

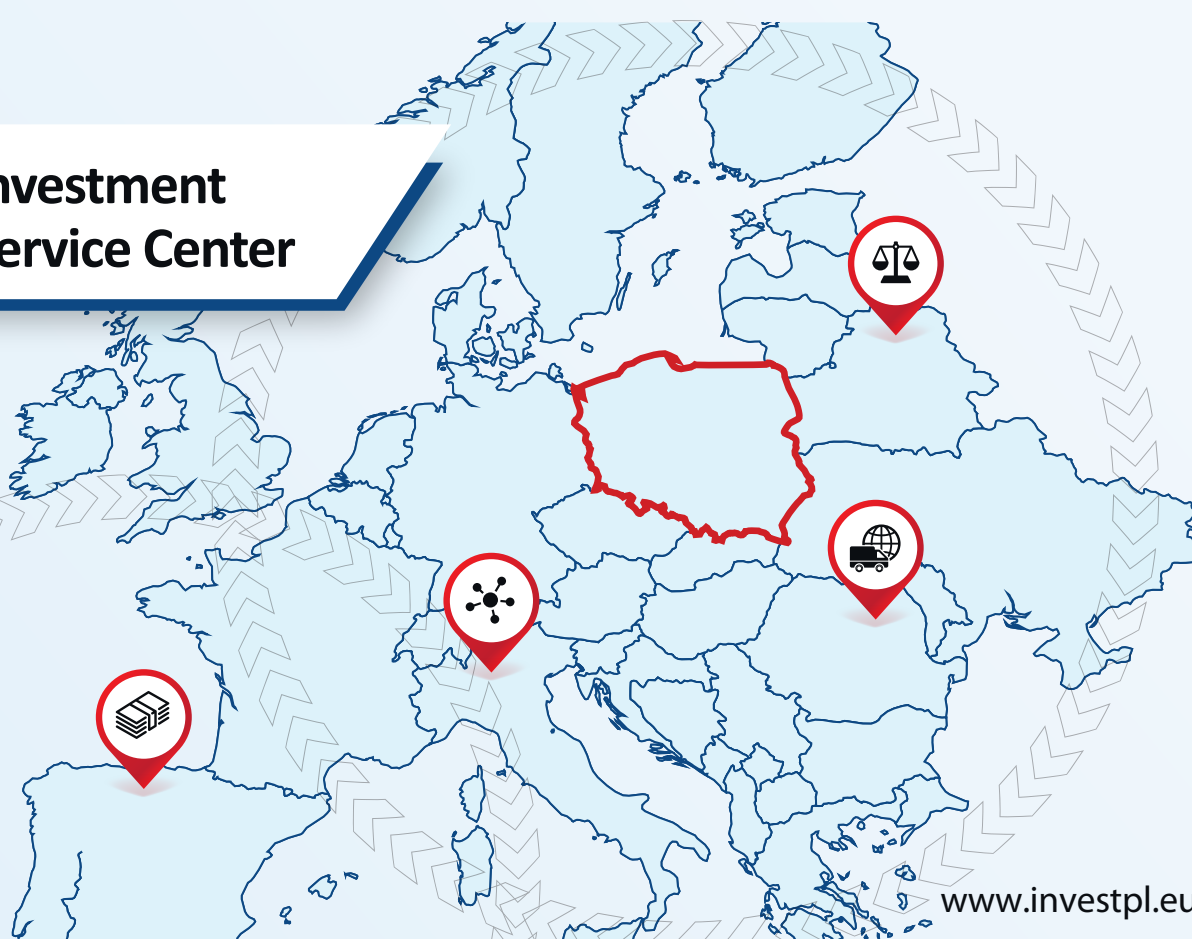


# INVESTMENT GUIDE



Poland





## Investment Service Center

### complex project support

Investment Service Center is a group of high level experts whose task is to define the needs of each Investor in the best possible way and then select suitable tools for their fulfillment.

#### Stages of Investment Service Center services



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## THE FIRST EDITION OF EMIRATES & EUROPE ECONOMIC FORUM



The mid-May brought the biggest event thus far on the creation of economic and cultural relations between the United Arab Emirates and Europe. The Emirates & Europe Economic Forum was held on 17-18 May 2016 in Warsaw for the first time. It is a unique event, organized with the aim of presenting possible areas of cooperation and its intensification. The Emirates & Europe Economic Forum was organized by Emirates & Europe Business Development Cluster as well as European Green Technology Alliance. It is a unique event of a world significance, where spheres such as business, economy, technological innovations, technology transfer and tourism were discussed.



The forum was attended by more than 200 participants, among whom we could find representatives of institutions and organizations such as: The Ministry of Economic Development, The Ministry of Culture and National Heritage, The Ministry of Finance, The Embassy of the United Arab Emirates in Warsaw, The Senate of the Republic of Poland, The Self-Government of Mazovian Voivodeship, Polish Olympic Committee, RAK Free Trade Zone, Abu Dhabi Food Control Authority, Dubai World Trade Centre, Accountants and Auditors Association, who took an active part in the subject panels.



The Forum is an answer to the current economic, trade and cultural relations between Poland and the UAE. Our country, due to its good economic situation, is currently perceived as a getaway to the European markets. The Forum is an initiative connected with establishing mutual multi-level business activities. Solid framework for building long-lasting cooperation connections and business relations between the partners were created. Investment Service Centre takes care of financing the projects discussed on the forum. The distinctive element of this event was also the factual debate concerning key programs for cooperation between Poland and the countries of the Middle East as well as the aim of both parties of implementing them. During the discussion, areas of interest were selected, including: inbound tourism to Poland, trade development of agri-food sector, development and promotion of start-ups and establishing economic relations through Polish cultural heritage and historical legacy.





## LETTER FROM PROF. DR. HAB. KRZYSZTOF OPOLSKI



**Prof. dr hab. Krzysztof Opolski**

Ladies and Gentlemen,

On behalf of the Investment Service Centre, it is my pleasure to give you the “Investment Guide – Poland”, which presents the actual view of our country and its economy in the most genuine way possible, as well as the changes which occurred during the recent years. I do it with utmost pride, for the last year was the time when once again we have proven our business effectiveness. Our country is constantly showing not only its upward tendency of realized investments, but also their increasing profitability.

The factual scope of the Guide is focused on the main investment fields divided into twelve categories. The basic elaboration's principle is to present the data objectively, pointing out all the aspects of investments undertaken in our country.

As an uprising market, Polish economy is favorably situated in comparison to other Middle-Eastern European countries, and even to the entire European Union. The last two years were the period of struggling with the effects of the world's economic crisis. Even though it did not have such a drastic course as it happened in other countries, it was felt in almost all aspects of life. The majority of Polish businessmen are, first of all, dependent on their citizens, their talents, knowledge, entrepreneurship, initiative and involvement.

The directions and dynamics of changes in social-economic situation have forced the need of having a new view on Poland's progression, the result of which is to perform actions towards the intensification of abroad investments. The last year was the year of mutual work of experts, ended with formulating challenges and long-term aims of development.

I hope that this guide will be a truly valuable source of knowledge on Poland and its investment possibilities.







## COVER LETTER

Dear Readers,

Emirates & Europe Business Development Cluster as an organizer of investment cooperation between Poland and UAE, invites You to familirize yourself with the investment guide on business and economy relations. The magazine is about to explain the political and economic cooperation between the United Arab Emirates and Poland, show the cultural values of both countries as well as draw one's attention to the great investment opportunities of both the Emirates and Poland. It also aims at enumerating business cooperation models that would bring significant profit.

