Smart Specialization a Possible Solution to the New Global Challenges

Margareta Rusu

*Faculty of Management, Academy of Economic Studies, Bucharest, Romania

Abstract

Smart specialization is a new concept that has been actively promoted as a tool for the strategy Europe 2020. It is a key solution for avoiding dissipation of the EU research funds and for focusing the research, innovation, human and financial resources on those innovative sectors which are high performing, strategic from a socio-economical perspective, eco-friendly and attractive for investors. Given the novelty and complexity of this concept consideration should be given to the concept clarification, for the use of policy makers and for its effective implementation in the wood processing industry with its R&D and innovation background and economic context.

Keywords: wood processing industry; smart specialization; R&D; innovation.

1. Introduction

The action programme, laid down by European Parliament and Council Decision 1600/2002/EC of 22 July 2002 was a ten-year (2002-2012) policy programme for the environment. It identified four key priorities: tackling climate change; nature and biodiversity; environment and health; and sustainable use of natural resources and the management of waste (Eurostat-Key figures on Europe 2012).

Wood and wood products can be seen as a source to reduce CO2 and increase carbon sinks making the wood processing industry greener and encouraging the use of renewable energy solutions. The opportunities and
challenges that Romania currently faces in terms of environmental improvement and poverty alleviation must be understood against the background of crisis in the context of global warming.

According to Eurostat-Key figures on Europe 2012 sustainable growth is a priority - one of the flagship initiatives concerns for a resource-efficient Europe. “The aims are to help decouple economic growth from the use of resources, support the shift towards a low-carbon economy, protect biodiversity, increase the use of renewable energy sources, modernise the transport sector, and promote energy efficiency.”

Research and development (R & D) is often considered as one of the driving forces behind growth and job creation. Its influence extends beyond the economic sphere, as it can resolve environmental or international security threats, ensure safer food and provide a possible solution to the poverty alignment.

In October 2010, the European Commission launched a ‘innovation union’ (COM(2010)546 final) which sets out a strategic approach to a range of challenges like climate change, energy and food security, health and an ageing population.

Horizon 2020 is a framework programme for research and innovation after 2013. A Green paper titled ‘From challenges to opportunities: towards a common strategic framework for EU research and innovation funding’ (COM(2011) 48) was adopted by the European Commission in February 2011 and proposed major changes to European Union (EU) research and innovation funding to make participation easier, increase scientific and economic impact and provide better value for money.

2. Increasing research efforts in Europe

There is mounting criticism regarding the ‘3 % objective’ - to increase Europe’s research and development effort to the level of 3 % of the GDP. This objective, set in 2002 as part of the Lisbon Strategy, was the result of a persistent R&D deficit being observed between Europe on the one hand and the United States and Japan on the other, which experts considered to be one of the main reasons explaining the sluggishness of European growth. The problem of the R&D deficit in Europe is not essentially a problem of financing whereas, it is primarily a problem of specialisation: a great many European countries are specialised in sectors that quite simply do not require any additional R&D.

According to Knowledge for Growth the debate on the specialisations of European economies is essential but must not be used as a reason to give up trying and abandon the objective. Following are three arguments supporting the view that the objective must be maintained, in spite of – but also because of – the dominating specialisation structures in Europe.

Primarily, R&D investments make a crucial contribution towards transforming a country’s specialisations. The countries that registered an economic prosperity between 1995 and 2000 (particularly the United States, Finland and Sweden) turned out to be those countries that during the preceding period had managed to profoundly renew their knowledge base and create industries of the new economy. R&D counts at both ends of the chain, on the one hand as a triggering factor in the transformation of specialisations and emergence of new industries, and on the other as an increasingly useful and efficient resource as this transformation progresses.

