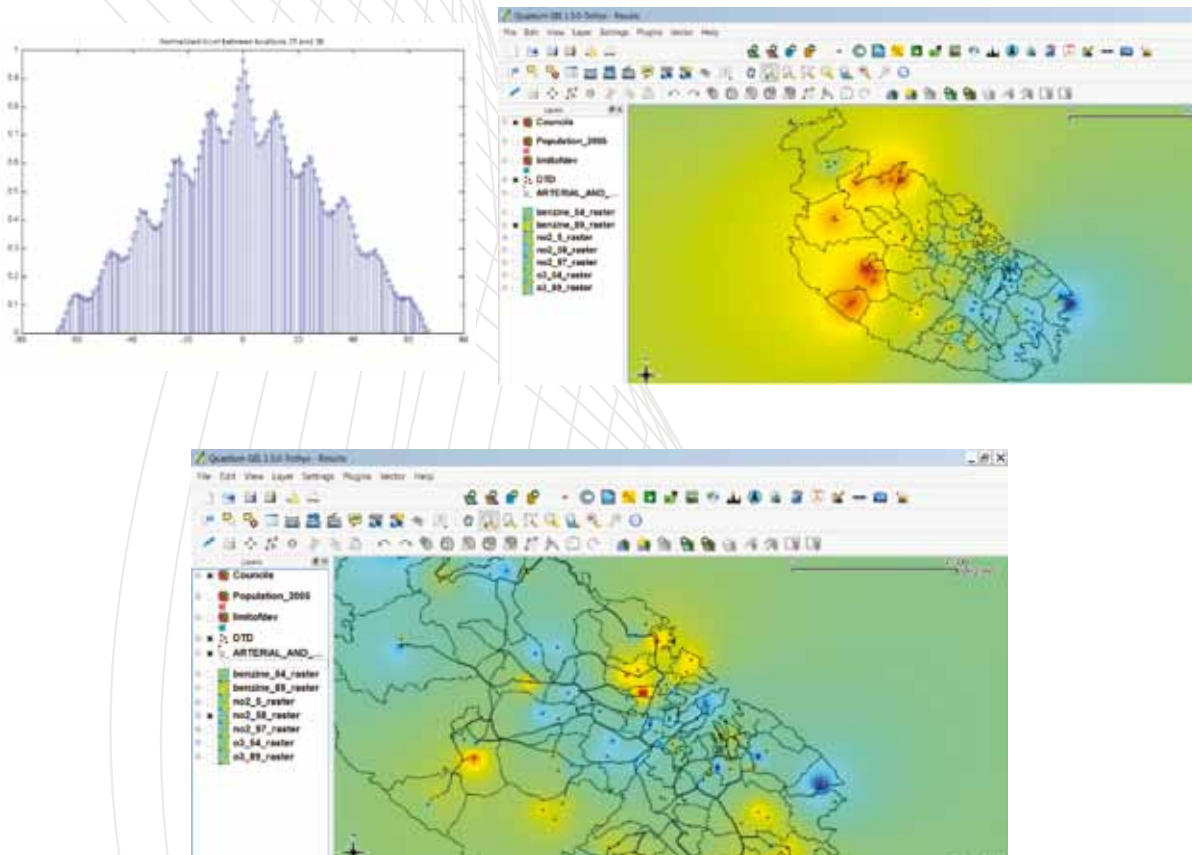
Source: Dr Eng. Saviour Zammit, Lecturer ICT



### Spatio-temporal analysis of air pollution levels in Malta using diffusion-tube network data

Research Partners: Institute for Sustainable Development (Dr Maria Attard; Ms Thérèse Bajada), Faculty of Engineering (Dr Kenneth Scerri) and the Malta Environment and Planning Authority (Mr Mark Scerri).