EEBD - is an international organization that was established with the aim to intensify cooperation between the European and Emirate environments. Its basic goal lies in associating and supporting member institutions, such as enterprises, governmental entities, as well as academic and research societies, interested in investment cooperation, in such fields as:

- Financial Products and Services,
- Innovative Technologies,
- IT market,
- Energy,
- Waste management,
- Agri-food market,
- Real Estate,
- Transportation,
- Tourism,
- Military Technologies,
- Medicine,
- Culture and Art.

The main goal of the project is to present and popularize economic potential of particular Poland's regions among Polish and foreign investors and companies, interested in the intensification of economic cooperation.

We hope that this Guide, devoted to the most important market sectors and business, will be helpful in terms of implementing next successful investment project and tightening partnership between our countries.

Enjoy Your reading!









# 01



## ECONOMIC AND COMMERCIAL COOPERATION BETWEEN POLAND AND UAE



## ECONOMIC AND COMMERCIAL COOPERATION BETWEEN POLAND AND UAE

Diplomatic relations between those countries were formed at the turn of 80's and 90's of the previous century. After political transformation of Poland, which has changed from centralised to free market economy, its limitations of international cooperation have decreased significantly. The first sign that indicated the beginning of close partnership with the Middle East countries was the creation of Polish Trade Centre in Dubai, which has later transformed into the Commercial Counselor Office. In 1991, the first Polish Embassy was established in the capital city of UAE – Abu Dhabi.

A significant revival in relations between the countries took place after 2009, when was taken the decision of building the UAE Embassy in Warsaw. The Poland's governmental explicitly declared that it sees cooperation with the UAE as a chance to reach Middle East and underlined importance of their partnership. It stems from the fact that the UAE plays key role in trade between China, India, Afrika and Europe.

The purpose of the cooperation between Poland and the UAE is to strengthen their mutual relations in such domains: economic, commercial as well as cultural. This fact was underlined by Poland and the UAE on numerous occasions.

„We open doors in every possible areas. We are looking for serious partners, and UAE is an extremely serious partner, extremely favorable, extremely consistent” – pointed the Vice Prime Minister of Poland Janusz Piechociński, during the Polish & Emirates Economic Forum. The main topics of Forum discussions covered, among others: new technologies, renewable energy sources, energy efficiency, ICT sector and furniture industry as well as marine, land, and air transport sector. Wide scope of the cooperation areas can be confirmed by various statistics. Polish export to UAE has been rising constantly since 2012, and in 2014 reached as

much as 50% growth. Upward tendency also takes place in import, which in 2011-2014 was rising by 40% a year.

Up to now, the relations between Poland and the UAE was backed up by the conclusion of four bilateral agreements on economic cooperation and memorandums on cooperation between research institutions.

The most important agreements are:

- Agreement on avoidance of double taxation,
- Agreement on mutual support and investment protection,
- Agreement of cooperation in air space,
- Agreement on economic cooperation,
- Agreement on on tourism cooperation.

These agreements have significantly determined the development of trade and investments, contributing to the UAE that is becoming one of the most important commercial partner of Poland among the member states of Gulf Cooperation Council (GCC).

Polish direct investments into the United Arab Emirates constituted, overall, USD 480 million. Polish vigorous activity in the mutual trade between those countries as well as an increasing number of companies, established in the UAE by Polish entrepreneurs, serves one a good sign of favorable investment conditions. Various enterprises functions in special sectors as well as outside of them, generating considerable export from Poland. Interestingly, this increase results from the signment of a bilateral agreement between Poland and the UAE, which subject was related to the double taxation, mutual support and investment protection. It is also worth mentioning that free trade agreement with EU member countries will allow to abolish still existing restrictions in access to the market and influence the investment implementations for both parties.

**Table 1: Trade turnover of UAE - Poland 2015**

| Name                 | Export [USD] | Import [USD] | Turnover [USD] | Bottom line [USD] | Export share [%] | Import share [%] | Turnover share [%] |
|----------------------|--------------|--------------|----------------|-------------------|------------------|------------------|--------------------|
| Saudi Arabia         | 259 381 050  | 36 495 829   | 295 876 879    | 222 885 221       | 38.3             | 36.3             | 38                 |
| Bahrain              | 6 673 472    | 8 530 404    | 15 203 876     | -1 856 932        | 1                | 8.5              | 2                  |
| Qatar                | 14 915 660   | 5 743 965    | 20 659 625     | 9 171 695         | 2.2              | 5.7              | 2.7                |
| Kuwait               | 22 127 740   | 106 867      | 22 234 607     | 22 020 873        | 3.3              | 0.1              | 2.9                |
| Oman                 | 13 224 593   | 2 932 183    | 16 156 776     | 10 292 410        | 2                | 2.9              | 2.1                |
| United Arab Emirates | 360 626 811  | 47 092 204   | 407 719 015    | 313 534 607       | 53.3             | 46.7             | 52.4               |
| Altogether           | 676 949 326  | 100 901 452  | 777 850 778    | 576 047 874       | 100              | 100              | 100                |

Source: own study based on Ministry of Economy data





According to the UAE Ministry of Economy, United Arab Emirates allocated USD 67 billion to Foreign Direct Investment (FDI) in 2014. Investments were focused on sectors such as energy, hotel industry, real estate, telecommunication market, marine and port sector, finance services and banking as well as industrial segment. In Poland, FDI were focused mainly on real estate in provincial capitals such as Wrocław, Poznań and in Varmia-Masuria region. Moreover, investment project in Tricity and Warsaw received the greatest attention. In Poland, real estate market is the most active sector. It definitely attracts the biggest number of foreign investors in Central-East Europe region.

Governments of UAE and Poland have also concluded partnership in terms of innovation development as well as small and medium-sized entrepreneurship. The Ministry of Economy declares that this document „will significantly contribute to mutual cooperation development”<sup>1</sup>. In fact, Polish part of the agreement was realized by Polish Agency for Enterprise Development.

Small and medium-sized enterprises are also interested in commercial cooperation and investments in UAE. Emirates' business representatives draw their attention to SME sector. Investors from UAE are attracted by relatively cheap, however, highly specialized human resources from Poland. In order to improve business possibilities of SME sector, Polish Chamber of Commerce concluded agreements on cooperation with Commerce and Industry Chambers in Abu Dhabi and Dubai. Thanks to the established cooperation, the enterprises from SME sector are now the main economic representatives of Poland and they have a chance to organize trade-missions to the UAE every year.

As a result of the agreement on cooperation in tourist industry, since 13 November 2015, a new direct air line route from Poland to UAE has been launched. Despite their short existence, the aforementioned destination is highly popular among Polish tourists, who choose the UAE for vacation. Thanks to the agreement and the promotion of Poland in UAE, the former has experienced an increase in the Emirati tourists arrivals to Poland. Conclusion of agreement on abolishing the visa obligation between European Union and Uni-

ted Arab Emirates in 2015 was a crucial factor encouraging cooperation development as far as tourism, business, politics and economy are concerned. It is worth to underline that the agreement entered into force summarily, at the same time emphasizing its importance and involvement of the parties in cooperation development.

The parties also signed an agreement concerning agriculture, agriculture safety, food safety, research and study cooperation as well as food marketing.

Nonetheless, the relations between Poland and UAE is not only a collaboration as far as government, economy, business and science are concerned. In 2015, Poland and UAE signed a further agreement on cooperation in education. The purpose of this agreement was to increase recognizability of Polish universities in UAE as well as to encourage Emirati young people to study in Poland. Obviously, this is not the only project of that kind as Poland has also established cooperation with Oman's Sultan. Currently, works on agreement on education and culture development are taking place with the representatives of Qatar and Kuwait.

