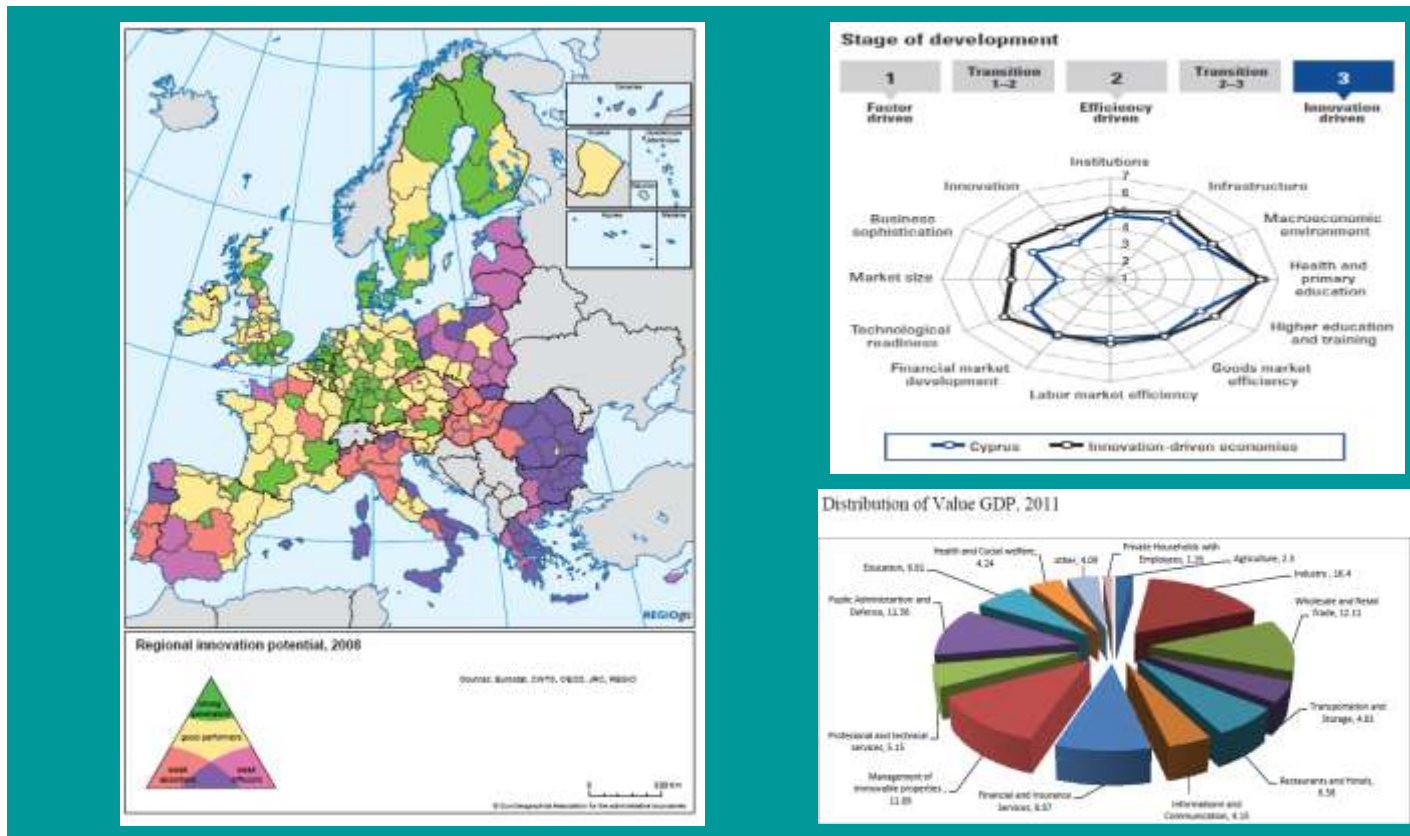


SMART SPECIALIZATION STRATEGY IN CYPRUS

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A. EVIDENCE AND ANALYSIS

- 1. Development, competitiveness and innovation in Cyprus**
- 2. Potentialities for a RS3 in Cyprus**

B. *A TOUR DE TABLE* OF POTENTIAL STAKEHOLDERS

C. SMART SPECIALIZATION = SMART CHOICES

D. SMART SPECIALIZATION = SMART GOVERNANCE

THE WAY FORWARD

A. EVIDENCE AND ANALYSIS

1. Development, competitiveness and innovation in the Cypriot economy

1.1. Depression after a decade of sustained high growth. Forecasts: -2.3%, -1.7%, -0.7%

1.2. Recession attributed to imbalances in the banking sector ► a hasty assessment ?

- Extreme dependence on domestic demand + weak domestic supply = constant trade deficit
- Lack of endogenous resources / comparative advantages ► no assets for a productive sector encompassing the whole economy
- High reliance on foreign trade (~ 100% of GDP) ► high capital inflows = foreign deposits, FDI, volatile short term investments ► fragile reliance



Building an RS3:

- not simply moulding innovation and research assets
- respond to current unfavourable environment + define priorities to tackle long term deficiencies
- build on existing pattern of businesses, sectors + help create (medium / long term) new sectors / businesses (productive hubs)