The Malta Environment and Planning Authority collects monthly averaged data for sulphur dioxide, nitrogen dioxide, ozone and benzene from a network of 134 diffusion tubes located around the Maltese Islands. The paper deals with data collected over the period 2004 and 2009. The objectives of this initial study are to i) map the data and create the basis for a spatio-temporal model ii) investigate any correlations between air quality levels and distance; and iii) identify land uses or topological features that affect the patterns of pollution displayed by the data over space and possibly, time. Results will show that there is very little correlation between values and space, and that distance is not the only factor affecting patterns of pollution over the islands. This interdisciplinary study brings together expertise from engineering and geography and builds on existing research in applying spatio-temporal models to the analysis of air pollution data.

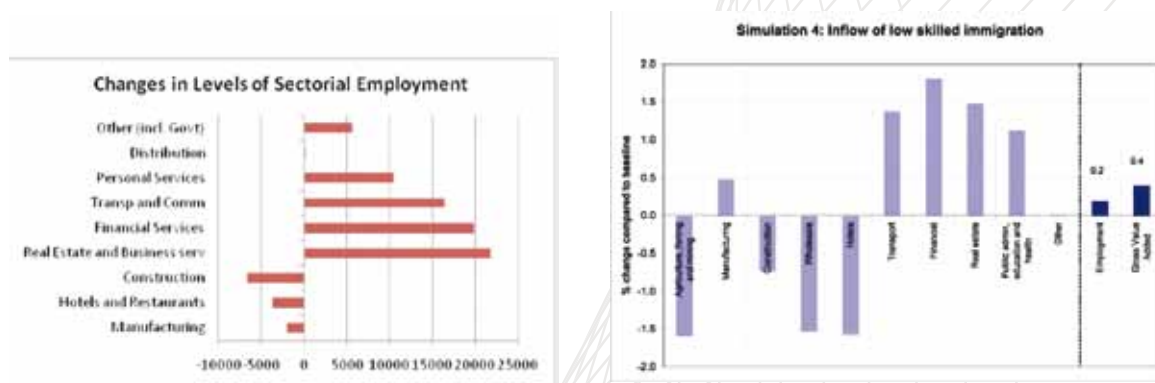


*Project outputs in graphical and map formats*

### Malta's Human Capital and Economic Sustainability

Research Partners: Institute for Sustainable Development (Dr Maria Attard), Department of Economics, Faculty of Economics, Management and Accountancy (Dr Gordon Cordina, Dr Philip von Brockdorff).

In 2009 the University of Malta launched the Institute for Sustainable Development in an attempt to initiate the debate on issues related to sustainability. Early discussions with stakeholders concluded on the concern over future human capital and skills. The objectives of the research are therefore to i) present the results of an economic and social foresight exercise for Malta; ii) predict future scenarios for the various economic sectors; iii) describe the current and future educational structures; and iii) develop a model of the economic benefits from educational attainment.



According to recent research, the reform of an education system providing adequate skills for all citizens could increase GDP by as much as 10 per cent in the long term (Wößmann, Schwerdt, Piopiunik, 2009)<sup>1</sup>. A better-trained workforce also benefits the economy as a whole and increases its competitiveness. It makes it easier for enterprises to adopt new technologies, innovate in products and services, processes or work organisation. The European Commission is also targeting the skills pool for future economic growth. Efforts by the Expert Group on New Skills for New Jobs have already identified actions to promote new skills (European Commission, 2010)<sup>2</sup>.

The research describes Malta's economic history, investigates the demographic profile, including its educational system and looks at the employment sectors and projects these to 2020. Initial results point towards a major re-orientation of Malta's major economic sectors to achieve the 2020 employment targets set by the Government Vision 2020 and EU convergence targets. The research would also feature an important geographical dimension where the interlay of economic, educational and social dynamics would be studied at a regional level.

Using the analysis carried out on the various factors influencing sustainable economic growth, the research develops a model of economic development through educational attainment. The individual sectors are tested over a period of years according to different growth patterns. A policy framework can be identified and future work could potentially focus on the implementation of such policy for sustained economic growth.

<sup>1</sup>Wößmann, L., Schwerdt, G., Piopiunik, M. (2009) The economic costs of inadequate education: a macroeconomic calculation of the dynamic growth effects of lacking education competence. Bertelsmann Foundation.