UAE and Poland are particularly interesting trade partner for each other, especially in terms of goods export, which benefits from the lack of financial restrictions and administrative barriers. The UAE has great trade traditions; Poland, in turn, has a good geopolitical location, which constitutes a bridge to Europe for its partner. In fact, Polish borders cross the most important north-south, east-west trade routes. On top of that, within last years, Polish economy has become open to trade exchange and international business cooperation.

Both parties can offer favorable investment conditions, numerous economic and duty-free zones that foster economic and business relations, which must be constantly developed.

#### Source:

1. [www.mg.gov.pl](http://www.mg.gov.pl)







# 02

## ■■■ INVESTMENT AREAS



## ■■■ POLAND AS A REGION WORTH INVESTING

Poland attracts investors with a stable, focused on sustainable development economy, highly specialized staff and price competitiveness. The sectors such as renewable energy, new technologies, IT, computerization of enterprises and public administrations, as well as many others, which are described in this guidebook, get the particular attention of investors. Such great interest among investors is certainly fostered by the support of local governments and availability of subsidies from structural funds for enterprises. An extremely important factor of implementation of investment in Poland, which significantly favors and directs investment objectives, are government programs. There are several programs in Poland, aimed at developing infrastructure, transport sector and renewable energy sources. In fact, the recent works of the government were focused on the development of two key segments, i.e. „Flat +” and computerization of public administration structures. „Flat +” is a governmental project, which aims at supporting young families in renting affordable flats, with the possibility of redemption. The program also targeting the reduction of the house deficit in Poland, since the experts claim that the country lacks from 1 million to 2 million flats. In addition to that, the program is also intended to improve the quality of social life. The „Flat +” will be launched in 2017. By implementing this program, the government wants to significantly improve cooperation with the construction and real estate sectors. The second category i.e. “The computerization of public administration”, represents an extension of the development strategy, developed in 2013 – “The strategy of the Better Government 2020”. The strategy of development has to be based on investment in the development of complete computerization of organizational structures, communication and management of public administration. With no doubt, this is a long-term process, which will require extensive cooperation between the government and IT sector.

The success of the investment depends on many factors, each of which plays crucial role in the final estimations. In order to successfully implement the investment, there must be carefully analyzed each of the investment process stages, starting from determining the nature of the activities, by specifying the selected locations, ending with a detailed analysis of the region, in which the investor wants to implement the investment project.

Thanks to the functioning of investment service centers in Poland, the conditions for investing into the country are extremely favorable. Investment Service Center is an institution bringing together a group of leading experts, aimed at supporting and coordinating the appropriate course of investment in cooperation with investors and entrepreneurs, seeking capital. Experts of ISC provide its clients with a professional approach to the needs of each investor and entrepreneur, and offer the selection of appropriate tools for the

implementation of investment, or introduction of the planned projects. The Center provides the necessary assistance in key areas for counterparties and implemented by them projects. Cooperating with business partners and local authorities, ISC offers an ongoing support, as well as the opportunity to obtain financing and the highest quality services for the launching and conduction of investment: starting with the access to database with the best investment locations and ending with the full support of investment operation and implementation of the projects, planned by entrepreneurs.

### INCREASING COMPANY'S PROFITABILITY THROUGH EU SUBSIDIES

The new financial perspective, which will be in force until 2020, is the best moment for acquiring financial funding or grants. EU funds serve an appropriate option to receive money for the company's development and modernization and constitute an extremely good source from the perspective of organizing training courses for employees. Starting from 2014, companies can raise the funds for a grant within the framework of the new operational program, called “Intelligent Development”, which is based on the former operational program “Innovative Economy”. Under the new program, small and medium-sized companies can raise their funds for such activities as: support for conducting R&D; increasing scientific and research potential; and finally, encouraging innovation. Planned pool of funds, intended for use in the OP Intelligent Development, amounts approximately EUR 8.5 billion. This sum will sufficiently contribute to the competitiveness and innovativeness of Polish enterprises, and thus, should generate an increase in GDP, which will positively impact country's economy. The introduction of new solutions and technologies in the company, also contributes to the development of innovations in those regions and consequently, the country, allowing to fasten and stabilize the development of the company. European funds allow one to obtain funding for specialized training for employees, which enriches companies with experienced and skilled professionals. Great enterprises can also obtain funding within the framework of the operational program called “Infrastructure and Environment”. The main task of the program is to increase the efficiency of the economy, support sustainable development and rational management of natural resources and wastes. The program will be able to raise funds, among others, for the construction or expansion of wind power plants, increase energy efficiency of residential buildings or implement the intelligent manufacturing systems.

### REGIONAL OPERATIONAL PROGRAMMES

EU grants may be obtained also in the framework of the Regional Operational Programs. Each Voivodeship is implementing the regional operational program, having in its disposition certain amount of money. Those programs aimed at reducing





or limiting the most important for the region's problems. Within the framework of the new perspective, the funds have been contracted for activities, aimed at the development of enterprises. It's the perfect time to obtain the grants for the company's development and modernization, as well as improvement of its effectiveness. It is worth to take advantage from a wide range of possibilities following from the obtainment of grants for business development and increase market competitiveness, while promoting the development of the region and the Polish economy.

## STRUCTURAL INVESTMENTS - A ROAD TO INNOVATIVENESS

The subsidies affect the asset and financial conditions of particular enterprises. However, after years of investments related to the European Funds, one will notice that it is also a huge step towards the implementation of new technologies and the introduction of the revolutionary enterprise solutions. EU grants also help in the implementation of specific objectives, which include, among others: determination of the economic and financial situation of the enterprises; identification of companies, benefiting from subsidies or determination of the investment directions, supported by EU funds. EU subsidies are the grants, provided to businesses, local government units, and foundations.

The scope of activities, which belongs to the financed projects, constitutes, therefore, a wide diversity. Those sources may be used to purchase fixed assets; to design or implement quality management systems; for the introduction of

new technologies, as well as many other projects. Operational programs, in which individual can obtain the support, function at both national and regional levels. In the process of obtaining financial support from the EU Funds, entrepreneurs get acquainted with a number of unique benefits, as with the help of EU, the investment can be for instance, implemented at a much lower cost, than using other sources. Moreover, the grant allows to implement the investment project more quickly, using modern technologies, which exclusive contribution the company often could not afford. It is also an excellent reason for the creation of new workplaces. In addition, the structural funds have a very positive impact on company's development, improving its competitiveness on the market. For the reason of such support, companies can modernize, but it should be remembered that while planning EU investment, there should be identified the financing of company's own contribution in the project and secure the ability of lending the investments in total - until a refund. Such conditions increase the risk of losing financial liquidity. However, to force the realized investment bring profits in the future, one should carefully analyze the declared projects and evaluate their effectiveness at the planning stage of the whole process. Evaluation of the effectiveness of the investment project and decisions, using an appropriate techniques and methods, are one of the stages of capital budgeting. A professional estimation of cash flow is a prior condition for a reliable assessment of the effectiveness of the planned project. The basis for estimating real cash flow is to prepare a report on investment flows and costs, as well as evaluate the financial effects that may occur in the future.

## ■■■ INVESTMENT AREAS

Recent years were characterized by gradual recovery of macroeconomic situation in Poland, which is the 9<sup>th</sup> largest European country with over 38.5 million population and more than 312.000 km<sup>2</sup> of area. It is proven by aggregate indicators analysis, which reflects general economic situation. The most commonly used indicators are as follow:

- dynamics of Gross Domestic Product (GDP),
- unemployment rate,
- CPI inflation,
- Foreign Direct Investment (FDI),
- interest rate.

