WORLD BANK

ROMANIA - WEST REGION COMPETITIVENESS ENHANCEMENT AND SMART SPECIALIZATION

TIMISOARA, SEPTEMBER 6TH, 2013

AGENDA FOR THE PRESENTATION

1. **INTRODUCTION:** objective and scope of the project

2. **COMPETITIVENESS ASSESSMENT:** key strengths and challenges of the West Region economy

3. **SMART SPECIALIZATION, SECTOR CASE STUDIES AND IDENTIFICATION OF MAIN POLICY AREAS**

4. **POLICY RECOMMENDATIONS:** key elements of a smart specialization strategy in the West Region

1. INTRODUCTION: objective and scope of the project

Objective and scope of the project

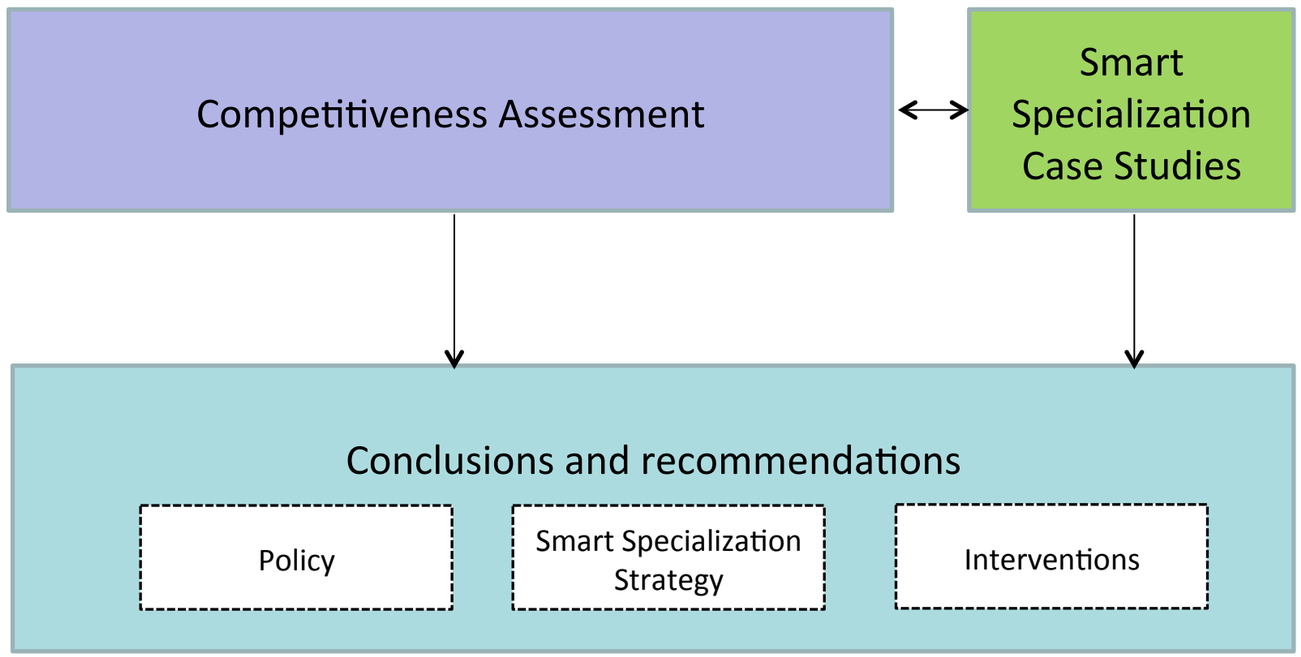
- The World Bank has provided a set of advisory services to the Regional Development Agency for the West Region of Romania (ARD Vest). The objective was to:

  i. Develop a competitiveness assessment of services and goods sectors in the West Region

  ii. Identify potential policy measures and interventions that can help enhance regional growth potential.

- The results of the analysis will **support the 2014-2020 planning activity of the Agency** and will serve as an **input for the regional development strategy financed by EU structural funds and other sources of financing**.

Analytical framework



Components

The World Bank's advisory services have encompassed seven deliverables

1. Trade Outcomes Assessment
2. Territorial Assessment: Profile, Performance, and Drivers of Growth
3. Economic Geography Assessment: Territorial Development Challenges
4. Trade and Transport Facilitation and Logistics Infrastructure Assessment
5. Competitiveness of West Romania Firms: Diagnostics, Challenges, and Opportunities

6. Smart Specialization Sector Case Studies Report

7. Final Report: Policy Recommendations

2. COMPETITIVENESS ASSESSMENT: key strengths and challenges of the West Region economy

Key strengths

1. The physical endowments of the region are reasonably plentiful (and unexploited to some extent)
2. The region has experienced rapid economic growth which has delivered rising real wages, supported by commensurate improvements in productivity.
3. The region has a relatively highly skilled population
4. There are important signs of entrepreneurial activity in the West Region
5. The export performance of the West Region is very positive in overall terms

Main challenges

1. Fruits of economic growth were not distributed evenly across the region
2. As a result of the spatial effect of the economic transition and conditioned in part by geography, productive activities are located unevenly across the region, which reinforces the income disparities.
3. Despite a relatively significant number of universities and good university enrollment rates, the region faces important shortcomings at all levels of training and skills development
4. Economic activity is increasingly concentrated
5. Export performance is also very concentrated and intensive in relatively low skilled and less sophisticated products
6. There is increasing integration with regional value chains, leading to low local value addition

Key strengths: (1)
The physical endowments of the region are reasonably plentiful

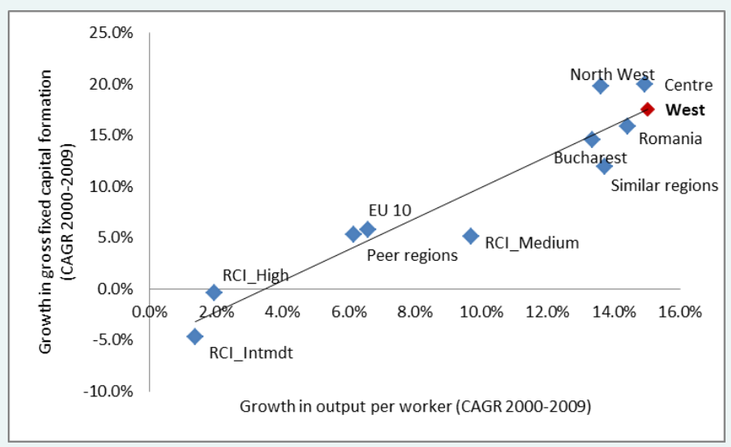
- The Banat Plain, which makes up the western half of the region, covers a fertile land that has supported diverse agricultural activities, including cereals, horticulture, and animal production.

- Natural endowments underpin the local industrial and commercial base, which has contributed to the creation of infrastructural endowments from which the region benefits today.

Key strengths: (2)
The region has experienced rapid growth, supported by commensurate improvements in productivity

- The significant GDP per capita convergence of the West (and of Romania) toward the EU average has been a function of rapid productivity catch-up, which in turn has been driven by strong investment.