SOME INDICATORS	% change	2011/2010	2012/2011
▲ Volume of production in manufacturing		-6,5	-9,7
- Volume of production: food and beverages sector		-5,9	-4,7
- Volume of production: pharmaceuticals		3,2	7,5
Turnover in manufacturing		-2,5	-7,8
Value, exports of manufacturing goods		11,2	7,5
- Value, exports of photovoltaics		-35,3	-72,0
- Value, exports of pharmaceuticals		14,2	13,9
- Value, exports of industrial waste and residues		67,5	-10,0
Building permits		-27,1	-31,1
Turnover in construction sector		-5,2	-22,2
Turnover, retail commerce		2,3	-2,9
Turnover, transports and communications		-14,9	-12,4
- Turnover, road transport		-7,6	-3,4
- Turnover, air transport		-30,4	-21,2

1.3. Composition of imports shows:

- ▶ declining path of manufacturing (loss of competitiveness / low absorption of innovation)
- ▶ shift towards the tertiary sector (consumer of imports)

Composition of exports shows:

- ▶ specialization: pharmaceuticals, photo-sensitive semiconductor devices, scrap, processed and raw agricultural products, processed minerals

1.4. A sophisticated /diversified services sector, gradually, leader of the economy:

- ▶ Distortions, heavy presence of foreign companies in tradable services
- ▶ Tourism 10% of GDP, ~ 20% of employment, but:
credit squeeze, erosion of competitiveness, “sea-sun-antiquities”



Starting point for exploring fields of smart specialization

- ▶ The RS3, a basis for flexible response to changing external trade challenges
- ▶ RS3 cannot override the dynamism of the services sector
- ▶ Technical innovation in tourism limited ▶ practice-based innovation

1.5. Energy sector:

- ▶ In excess of 2012 indicative target for RE
- ▶ Share of environmental goods' exceeds 1 % of exports
- ▶ Smart exploitation of gas fields to create new impetus ▶ Cyprus an energy hub?
- ▶ Opportunities to promote R&D in the energy sector + enable assorted new industries



An RS3 with focus on renewable energy and energy efficiency

Spin-offs and spill-overs ▶ education / training, components manufacturing, ICT infrastructure

1.6. Until the crisis, economy behaved well regarding entrepreneurship, but:

- ▶ would-be entrepreneurs still think themselves operating in a tough environment
- ▶ small size of economy and manufacturing sector ▶ “monopolistic” situations



"Think small first": touchstone of a recovery policy based on SS ◀▶

Working with established sector leaders: will spread effect and spill-overs occur?

1.7. In the group of “uneven performers” (industrial performance / competitiveness):

- ▶ exports of high-tech and environmental goods
- ▶ seizing opportunities from greening of economies
- ▶ weak performance in terms of R&D and innovation
- ▶ progress in building a research system / a vision for a knowledge-based economy
- ▶ R&D expenditure in line with the “E2020” / still far from EU average
- ▶ reliance on public expenditure / contribution of businesses among the lowest
- ▶ industrial research virtually absent:
service sector dominance - small companies in traditional sectors – buying technology

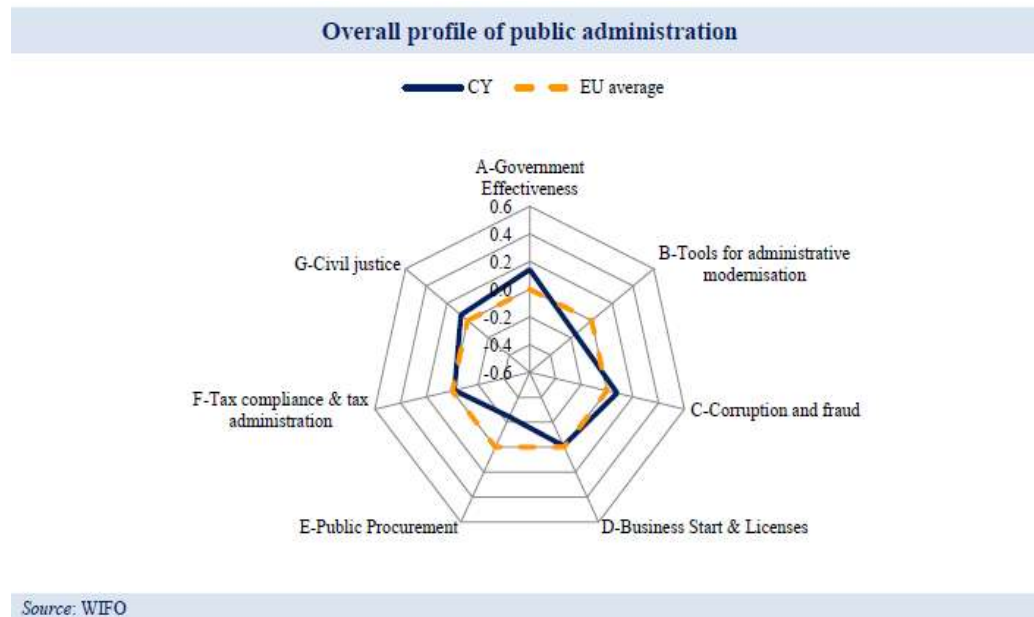


Limited assets and resources:

- ▶ inevitably concentrate efforts in selected areas with:
high-tech or practice-based innovation potential

1.8. Public administration performs close to EU average.

- ▶ **World Bank: quality better than EU average ◀ ▶ lagging in modernisation tools (e-government, impact assessment, performance and service orientation)**
- ▶ **Citizens' Service Centres (CSC) + Companies Registration System + reducing administrative burden by 20 % (2012)**



Achieving businesses - administration synergies during RS3 drafting rather assured.