Secondly, even when specialisation remains unchanged, R&D plays a role in modernising the ‘traditional sectors’ and easing their move into the knowledge economy. Spending money on research in traditional industries may prove extraordinarily profitable. Thanks to R&D and innovation, these countries offer extremely innovative product ranges – even if ‘they are only machine tools’ – in a world market in full expansion. The traditional machine tool sector has simply shifted into the knowledge economy – and R&D has played a central part in it.

Thirdly, the ‘D’ in R&D must be taken into consideration, as it is the area that must significantly increase. The current period has been marked by the advent of a general purpose technology (information technologies) whose principal property is the provision of a multitude of innovation opportunities in all sectors. A basic condition for the realisation of these opportunities is investing in the ‘D’ of R&D.
3. Smart specialization - a new concept and instrument of the 2020 EU Strategy

The concept of smart specialization was launched between 2007 and 2008 by a team of economists known as “Knowledge for Growth Group” that provided a high-level advice regarding the reinvigoration of the Lisbon Strategy. In their first report, European Commission, 2008, the authors mention “A critical issue for most regions in Europe is therefore to succeed in particularizing their knowledge base; achieving what we call a smart specialization’ process”. At least, three of the nine studies elaborated in this respect, are focused on different aspects of smart specialization (the concept, dilemmas, opportunities and risks for the European Research Area, the relation between technologic specialization, R&D specialization and smart specialization) according to Foray and Van Ark(2007); Foray, David and Hall(2009); Giannitsis, Kager(2009).

Since 2008 the concept has been quickly and extensively developed as well as widely embraced by scientific experts and applied by policy makers at the national and European level. “The concept of smart specialization and, in general, smart policies is attractive but has various practical difficulties. It assumes that we have criteria to judge which specialization is smart and which is not and consequently which targets are smart” Giannitsis and Kager(2009).

Knowledge for Growth European Issues and Policy Challenges underlines that fostering economic and social progress has been a key objective of European policies. In March 2010, the European Commission launched the Europe 2020 strategy for smart, sustainable and inclusive growth to follow up the 2000 Lisbon strategy. Following actions to stabilize the financial system and the economy, the recent crisis also prompted a reinforced economic agenda with closer EU surveillance, as well as agreement over a range of policy priorities and a set of targets as part of the Europe 2020 strategy.

“Such a success story in such a short period of time is a perfect example of ‘policy running ahead of theory’. They consider that there is a growing gap between the policy practice and the theory and that the theoretical framework is too modest to guide its application” underlined Forey, David and Hall(2011).

The policy makers need assistance from the academic community in order to fully understand the content and the application options, to design and apply effective and relevant smart tools for the assessment and measurement of the smart potential of a region, of the real opportunities to support new competitive areas, and to integrate these new opportunities into the existent Regional/Sectorial structure.

“The challenge for the next step of smart specialization studies is to launch a pilot study based on existing statistics to demonstrate that smart specialization is measurable and that aggregate statistics can be produced”, David, Foray and Hall(2012).

Steliana Sandu(2012)believed that the indicators system may consist of:

- Indicators describing the current research and innovation potential of the region and the level of R&D and technologic specialization. In this case, we could build on already existent indicators such as patents, publications, RDI expenditures, RDI human resources, new products and technologies, etc;
- Economic indicators that may reveal an original industry, be it new or traditional, but with relevant possibilities of development on the background of research and innovation and with good perspective such as predictable market share, turnover, productivity level, etc.;
- Indicators for the assessment of the cooperation level between the specific R&D sector business environment, of the opportunities for synergic relations with other actors, e.g. number of co-inventions, co-publications, cooperation agreements, shared projects, spin-off companies, public-private partnerships, clusters, etc.

Knowledge creation or exploitation successfully applied represents a chance for all regions - and especially for those of the new member states, even the least RDI intensive ones - to capitalize on the specific values and original features of their knowledge base, and to become competitive. It involves an ‘entrepreneurial discovery process’ and a process of ‘co-invention of application’, Foray(2009,2012). This is achieved through the absorption and exploitation of the knowledge and technology stock already created by the enterprises with capacity of entrepreneurial discovery.