After significant economic boost in 2010, 2011-2012 brought another deterioration of macroeconomic situation in majority of the European Union countries. The attempts to invigorate economies made by central banks seemed to underperform, and dynamics of General Domestic Product (GDP), seemed to take downward tendency in many countries. Value of this indicator for Euro Zone has declined below zero. However, 2014 brought return of economic growth and thus, reversed the recession.

During that time, Polish economy remained stable, maintaining relatively high growth rate. Although in 2014 dynamics of GDP weakened slightly, it outstripped the greatest European economies, developing faster than EU economies as a whole. In 2004-2010, Poland's economic growth reached 30%, while in EU-27 economies, it was only 6% (EU-15 – 5%). In remaining member countries from Central and Eastern Europe, the growth rate in 2004-2010 was as follows: Bulgaria 21%, Czech Republic 21%, Romania 18%, Lithuania 14%, Slovenia 14%, Estonia 9%, Latvia 7% and Hungary 3%. Such development of economic growth, was mainly an outcome of high external demand. In the previous year, situation in this field has positively changed and currently, added value growth is the main factor influencing national demand in Poland.

At the end of 2015, dynamics of Gross Domestic Product were stable and amounted to 3.9%, in contrast to Great Britain's results, where we could observe decrease by 0.7%, or Germany, whose growth declined significantly. It is worth noticing that it resulted in stabilising the economic growth rate of Poland in relatively narrow range 3.2-3.9% YOY.

As the data of the Central Statistical Office indicates, national demand, which increased in third quarter by 3.1% YOY, was the most crucial for economic growth. Additionally, it should be stressed out that the expenditure on overall consumption, whose dynamics increased by 2.7% YOY, was a major factor.

In the third quarter of 2015, the export growth rate exceeded the import growth rate, increasing respectively by 6.5% YOY and 6.0% YOY. Therefore, it is clearly visible that the trade

balance of Poland comparing to foreign countries, has undergone a significant improvement.

Recent years have also seen decrease in unemployment rate in Poland to nearly 7.0%. It has to be noted that influence on this rate was caused mainly by general improvement of economic situation in the country.

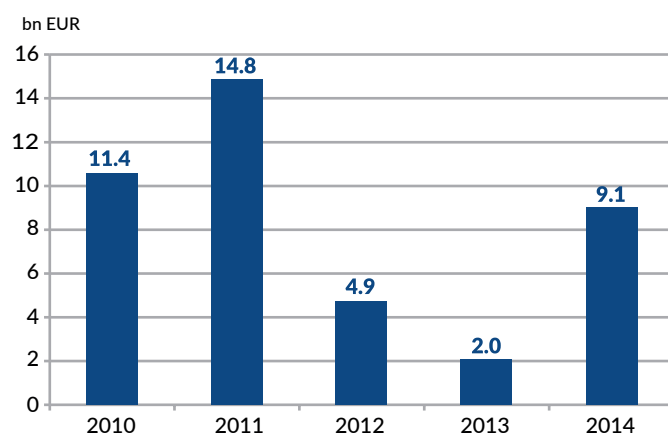
CPI inflation that indicated the pace of goods' and consumption services price growth, has maintained decreasing trend for several years, however, at the end of the previous year, we noted an increase – thus amounting to 0.2% YOY. It is worth stressing that inflation level amounting to 1.0% that was noted in 2014 was the lowest value within the last 20 years. Nonetheless, the forecasts of the experts indicate that the incoming quarters would be characterised by quick return to price hike.

The current relatively quick pace of economic growth and the newest forecast suggests that in upcoming quarters the macroeconomic situation in Poland should become much better.

According to available estimations, the GDP dynamics for the whole 2016 should maintain on level of 4.2% YOY. It will be significantly dependent on improvement of economic situation on international arena, especially in the greatest importer of Polish goods - Germany. Still, the construction and industrial sector are the key elements responsible for GDP growth. Following that, it is predicted that 2016 would be characterised by the continuous economic growth in Poland.

Foreign investors seem to notice high potential of Poland, as the economy still shows positive capital flow derived from Foreign Direct Investments. In 2014, the flowing capital amounted EUR 9.1 bn and was 4-times higher than the year before. According to research of FDI Intelligence, in January 2003 –

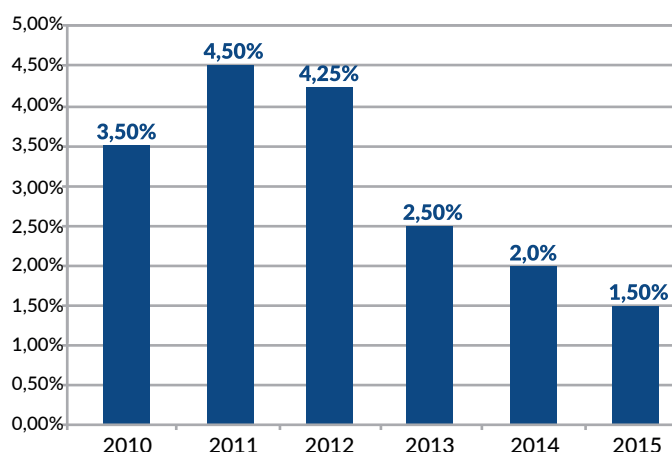
**Figure 1. Foreign Direct Investments (FDI) in Poland in 2010 – 2014.**



Source: own study based on NBP data



**Figure 2. Guiding rate of NBP in Poland in 2011 – 2015.**



Source: own study based on NBP data

August 2014, 3379 greenfield investment projects were realized in Poland and 822 of new workplaces were created.

The above mentioned phenomenon is fostered by decisions of Monetary Policy Council, which since 2011 has been gra-

dually decreasing value of money in Poland by lowering the reference level of interest rate from 4.5% in 2011 to only 1.5%. The lower the credit interest rate - the more attractive the terms of obtaining external financing for the planned investments. This, in turn, encourages to make decisions on allocating investment projects in Poland.

The improving situation will surely encourage the demand for new investment in immediate future. In addition, according to World Bank's ranking – "Doing Business 2015", Poland was placed 32nd out of 189 economies from around the world. The high position in this ranking supports the claim that the legal and regulatory environment also facilitates investment processes in this country.

Although Polish economy is still undergoing a dynamic development, only some of the branches are characterised by comparably high growth rate. They offer more attractive investment opportunities, therefore the proposed investment scope of the Fund is focused on specified areas, in which engaging financial resources may bring benefits for all projects' participants.