1.9. OP “SDC”’s targets, unevenly met:

- ▶ R&D expenditure 1,0% of GDP (revised to 0,5% / NRP)
- ▶ contribution of RE to total energy consumption 9% (5.2%, 2011)
- ▶ 364 new businesses, 1310 gross direct jobs (obtained)
- ▶ expenses for technology transfer only 0,07% of the Business Plans’ total budget
- ▶ projects in Knowledge and Innovation Society: emphasis to research infrastructure rather than supporting enterprises to collaborate with them



Do not ignore achievements, whatever limited

1.10. A small economy and a small country, no differentiated territorial economies.



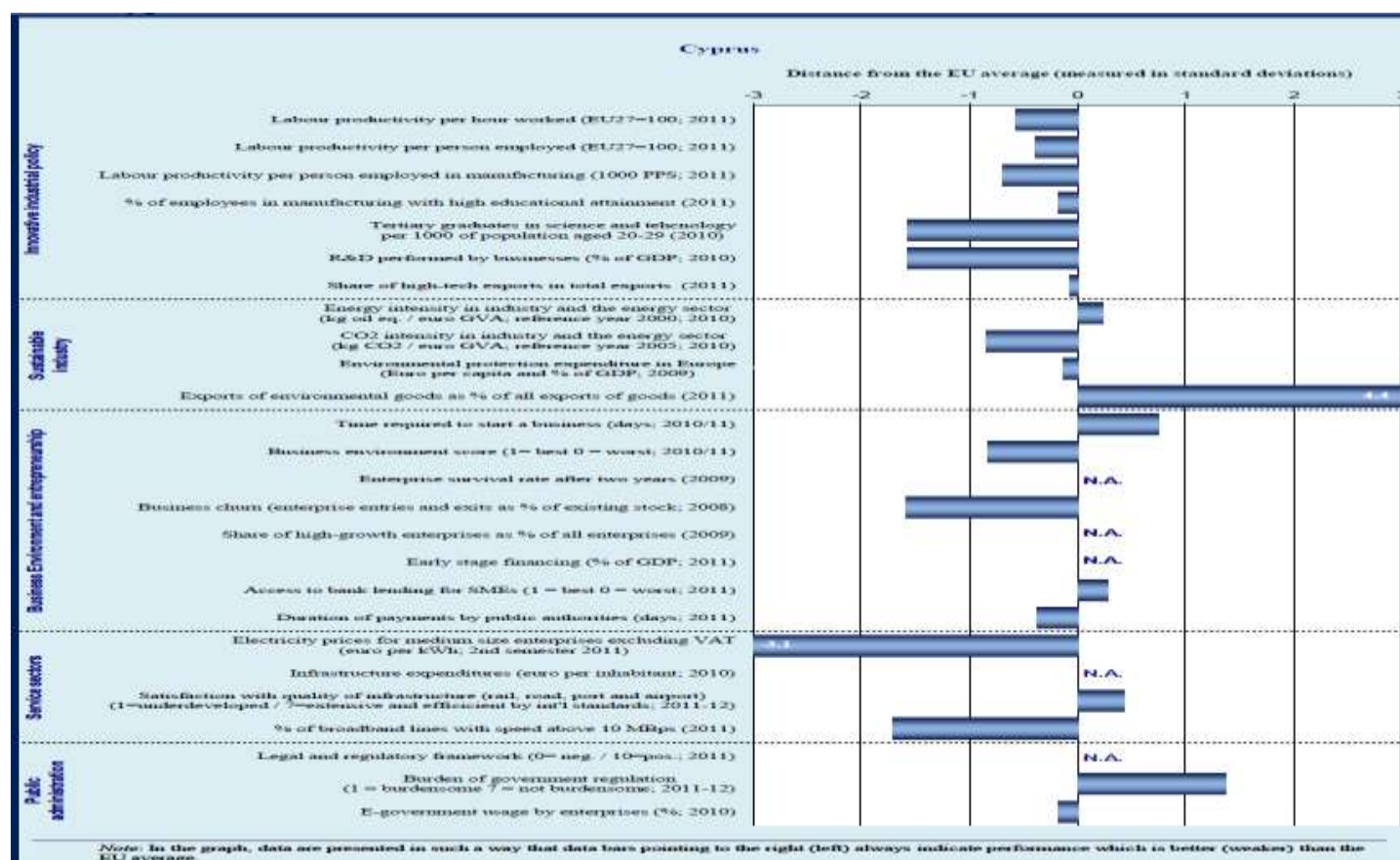
Regional SSS not an issue. Nonetheless, place-based approach:

- ▶ spatial proximity may be of great importance
- ▶ trigger a positive territorial cohesion / development impact