The ‘entrepreneurial discovery’ is considered the key element of smart specialization – a bi-dimensional process(bottom up and top down) in which stakeholders, research centres, universities, enterprises, and factors of
innovation are expected to identify the most promising areas of specialization within a region or member state but also the barriers in the field. The regional knowledge base can provide valuable knowledge emerged from research projects and innovative ideas that may turn into new goods or services, increasing the competition and generating new managerial methods, Forey (2012).

The priorities must be acknowledged through a process of identification of the area in which research and innovation may contribute and create internal capacities and interregional competitive advantage taking into account the context and specific condition of the country or region David, Foray, Hall(2012); McCann(2012)

The relation between RDI resources and sectoral structures, the synergies between the already existent and the new activities, the external activities, agglomeration, the need for compensatory incentives for risk-takers are considered valid ingredients and options for smart specialisation Forey(2011, 2012).

Smart specialization has become a general strategy. Even though practice is ahead of theory, meaning that in Europe and other countries strategies of smart growth or platforms of smart specialization have already been elaborated, it is necessary to refine the theory and to choose the adequate data base that would help to clarify this concept, to evaluate the possibilities of implementation and also the means to monitor and coordinate it.

4. Smart specialization in Europe

Through the strategy Europe 2020, the European Commission encourages national and regional authorities around Europe to elaborate Strategies of Regional Development and Strategies of Research and Innovation based on the concept of smart specialization. The goal is to improve the use of the Structural Funds of the EU, by investing in priority areas and to ensure a certain synergy between the different communitary policies, national and/or regional, etc. The Commission launched, in June 2011, the Smart Specialisation Platform as a step towards the objectives set by the Member States in the R&D field(as part of the Europe 2020 Strategy).

The platform aim is to support regions of the Member States in better defining their research and innovation strategies, in assessing their specific research and innovation strengths and weaknesses and to develop their competitive advantage. It establishes expertise from universities, research centres, regional authorities and business and depends on a strong partnership among these actors. The Commission noticed a lack of vision in setting R&I priorities in Europe: sometimes either the priorities are not clearly defined, or they are simply copied from one region to another. Therefore, each region should identify its best assets and R&D potential in order to concentrate its efforts and resources on a limited number of priorities where it can really develop excellence and compete in the global economy.

Among product and/or process innovative enterprises in the EU-27, more than one in four enterprises (25.5 %) was engaged in cooperation regarding their innovation activities (see Table 1). This cooperation might be with other enterprises within the group, suppliers, commercial labs, universities or public research institutes.

Table 1: Proportion of product and/or process innovative enterprises engaged in any type of cooperation by size class, 2008-2010(% of all product and-or process innovative enterprises)