<sup>2</sup>European Commission (2010) New Skills for New Jobs: Action Now. A report by the Expert Group on New Skills for New Jobs prepared for the European Commission.

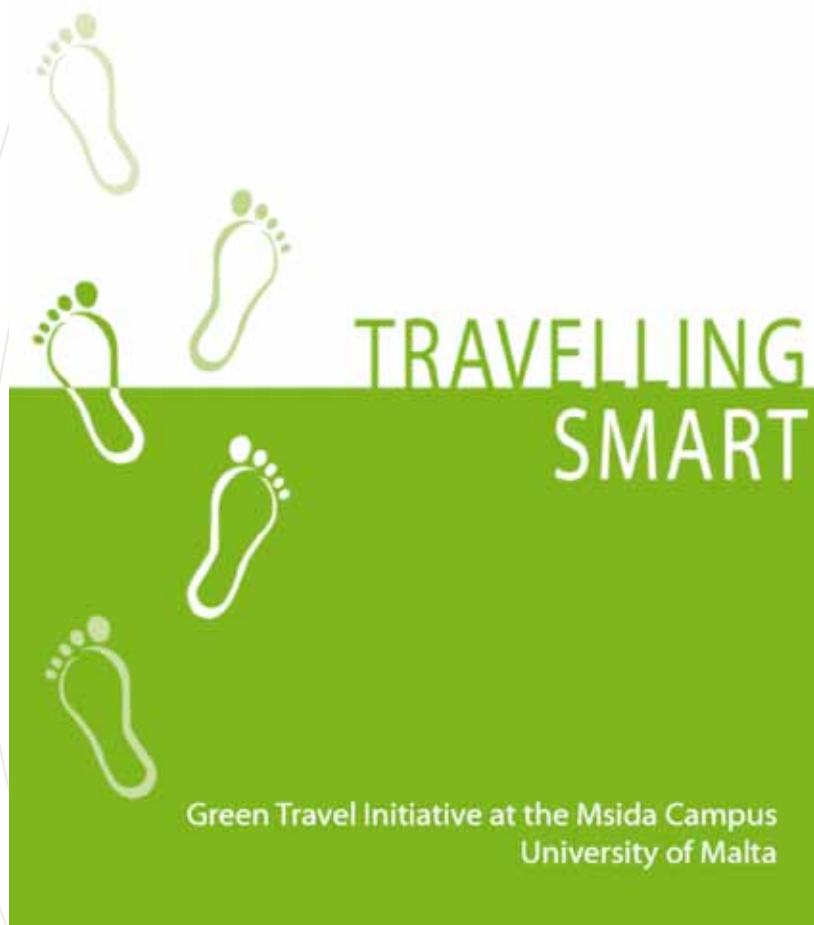
### Travelling Smart Initiative at the University of Malta

Partners involved: Institute for Sustainable Development (Dr Maria Attard; Ms Thérèse Bajada), Estates and Works (Perit Christopher Spiteri), Faculty of the Built Environment (Dr Paul Gauci), Statistics and Operations Department (Dr Liberato Camilleri), Precincts Office (Mr Joe Camilleri), Communications Office (Ms Patricia Camilleri, Ms Laura Mifsud Bonnici)

As part of the requirement to develop a Green Travel Plan for the Msida Campus, the Institute for Sustainable Development is collaborating with the University's Estates and Works to encourage staff and students to change their travelling habits and change to environmentally friendly modes of transport. The Institute has initiated the process to develop the first ever Green Travel Plan for the University. Awareness campaigns and a questionnaire will be distributed in the first month of the academic year. It is hoped that with the data collected an effective plan can be drawn up and submitted to the Malta Environment and Planning Authority for approval. This plan will be the first step towards the implementation of sustainable mobility practices at University.



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## Events

### GIS Day on Campus

A GIS Day was held on Campus on Wednesday 18th November 2009, with a stand and various demonstrations at the Students' House.