**Table 1. Dynamics of GDP in Poland and selected Euro Zone countries in 2010 – 2015.**

|               | 2010  | 2011  | 2012   | 2013  | 2014  | 2015  |
|---------------|-------|-------|--------|-------|-------|-------|
| Poland        | 4,5 % | 4,3 % | 4,4 %  | 4,9 % | 3,7 % | 3,9 % |
| Euro Zone     | 2,0 % | 0,7 % | -0,9 % | 0,4 % | 0,9 % | 1,5 % |
| Germany       | 3,7 % | 3,0 % | 0,7 %  | 0,1 % | 1,6 % | 1,7 % |
| Great Britain | 2,1 % | 0,9 % | 0,0 %  | 1,9 % | 2,9 % | 2,2 % |

Source: own study based on Bankier.pl data

**Table 2. Unemployment rate in Poland in selected Euro Zone countries in 2010 – 2015.**

|               | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   |
|---------------|--------|--------|--------|--------|--------|--------|
| Poland        | 9,5 %  | 9,9 %  | 10,4 % | 10,0 % | 8,2 %  | 7,2 %  |
| Euro Zone     | 10,0 % | 10,4 % | 11,7 % | 11,8 % | 11,4 % | 10,4 % |
| Germany       | 6,5 %  | 5,5 %  | 5,3 %  | 5,1 %  | 4,8 %  | 4,5 %  |
| Great Britain | 7,8 %  | 8,2 %  | 7,7 %  | 7,1 %  | 5,5 %  | 5,3 %  |

Source: own study based on Eurostat data

**Table 3. CPI inflation in Poland in selected Euro Zone countries in 2010 – 2014.**

|               | 2010  | 2011  | 2012  | 2013  | 2014   | 2015   |
|---------------|-------|-------|-------|-------|--------|--------|
| Poland        | 3,1 % | 4,6 % | 2,4 % | 0,6 % | -1,0 % | -0,2 % |
| Euro Zone     | 2,2 % | 2,7 % | 2,2 % | 0,8 % | -0,2 % | 0,2 %  |
| Germany       | 1,7 % | 2,1 % | 2,1 % | 1,4 % | 0,2 %  | 0,3 %  |
| Great Britain | 3,7 % | 4,2 % | 2,7 % | 2,0 % | 0,5 %  | 0,2 %  |

Source: individual studies based on Bankier.pl data



## FINANCIAL PRODUCTS AND SERVICES

The finance market plays a key role in the economic system. It is influenced by different factors, both external and internal. The situation of finance market is significantly affected by the condition of the macroeconomic environment, the condition of global market economy as well as the situation on world finance markets.

The key to the domestic financial market is also the situation of the euro zone, and the consequences of the financial crisis. As far as these can be reflected on the actions that the European financial groups, operating on the Polish market, can take in the future. The risk of temporary or permanent deterioration in the individual countries, as well as financial institutions that are established in these countries, is closely linked with the ability to access to the financial activities on the market.

For the reason of that, regardless of the type of financial entities, their situation depends, in that or another way, on the re-

lationship with other entities from other sectors of the financial market and the real economy. Obviously, the connections between entities significantly determine their stability, which in turn affects the level of investment and the overall financial market. Therefore, there has been provided support programs for investors, operating under the Investment Service Centre, aimed at the broad analysis of proposed investment projects and their proper implementation, in order to avoid any possible financial losses.

Thanks to the comprehensive investors' support, Poland, regardless continuing weakening of economic situation in the Euro Zone, has recorded in 2014 high economic growth, and in 2015, according to the NBP report, its GDP increased to 3.6%.

Financial products and services cover a very extensive area of the whole financial market. Domestic banks as well as banks with foreign capital are constantly competing in terms of the





quality of proposed offers, the level of profit percentage, or new innovative payment systems and customer service. The competitiveness of offers, both in terms of financial return as well as the availability and ease of control over their own financial products, significantly determines the image of the domestic financial market. Increased investment activity of bank customers, which follows from the wide availability of services, affects their quality of life, but also influences the economic development of the country.

## MICROPAYMENTS

Electronic payments, also known as e-payments, are conducted via the internet. They include any financial operations, done remotely with the help of electronic devices, such as PC, smartphones and tablets.

Electronic payments can be made by: transfer order, payment cards or through electric payment providers. In most cases, they resemble traditional payment methods – such as bank transfer or payment with a card – however, they are tailored to the nature of the Internet. Its performance is ensured by Payment Services Provider (PSP4), which mediates between the bank of client, who is doing the shopping, and the seller or only between the parties of the transaction.

Creation and development of electronic payment is closely related to e-commerce. Thanks to that, it is customized much better to the needs of e-commerce than payment cards and traditional bank transfers, whose concept date back to times when the Internet2 has not been popular yet.<sup>1</sup>

Micropayments - are electronic payments, made on small, even a few penny amounts of money. In business practice there is no single, precise definition of micropayments, and the upper limit value is determined arbitrarily by individual suppliers; however, usually closes in the amount of approximately USD 10-25. In addition to the value of transactions, micropayments differentiate by the fact that they are usually related to the purchase of digital goods or services - such as an access to the article, the music or the movie - which is obtained immediately after payment transaction has been made. In fact, it is the time of the payment, but not the cost that plays the greatest importance in micropayments. Usually they are concluded by means of the so-called „one click“.

Another advantage of micropayments, both from the seller and the buyer points of view, is that at the time of payment the customer does not leave the web store. This is particularly important, for instance, in online games, in which the re-buy of additional services does not stop the game. Such quick purchase has an impulsive character, that in turn, is very profitable for the sellers.

Micropayments - are more often used on websites, offering access to digital products - newspaper articles, scientific papers, music files etc. as well as on the computer games market.

International PayPal and Ipsos research, which described 22 markets and over 17 500 consumers, enabled to point out

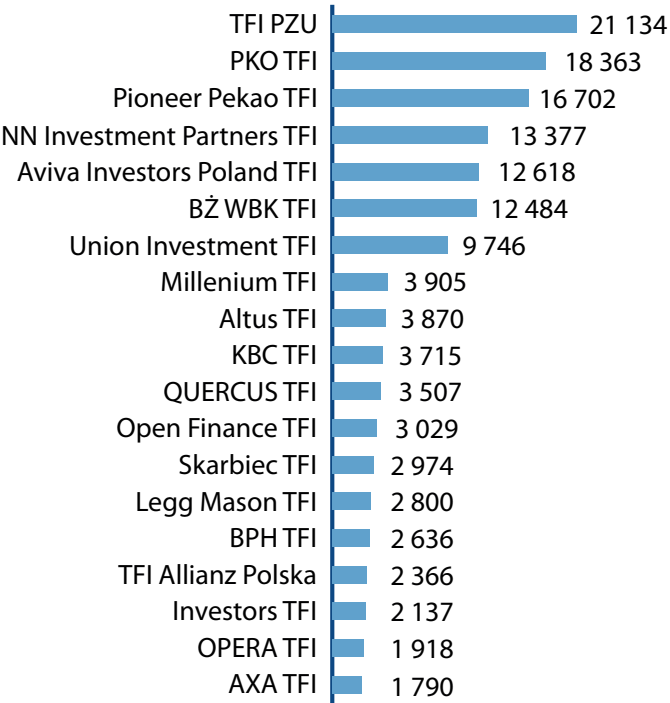
the best practices in international commerce and identify possibilities for Polish entrepreneurs. It is estimated that m-commerce is rising 3 times faster than the whole e-commerce sector in Poland. In 2013-2016, the average m-commerce growth rate in Poland will amount 32.8% in comparison to 10.4% growth in case of e-commerce in total.

Polish market of electronic payment is still a developing one. In the last year, we noted an increase in the number of transactions by 25%, and in the last 2 years by 48%. According to data from banks, in the 3<sup>rd</sup> quarter of 2015, there was 861.7 million transfers made with payment cards (cash and cashless ones) and, in comparison to the previous quarter, there was an increase in number of transfers by 35.7 million, what gives a growth of 4.3%. This trend is to remain in upcoming years. It is a result of rising number of clients doing shopping in the Internet as well as an increasing number of clients using internet banking.

71% of households possess an access to the Internet. Shopping on the web was conducted by more than 30% of Poles, aged 16-74. Interestingly, the level of users from 2012 to 2015 did not change significantly. According to a Gemius study, in 2015 about 70% of Poles, (24.82 million) were using the Internet. It is worth mentioning that five years ago, every second inhabitant of Poland was logged in the „network“, which is equal to 18.21 million people. In 2005, the Internet users amounted over 27% of people of Polish society (which is 9.55 million).