Productivity and investment growth (2000-2009)

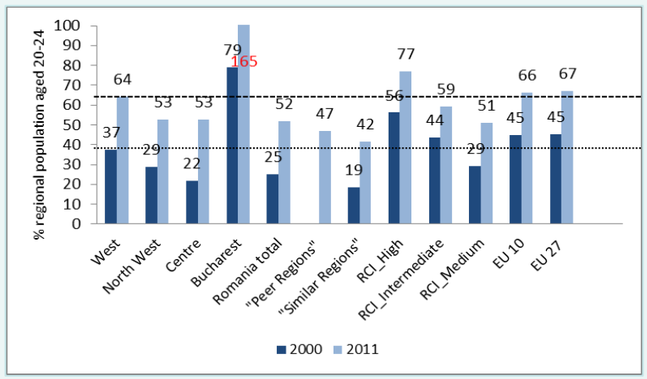


Source: Calculations based on data from Eurostat

Key strengths: (3)
The region has a relatively highly skilled population

- The West Region is recognized as having **a strong set of universities** and hosts a large student population, particularly in Timisoara.
- These trends are reflected in the labor market - the West has a **comparative advantage in highly skilled workers** (proxied by tertiary education).
- However, the West faces a problem with **older workers retrenching due to restructuring of traditional industries** like coal and metals (particularly in Hunedoara and Caras-Severin), as well as with **younger workers that leave school without qualifications**.

Students in Tertiary Education as share of Regional Population Aged 20-24

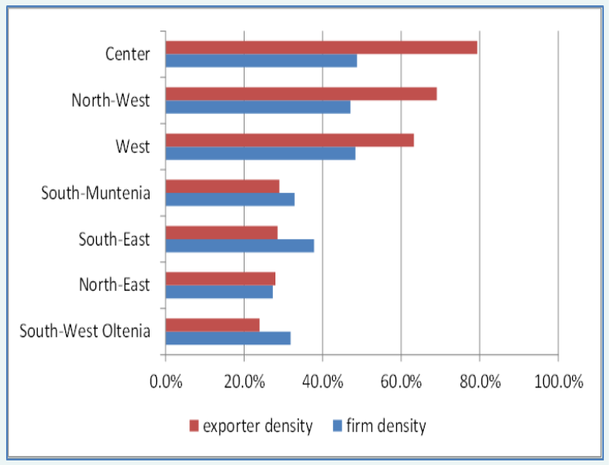


Source: Calculations based on data from Eurostat

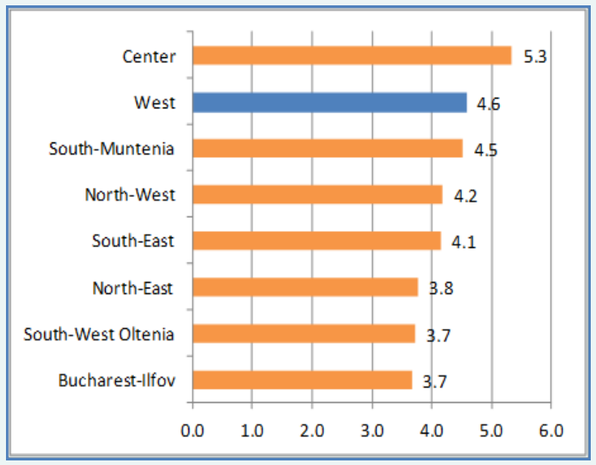
Key strengths: (4)
There are important signs of entrepreneurial activity in the West Region

- The West Region is one of the most **enterprise- and trade-dense** regions in Romania. Additionally, it presents the second highest share of gazelles* among all firms.

Firm and Exporter Density in 2010
(% of density in Bucharest-Ilfov)



Share of Gazelles Among All Firms in 2010
(Excluding SOEs), by region



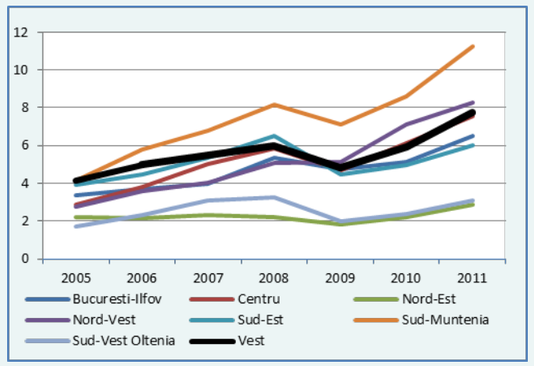
Source: Calculations based on SBS data

* A gazelle is an extremely fast-growing company, which maintains consistent expansion of both employment and turnover over a prolonged period.

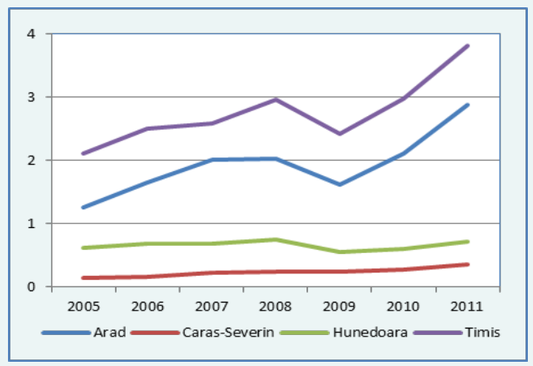
Key strengths: (5)
The West Regions' export performance is very positive in overall terms

- Overall, the West Region **export performance is very positive**: export growth is sustained, particularly since 2009 and is driven by the performance of firms located in Arad and Timis.

Exports across Romanian regions
(US$ billion)



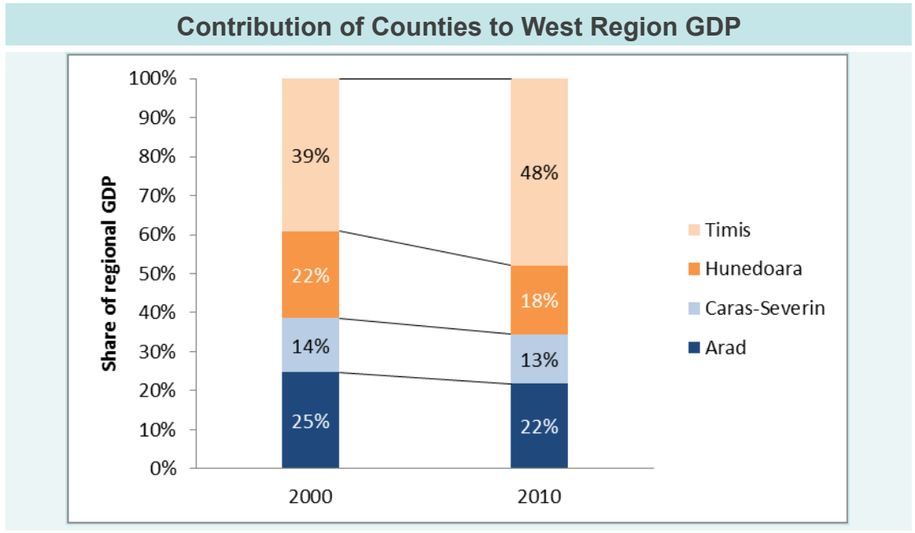
Exports for the counties of the West Region
(US$ billion)



Source: World Bank staff calculation based on SBS data

Challenges (1):
Fruits of economic growth were not distributed evenly across the region

- **Timis accounts for almost half of the region's GDP**, while the contribution of the other three counties has declined significantly over the last decade.



Source: Calculations based on data from Eurostat

Challenges (2):
Productive activities are located unevenly across the region, which reinforces the income disparities

- **Geographical endowments and development patterns still play a significant role in shaping the economies** of the 4 counties today and have reinforced regional disparities.

- **Timis and Arad are specialized across a range of manufacturing sectors**, with Timis specialized in several more sophisticated manufacturing sectors.

- **Hunedoara and Caras-Severin, meanwhile remain specialized in sectors linked to their physical endowments** – forestry and mining in Hunedoara; mining and metals (as well as wood products) in Caras-Severin.