*Rector visited the stand on GIS Day whilst students demonstrated how GIS works*

*[http://www.gisday.com/apps/successstory\\_search1.cfm?eventID=11192](http://www.gisday.com/apps/successstory_search1.cfm?eventID=11192)*

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### Official Launch of the Institute for Sustainable Development

On Friday 22nd January 2010, the University of Malta officially launched the Institute for Sustainable Development. The Institute, officially inaugurated by the Prime Minister Lawrence Gonzi, aims to make the University of Malta more pertinent to the socio-economic development of our country, as it continues to reflect this specific direction, highlighting study programmes aimed at enhancing entrepreneurship and specialised capacity in the country and with projects that aim to bring together academic and non-academic information into one accessible map-based databank for use in policy decisions, research and business start ups.

Professor Juanito Camilleri, Rector and Chairman of the Institute, and Dr Maria Attard, Director of the Institute, spoke about University's major steps in the provision of quality higher education in the interest of the strategic goals of the country and of the University. Dr Attard said the Institute aimed at collaborating with leading institutions to develop study programmes and post graduate research for the creation of a knowledge based economy and society. Prof. Camilleri said that the University was looking at creating a post-graduate programme to help the commercialisation of ideas and innovation emerging from within the University through feasibility studies and business plan formulation and the development of new business ventures. The Institute will no doubt reach out to a number of local stakeholders which will in time benefit from its expertise and services but will extend beyond our shores to strike strategic partnerships with international counterparts.

During the launch the Prime Minister referred to the importance of new approaches to support sustainable development, which he defined as person-based and community-oriented - particularly ones that integrate and promote the use of Information Technology. The Prime Minister emphasised that the University had transformed itself from just a supplier of human capital to an institution which responded to the country's needs, coming up with specific courses in the principle economic drivers of the country. The Institute for Sustainable Development will surely become a reference point for research and will act as a catalyst not only for policy recommendations but also for commercial research exploiting existing inter-disciplinary synergies. In addition, it will continue contributing to the existing stock of human capital and knowledge economy.



The launch was supported by a number of organisations including the Malta Council for Science and Technology, the Malta Information Technology Agency, the Ministry of Finance, the Economy and Investment, the Ministry for Infrastructure, Transport and Communications, Malta Enterprise, the National Statistics Office, the Cleaner Technology Centre, CVA Technology and GEOSYS.

Professor Michael Batty, Bartlett Professor of Planning and Director of the Centre for Advanced Spatial Analysis at University College London delivered a keynote speech about climate change and modelling, outreach and sponsorship, with examples from London-based projects.

<https://secure.um.edu.mt/isd/news/institutelaunch/>

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### **Sustainability and Quality of Life Event**

On the **24th of March 2010** the Institute for Sustainable Development in Collaboration with the Mediterranean Institute's Geography Programme, University of Portsmouth's Geography Department and the University of Malta Geographical Society organised a workshop entitled 'Sustainability and Quality of Life'.

During this event various local and foreign speakers delivered presentations about their research. Presenters included

Dr Julia Brown, University of Portsmouth  
Water for Life  
Sustainable Water Management in Malta

Dr Lars Keller, University of Innsbruck  
Quality of Life in the Austrian Tyrol

Postgraduate Forum Speakers  
Margaret Calleja (M.A. candidate, University of Malta)  
Population growth and density as a measure of the Quality of Life index

Thérèse Bajada (PhD candidate, University College London)  
Modelling Sustainability in Transport: The Case of the Public Transport Reform in Malta

Bernardine Satariano (M.A. candidate, University of Malta)  
The Geography of socio-economic challenges

[https://secure.um.edu.mt/isd/news/sustainability\\_and\\_quality\\_of\\_life](https://secure.um.edu.mt/isd/news/sustainability_and_quality_of_life)

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### Students meet Entrepreneurs - SME Week

The "Students meet Entrepreneurs" week was held at the University of Malta on Wednesday, 26th May 2010. This event was organised by the Entrepreneurship Unit of the Institute for Sustainable Development in collaboration with the Edward deBono Institute of the University of Malta and the Ministry of Finance, the Economy and Investment. This was a free public event where students and entrepreneurs discussed the challenges and opportunities involved in starting up a business.