Poland is one of the most rapidly developing m-commerce markets among EU member states, competing with Germany and France. 30% of Poles do the shopping in the Internet and

Figure 1: Net asset value of Polish OEF (million PLN)



Source: own study based on [www.finance.egospodarka.pl](http://www.finance.egospodarka.pl)

20% of them use mobile devices, not limiting themselves to regional or national purchases. In 2015, the value of mobile market amounted to PLN 2.5 billion, what gives an increase of PLN 1.5 billion in comparison to 2014. Every fifth representative of Polish e-shops declares that mobile transfers constitute 5%-10% of all orders. It is a solution for investors who are looking for innovative investment project that are still in the phase of development.

## MULTISYSTEMS

Multisystem - or a combination of loyalty systems with the system of electronic payment - is a novelty that was missing so far on the Polish market. It combines data from all cards of the user, and helps to save space in the wallet, systematise and simplify payments and make it easier to organize active means of payment, such as debit, charge, credit and prepaid cards. In addition to that, Multisystem assigns to the card all available loyalty and discount systems, corresponding to explicit incentives.

The innovation, popularly called Multicard, represents an intelligent electronic card, based on the concept of „all in one”. It is a closed and save system that integrates in itself all external systems, aimed at consolidation of as much as possible paying transactions in one integrated card. It overlooks the needs of modern society, which expects that the new technologies will offer them a wide range of possibilities in an affordable and functional form. Such a novelty in the form of multi-purpose cards, are used in Poland for several years. A good example of this are „benefit systems”, designed for providing its users with the discounts in medical, sports and many other facilities.

Electronic student cards used as a library card, public transport ticket or Krakow Family card, can give a number of discounts on selected products and services. It serves another example of the useful and original solution. However, none of the examples presented, does not allow the user to conduct payment transactions. In Poland, a growing interest in the implementation of multicard, allowing the user to get access to all bank accounts and financial services. Unfortunately, so far, a solution has not been introduced yet.

Recent data indicates that currently 35.5 million of payment cards are operating in Poland. It is not surprising, as it nowadays, one of the fastest growing industries in our country. Both the number of cards and transactions conducted continue to grow. This indicates on the ample opportunities for potential investors. Polish market needs and expects this type of solutions - from both partners, engaging in programs and banks, as well as the clients themselves, who often complain of non-functional and not fully thought out procedures in the conduct of accounts, getting access to them or payment handling. In fact, multisystem is a good solution not only for entrepreneurs, this type of improvement has been optimized for each user of electronic cards, the primary goal of which is to facilitate a number of daily activities ranging from shopping, ending with merging of all necessary information, useful during traveling.

Multisystem is a project that is still undergoing through various changes and modifications. Moreover, it also needs an investment, programming, banking support as well as improvements in the field of administration, including the implementation of a card system or improvements related to the development of mobility and technology in urban centers. The focus should be concentrated on the informatization of local governments, so that the operating systems of administration were able to support and implement this type of project. This whole process is a long-term cycle, which requires a multifaceted cooperation at various levels of development, which creates great scope for the involvement of capital for entrepreneurs and investors. Multicards innovation and market demand for the opportunities they offer, make it a region with great potential. The resources of consolidation solutions are always very popular, and the activities in this area comprise of benefits that are hard to find in other districts of investment, including the functioning of the vast space of the business, which is growing with the development of the project.

An extremely important issue from the multiplexing area is security. The technologies, applied in a design of Multisystem, enhance the security of payment transactions by authenticating the cryptographic card. The use of modern technologies will prevent counterfeiting of cards and enrich the systems with interoperability verification and authorization functions. The data encryption will not only allow the safe use of the Multicard, but will also make the system available for smartphones - through specially designed and developed applications..

## INVESTMENT FUNDS

The beginning of 2015 fostered investments; national investment funds gained over PLN 1.9 billion in February. In turn, PLN 2.1 billion is an amount of deposit surplus over withdrawals, that Open-ended Funds (OEF) exceeded and reached at the same time the highest level within the last 14 months.

Low-risk profile funds appeared to be in the centre of investors' interest in 2015. Investment in participation units of debt solutions, whose balance of deposits over withdrawals amounted to PLN +750 million, remain to thrive.

Innovative solutions, whose managers invest on national debt market, were the main beneficiaries of the inflow. Among them, debt funds with universal strategy gained the majority of resources (PLN +420 million), among which the most prominent are as follow: Pioneer Pieniężny Plus (Pioneer OEF) as well as Long-term Bonds of PKO (Umbrella OEF). High sell rate was also characteristic of corporate debt funds (less than PLN +200 million), mainly for Arka Prestiż corporate bonds (Arka Prestiż SFIO) and Millennium corporate bonds (Millennium SFIO). Foreign bonds funds were considerably less popular and they gained only PLN +30 million net.<sup>2</sup>

Cash and money funds remain highly popular. They noted PLN +690 million net influx. According to materials published by Analizy Online, investments in this sector were characterized by the highest level of safety, although interest ra-



tes were lowered by 50 base points, what could have, to some extent, negatively affect future profits from investments.

In 2015, the share funds were also growing and after all, gathered the biggest ammount of new resources in comparison to 2014. The deposit and withdrawal balance amounted PLN 370 million. New resources were directed mainly to foreign shares funds which had the record sales balance since the crisis of 2008, i.e. PLN +480 million. Big popularity of this solutions results from boom on foreign shares markets in the USA, Great Britain or Germany, where stock indexes set new records.<sup>3</sup>

According to Analityz Online, in the first quarter of 2016, there was a great activity on national share market – what confirmed that the situation is improving. It fostered allocation of financial resources in shares of small and medium-sized companies by investors. The balance at the end of 2015 amounted to over PLN 70 million net, and the margin between deposits and withdrawals was over PLN 70 million net.

As a result of the fact that the managers allocated assets on foreign markets, the segment of mixed funds reached PLN 120 million net in February 2015. However, Polish fixed funds segments noted PLN 0 balance, which means that deposits and withdrawals were equal. The only solutions for stable growth were net positive with PLN 90 million of profit. The first quarter of 2015 was also beneficial for total return rate funds, to which clients paid PLN +160 million more than they withdrew.

Close-ended Funds (CEF) are superior to other forms of investments. The value of investment funds is created by combining financial resources of particular investors. These resources are invested in common business of fund members. Their input is converted into investment membership titles, membership units or investment certificates which define investors' proportional share in the value of their investment fund. Funds of that kind are managed by specialists supervised by Supervisory Board what guarantees transparency of the activities. The rules require from Investment Fund Companies publishing to publish all crucial information about their activities. Every investor can find something interesting for them in Close-ended Investment Fund. It is due to the fact that investment goals are highly diversified. The investment safety also increases.

Close-ended Investment Funds are regarded as one of the most interesting form of joint investment. Thanks to the lack of restrictions characteristic to Open-ended Investment Funds, they have possibility to invest freely in different asset classes as well as derivative instruments. An investor acquires a security – an investment certificate. CEFs, due to their legal status, also provide tax optimization to the investors.

Current financial crisis makes companies as well as households seek savings in their budgets. However, financiers and tax accountants strive to meet customers' demands, often offering them solutions that ensure making them. Tax optimization, due to CEF, is a unique construction that is based on advantages resulting from the fact that they are exemp-





ted from paying CIT under the act of Corporate Income Tax. The optimization is possible thanks to regulations of Tax Ordinance Act according to which partnerships are not obliged to pay income tax. It is paid by the partners in proportion to their right to profit share. As a result, in case of Close-ended Funds, corporate tax does not have to be paid thanks to tax exemption.