Top 5 Most Specialized Basic Sectors by County (2010)

Arad			Caras-Severin		
NACE	Description	Location Quotient	NACE	Description	Location Quotient
29	Motor vehicles	5.3	28	Machinery and Equipment	5.3
32	Other Manufacturing	3.8	24	Basic Metals	4.0
30	Other Transport Equipment	3.5	07	Mining Metal Ores	3.3
31	Furniture Manufacturing	2.5	16	Wood and Wood Products	3.1
26	Computer, Electronic and Optical	2.3	29	Motor vehicles	3.1
Hunedoara			**Timis**		
NACE	Description	Location Quotient	NACE	Description	Location Quotient
02	Forestry and Logging	19.9	26	Computer, Electronic and Optical	6.1
05	Coal Mining	17.1	27	Electrical Equipment	3.5
32	Other Manufacturing	4.0	29	Motor vehicles	3.2
08	Other Mining	2.7	15	Leather Products (Footwear)	3.0
29	Motor vehicles	2.6	22	Rubber and Plastics	2.6

Source: Calculations based on data from Structural Business Survey
Note: Basic sectors include those sectors which sell primarily outside the local area; Specialization defined as the sectors with the highest location quotient for employment relative to the national context

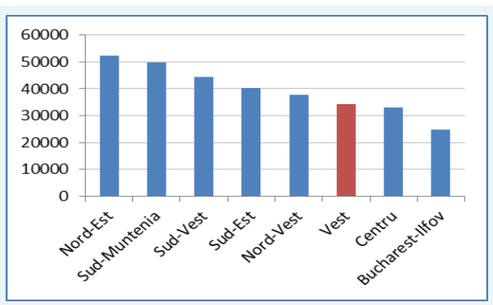
Challenges (3):
Despite a relatively significant number of universities and good enrollment rates, the region faces important shortcomings at all levels of training and skills development

- The West Region has an advantage in tertiary education in the Romanian context. However, **enrollment rates in secondary education are only moderately ahead of the national average**.

- The **relative performance of its students in upper secondary education is also of concern**. In 2011 and 2012, every county in the West Region performed in the bottom quartile of Romanian counties in the first presentation of the baccalaureate examination.

- In addition, **West region lags behind other peers in terms of enrollment in TVET programs**.

Number of students enrolled in technical education



Source: Institute of National Statistics

Challenges (4):
Economic activity is increasingly concentrated

- The top ten sectors in the West Region accounted for almost 54% of turnover and 55% of employment in 2010 and the concentration of the West Region economic activity around them has increased between 2008 and 2010.

Main Economic Sectors in the West Region (% total)

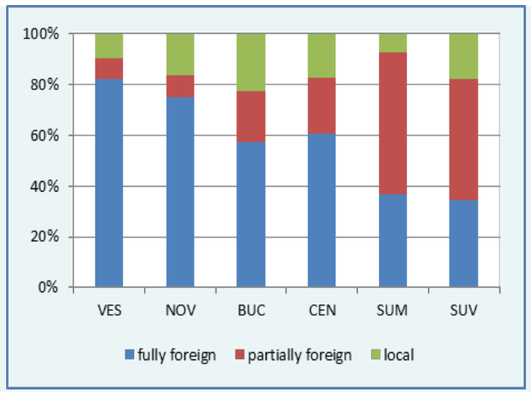
	Turnover		Employment	
NACE 2-DIGIT SECTOR	**2008**	**2010**	**2008**	**2010**
Manufacture of motor vehicles, trailers and semi-trailers	9.0	22.4	10.1	17.0
Manufacture of wearing apparel	1.8	2.6	5.8	5.2
Wholesale trade, except of motor vehicles and motorcycles	16.9	9.2	5.3	4.9
Retail trade, except of motor vehicles and motorcycles	6.6	3.8	4.7	4.4
Manufacture of leather and related products	1.4	2.1	4.6	4.1
Manufacture of food products	3.7	4.8	3.7	4.1
Land transport and transport via pipelines	2.9	2.5	3.5	4.1
Mining of coal and lignite	1.0	0.6	4.2	3.9
Construction of buildings	5.5	2.6	5.4	3.7
Manufacture of computer, electronic and optical products	2.1	3.2	3.0	3.4
TOP 10 NACE 2 DIGIT SECTORS	**51.0**	**53.8**	**50.3**	**54.7**

Source: World Bank staff calculation based on SBS data.

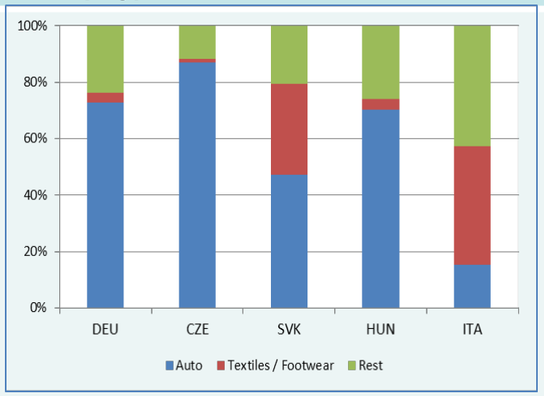
Challenges (4):
Export performance is also highly concentrated and intensive in relatively low skilled and less sophisticated products

- The export-driven growth model of the region is potentially **very vulnerable to exogenous developments.**
  - Exports are over reliant on a handful of foreign owned large exporters mainly from the auto and apparel/footwear industry
- **EU remains by far the most important destination market** (absorbing 90% of the exports from the West region)
- **Export growth** over the period 2005-2011 has been **very reliant on the "intensive margin"**
  - 75% of export growth came from incumbent exporters going to markets they already served and with no innovation in terms of product range
- Exports are concentrated in **relatively low-skill, low sophistication industries**
  - Like footwear, textile, rubber, wood, and agro industries or other basic manufactures

Percentage of Exports by Ownership, Type and Region



West Region: Percentage of Exports by Ownership Type and Sector



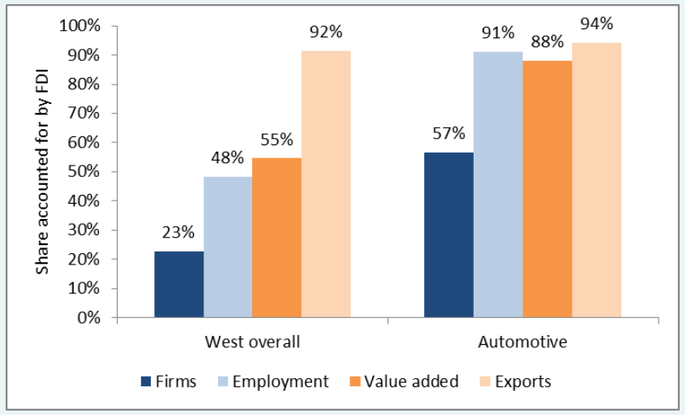
Source: Calculations based on INS data

Challenges (5):
There is increasing integration with regional value chains, leading to low local value addition

- Foreign firms predominate across many sectors in the region (particularly automotive).

- **Foreign ownership in the region's key sectors brings with it both opportunities and risks.** The main risk is that foreign firms are likely to be 'footloose'. A second risk is that foreign owned firms might 'crowd out' the local industry.

Scope of Firms with Foreign Ownership in the West Region (2010)



Source: Calculations based on data from Business Registry
Note: Foreign firms include firms with any share of foreign participation, so includes both fully foreign-owned firms and firms with both foreign and domestic capital (the Business Registry does not indicate ownership shares, only "100 percent foreign", "100 percent local", and "mixed").