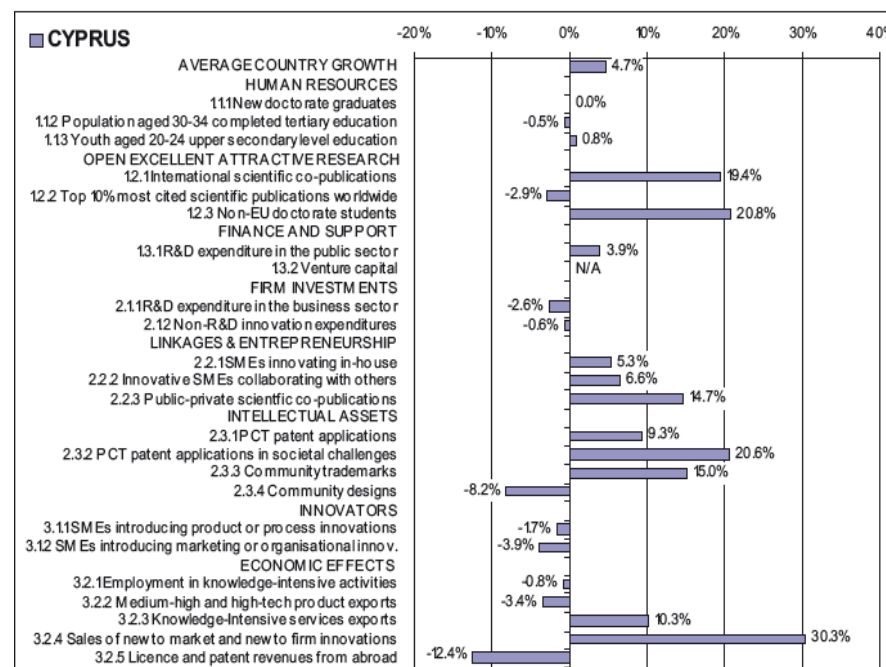
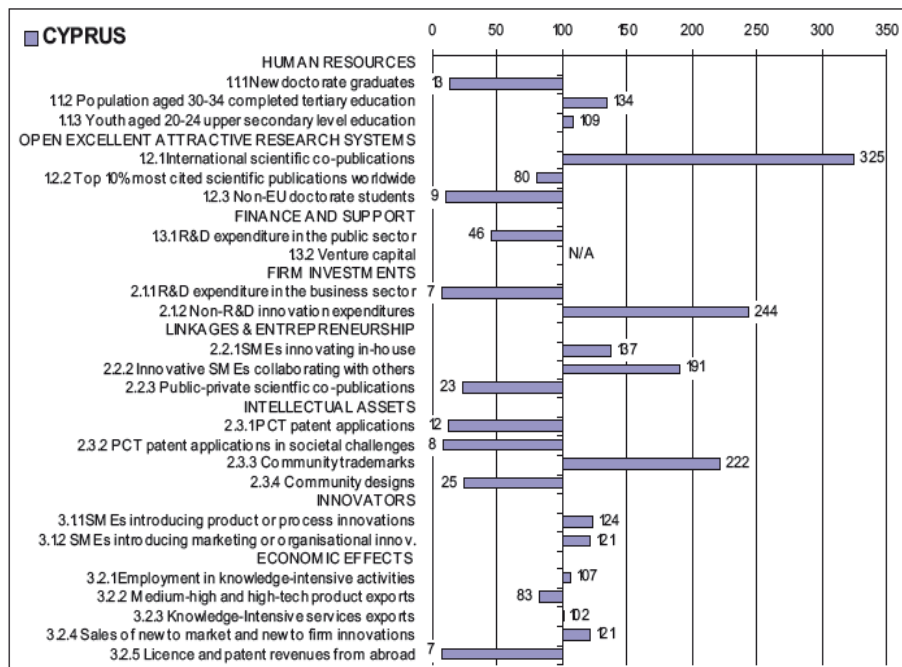
2. Potentialities for a RS3 Strategy in Cyprus

2.1. Two main bottlenecks in the “innovation-to-industry relations” system:

- ▶ limited human resources in the S&E area (small demand from business)
- ▶ limited engagement of business to R&D activities (no big companies / high-tech industry)



2.2. Comparing innovation performance with the rest of the EU27 Member States:



► **Most notable weaknesses:**

Doctorate graduates, R&D expenditure in public and private sector, PCT patents and applications, Licence and patent revenues.