The poster features a header with the Maltese coat of arms and the text "Ministry of Finance, the Economy and Investment" on the left, and the "EUROPEAN SME WEEK 2010 TRAINING BUSINESS CHAMPIONS!" logo on the right. The main title "SME WEEK comes to Campus!" is in large blue font. Below it, the event title "STUDENTS MEET ENTREPRENEURS" is followed by a paragraph describing the event. The venue "Sir Temi Zammit Foyer" and date "26 May 2010" with time "10:00 - 11:30am" are listed. A section titled "ON THE PANEL:" lists speakers: Ing. Mario Schembri (AIS Group), Ivan Bartolo (6PM), Marisa Cassar (MLS BioDNA), and Joseph Grech (Malta Enterprise), with Leonie Baldacchino as the chair. A note states the Enterprise Mobile Unit will be parked on campus on Wednesday, 26 May 2010 from 09:00am. The bottom right corner features the University of Malta logo and name in both English and Maltese.

**SME WEEK comes to Campus!**

**STUDENTS MEET ENTREPRENEURS**

The University's Institute for Sustainable Development and the Edward de Bono Institute for the Design and Development of Thinking are organising an event in collaboration with the Ministry of Finance, the Economy and Investment, during which students and entrepreneurs will discuss the challenges and opportunities involved in starting up a business.

**Venue:** Sir Temi Zammit Foyer  
**Date:** 26 May 2010    **Time:** 10:00 – 11:30am

**ON THE PANEL:**  
Ing. Mario Schembri (AIS Group) Ivan Bartolo (6PM) Marisa Cassar (MLS BioDNA) Joseph Grech (Malta Enterprise) Leonie Baldacchino, from the Edward de Bono Institute for the Design and Development of Thinking, will chair the session.

The Enterprise Mobile Unit will be parked on campus on  
**Wednesday, 26 May 2010 from 09:00am**

Students and the general public are encouraged to participate and entrance is free.

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## Other Initiatives

### Working Paper Series

Editor: Dr Maria Attard

The objectives of the Institute for Sustainable Development Working Paper Series are to:

- disseminate academic work that represents work-in-progress in the fields related to sustainability, information technology, quality of life and interdisciplinary research;
- provides academics with the possibility of a means of publication within a short period of time prior to the development of further work; and
- provides academics with a peer review to help them improve their work in order to publish the work in academic journals.

The Working Paper Series publishes work exploring issues in sustainability through the application of interdisciplinarity and use of technology tools to achieve sustainable development. Papers in this series can tackle important issues current to the local scene as well as broader international policy related to any area of sustainability. Papers that review academic literature on particularly current subjects or deal with methodological themes are also welcome.

Guidelines for the submission of papers have been developed and posted online.

[http://www.um.edu.mt/isd/working\\_papers](http://www.um.edu.mt/isd/working_papers)

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### Joint Research Centre – National Contact Point

Dr Maria Attard, Director of the Institute for Sustainable Development has been appointed as National Contact Point for the European Commission Joint Research Centre (JRC).



The mission of the Joint Research Centre (JRC) is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of European Union policies. As a service of the European Commission, the Joint Research Centre functions as a reference centre of science and technology for the Union. Close to the policy-making process, it serves the common interest of the Member States, while being independent of special interests, whether private or national (European Commission, 2010).

On the occasion of a joint event organised by the JRC in cooperation with the Malta Council for Science and Technology (MCST), the two organisations signed a Memorandum of Understanding on intensified research cooperation. Areas of such collaboration have been identified on the basis of mutual interest and include environment, biotechnology, information and communication technologies (ICT), energy, food safety and maritime affairs.

Both organisations have also agreed to host Maltese doctoral and post doctoral students in the various JRC Research Institutes. Candidates for grants funded by Malta's national programmes will be nominated by MCST or the University of Malta, and pre-selected candidates will be approved by the JRC. Maltese candidates to the EU grants will need to follow the common JRC grants procedures or apply for a Marie Curie fellowship.

The Institute updates the JRC news through its website.

*<http://www.um.edu.mt/isd/jrceuropeancommission>*

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### **Services offered to Third Parties**

A number of initiatives and proposals have been discussed and developed over the period 2009 – 2010.