Having acquired the fund investment certificates, the investor will have to pay income tax in the future when the funds are canceled. Nonetheless, in that way, an investor can benefit from postponing the date of paying it. As a result, in long-term, such move gives measurable benefits from reinvesting the money economized on taxes.

Thus, for each fund, the goal is to invest the entrusted resources in such a way that would allow making as much profit as possible for the fund members and minimizing investment risk at the same time. Investment in investment funds can provide investors with much bigger profits than deposits or bonds. Meanwhile, they are one of the most popular forms of investing in Poland and around the world.

## GREEN HELP

According to the Central Statistical Office, the structure of social assistance that was not changed for a long period of time, in some cases perpetuates the poverty rather than helping to handle it. The financial sources, provided under the benefits or grants, are not always used as intended. The answer to the needs of donors, which number, according to statistics, would increase by 30%, lies in the proper allocation of funds, an intelligent system of social assistance using modern information technologies, which will also enable a communication between the support unit and the donee. Furthermore, computerization of the department will help to faster and easier contact people, interested in the relevant body. Long queues and complicated formalities could be replaced by a specially designed system, containing all the necessary information and facilities. Such a platform would help the person concerned, to fill step by step any document (registration form) and in a transparent way determine where to seek help in individual cases. In order to make system ba-

sed on mutual benefits, those in need would have an access to a specially configured, personal accounts, which would assist them in the identification.

In order to prevent wasting of money on unnecessary things or items that are not covered by financial support, the system will allow the use of resources only in the case of important food products, bills or other necessities. This is to prevent the use of social assistance as a source of additional income, and thus, let the money go to the most needy families, which will use the funds received for their intended purpose. The billing system will also verify what types of products are the most needed, which in the future will also help to organize all kinds of collections of food for the poorest people.

The system also requires the cooperation of the public administration and the banks in order to ensure that the appropriations would be transferred every month to individual's account, and that at any moment one could verify how they were spent. Perhaps it will be a good idea to design a card, on which the funds from social assistance would be provided and which could be used in the same manner as a debit card, but without the ability to withdraw the cash from that card. This method would help to control the expenditures of the user, thus, making a system very user-friendly.

Undoubtedly, this solution would be a great advantage for both parties: for the user - as the cardholder, it will help to easily check and control the status of the account, and financial resources could have come to the account faster and be better adapted to the current situation; for the beneficiary it will, in turn, ensure the possibility of easy and transparent arrangement of all necessary data.

### Source:

1. Electric Payment Methods. Essence, development, forecast, Bartłomiej Chinowski, 2013. Polish Financial Supervising Authority, 2013
2. [www.money.pl](http://www.money.pl)
3. [www.money.pl](http://www.money.pl)



## INNOVATIVE TECHNOLOGIES

Investments in new technologies and innovations are the core elements supporting economic development. On average, in Europe, 2% of GDP is devoted to research and development, whereas in Poland it is only 0.9 %. Low input results in a new Poland's development policy till 2020 will ensure assistance for investments in research, development and innovations. Projects carried out in Poland are supposed to be awarded public money – both national as well as European.

Investments in research, development and innovations cannot, however, be financed only with a support of the European Fund; support for innovation in terms of legal and administrative issues should be of the greatest priority for Polish government.

### EUROPEAN GREEN TECHNOLOGY ALLIANCE

Innovative technological project carried out in Poland, due to lack of proper investment outlays, is very often not commercialized. This process is based on cooperation between business and science and the key help in this field is provided by European Green Technology Alliance - EGTA. It focuses on innovative technologies transfer between European countries and provides support through specialised institutions of business environment in all European countries as well as through the network of its collaborators on the remaining continents. It is a unique organization which promotes innovative technological possibilities and mediate between development institutions and international cooperation.

Knowledge exploitation and commercialization are the main purposes of EGTA and other enterprises. It ENSURES transfer of technologies to all European economies; it also commercializes scientific research results through science and opinion-forming as well as cooperation on their implementation. What is more, it supports enterprises and research and development entities with managing intellectual property, scientific results protection, disclosing patent rights as well as license and implementation agreements.

Cluster network is to assist entrepreneurs in knowledge and experience transfer as well as safe technology transfer within their own structures as well as outside of them. Moreover, cluster system supports activities connected with acquiring financial resources that would allow to commercialize the innovative projects.

Currently, European Green Technology Alliance comprises of 21 Clusters with more than 300 enterprises and institutions from 18 EU member countries. Its main goal is to:

- Create European ecosystem of innovation, serving the purpose of knowledge transfer, mutual research, development and commercialization of studies by providing coordination, communication and IT tools,
- Create new business opportunities for EGTA members on a European and global scale by undertaking mutual business and marketing ventures,
- Support EGTA members with international strategy implementation by establishing cooperation with non-European countries and create global platform for technology transfer.



Interesting conclusions connected with current situation of science in business were drew in the article: „System of technology transfer and knowledge commercialization in Poland - prime movers and barriers”. As was emphasized in the above mentioned article, the issue of technology transfer and commercialization has a particular strategic importance for Polish and European economy. Additionally, the situation in which the results of even the most innovative research, publications and patents of European scientists find their application in new products, technologies or services. EGTA is an element of Polish innovation development, which enables opening to wide economic contacts and participation in European and world activities that stimulate economic growth. The basic criteria of EGTA project assessment is the possibility and profitability of introducing technologies to the market and its further commercialization.

POLISH TECHNOLOGIES THOUGHT

Although European average rate of research and development investment surpasses the Polish one, the innovation growth of Polish economy rises faster than in many EU countries. According to European Commission’s report „Innovation Union Scoreboard 2015”, Polish Summary Innovation Index (SII) has risen from 0.27/0.28 in 2006 and 2007 to 0.31 in 2014, what in turn, made it possible to outrun Latvia and reach the same rate as Croatia. However, two Polish enterprises took place in a rank of companies that spend the biggest amount of money on research and development. These are: Telekomunikacja Polska [Eng. Polish Telecommunication] (488th place) KGHM Polska Miedź [Mining and Metallurgical Plant-Copper] (864th place).

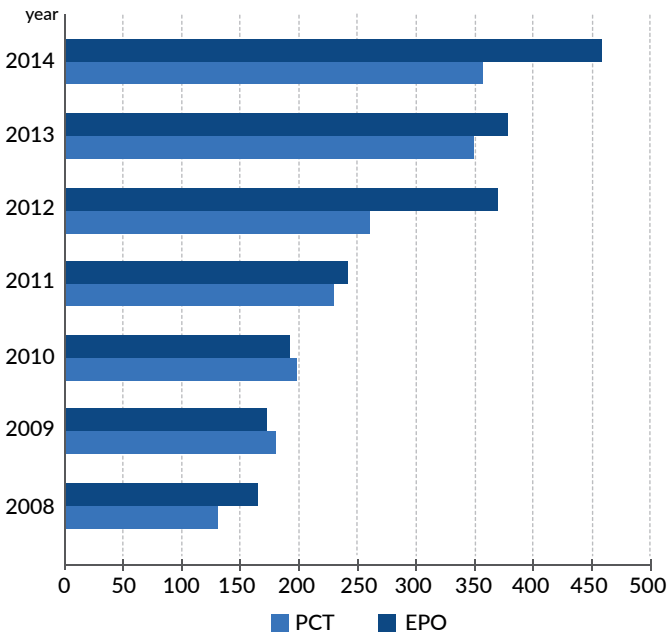
In years 2006-2015, the innovative index for Poland was circa 0.27. In 2014, for the first time, there was noted a more

significant growth since it reached 0.31. What is interesting, in 2014, this index was rising faster for Poland than for other members of Euro Zone. If this tendency continues to remain at the same level, in the next years, Poland has a chance to conquer even higher place in the European ranking.