► **Apparent strengths:**

Publications, non R&D innovation expenditures, Community trademarks

2.3. Cyprus is an “Innovation Follower”:

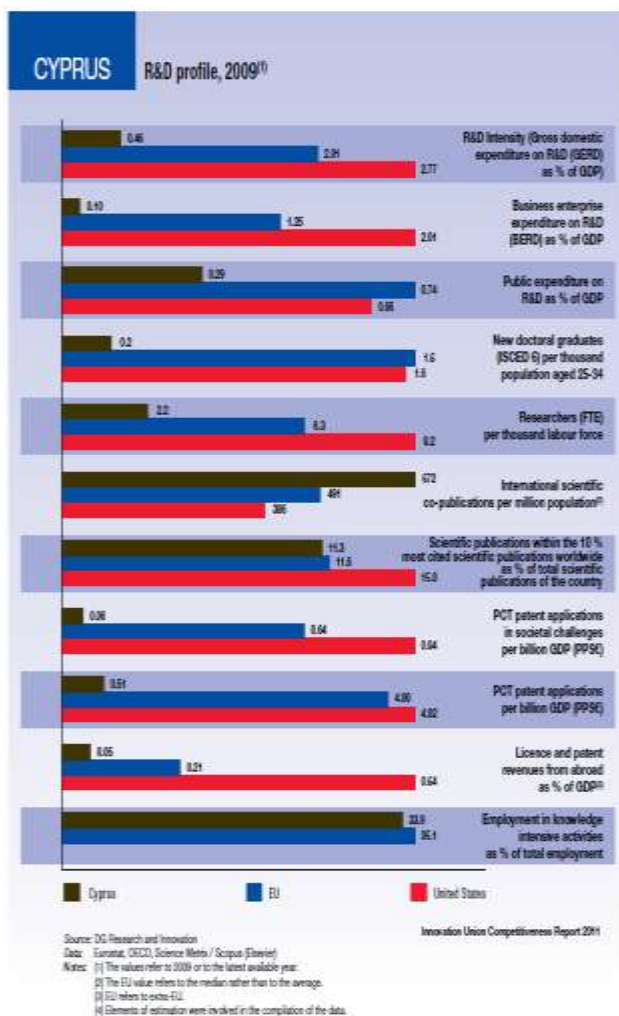
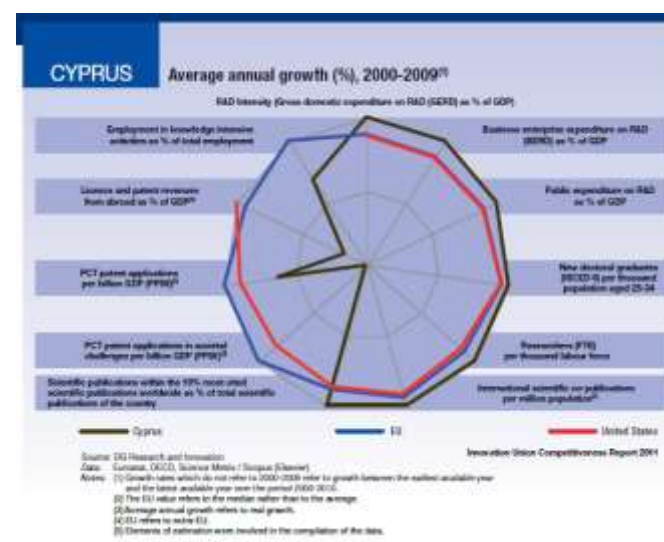
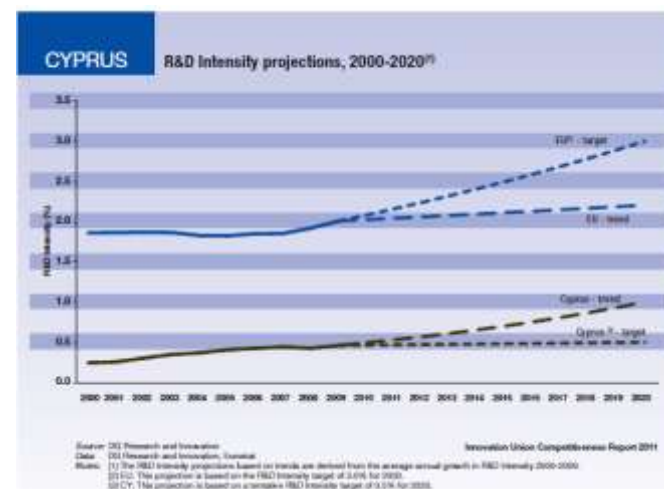


TABLE 1 CY - Cyprus - Most active FP7 research priority areas by number of applicants applying for the research projects

FP7 priority area	Nr. of applicants	Requested EC contribution by applicants (M euro)	Nr. of mainlisted applicants	Success Rate (applicants)	Requested EC contribution by mainlisted applicants (M euro)	Success Rate (requested EC contribution)
Information and Communication Technologies	378	106.46	45	11.67%	12.65	11.69%
Research for the benefit of SMEs	280	46.61	54	19.29%	6.84	14.67%
Marie-Curie Actions	143	n/a	31	21.68%	n/a	n/a
Environment (including Climate Change)	103	19.13	9	8.74%	1.13	5.91%
Socio-economic sciences and Humanities	98	18.68	18	18.37%	0.96	5.76%
Health	76	23.19	7	9.21%	1.15	4.57%

TABLE 5 CY - Cyprus - Most active organisations in terms of EC contribution granted to the FP7 research projects

Legal Name	Number of Participations	% of all CY grant holders	EC contribution (M euro)	% of total EC contribution to CY grant holders
University Of Cyprus (UCY)	55	25.56%	13.87	35.24%
The Cyprus Research And Educational Foundation (CREF CY)	13	6.05%	5.36	13.62%
Cyprus University Of Technology (CUT)	12	5.58%	1.48	3.75%
Prinatel Plc (Prinatel)	7	3.26%	1.44	3.65%
Signet Solutions Ltd (Signet)	5	2.33%	1.42	3.60%



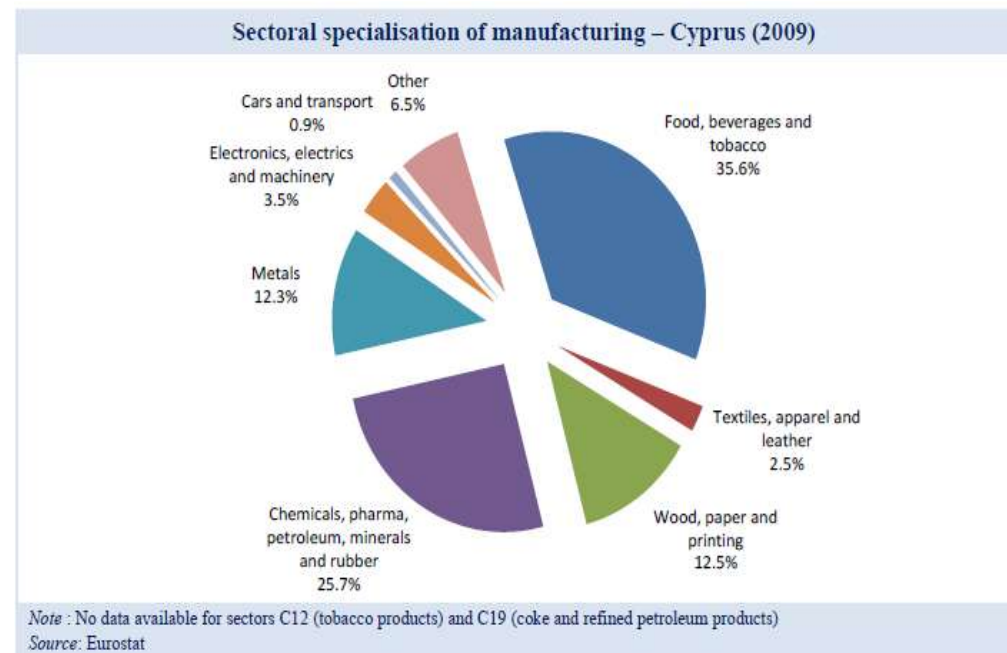
2.4. Lack of industrial base - 99% of enterprises being SMEs - a services-oriented structure.