|         | Total | From 10 to 49 employees | From 50 to 249 employees | 250 employees or more |
|---------|-------|-------------------------|--------------------------|-----------------------|
| EU 27   | 25.5  | 20.5                    | 32.7                     | 53.9                  |
| Belgium | 42.3  | 35.0                    | 53.4                     | 74.1                  |
| Bulgaria| 22.4  | 19.0                    | 22.3                     | 44.5                  |
| Czech Republic | 34.2  | 25.1                    | 45.9                     | 62.1                  |
| Denmark | 39.7  | 35.1                    | 43.5                     | 70.4                  |
| Germany | 24.3  | 19.8                    | 29.1                     | 55.8                  |
| Estonia | 42.1  | 35.6                    | 53.1                     | 70.0                  |
| Ireland | 28.5  | 22.8                    | 37.0                     | 60.8                  |
| Spain   | 22.3  | 18.0                    | 28.9                     | 47.1                  |
| Country     | Creativity | Skills Available | Innovation | Strongly Supports | Highly Fruitful |
|------------|------------|-----------------|------------|-------------------|----------------|
| France     | 36.1       | 30.9            | 42.0       | 58.7              |                |
| Italy      | 12.1       | 9.3             | 20.2       | 40.2              |                |
| Cyprus     | 62.3       | 59.2            | 70.4       | 73.0              |                |
| Latvia     | 29.1       | 28.4            | 22.5       | 57.2              |                |
| Lithuania  | 43.3       | 35.2            | 53.1       | 69.4              |                |
| Luxembourg | 32.2       | 33.8            | 23.7       | 48.5              |                |
| Hungary    | 43.2       | 32.1            | 54.2       | 66.8              |                |
| Malta      | 18.5       | 15.5            | 16.4       | 47.4              |                |
| Netherlands| 33.5       | 30.3            | 38.4       | 52.8              |                |
| Austria    | 51.0       | 44.7            | 59.1       | 77.1              |                |
| Poland     | 33.5       | 30.3            | 38.4       | 52.8              |                |
| Portugal   | 19.5       | 13.7            | 33.1       | 63.6              |                |
| Romania    | 24.1       | 21.4            | 24.5       | 37.4              |                |
| Slovenia   | 44.7       | 35.1            | 54.9       | 71.3              |                |
| Slovakia   | 34.7       | 28.4            | 37.4       | 52.2              |                |
| Finland    | 39.8       | 33.0            | 49.1       | 73.0              |                |
| Sweden     | 38.8       | 34.3            | 46.5       | 68.2              |                |
| United kingdom | 13.7 | 12.9            | 16.3       | 15.6              |                |
| Iceland    | 32.2       | 34.6            | 20.7       | 37.8              |                |
| Norway     | 30.6       | 26.0            | 38.3       | 51.9              |                |
| Croatia    | 32.6       | 28.7            | 36         | 55.4              |                |
| Serbia     | 24.9       | 20.4            | 30.4       | 43.9              |                |
| Turkey     | 18.7       | 17.5            | 19.2       | 36.8              |                |

Source: Eurostat http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Innovation_statistics

Creativity and skills available in enterprises (see Table 2) presents the successful methods for stimulating creativity in innovative enterprises in every country for which data are available. More than a half of the countries consider brainstorming sessions the most beneficial method. The highest shares of enterprises that strongly support this method are in Cyprus, Luxembourg and Ireland. The results vary significantly among countries (between 6.9 % and 76.9 %). Multidisciplinary or cross-functional work teams are, according to enterprises, the second most successful method used. Luxembourg, Cyprus and Slovenia have the highest shares of enterprises that consider this method highly fruitful.

Training on how to develop new ideas or creativity is overall a little less successful than the first two. The highest shares of innovative enterprises that regard this method as successful are observed in Cyprus, Luxembourg and Serbia. Methods related to job rotation of staff, financial incentives and non-financial incentives for employees to develop new ideas are relatively less endorsed and supported by innovative enterprises.

EU programmes need to generate a higher number of world class scientific breakthroughs as they help generate excellence through European wide competition. An integration of policies and EU funding from research to market (as in the European Innovation Partnerships) will make Europe better at turning knowledge into innovation. The provision of services to support innovation processes beyond technological innovation will help seize market opportunities for innovative solutions as it was underlined in the paper From Challenges to Opportunities: Towards a Common Strategic Framework for EU - Research and Innovation funding.
Table 2: Proportion of innovative enterprises by type of methods for stimulating creativity considered highly successful, 2008-2010