3. SMART SPECIALIZATION, SECTOR CASE STUDIES, AND IDENTIFICATION OF MAIN POLICY AREAS

Smart specialization in the context of the Europe 2020 Strategy and the European Cohesion Policy

- In 2010, **the Europe 2020 Strategy was launched as the European Union's ten-year growth strategy**, built on three main objectives: "smart growth", "sustainable growth" and "inclusive growth"

- **To render Europe 2020 objectives** more tangible, **five key targets have been set for the Member States** to be achieved by the end of the decade

- As the national authorities did not establish regional contributions to the national targets according to regional disparities, **each region can decide to fulfill the same level of the indicators**

	Employment rate (%)	R&D (% of GDP)	Emissions reduction (compared to 2005) (%)	Renewable Energy (%)	Energy efficiency reduction (%)	Early school leaving (%)	Tertiary education (%)	Reduction of population at risk of poverty or social excl. (no. of persons)
EU target	75	3	20	20	20	10	40	20,000,000
RO target	70	2	19	24	19	11,3	26,7	580,000
RO current situation	63,8	0,48	51,85	20,79	16,6	17,4	21,8	240,000
West-region current situation	52.5	0.22	-	-	-	-	15.4	-
West-region target	70	2	19	24	19	11,3	26,7	-

Smart specialization in the context of the Europe 2020 Strategy and the European Cohesion Policy

- **Smart specialization** has been highlighted by the European Commission as a central pillar of the Europe 2020 Strategy, to help unleash innovation capacity.

- Developing smart specialization strategies requires Member States and regions to **concentrate resources on the most promising areas of competitive advantage**.

- As part of the Cohesion Policy for the 2014-2020 programming period, **smart specialization has been proposed as "ex-ante conditionality".**
  - This means that every Member State and/or region will need to have a well-developed strategy in place to be eligible for EU financial support through the ESI funds for their planned innovation measures.

- **In Romania, the authorities have decided to promote a National Smart Specialization Strategy,** as part of the National Strategy for Research, Development and Innovation

Analysis of the sectorial specialization of the West region

- The analysis of the economic specialization of the West Region of Romania, following a sectorial approach, as a way to **support the development of a sustainable growth strategy at the regional level**

- **Six clusters were selected for in-depth analysis** because of their relevance and potential in the West Region's economy:
  - Automotive
  - Textiles
  - Agro-food
  - ICT
  - Tourism
  - Construction

- The effectiveness of targeted innovation and research policies depends heavily on the information available in the market on whether the region has any sectors with **observable comparative advantages**

Based on available information, the six sectors clusters were classified as follows

*Sectors with **apparent comparative advantage*** *(*activities that are already well-developed and have attained a level of competitiveness that allows the local firms to export on the global market)

- **Automotive**
- **Textiles**
- **ICT**

*Sectors with **latent comparative advantage*** (activities are not fully developed but the region has the required asset (location, knowledge, natural endowment)

- **Agro food**
- **Tourism**

*Sectors with **unclear comparative advantage*** *(*the available information does not indicate any observable asset in a particular area of specialization)

- **Construction**

AUTOMOTIVE: overview

- **Since mid 2000's automotive sector took over the dominance of economic activity in the West Region** from the textile industry.
- The auto sector is **among the top five sectors in terms of revenue and employment generation** in almost each county of the region.
- The geographic location of the region gives it a clear advantage over the rest of Romania through its **proximity to EU market**.
- **Human capital** with skill sets that are suitable for the sector's needs is available in the region.
- The region still provides **relatively low labor costs** for automotive activities which is a major contributor to attract foreign multi-national corporations (average wages are 13% below the national average in the sector).

AUTOMOTIVE: R&D activity and links with global networks

Exports in the Auto Sector by stage of production (% sector exports in 2011)

Value chain stage/segment	2005	2006	2007	2008	2009	2010	2011
Final products	0.1	0.1	0.8	1.3	2.7	1.8	1.5
Main parts and components	0.0	0.1	0.0	0.0	0.0	0.0	0.1
Raw Material	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Standard parts	99.9	99.8	99.2	98.7	97.3	98.2	98.3

Unsurprisingly, almost all exports came from **standard auto parts** (98.3% in 2011)

A very small share came from final products (1.5%) and main parts of components (0.1%).

- The way the sector is linked to global value chain has consequences over the R&D activity carried out locally.
- R&D activity in the sector tends to be done outside the region
  - often in the headquarters of foreign owned companies (OEM and first-tier suppliers)
  - or in collaboration with top universities worldwide.
- The research needs of the large companies are met in house most of the time, without much interaction with the research universities in the region.

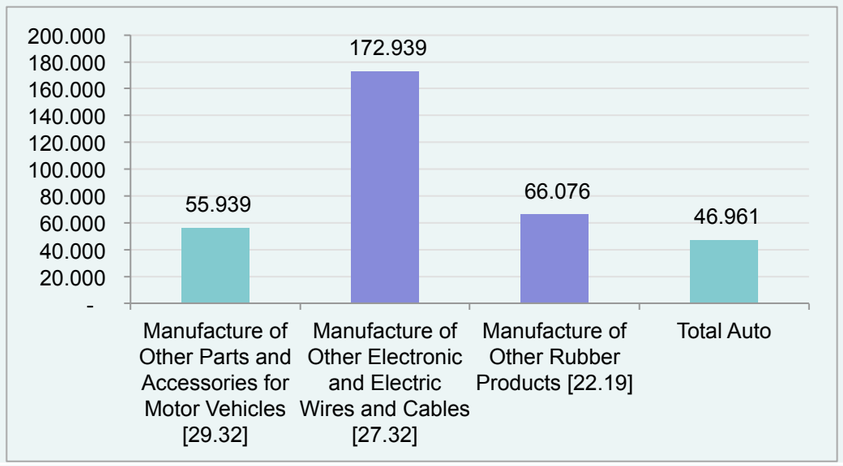
AUTOMOTIVE: looking ahead

- **Keeping labor costs low is not a sustainable development strategy for the sector to remain globally competitive.**
- **Policies must be developed to increase economic activity in areas where more knowledge and technology is produced.**
- After years of involvement in low value-added, high labor-intensive tasks, some large MNC have started to benefit from the local capacity and know-how accumulated over the past years and have begun to engage in **design and development activities**.
- These initiatives create great opportunities for **knowledge spillovers** to region.
- Timisoara and to some degree Arad have developed the know-how and capacity to be successful in these areas.
- Efforts to introduce **new designs, products, processes and technologies** must be scaled up and must be backed by supportive policy reforms.

AUTOMOTIVE: specialization opportunities

- High growing activities (2008-2010) with huge potential for value added generation
  - ***Manufacture of Other Parts and Accessories for Motor Vehicles***,
  - ***Manufacture of Other Electronic and Electric Wires and Cables***, and
  - ***Manufacture of Other Rubber Products***.

Average labor productivity for selected NACE 4 digit sectors within automotive sector: 2010 (Romanian Lei per worker)



Source: Calculations based on SBS data

Manufacture of Other Electronic and Electric Wires and Cables, and ***Manufacture of Other Rubber Products*** also have export potential, particularly when product/ technological links with already exported products is taken into account.

Manufacture of Other Electronic and Electric Wires and Cables=> electrical and computer systems in cars

Manufacture of Other Rubber Products => production of new pneumatic tyres

TEXTILES: overview

- The textile sector continues to be **one of the biggest employers and contributors to export** in the region.