RS3 has to help creating a critical mass of industrial companies investing in innovation.

Critical mass to be searched for in existing specialization ► “smooth” start-up:

- food -beverage-tobacco, chemicals-pharmaceuticals, metals-minerals, sectors where innovation needs to be developed
- electronics-electrics: innovation of crucial importance + cross-sector effect.



2.5. Weaknesses and challenges appropriately detected in NSRF 2007-2013 / OPSDC. Two PAs:

- ▶ **“Knowledge Economy and Innovation”**: 16% of Community Contribution
- ▶ **“Productive Environment”**: (15%)

2.6. Current priorities of the research and innovation policy

System for Research, Technological Development and Innovation:

- ▶ **Ministerial Board**
- ▶ **National Council for Research and Innovation (NCRI)**
- ▶ **Scientific Council (CSC)**

At the recipient level:

- ▶ **Cyprus Employers and Industrialists Federation (OEB)**
- ▶ **Cyprus Chamber of Commerce and Industry (CCCI)**
- ▶ **sectoral organisations (Committee of Public Dialogue)**



Development of an innovation culture, one of the major challenges.

2.7. Innovation policy gaining importance, challenges systematically appraised, but:

- ▶ mindset of government too closely linked to research and technology
- ▶ business sector views innovation much more as a process of non-technological change.



The gap needs to be bridged

Government: invest in human resources and foster incentives for people to be creative

To disengage from traditional direct funding schemes.

2.8. Adopting a coherent long-term RTDI strategy a positive step

- ▶ to benefit from a limited set of priorities in niche R&I areas
- ▶ an Action Plan to make use of unexploited R&I capacity (innovation culture)
- ▶ joint ventures with leading international organisations (a platform for excellence in RTDI)
- ▶ New initiative “Public Sector Innovation” ▶ enhance the demand side innovation
- ▶ New Industry Liaison Offices (“Mediation Centres for Research and Innovation”)

2.8. Notable elements:

- ▶ Four business incubators, three still in function
- ▶ R&D cooperation: Innovation Vouchers and Patenting Support
- ▶ Human resources: “Programme for support of young researchers” / “DIDAKTOR”
- ▶ 5 pillars in the NP of RPF: SMThR (18%), DHRR (9%), DIRIA (16%), INC (4%), DRI (53%)
- ▶ Specific Action “Development of Innovative Products and Services”

2.10. Two initiatives of the private sector to establish Technology Platforms:

- ▶ Cyprus Construction and Technology Platform
- ▶ Cyprus Food Technology Platform



Encouraged to proceed to:

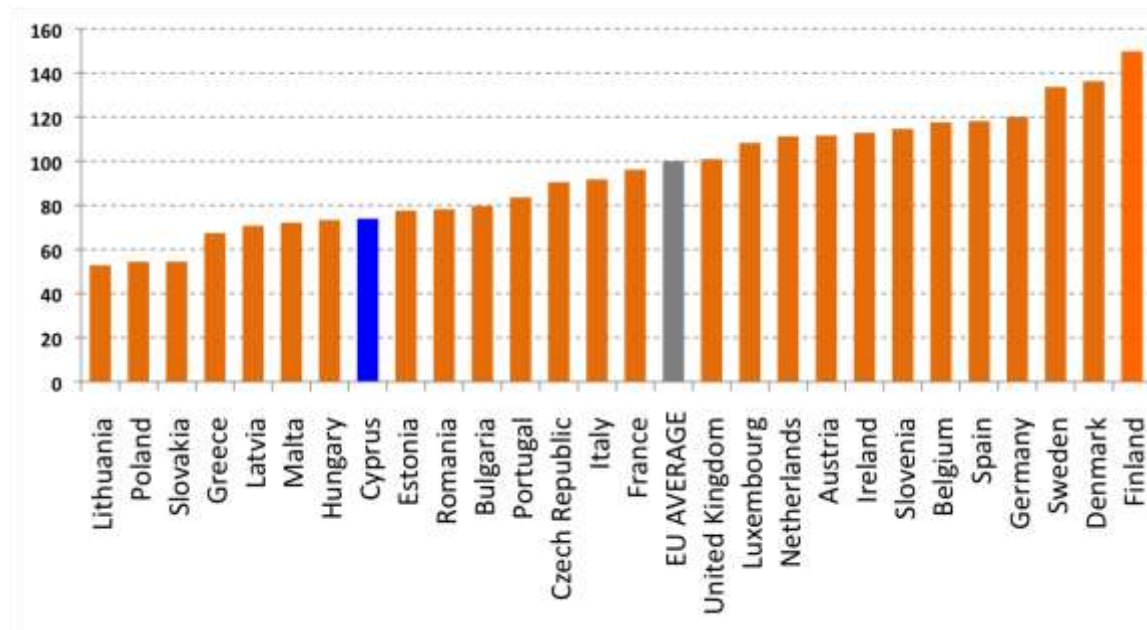
- ▶ assessment of each sector’s Opportunities and Threats
- ▶ detection of areas for synergies
- ▶ assessment (quantitative + qualitative) of the critical mass of private stakeholders
- ▶ prospection for feasible inter-national complementarities / joint actions.