- GIS services have been provided by the Institute to Transport Malta.
  - A proposal for the monitoring of public transport performance has been developed for the Ministry for Infrastructure, Transport and Communications
  - A training programme has been developed and proposed for staff development at Transport Malta.
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## Annex 1

### **EDUCATION ACT (CAP. 327) STATUTE FOR THE INSTITUTE FOR SUSTAINABLE DEVELOPMENT**

IN exercise of the powers conferred by articles 74(5) and 75(6) of the Education Act, the Chancellor of the University of Malta has promulgated the following statute made by the Council of the University of Malta in virtue of the powers conferred upon it by articles 72(h), 75(2) and 77(c) of the said Act.

#### **Citation**

This statute may be cited as the Statute for the Institute for Sustainable Development.

#### **STATUTE FOR THE INSTITUTE FOR SUSTAINABLE DEVELOPMENT**

1. The Institute for Sustainable Development is hereby established as an institution within the University of Malta.
2. The aims of the Institute shall be:
  - (a) to assist by interdisciplinary research in the realisation of national plans to improve the infrastructure, productivity, entrepreneurship and the quality of life in Malta;
  - (b) to provide advice and assistance on issues of sustainable development in Malta;
  - (c) to promote the use of, and deploy Geographic Information Systems and other information systems as a tool for decision support and strategic planning;
  - (d) to promote and catalyse science and technology commercialisation, the creation of start-ups and new business ventures, and the transfer of innovation and technology to industry;
  - (e) to organise undergraduate and postgraduate courses within the scope of the Institute subject to the Statutes and Regulations of the University;
  - (f) to network and liaise with similar, university institutions and centres for sustainable development overseas; and
  - (g) to disseminate the knowledge acquired by publication, seminars and teaching programmes.
3. The Institute shall be governed by a Board that will consist of the following:
  - (i) Chairperson: Rector or his delegate;
  - (ii) Vice-Chairperson: Director of the Institute;
  - (iii) a person appointed by the Council of the University;
  - (iv) a person appointed by the Senate of the University;
  - (v) an academic from the Faculty of Economics, Management and Accountancy;
  - (vi) an academic from the Faculty of Engineering;
  - (vii) an academic from the Faculty of Information and Communication Technology;
  - (viii) an academic from the Faculty for the Built Environment;

(ix) an academic from the Faculty of Science; and

(x) up to two scholars of repute to be recommended by the Board and approved by Senate.

The Registrar or his delegate shall act as Secretary to the Board.

4. All the members of the Board, other than those appointed ex officio, shall be appointed for a period of one year, renewable for up to four years. A retiring member will be eligible for re-appointment.

5. The function of the Board shall be:

(a) to govern the affairs of the Institute, subject to the provisions of these statutes and of such regulations, policies or directions as may from time to time be approved by the Council and the Senate.

(b) to decide the policy of the Institute, to supervise its activities and administration, and without prejudice to the generality of the foregoing, the Board may:

(i) approve business plans and annual estimates of revenue and expenditure of the Institute for consideration and approval by the Council;

(ii) with the written concurrence of the Rector enter into agreements with third parties for funding of the Institute or of particular activities;

(iii) publish an annual report;

(iv) enrol the Institute in associations or institutions sharing similar aims and interests;

(v) propose Regulations and Bye-Laws to the Senate;

(vi) require from staff members of the Institute the production of reports on academic matters, including the curricula of courses of study, qualifications for admission to courses, examinations and certificates of attendance or qualification;

(vii) recommend to the Council the creation or abolition of academic and non academic posts in the Institute;

(viii) propose for approval to the Senate, Board of Studies and Examiners for degree and diploma courses.

6. The Institute shall have a Director and Staff:

(a) the Director shall be appointed from among the academic staff of the University by the Council for a duration of one year, with the possibility of renewal annually subject to established performance criteria, the needs of the Institute and the needs of the University, for a total period not exceeding four (4) years; and

(b) the staff of the Institute shall be appointed by the University according to the usual practice.