- Significant **industry-specific knowledge has been accumulated**, making local producers well positioned to respond to demand from their MNC clients.
  - Similarly, direct connections with many multi-national clients in the sector have helped build a business network in the region which can easily generate new business opportunities.

- The **geographic location of the region gives it a clear advantage through its close proximity to the European market** which provides an advantage in terms of transportation costs and facilitates communications with clients.

TEXTILES: R&D activity and links with global networks

Exports in the Textile Sector by stage of production (% sector exports in 2011)

Value chain stage/segment	2005	2006	2007	2008	2009	2010	2011
Final products	97.2	96.9	94.5	92.7	90.1	86.5	84.3
Main parts and components	0.6	0.5	1.5	1.9	1.4	1.8	2.0
Raw Material	1.7	2.1	3.5	4.9	7.7	10.4	12.4
Standard parts	0.4	0.4	0.4	0.5	0.7	1.0	0.8

- The textile sector in the West Region specializes in exporting final products instead of parts or components like in the auto sector.
- Although exports of finished textiles and apparel have dominated the sector, accounting for 84.3% of the total, exports of raw materials have picked up since 2008, and now represent 12.4% of exports in 2011.

- The way the sector is linked to global value chain has consequences over the R&D activity carried out locally.
- There is no local R&D capacity to produce new machinery or to adapt the imported machinery and equipment to the needs of local firms.
- Most of the time, the foreign clients conduct the research and undertake design and development of new products.
- Also the material inputs are either provided or suppliers of such materials are imposed to the textile companies by their clients.
- The local firms only provide production capacity with limited use of use of technology and little involvement in knowledge intensive.
- This constrains the sectoral activity to labour intensive production activities that have the least value added.

TEXTILES: looking ahead

- Many local firms in the region conduct **labor intensive activities with the lowest contribution to the value chain** such as sewing, nesting, cutting, press and packaging. However, in textiles/apparel sectors, **major innovations come either through introduction of new machinery and equipment for production or from chemical industry**.

- Development of **local capacity to build new machinery and equipment is not feasible in the short to medium term** but would be investigated for a long-term strategy.

- There are **alternative routes to support local firms:** subsiding acquisition of machinery, developing the skills set to perform activities requiring more knowledge and use of technology.

- Firms that succeed **generating higher values and broadening activities** will be able to pay higher wages. This attract more high skilled workers to the sector.

TEXTILES: specialization opportunities

- High growing activities (2008-2010) with huge potential for value added generation
  - ***Manufacture of Other Textiles N.E.C.,***
  - ***Manufacture of Other Knitted and Crocheted Apparel, and***
  - ***Manufacture of Non-Wovens and Articles Made From Non-Wovens, Except Apparel***

Average labour productivity for selected NACE 4 digit sectors within textile sector: 2010
(Romanian Lei per worker)

Source: Calculations based on SBS data

"Manufacture of Non-Wovens and Articles Made From Non-Wovens, Except Apparel" and **"Manufacture of Other Textiles N.E.C."** also have export potential, particularly when product/technological links with already exported products is taken into account.

Both are linked to the high tech synthetic fiber niche activities => Textiles fabrics impregnated with polyurethane' (HS 590320) and 'Textile fabrics impregnated with plastics' (HS 590390)

AGRO FOOD: overview

- In the West Region, the agro food sector - which includes food processing and the manufacture of beverages - accounts for only **4.3% of the total employment in the region**, or a little more than 10,000 people.

- Although the West Region is one of the most trade-dense regions in Romania, in comparison with other sectors, **agro food exports represent only 0.5% of total export in the West region in 2010.**

- Overall, evidence suggests that the **West region has a latent comparative advantage in the agro food sector**. The main reasons for this inference are the **low wages** and, particularly, the **agricultural richness of the region**.

- The region - especially the Banat Plain, which makes up the western half of the West Region – encompasses a rich agricultural land that has supported **diverse agricultural activities, including cereals, horticulture, and animal production**. However, the share of the region's land area that is utilized for agriculture is the lowest among all regions in Romania.

AGRO FOOD: R&D activity and links with global networks

Exports in the Agro food Sector by stage of production

(% sector exports in 2011)

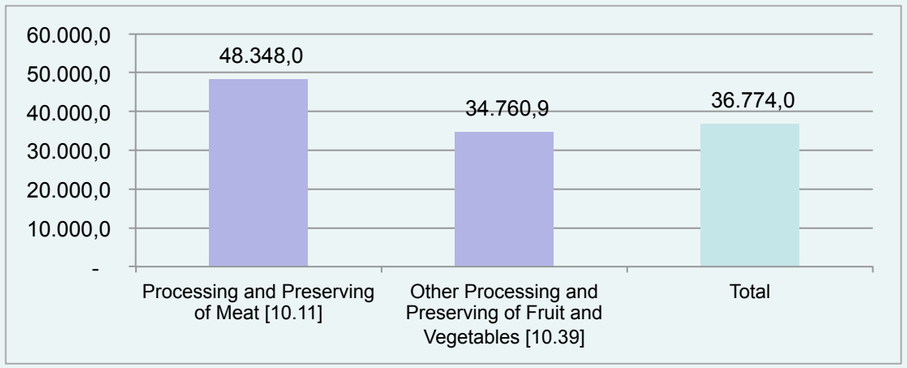
Value chain stage/segment	2005	2006	2007	2008	2009	2010	2011
Final products	8.2	29.2	17.8	23.0	28.8	20.2	20.8
Main parts and components	10.2	5.3	13.9	10.0	3.7	5.6	6.0
Raw Material	70.9	49.4	52.5	50.8	56.8	66.6	67.1

- Unlike in the case of the auto and textiles/ apparel value chains, the West Region shows **some specialization in more than one segment of the export value chain**.
- Both the **Final products and Raw Materials segments have been important in terms of exports** for the West Region, although the former has traditionally represented the bulk of the activity in the industry.
- The largest share of innovation (and value added) in the agro food value chain is generated by buyers through the provision of new machinery, new seeds, new chemicals and fertilizers, and more recently by the application of ICT to agriculture.
- Firm interviews conducted as part of this analysis revealed that **R&D is a marginal preoccupation for the majority of firms** in the agro food sector in the region.
- However, **there is evidence of some interaction between the research community and the private actors.** The Banat's University of Agriculture and Veterinary Medicine specializes in the area, and this gives the West Region a comparative advantage in terms of knowledge accumulation and expertise.

AGRO FOOD: specialization opportunities

- High growing activities (2008-2010) with huge potential for value added generation
  - ***Processing and Preserving of Meat,***
  - ***Other Processing and Preserving of Fruit and Vegetables***

Average labour productivity for selected NACE 4 digit sectors within textile sector: 2010
(Romanian Lei per worker)



Source: Calculations based on SBS data

Within these activities, potential *products* with export potential are **walnuts** (HS 80232), **mushrooms** (HS 70951), **apples** (HS 800810), **grapefruit** (HS 80540) and **wine** (HS 220421)

AGRO FOOD: looking ahead

- Local agro-food companies have to **grow by upgrading processing, packaging, quality and branding**.
- Value can often be captured through **relatively simple changes** (e.g. canning, drying fruit, cooling milk, packaging, or labeling).
- It is also essential to establish **linkages with large distribution networks**
- Policies should aim to **help agro food producers (especially small firms) meet quality and safety certifications** required for their specific products
- Other support measures can encompass: **SME financing initiatives** or **investments in research**
- **Association of small scale farmers** could improve access to finance, production sustainability, lower processing costs, and increase employment
- **Land consolidation**, as well as the development of the land market **is key for increasing the competitiveness of the sector**

ICT: overview

- The ICT sector has recently experienced the effects of the crisis, but there are **clear signs of apparent comparative advantage** with respect to other sectors.
- **Low wages** and **skilled workforce** seem to be the main advantages of West Romania in the ICT sector.
- A number of **international firms have chosen Timisoara** in order to capitalize on the local skills, particularly mathematics and computer science, and low wages - while enjoying the benefits of a EU location.
- **Identifying opportunities for ICT specialization in the near future is key** for sector expansion and for the economic development of the region as ICT important spillover effects, particularly over user activities.