|                     | Brain-storming sessions | Financial incentives for employees to develop new ideas | Job rotation of staff | Multidisciplinary or cross-functional work team | Nonfinancial incentives for employees | Training employees on how to develop new ideas or creativity |
|---------------------|--------------------------|--------------------------------------------------------|-----------------------|-----------------------------------------------|--------------------------------------|-------------------------------------------------------------|
| Belgium             | 42.0                     | 8.7                                                    | 16.2                  | 31.9                                          | 10.1                                 | 18.9                                                        |
| Bulgaria            | 16.3                     | 17.3                                                   | 11.0                  | 14.6                                          | 10.2                                 | 19.4                                                        |
| Czech Republic      | 31.2                     | 31.0                                                   | 4.7                   | 18.3                                          | 20.7                                 | 23.2                                                        |
| Estonia             | 37.6                     | 14.6                                                   | 17.4                  | 32.0                                          | 16.0                                 | 11.9                                                        |
| Ireland             | 51.7                     | 10.4                                                   | 23.6                  | 38.0                                          | 13.2                                 | 21.0                                                        |
| France              | 32.9                     | 8.8                                                    | 14.5                  | 41.4                                          | 12.9                                 | 16.5                                                        |
| Italy               | 6.9                      | 4.1                                                    | 6.9                   | 7.9                                           | 4.6                                  | 8.1                                                         |
| Cyprus              | 76.9                     | 22.5                                                   | 50.3                  | 52.6                                          | 21.2                                 | 51.8                                                        |
| Lithuania           | 25.2                     | 24.5                                                   | 10.8                  | 26.9                                          | 23.8                                 | 26.9                                                        |
| Luxembourg          | 72.2                     | 22.2                                                   | 35.4                  | 68.4                                          | 32.4                                 | 46.1                                                        |
| Hungary             | 29.5                     | 16.2                                                   | 11.7                  | 22.3                                          | 17.1                                 | 21.8                                                        |
| Malta               | 44.0                     | 12.9                                                   | 20.9                  | 26.8                                          | 12.6                                 | 19.2                                                        |
| Netherlands         | 37.6                     | 5.5                                                    | 10.6                  | 20.7                                          | 8.7                                  | 13.2                                                        |
| Poland              | 31.8                     | 26.6                                                   | 15.2                  | 18.4                                          | 15.2                                 | 21.2                                                        |
| Romania             | 18.1                     | 31.9                                                   | 17.4                  | 19.7                                          | 22.3                                 | 24.8                                                        |
| Slovenia            | 39.4                     | 27.2                                                   | 27.8                  | 40.3                                          | 22.0                                 | 24.8                                                        |
| Slovakia            | 30.0                     | 26.4                                                   | 13.4                  | 27.4                                          | 24.3                                 | 22.6                                                        |
| Finland             | 39.2                     | 10.4                                                   | 21.2                  | 17.7                                          | 10.6                                 | 16.5                                                        |
| Norway              | 12.1                     | 7.4                                                    | 8.5                   | 9.9                                           | 10.8                                 | 10.1                                                        |
| Croatia             | 21.5                     | 21.4                                                   | 25.4                  | 17.5                                          | 20.8                                 | 24.4                                                        |
| Serbia*             | 14.8                     | 28.0                                                   | 26.9                  | 20.1                                          | 24.4                                 | 32.4                                                        |
| Turkey              | 26.9                     | 20.8                                                   | 23.4                  | 36.3                                          | 24.8                                 | 28.2                                                        |

Source: Eurostat http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Innovation_statistics

5. Smart Specialisation in Romania

At national level, good premises and new opportunities for stimulating smart specialization came forth in 2012. The National RDI Strategy 2014-2020 is based on smart specialisation, defining the priority areas that are to receive the 2% of GDP targeted for R&D and the incentives designed for increasing the contribution of the private sector to the RDI funding.

The Partnerships in Priority Fields National Programme, aiming to stimulate partnership between different R&D and innovation entities that could cooperate in priority fields is also an important instrument for stimulating smart specialisation UEFISCDI, 2012a. In July, 2012, two new financing instruments have been set up: High-Tech Export Stimulation UEFISCDI, 2012b and Developing Products, Systems and Technologies UEFISCDI, 2012c within The National Innovation Programme. The first sub-programme, aims at improving the competitiveness of the Romanian high-tech products and technologies and the second is intended to improve the technologic and economic performance of Romanian companies through financing the enterprises with the capacity of turning ideas into innovative products and technologies, with real market potential, Sandu(2012).
The improvement of the legislative framework smoothed the path for smart specialisation, as it is focused on key issues that smart specialisation relies on, such as research appraisal, universities and R&D units acknowledgment, institutional funding, evaluation and management of projects and national programmes funded through the National R&D and Innovation Plan, the performance of the Romanian educational system, etc.