2.11. Eco-innovation performance: still lower than EU average.

Leading sectors: manufacturing of non metallic mineral products + food and beverages using organic cultivation, bio or environmental certification + solar energy sector + water saving in irrigation

Eco-innovation needs and challenges: high greenhouse gas emissions + municipal solid waste management.

2012 ECO-INNOVATION SCOREBOARD



2.12. Until early nineties, research activities in Cyprus limited. Since then:

- ▶ **University of Cyprus, 1992**
- ▶ **upgrading research activities:**
Institute of Neurology & Genetics, Agriculture Research Institute & State General Laboratory
- ▶ **Research Promotion Foundation, 1996**
- ▶ **Academic and Non-Academic Organisations involved in research activities:**
 - **University of Cyprus - Cyprus University of Technology - Cyprus Institute - Cyprus International Institute for the Environment and Public Health - Higher Technical Institute (Ministry of Labour and Social Insurance) - Cyprus Forestry College (Ministry of Agriculture, Natural Resources and Environment) – European University Cyprus – University of Nicosia - Frederick University**
 - **Cyprus Institute of Neurology and Genetics (CING) - Agricultural Research Institute (ARI) - Bank of Cyprus Oncology Centre - State General Laboratory (Ministry of Health) - Geological Survey Department - Department of Fisheries and Marine Research - Cyprus Forestry Department - Meteorological Service - Cyprus Institute of Energy - Cyprus Telecommunications Authority (CYTA) - Electricity Authority of Cyprus (EAC).**

2.13. NRP: a detailed and comprehensive strategy for improvement of ICT

- ▶ a sectoral baseline project for the reduction of administrative burden
- ▶ for e-government, a horizontal proposal promote the use of existing systems

2.14. A Digital Strategy:

1. “Connect Cyprus”
2. “Modernize public administration and provide public electronic services”
cross-sectoral horizontal framework
3. “Inclusion of all into digital Cyprus”
6. “ICT for the environment”
“infrastructural” level
4. “Education and Learning”
addressing labour force’s capacities
5. “Digital Entrepreneurship”
the primary area of the RS3

2.14. Key Enabling Technologies ?

Gap between demand and supply ► a niche not easily detected.

2.15. “Blue Growth”:

► Cypriot authorities diligently promoted a European marine and maritime strategy



Only to gain from focusing at least part of RS3 on this area:
critical mass and international complementarities “criteria”.

► **Mature activities:**

Shortsea shipping, Offshore oil and gas, Coastline tourism and yachting, Coastal protection.

► **Promising areas:**

Marine aquatic products, Offshore wind, Cruise shipping, Maritime monitoring and surveillance.

► **Sectors to explore:**

Blue biotechnology and Marine minerals mining.

B. A TOUR DE TABLE OF POTENTIAL STAKEHOLDERS

LEVELS OF PREPARATION AND AWARENESS

Tour de table / 1: Nicosia Chamber of Commerce and Industry (NCCI)

- **Largest share of industry in Cyprus**
- **Prepared a proposal for an “ad hoc Committee on Regional Development and Innovation”**
- **NCCI wants to provide a vision for R&D and Innovation**
- **In-depth understanding of Smart Specialization tools, pro-active and well-prepared**

Tour de table / 2: Ministry of Commerce Industry and Tourism (MCIT)

- **Long experience in promoting entrepreneurial innovation through various schemes**
- **Understanding of real business needs based on regular stake holder consultations**
- **Completed several stakeholder meetings regarding Smart Specialization**
- **Experience concentrates on innovation; wider scope of societal issues needed**

Tour de table / 3: Planning Bureau

- **Considerable experience in *planning* (“top-down” approach)**
- **.... but “bottom-up” process necessary for Smart Specialization may prove challenging**
- **Faced with culture of entitlement that makes choices difficult**
- **Smart Specialization will change relations between public institutions and their clients**

Tour de table / 4: Cyprus Chamber of Commerce and Industry (CCCI/KEBE)

- **Less pro-active: expects the Planning Bureau to start process**
- **Relies on network of 140 professional associations to support public consultation**
- **Needs information about Smart Specialization to inform its members**

Tour de table / 5: Cyprus Association of Research and Innovation Enterprises (CARIE)

- **Dynamic technology entrepreneurs**
- **SMEs dedicated to transfer science and technology to the business world**
- **Best practice in Cyprus?**
 - **what reliance on public funds?**
 - **measurable success of bringing new products to markets?**
 - **what business needs?**

Tour de table / 6: Research Promotion Foundation (RPF / IPE)

- **Implementing body – no particular strategic focus**
- **Its advisory body (National Council for Research and Innovation) does not work**
- **RPF criticized in recent years: insufficient understanding of business needs and overly bureaucratic**
- **Structural Funds are being used to finance research programs = very complex administration**
- **Structural funds are better suited for infrastructural projects**

Tour de table / 7: Cyprus Employers' Federation (CEF / OEB)

- **Long tradition in recognizing the various facets of innovation through the Cyprus Innovation Award**
- **Promotion of culture of innovation in the public *and* private sector**
- **Active in highlighting shortcomings in public sector (red tape, wasted funds, inefficiencies)**
- **Supports e-government and other rationalizations**

Tour de table / 8: Cyprus University of Technology (CUT / TEPAK)

- **First in promoting Smart Specialization in Cyprus through informative event (October 2012)**
- **Translation into Greek of main literature on Smart Specialization (book by Dr. Antonis Theocharous)**
- **Strong willingness to provide expertise to support the process**
- **Offering support to the Planning Bureau**

Tour de table / 9: University of Cyprus

- **Proposal: “The Nicosia Knowledge Region” by Prof. Stavros Zenios**
- **Theoretical document was endorsed by various stakeholders and could support the process**

Tour de table / 10: other studies...