7. The duties of the Director/Vice-Chairperson shall include:

(a) promoting the development and implementation of the Institute's curricula and research programmes;

(b) compiling and submitting to the Registrar of the University by not later than January of each academic year, an updated comprehensive prospectus of the content descriptions of all current and projected study-units offered by members of the Institute as per guidelines established by the Programme Validation Committee;

(c) ensuring that the study-units offered by the staff members of the Institute are delivered in accordance with the advertised programme of studies; the Director must ensure that lecturing staff under his remit deliver all lectures, seminars, tutorials and laboratory sessions assigned to them respectively, at the time and venue

advertised in the official timetable, and that any deviations thereof are formally registered, and the students duly notified in good time;

- (d) delivering and implementing the strategic plan of the Institute;
- (e) administering the Institute in full consultation with the members; monitoring and approving requests for leave of absence of members of the Institute; the Director is expected to maintain records of all leave taken by members and to pass on these records to the Director of Human Resources Management and Development upon request;
- (f) promoting students' academic and personal welfare, providing first-line support to students with any difficulties they may encounter during their studies related to the activities of the Institute;
- (g) monitoring the running of tests and examinations in the Institute and ensuring that all assessment and examination results are submitted to the Registrar's office as follows:  
  
January session – by the end of March;  
May/June session – final year results by not later than two working days prior to the final year degree classification board but in any case not later than end of July, other results as early as possible but not later than the end of July;  
September session – by the end of September.
- (h) encouraging and facilitating co-operation with other universities and other institutions;
- (i) calling and chairing (in lieu of the Rector) meetings of the Institute Board and ensuring that follow-up action is taken;
- (j) ensuring and facilitating the further development and training of academic and non academic staff;
- (k) participating at any meeting of the University congruent with the post;
- (l) representing the Institute during official functions of the University;
- (m) compiling and submitting to the Secretary of the University by the end of September of each academic year, an annual report outlining the activities of the Institute for the outgoing year, which should include amongst other information that may be requested by the Secretary: a comprehensive list of recent publications of all members of the Institute; a synopsis of all projects involving members of the Institute which are wholly or partially externally funded; a list of all conferences/seminars/meetings attended abroad by members of the Institute during term time; and an outline of the Institute's collaboration with third parties including local industry, Government or civil society at large;
- (n) compiling and submitting to the Director of Finance of the University by not later than end of May of each academic year budgetary estimates for the following year including a manpower plan for the Institute, to cover the projected teaching, research and administration workload of the Institute, and based on the projected workload for each Resident Academic member of the Institute and Visiting Teaching Staff;
- (o) monitoring the performance of the non-academic staff attached to the Institute;

(p) authorising the Institute's procurement of equipment; ensuring that the resources assigned to the Institute – whether human or other – are utilized fully and efficiently;

(q) performing other duties which may be assigned by the University from time to time.

8. The Director moreover:

(a) is to report directly to the Chairperson of the Board governing the Institute and shall collaborate with all senior administrative officers of the University;

(b) shall normally be a Resident Academic engaged with the University on a full-time basis for the duration of his tenure as Director. If the Institute is engaged in normal teaching programmes of study then the Director must be engaged with the University as a Resident Academic on a full-time basis;

(c) should not be engaged in any other activity outside the University which may be in conflict with, or distract him from, his duties at the University;

(d) is expected to be present on campus or any designated University of Malta site at least during normal office hours from Monday to Friday throughout the year subject to the exigencies of an academic in accordance with the University's practices and needs and subject to normal leave entitlement and public holidays as provided for at law; should his absence be necessary and justified he must ensure that he is immediately contactable through the secretarial staff of the Institute;

(e) shall not give access to any information to any third party that is not associated with the University of Malta, about any work or data that relates to tasks conducted at the University of Malta without the prior approval of the University of Malta; all work carried out within the Institute must be treated according to Maltese data protection legislation;

(f) is to abide with the statutes, regulations and policies of the University of Malta, which are in force now or will become effective in the duration of his tenure.

9. The Director of Finance of the University shall be the Treasurer of the Institute.