ICT: R&D activity and links with global networks

- Due to the lack of export data for service sectors – which includes ICT services – it is not possible to identify the exact way the ICT sector in the region is connected to the global value chain.
- However, **the presence of foreign owned firms in ICT sector in the region reflects in some extent the way the sector is connected with the global networks**.
- The **majority of firms interviewed as part of this analysis develop software exclusively for the headquarters of the** mother company or for a single foreign firm that outsources this task to the firm in the West Region.
- Firms interviewed as part of this project often said that universities usually do not have the structure to get involved in partnerships with the private sector.
- The academic entrepreneurs and businesses in the region relate this to the low quality of research at universities, mainly driven by the teaching oriented agenda and the lack of private sector focus.
- The **most important actors of RTDI infrastructure for ICT sector are the business incubators, particularly UBIT** which initially targeted startups in the ICT sector, primarily software development firms.
  - UBIT activities focus on networking and training in areas such as marketing, legal advice and accounting.

ICT: specialization opportunities

- By examining the annual growth performance of (labor) productivity, turnover, value added and employment, three activities emerge as high growing subsectors: **Manufacture of Communication Equipment**, **Manufacture of Computers and Peripheral Equipment** and **Other Information Technology and Computer Service Activities**.
  - These ‘emerging stars’ account together for 11% of the whole value added generated in the whole ICT sector in 2010.

- In addition, three main specialization avenues can be explored when one considers also the opportunities that emerge from cross sectorial demands relevant to the West Region potential:
  - **Data processing, hosting , and related activities** (with application to e-health services)
  - **Computer programming activities** (with application to e-health services and customized software for the automotive sector)
  - **Web portals** (with application to tourism development)

ICT: looking ahead

- Since knowledge is an essential input for ICT activities, polices should aim to enhance the **role of the knowledge factor** for the growth of the sector.

- For the ICT sector, **financing is best obtained through venture capital**. The reason for this is that software companies need money upfront to experiment but other forms of financing (e.g. EU funds) may be impose requirements that are too constraining.

- **Business incubators can facilitate the development of the ICT sector**. To be useful these need to provide services, such as: information about the sector and the clients, assistance in drafting business plans, and advice regarding financing options

- The region could benefit from the **existing strong expertise and cutting-edge technology of the sector**. Local stakeholders could support initiatives to help match supply and demand for e-services, and help firms overcome potential bottlenecks.

CONSTRUCTION: overview

- The industry has been **severely impacted by the economic crisis**; many construction firms in the West Region of Romania have seen their rates of activity decrease steadily since 2008.
  - Data analysis indicates that, between 2008 and 2010, West Region firms in the construction sector experienced a **23% decrease in employment 12% decrease in turnover**, on average.

- Despite adequate levels of expertise regarding the use of technologically-advanced construction materials (particularly in the Timisoara area), **there is not sufficient evidence to indicate that the West Region holds significant natural or knowledge assets in construction**, though the availability of construction materials (such as stone, wood or marble) at the local level can help support the development of the sector in the future.

- The use of **energy efficient materials by construction companies in the West Region is still highly dependent on the client market.**
  - Discussions with sector stakeholders indicate that many firms, particularly in the Timisoara area, have access to the necessary skills, know-how and inputs that would allow them to use this type of materials, if the demand existed.

TOURISM: overview

- Although one of the less populated development regions, **the Western Region is the 3rd in the country in terms of the number of accommodation places per 100 inhabitants.**

- Between 2000 and 2008 Arad and Timisoara experienced a relatively robust growth during the last half of this interval (almost a 20% increase of overnights between 2005 and 2008 for Timisoara). Meanwhile, Caras-Severin and Hunedoara registered lower tourist flows between 2005 and 2008.

- The 2008 economic crisis affected the West Region and all its counties**. The West followed the national upward trend in 2011 and registered a growth in the number of overnights spent by both local and foreign tourists.**

- The West Region overall occupancy rate is almost identical with the national average, which is a low one.

- In addition, the overall trend in the Western Region mirrors the national one: strong decrease during the crisis years in 2008-2010 and a slight rebound in 2011.

TOURISM: specialization opportunities

The West Region holds a potential comparative advantage for three different types of tourism.

- **Eco-Tourism and Active Tourism**
  - The West Region encompasses important natural, historical, and architectural assets: mountainous landscapes, gorges, lakes, hot and mineral springs, nature parks and reserves.
  - Approximately 26% of Romania's protected areas are located in the West Region and no less than 2104 monuments and historical sites located in the West Region were registered on the Romanian National List of Historical Monuments in 2010.

- **Spa Resources and Health Tourism**
  - The regional spa resorts are key assets for tourism in the West Region due to the quality of thermal springs, their location, their historical heritage, the national custom of spa holidays and the new international trend in spa and wellness tourism.

- **Urban & MICE Tourism**
  - The main form of tourism in the West Region cities is business tourism.
  - This trend is supported by proximity to Western and Central Europe, the Arad and Timisoara airports, the three main European routes (E68, E70, E79), the three international railway lines, and the economic potential of the region

TOURISM: looking ahead

There are certain challenges that need to be addressed in order to capitalize on the important natural and historical endowments:

- **Limited political awareness** at the highest level regarding the development needs of the sector.
- The absence of a **common integrated strategy**; as a consequence, there is an unjustified competition between complementary destinations such as Timisoara and Arad that are competing to become the European Capital of Culture.
- **Unclear ownership rights** for the historical and cultural patrimony, like castles, spa facilities, etc.
- Lack of **access to European funds** due to ownership problems and non-eligibility of concession grants by the management authority.
- Reduced public **administrative capacity** for complex investment tourism-related projects, or for drawing and managing PPP projects.
- Lack of **regional integrated tourism products** to be sold on local and foreign tourism markets

Summary of challenges by sector

Each one of these sectors has its own constraints and specificities which will shape the future progress towards the smart specialization of the region.

- For the **automotive** sector, the overarching challenge is to diversify towards higher value activities, which requires **moving up a very hierarchical structure under the international value chain.**

- For the **textile** sector, the challenge is also to increase value added by building the skills and capacities for firms to **start producing their own design or brand**.

- For the **agro-food** sector, **improving the marketing of the local products and establishing linkages with large distribution chains** seems to the main challenge in the short term.

- For the **ICT** sector, which is generally regarded as an internationally competitive player in the areas of software development activities as well as design and engineering, the biggest challenge is to **expand this entire set of activities and overall productive capacity**

- For the **construction** sector, the challenge is to **better explore the local availability of construction materials and to expand the use of energy efficient materials and technologies**, which, although encouraged by the European Union, is not yet widespread in the region.

- For the **tourism** sector, **increased attention at the political level is key if the West Region** is to take full advantage of its natural and cultural endowments.