Another impetus is given through the new perspective of the National Agency for Scientific Research policy that brings forward new initiatives (vouchers for innovation, the elaboration of a National Innovation Strategy; the development of a National Strategy and programmes for smart specialisation in the near future, etc.) based on the instruments adopted within the Joint Assistance Programme intended to support Projects in the European Regions during 2013-2020.

At the regional level, one may notice that some regions are very active and firmly committed towards achieving their smart specialisation. The initiative “Toward an S3 strategy for the west Region. West Region, a smart specialization region” intended to assess the regional economic competitiveness, the smart specialization tendencies and niches for sectors like ITC, Automotive, Construction, Agro-food, Energy efficiency, etc were identified through analyses of the regional potential.

6. Smart Specialisation in the context of climate change mitigation

Due to rapid and widespread changes in the world’s human population, unprecedented levels of consumption present profound challenges not only to the human health and wellbeing but also to the natural environment. In order to cut down of GHGs mankind needs to make growth greener and make our economic and environmental policies more compatible by mutually-reinforcing each other, Rusu(2012).

Facing unprecedented levels of consumption as well as a constant need for innovation and environmental protection, the carbon storage provided by wood products and the positive contribution these can deliver to limiting the effects of climate change can be seen as a possible solution. Wood products provide additional storage for the carbon removed by forests, recycling prolongs the capacity of wood products to retain carbon and “carbon storage in harvested wood products can extend the carbon sequestration benefits provided by forests”, CEI-Bois (2009).

The innovative financing instruments have as main objective to ensure the financing in priority domains of the European Union, such as innovation and development, sustainable development, creating jobs, eco-friendly solutions, etc.

Counties like Suceava, Neamt, Harghita have a legacy in the use and methods used in the wood processing industries. In these places the art of crafting and processing wood has been passed down from one generation to another making this industry one in need of conserving traditions and jobs in context of globalization and in need of research, development and innovation.

Taking into account the sector’s specific features, it is possible to set up new units of small to medium size production capabilities in the vicinity of raw materials as well as turning existing production capabilities efficient or more efficient by upgrading. Rusu (2013). Smart specialization can provide added value to the regional economy and help create jobs in less industrialized or developed regions. Romania is not immune when it comes to turbulences on the foreign markets. The need for consumption and investment needs to take into account the dangers posed by the international crisis. Aurica Sereny, President of the Romanian Furniture Manufacturing Association (APMR), considers that prudent decisions, responsibility and the efficient management of company’s own resources are the main priorities of businesses operating during this period.

The furniture industry in Romania is famous for its well-known tradition in the field as well as the favorable premises that lead to its development. The country rich in wood that can be fetched from short distances, the low prices of the raw wooden materials on the local market as well as the low cost of the labor force can be seen as competitive advantages. Not only is the labor force cheap but it is also famous for its qualification level being highly qualified and experienced, capable to adapt to modern, technological and managerial requirements.

According to Aurica Sereny, 2011 has brought a steady increase in the activities of business in the wood processing and furniture industry in Romania. The statistical information registered and compiled by the National Institute of statistics for the first 5 months of 2011 shows that the furniture market grew by 18% in comparison with the corresponding period of 2010.
In the global fight against climate change there is a need to improve R&D and innovation, on the forest based industries, forest products and the characteristics of wood as a renewable and climate friendly raw material.