- **“Cyprus entrepreneurial eco-system”**: road map to incentivize start-ups by Marina Theodotou
- **Report on how to promote the importance of “professional services”** by Marina Theodotou and Fiona Mullen
- ... and many other studies that *will be needed* to inform the future strategy

Tour de table / 11: the municipalities

- **Will need technical assistance to formulate their needs within the framework of the national strategy**

Tour de table / 12: ...and many other relevant stakeholders

- **Investors and enterprises**
- **Knowledge-based institutions: Cyprus Institute, Agricultural Research Institute, Cyprus Institute of Neurology and Genetics, Department of Fisheries and Marine Research, public & private universities, ...**
- **Public bodies (national and regional)**
- **Civil society actors: NGOs in relevant fields (social, environmental), trade unions, political parties, associations, ...**
- **International experts (peer review, benchmarking -- JRC-IPTS)**

C. SMART SPECIALIZATION = SMART CHOICES

STATE OF PLAY – INDICATIVE LIST OF POTENTIAL GROWTH PROSPECTS

State of play / 1

- **Hydrocarbons:** Cyprus needs to develop local qualified manpower to minimize reliance on overseas operators

Many business opportunities in related activities: engineering, inspection, maintenance, safety, pollution, supplies, special shipping, helicopter services, etc.

State of play / 2

- **Health care:** Cyprus needs a universal health care system supported by public and private sector
No more studies but political will...
- **Special tourism** niche markets (professional sports training, medical rehabilitation) should be supported by new infrastructures through public-private partnerships

State of play / 3

- **Generic pharmaceuticals:** promote further existing export champions
- **Business and professional services:** understand their success (Forex for instance) and support innovations in services
- **Shipping:** take advantage of critical mass and presence of international actors and continue to promote best practices

State of play / 4

- **Fish farming, bio farming, high quality wineries, dynamic dairy industry ...**
all part of an active **food cluster** which could benefit from cross-sectoral technological opportunities and enhanced applied research
- **Sustainable development:** biomass and waste management

State of play / 5

- **Renewable energy:** solar thermal and photovoltaic.

Solar energy to solve both water challenges and electricity shortage

- **R&D potential already exists (Cyprus Institute and University of Cyprus)**
- **Key to more sustainable growth**
- **Innovative governance is needed**

State of play / 6

- **Government services:** twin pressure of reduction of public sector employment and reduced operating budgets. Thus, need for efficiency and cost cutting - “doing more with less”,
 - improve productivity through e-government
 - mobility of staff, simplification of procedures, disengagement from selected activities, more public-private partnerships
- **ICT:** the underlying tool to achieve multiple goals crossing the boundaries of various sectors

To conclude on smart choices...

- **Smart choices are based on existing critical mass and excellence in processes and practices**
- **ICT services need to be on par with European partners (quality & price)**
- **“Harvest the Cyprus sun”**
 - **industrial activities and services based on *non-renewable* energy sources (hydrocarbons)**
 - **methods and technologies using *renewable solar energy* (photovoltaic, thermal)**

D. SMART SPECIALIZATION = SMART GOVERNANCE

CRITICAL ISSUES OF GOVERNANCE

breaking with established conventions... / 1

- **Smart Specialization requires a bottom-up approach – new for Cyprus**
- **Initially, mobilization of stakeholders must be as broad as possible - public-private cooperation necessary**
- **Stakeholders have little experience with such approaches; strategies and policies have always been “designed for them”**
- **Novel policy-making tool for Cyprus; all stakeholders must *own* the process**
- **Authorities: don’t “plan & consult” ... but enter the process of designing together with all stakeholders**

breaking with established conventions... / 2

- **Set up a steering committee, a mirror group and thematic working groups**
 - **empower a charismatic and respected individual to steer the way (preferably from industry)**
 - **give a voice the leading exporters, large employers, highest achievers or tax contributors**
 - **avoid “usual suspects” !**

breaking with established conventions... / 3

STUDY...

- a) your scientific and technological assets; how to connect those to productive sector?**
- b) your entrepreneurial wealth: new business opportunities (solar, hydrocarbons), cross-sectoral linkages (food & special tourism), common new technologies (ICT), value chains and clusters (food, shipping, professional services, special tourism)**
- c) your linkages to the rest of the world**

breaking with established conventions... / 4

- **Re-think and re-organize policy making based on the real needs of firms:**
 - **Don't produce papers but actions**
 - **There will be no “coffee for all”**
- **Drafting the strategy is a specialized task requiring expert knowledge. It cannot be left to technocrats only.**
- **Seek advice, give a strong voice to private sector SMEs to enhance the credibility of the process**
- **A private sector that was not sufficiently involved will not invest!**

THE WAY FORWARD

- **There is considerable work and very little time in front of you (first draft – summer 2013)**
- **Plan today your next step, there are plenty of stakeholders willing to work**
- **Don't forget: as a process, smart specialization is an *innovation* in its own *right*. It is simply different.**
- **Harness your *social capital* intelligently to promote *sustainable* and *inclusive* growth based on *knowledge***
- **Your ability to *innovate collectively* is your competitive advantage**