Identification of main policy areas

- In order to tackle these challenges, broad areas for policy action have been identified
  - some of them are **horizontal (common to all sectors)**
  - other are **sector specific.**

Horizontal policy areas

Horizontal policies, often the remit of the central government, are needed to foster smart specialization in the region:

- **Skills**
  - Improving the link between tertiary education and the workforce, and enhancing lifelong learning;
  - Improving the vocational school system to provide industry-relevant training;
  - Expanding entrepreneurial and business management skills;

- **Infrastructure**
  - Improving internal connectivity with the region's main urban agglomerations, particularly with the Timișoara-Arad conurbation, as well as the infrastructure to facilitate connectivity between Timisoara-Arad and more peripheral parts of the region;

- **Access to finance**
  - Increasing the supply of non-reimbursable funds (including EU funds)
  - evaluation process should be streamlined so that funding decisions are communicated to applicants within a reasonable period of time.
  - Reimbursement of funds should be processed in an expedite manner so as to avoid the potential negative impact which this type of delays can have on a firm's cash flow and operations;

- **Improving the institutional framework supporting innovation** (to be explored later)

Sector-specific policy areas

Sector specific actions can complement horizontal policy reforms:

AUTOMOTIVE

- Establishing local research institutes and labs to support firms in preparing prototypes, and testing new designs, products and processes;
- Introducing vocational school providing relevant training for the auto industry, endowed with appropriate technical facilities;
- Increasing awareness regarding the activities of the regional auto cluster

TEXTILE

- Provision of tax incentives, subsidies and better financing terms on productive investments, especially on acquisition of new technology and machinery as a way to support the development of new design or products;
- Establishment/improvement of vocational programs focused on textile–relevant training with appropriate technical facilities.

Sector-specific policy areas

AGRO-FOOD

- Supporting innovation and compliance with standards in the industry, especially as food engineering, agriculture, and veterinary sciences are areas of strength of the West Region universities.

- Establishment/improvement of vocational school focused on agro–food industry–relevant training with appropriate technical facilities.

ICT

- Expansion of services offered by incubators and business accelerators; support for mentorship programs.

- Support for the connection between angel investors and potential entrepreneurs (public action to research the market and connect investors to new creative companies in need of funding).

- Support for the development of links with global customers and with downstream user sectors.

Sector-specific policy areas

CONSTRUCTION

- Supporting the development of energy efficient materials using local inputs and expertise
- Increasing awareness regarding local energy efficiency projects
- Combining measures that promote firm entry and encourage startups (potential high growth firms) – and allowing firm exit

TOURISM

- Developing integrating tourism packages and anti-aging treatment packages
- Protecting national resources and developing regional brand products
- Supporting eco-tourism and active tourism
- Designing effective awareness campaigns

4. POLICY RECOMMENDATIONS: key elements of a smart specialization strategy in the West Region

- **The region has one overarching challenge set by the EC: meeting the goal of 2% of regional GDP to be spent on R&D by 2020**
  - The current level is 0.22% (2010 data)
  - The related regional budget necessary to meet this target would need to increase from (average) 28.13 million Euros in 2011-2020 to 323.3 million Euros in 2020!
  - The goal is highly ambitious! But progress towards this target should be continuously monitored

- **Practical measures can be suggested….**
  - Against the background of the broad policy areas and building on the region's comparative advantages, this project takes a practical approach and presents key elements for a smart specialization strategic policy framework for the West Region.

- **..following the general guidelines for the design of the instruments to be financed in the 2014-2020 programming period from EU structural funds and other sources.**

The 2014 - 2020 programming period and inputs for a smart specialization strategy

- **EU structural funds and other sources can support horizontal and sector specific actions according to priority axes and thematic objectives.**

- The EU structural funds available for the 2014-2020 programming period can be leveraged to achieve horizontal and sector specific objectives in line with a “smart specialization” strategy for the West region.

- The availability of national resources and mobilization of private sector financing can enhance the ownership and effectiveness of specific interventions.

- Building on the analysis conducted so far, inputs for a smart specialization strategy are drafted. A four step approach is followed:

  i. ***Definition of thematic objectives and investment priorities***
  ii. ***Definition of investment priorities***
  iii. ***Identification of potential pilot initiatives***
  iv. ***Design of an institutional framework to support innovation***

(i) Thematic Objectives for the West Region

- Following the guidelines of the European Commission, a number of thematic objectives, as defined by the EU Cohesion Policy, are deemed relevant for the West Region and grouped under priority axes.

PRIORITY AXIS (PA)	THEMATIC OBJECTIVE (TO)
PA1: Regional competitiveness enhancement and smart specialization	TO1. Strengthening research, technological development and innovation TO3. Enhancing the competitiveness of small and medium-sized enterprises TO11. Enhancing institutional capacity and an efficient public administration
PA2: Protect nature and cultural assets of the region	TO 6. Protecting the environment and promoting resources efficiency
PA3: Education for all at high standards	TO 10. Investing in education, skills and lifelong learning

(ii) Investment Priorities for the West Region

- **Investment priorities can be tailored to the particular needs of the region and can be promoted with regional initiatives. These can be directed to:**

I. Increasing financing for regional research, development and innovation

II. Promoting and developing cultural and natural heritage

III. Increasing the employability of the labor force by improving the skills and competences required in the labor market

(iii) Examples of Potential Pilot Initiatives

- A set of large integrated competitiveness and smart specialization potential pilot initiatives are presented as an illustration of how to enhance local growth potential, based on the assets and characteristics specific to the West Region*.

Examples of Investment Pilot Initiatives*

Innovation center for the West Region
A ICT competitiveness pole
A regional development fund focused on financing innovative projects in the West Region
Upgrade of the existing industrial parks and industrial areas to regional industrial and technology parks
Regional exhibition and training center
Laboratory and innovation center for the auto industry
Laboratory and innovation center for the textile industry
Laboratory and innovation center for wood processing industry
Agro-food market center including a regional accredited laboratory for food safety and veterinary tests
Launch of feasibility study to assess the regional priorities for land irrigation
Innovation center for green energies and energy efficiency
Center for protection and promotion of natural parks
Geo therapy center
Pilot initiative on development solutions for the mining areas

These investment projects have not been appraised nor endorsed by the World Bank. This list should be considered as merely illustrative.

The implementation of the overall initiatives outlined in the report depends on the existence of an efficient institutional framework.

(iv) Improving the institutional framework supporting innovation

- The current institutional framework which supports the regional innovation system encompasses both **national and regional bodies**.

- At the national level, there is a myriad of institutions responsible for research, technological development and innovation.
  - Directorate General for Research, Technological Development and Innovation
  - National Council of Scientific Research
  - Consultative College for Research, Development and Innovation
  - National Council for Ethics of Scientific Research, Technological Development and Innovation
  - Executive unit for financing research, development and innovation
  - National institutes for research and development

- **Cooperation between national and regional institutions is weak**, which has had a negative impact on knowledge management in the region.
  - The majority of policies are designed at the central level, by ministries or national agencies, while services are provided at county level.
  - However, there is insufficient cooperation between regional and national authorities.
  - **This lack of coordination has had a negative impact on knowledge management in the West Region**. The research undertaken at knowledge generating institutions, predominantly the RDIs, does not seem to be marketable, nor does it meet the demands of the private sector

Improving the institutional framework supporting innovation

- The **Regional Development Agency emerges as the key institution** with the capacity to connect national and local stakeholders

- The establishment of **two regional committees**, managed by the RDA, can introduce a new partnership format to promote cooperation between national and regional policy makers.

- The first would be the ***Regional Innovation Committee***. Relevant topics that could be discussed by the Innovation Committee include the **design of technology transfer offices** and **co-financing of patent applications**.

- Second would be the ***Human Capital Committee***. Its role would be to **adjust, update and modernize the curricula** for theoretical education, vocational training and lifelong learning in order to answer to the demands of the business sector.