7. Conclusions

In the paper From Challenges to Opportunities: Towards a Common Strategic Framework for EU Research and Innovation funding the authors underline that “Europe and the world are faced with unprecedented challenges requiring innovative solutions. Returning to growth and higher levels of employment, combating climate change and moving towards a low-carbon society require urgent and coordinated action. The impact of demographic developments is increasing and our natural resources need to be used more wisely. Our societies face security challenges which are growing in scale and sophistication. Challenges such as our ageing population or our dependence on fossil fuel do, however, also provide powerful opportunities to develop innovative products and services, creating growth and jobs in Europe.”

Romania needs to meet the challenge of retaining and reinforcing its competitive position in the wood processing industry in the face of globalization. The emerging economies are moving from cost competition and imitation towards strategies based on innovation. Romania needs to make a step change in its research and innovation performance in the wood processing industry. This requires research and innovation to be better linked, creating public-private research partnerships, identifying smart specialization solutions, etc. It should break away from traditional compartmentalized approaches and focus more on challenges and outcomes to be achieved, linking the research and innovation funding closer to the policy objectives. Developing a simplified set of instruments and rules is equally crucial, while leaving room for flexibility where it is needed.

“EU programmes operate in an environment in which most public funding for research and innovation is administered by Member States. Yet still too often this fails to take proper account of the trans-national nature of research and innovation, leaving synergies with the programmes of other Member States or those of the EU largely unexploited” as underlined in the paper From Challenges to Opportunities: Towards a Common Strategic Framework for EU Research and Innovation funding.

Rural Development funding currently provides for a broad range of measures fostering innovation in agriculture and forestry. The Communication ‘The CAP towards 2020: meeting food, natural resources and territorial challenges of the future’21 points to innovation as one of the guiding themes of rural development besides environment and climate change.

Current EU funding programmes have put considerable effort in tackling societal challenges, predominately through a thematic technology push. Bringing researchers from across Europe together in collaborative networks has been at the heart of this approach and will continue to be vital in sustaining a European research fabric. Experience has shown, however, the limitations of this approach in achieving the necessary flexibility, creativity and crossdisciplinary research needed.

Europe and Romania need to step up its performance in creating impact from research and innovation funding. Obstacles remain in transferring research outcomes from the laboratory through to the development, commercialisation and application phases. This requires an essential role for the wood processing industry in setting priorities and through public-private partnerships. It also involves broadening support across the full innovation cycle (including proof of concept, testing, piloting and demonstration), including covering issues such as post-project follow-up, pre-normative research for standard setting, support to patenting and to non-technological innovation.

8. References

CEI-Bois (2009) Memorandum to the European Institutions, How wood products can help Europe achieve its political objectives while ensuring competitiveness and profitability

David, P.; Forey, D.; Hall, B. (2012) Measuring Smart Specialization. The concept and the need for indicators. Available at cemi.epfl.ch/.../Measuring%20smart%20specialization.

Del Castillo, J.; Barroeta, B.; Paton J. (2012) Converting smart specialization into a regional strategy, INFYDE Working Paper, Year 1 - Vol. 2 Nº1.
European Commission (2011) Industrial innovation - Innovation Union Scoreboard. Available at http://ec.europa.eu/enterprise/policies/innovation/facts-figures-analysis/innovation-scoreboard/index_en.htm.

European Commission (2013) Eurostat, Innovation statistics, January 2013. Available at http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Innovation_statistics.

Eurostat (2012) Energy, transport and environment indicators. Available at http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-DK-12-001/EN/KS-DK-12-001-EN.PDF.

Eurostat (2012) Key figures on Europe 2012. Available at http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-EI-12-001/EN/KS-EI-12-001-EN.PDF.

Eurostat (2013) Analysis of EU-27 household final consumption expenditure — Baltic countries and Greece still suffering most from the economic and financial crisis. Available at http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/publication?p_product_code=KS-SF-13-002.

Eurostat (2013) High-technology and medium-high technology industries main drivers of EU-27’s industrial growth. Available at http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/publication?p_product_code=KS-SF-13-001.

Foray, D. (2009) Understanding Smart Specialization in Pontikakis, D., Kyriakou, D., Van Bavel, R. eds, The Question of R&D Specialisation: Perspectives and policy implications, JRC, IPTS, European Commission

Foray, D. (2012) Types of Strategies for Smart Specialization, 2nd TIP Workshop on Smart Specialization, OECD, 10-11 May 2012

Foray, D.; and Van Ark, B. (2007) Smart specialisation in a truly integrated research area is the key to attracting more R&D to Europe by Dominique, Knowledge Economists Policy

Foray, D.; David, P.A.; Hall, B. (2009), Smart Specialisation - The Concept, Knowledge Economists Policy Brief no. 9. Available at http://ec.europa.eu/invest-in-research/pdf/download_en/kfg_policy_brief_no9.pdf?

Foray, D.; David, P.A.; Hall, B. (2011) Smart specialisation. From academic idea to political instrument, the surprising career of a concept and the difficulties involved in its implementation, MTEI Working Paper

Horizon 2020, From Challenges to Opportunities: Towards a Common Strategic Framework for EU Research and Innovation funding. Available at http://ec.europa.eu/research/horizon2020/index_en.cfm?pg=documents.

Jaegers, T.; Lipp-LinGua, C.; Amil, D. (2013) High-technology and medium-high technology industries main drivers of EU-27’s industrial growth, Available at: http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-SF-13-001/EN/KS-SF-13-001-EN.PDF

Knowledge for Growth (2008) European Issues and Policy Challenges. Available at http://ec.europa.eu/invest-in-research/pdf/download_en/knowledge_for_growth_bat.pdf.

Mc Cann, P. (2012) Smart specialisation as Regional Policy. How to make it work? Paper presented at Conference: Regions for Economic Change. Transforming Regional Economies: "The Power of Research and Innovation Strategies for Smart Specialisation", Brussels, 12 June 2012

McCann, P.; Ortega-Argiles, R. (2011) Smart Specialisation, regional growth and applications to EU Cohesion policy, Economic Geography working paper 2011. Faculty of Spatial Sciences, University of Goningen

Politica regională (2012) Rolul nostru în Politica regională, source: http://www.politicaregionala.ro:8080/polreg/articol/229376/Rolul-nostru-n-Politica-regionala.

Radu, A. L.; Dimitriu, M. (2012) Scoring method applied to financing programmes in the context of sustainable development, Emerging Markets Queries in Finance and Business, Procedia Economics and Finance 3 (2012 ), p. 527 – 535.

Rusu M (2013) The wood processing industry and furniture industry in Romania - history, threats and opportunities, paper presented in the conference 2013 International Conference on Psychology, Management and Social Science, January 23-24, Shenzhen, China.

Rusu, M (2012) Social cost of carbon: opportunities and environmental solutions, Emerging Markets Queries in Finance and Business, Procedia Economics and Finance 3 (2012 ), p. 690-697

Sandu, S. (2012) Smart specialization concept and the status of its implementation in Romania, Emerging Markets Queries in Finance and Business, Procedia Economics and Finance 3 (2012 ), p. 236 – 242.

UEFISCDI (2012a) Partnershihip Priority Areas Programme. Available at http://uefiscdi.gov.ro/Public/cat/593/PARTENERIATE.html.

UEFISCDI (2012b) High Export Stimulation subprogram within the Innovation National programme. Available at http://www.uefiscdi.gov.ro/article/2859/Cecuri-de-inovare.html.

UEFISCDI (2012c) Development of Products, Systems, Technologies subprogramme within the Innovation National Programme

Zaharioae, M. (2012) Appropriate financial instruments for public-private partnership in European Union, Emerging Markets Queries in Finance and Business, Procedia Economics and Finance 3 (2012 ), p. 800-805