- **Administrative support** for these new structures could be provided in two ways: (i) through the creation of an **innovation center for the West Region** and (ii) by extending the scope and **strengthening the role of the Regional Pact for Employment and Social Inclusion**.

Institutional framework for Research, Development and Innovation: a suggested aproach

NATIONAL LEVEL

Ministry of Regional Development and Public Administration - coordinates the ***National Committee for Regional Development***

Ministry of National Education - Directorate General for Research, Technological Development and Innovation, coordinates:
- ***National Council of Scientific Research***
- ***Consultative College for Research, Development and Innovation***
- ***National Council for Ethics of Scientific Research, Technological Development and Innovation***
- ***Executive unit for financing research, development and innovation***
- ***National institutes for research and development***

Ministry of Economy - Directorate General Industrial policies and Competitiveness , coordinates
- ***Department for SMEs, business environment and tourism***
- ***Department for trade and international relationships***
- ***OSIM- State office for inventions and trademarks***
- ***State companies***

REGIONAL LEVEL

Regional Development Board - approve the Regional Development Plan

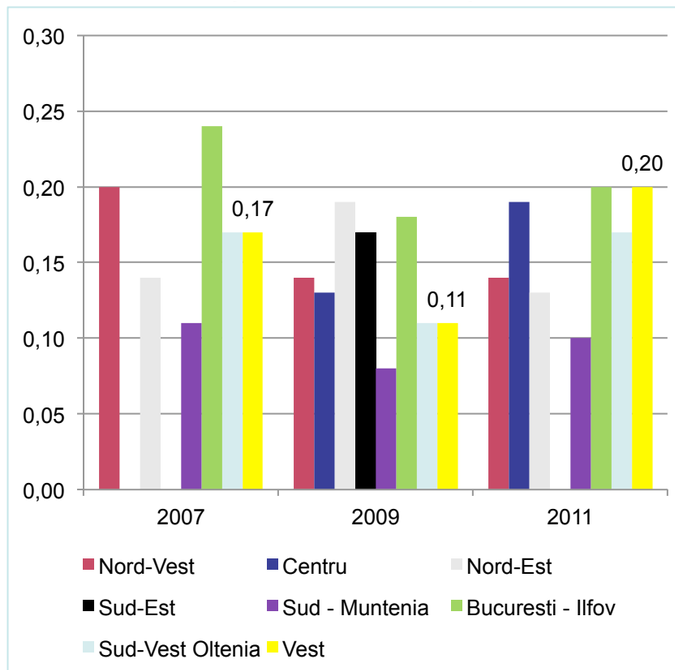
Regional Development Agency - prepare and monitor the Regional Development Plan, coordinate the regional sectorial/ technical committees

Regional Innovation Committee

Human Capital Committee

Overall, the suggested policies and recommendations presented here aim to tackle the main challenges that prevent the West Region from catching up with its more developed peers over the next programming period (2014-2020)

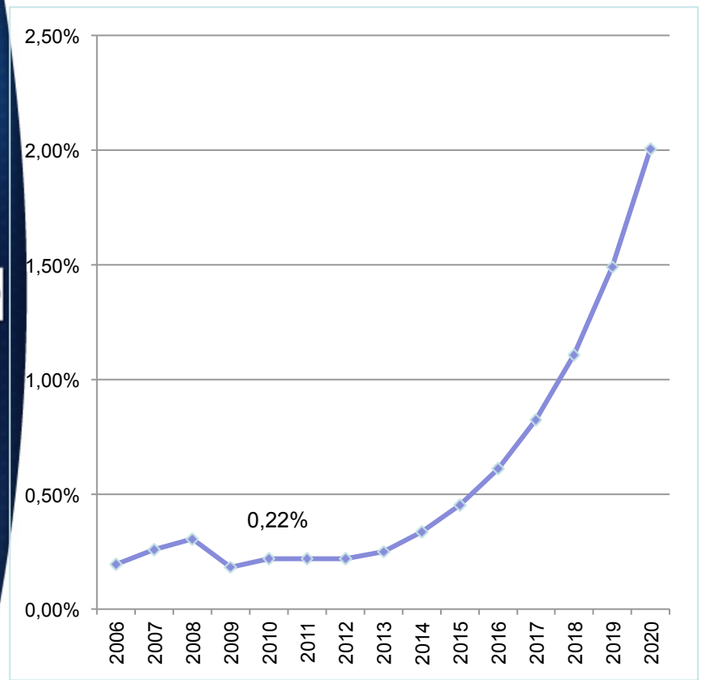
APPENDIX



Source: Regional Innovation Union Scoreboard, 2012
Note1: Number of patents applied for at the European Patent Office (EPO), by year of filing. The national distribution of the patent.
Note 2: **The value of the indicator has been rescaled from a minimum value of 0 for the lowest performing region to a maximum of 1.0 for the best performing region. Best performer: Noord-Brabant (Netherlands).**

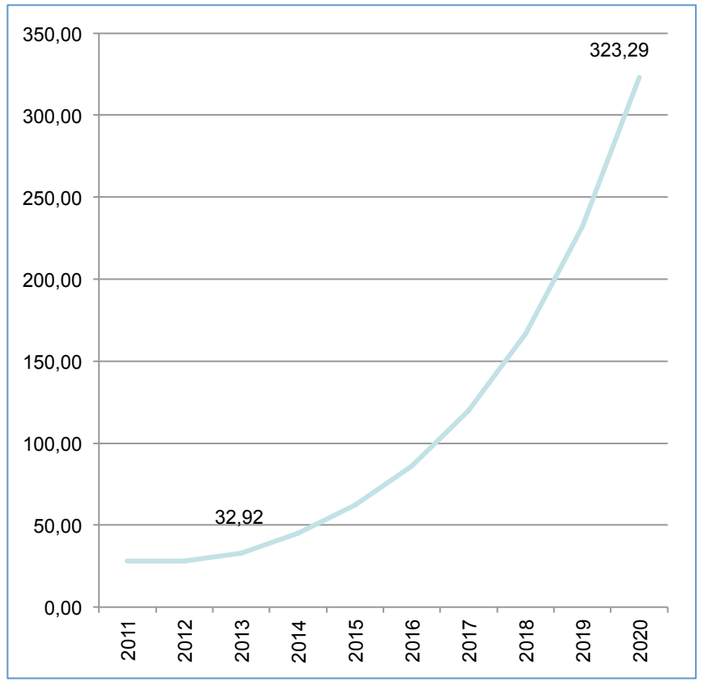
- Recent information from the Regional Innovation Union Scoreboard (2012) shows a mixed performance for the West Region in terms of EPO patents.
  - While in comparison with the other regions in the country the West Region appears to be catching up with Bucharest, it is drastically lagging behind comparators in the rest of the EU in terms of intellectual property protection for its inventions.
- The high costs of hiring patent attorneys emerged as the main reason for the low score in international patenting.
- A secondary reason was the lack of “vision” and knowhow necessary to approach international bodies in order to apply for patents and to exploit their commercial value to the fullest extent.
- Even in cases where an EPO or USPTO patent is granted, stakeholders in the region do not have much experience with licensing and not sufficiently aware of the potential gains from such activities.

Total intramural R&D expenditures over GDP in the West Region Romania: projections 2013*-2020



Source: World Bank staff simulations based on Eurostat and IMF data. *Note: the latest available data for R&D over GDP indicator for the West region is for 2010; 2011 and 2012 levels are assumed to be the same

Total intramural RD expenditures (million Euro): projections 2013-2020



Source: World Bank staff simulations based on Eurostat and IMF data.