Considerable number of patents that Poland possesses was issued by the European Patent Office (EPO). For instance, in 2014 this number constituted 75%, while in 2013 - 72%. Despite the fact that such way of obtaining protection of inventions is chosen mainly by foreign entities, Polish entities are also applying for patents, however, not only to Polish Patent Office, but also European Patent Office as well as in Patent Cooperation Treat (PCT) mode more and more frequently. In 2014, 475 patent applications were submitted to European Office, which is over 100 more than the year before (in 2013 - 372 application). A number of Polish applications in PCT mode has also increased - from 332 in 2013 to 348 in 2014. In addition, 78% of medium-sized and large companies in Poland have undertaken, within the last 3 years, works on innovative solutions. Regardless of the sector, product and service innovations are the key areas of innovation activity. In recent years, they have been implemented by 58% of industrial enterprises and 50% of trade and service ones. In the industry, process innovations are very important. 60% of industrial enterprises came up with such innovations and 48% implemented them.<sup>1</sup>

According to the report published by KMPG „Investment maturity of enterprises in Poland” Polish trade and services sector 46% of enterprises, aimed at innovation of the organization, declared about moving in this direction. New solutions were implemented by as much as 42% of the companies and 10% of those implementations refer to innovative venture on market level.

Figure 1: Number of patent applications from Poland to EPO in PCT mode 2008-2014.



Source: own study based on www.kpmg.com

The level of Polish marketing companies innovativeness was nearly 30% and in the next years, it is expected to maintain an upward tendency. In the segment of medium-sized and large companies, almost half of them, i.e. 47%, declared their willingness to proceed to market innovativeness. Technology transfer has immense significance when it comes to implementation of innovations among Polish enterprises. This is the point, where technology brokers succor. They specialize in implementing innovative solutions as well as technology transfer. As much as 12 % of companies, which implemented innovations, adopt the so-called good practices of the market. Only 6% of the enterprises decide to innovations using only company’s own resources.

Polish innovativeness and ingenuity is known around the whole Europe, however, realization of the innovative project still requires huge capital outlays, development and studies.

Source:

1. www.kpmg.com



## IT MARKET

Poland is on the top in Central and Eastern Europe (CEE) region in terms of the scale of predicted investment in IT solutions in the next 3 years, among others, in cloud computing and mobile technologies.

According to the report conducted by analyst firm IDC, the value of Polish IT services market in 2014 recorded an increase of 4.5%, reaching USD 3.28 billion; while in 2015 the growth rate increased to 5%. The experts also predict the growth of the IT market by an average of 4% (USD 4 billion), that will be achieved within the coming five years.

As The Association of Business Services Leaders (ABSL) reports, currently, the total number of employees in this sector amounts to 140 thousand people, of which 55 thousand work for large service companies in this sector. Software and IT services hold 29% shares in the whole IT market in Poland and 1.7 % in the global IT submarket. The majority of employees in this sector is hired in foreign capital companies - 66%. However, companies with Polish capital employ 34%.

Companies placed in Poland which provide IT services focus mainly on West Europe entities (80%). They provide services also for Polish business and institutional clients (74% of the examined enterprises). More than half of them also provide services to clients from North America and East-Central Europe (except Poland). Implementation of innovative solutions, as far as IT systems on Polish market are concerned, is another area that is characterized by attractive return rate and relatively low risk.

### IMPLEMENTATION OF IT SOLUTIONS IN ENTERPRISES ACTIVITIES AND PUBLIC ADMINISTRATION

The industry implies that the technological improvement and quality enhancement are vital processes. The constant development of IT solutions requires from companies to keep seeking creative employees that are highly specialized in narrow fields. The greatest demand for expert engineers can be noticed in SAP programming, software tests, Big Data management or solutions for mobile services.





Efficient use of arising opportunities in terms of developing existing technologies and create new solutions on IT market is significantly dependent on qualifications, experience and workers association within the project and research team. Equally important are: "Business intuition" in selecting the project, multistage analysis of the implemented solution and modernization of the system.

It all resulted in increased activity in computerization of organizational structures. The elimination of paper documents and the introduction of non-cash payments in the public administrations are the next priorities of this sector. The platforms - are already undergoing through the development phase. In 2013, there was created the Integrated National Informatization Program. It represents a strategic document, describing the government's efforts in providing the society with high-quality electronic public services.

The aim of the Programme is to create a coherent, logical and efficient informational state system, that will provide e-services at national and European levels in an effective way in terms of quality and costs, both for the administration and management bodies as well as for society. The program is to ensure co-operation between already existing as well as new IT systems of public administration, while eliminate previously redundant functionality.

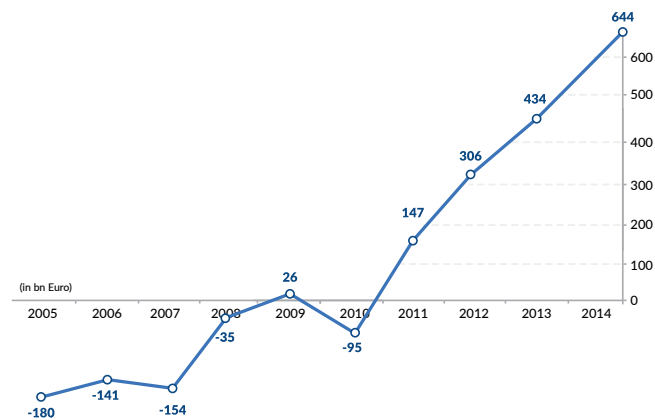
The current process of computerization characterized by solutions, which correspond to the needs of the various sectors of public administration, however, do not provide sufficient interoperability between systems, which could have had a negative impact on the implementation of e-services. Therefore, it became necessary to introduce a new instrument of planning and coordinating the work of public entities, which is, appointed by resolution of the Council of Ministers, the Program of Integrated Computerization. The entire program is also an executive document for the development strategy, in other words, the strategy of the Better Government 2020 (SP2020).

The entire process is conducted in the form of integrated computerization, and consists of four main categories:

- Logical and efficient information flow, so that the administration helps the citizen in the performance of their duties before the State and assists them in achieving their aspirations;
- Focus on processes in public administration and services that it provides;
- Transparency and efficiency of public spending;
- Technological neutrality, which ensures that access to services and supplies for administration is not limited by the technology used, and arises only from the functional needs.



Figure 2: IT services in capital account of Poland (billion Euro)



Source: own study based on NBP.

Thanks to digital technology, administrative procedures will be conducted in a more effective, personalized and participatory way.

As a result, the turn of civilization, pervasive computerization and digitization, and in particular, the availability of the Internet in everyday human activities, the administrative authorities shall also have to adjust the level of services and procedures, thereby enhancing management systems, communication and service.

Polish enterprises, in both private and public sector, continue to increase the level of implementing IT solutions. In the recent years, the majority of money intended for this purpose has been allocated to industries, such as telecommunication, financial sector, production sector as well as local and central administration. It is also worth mentioning that, in small and medium-sized enterprises (SME) sector, there has been an increase in capital investment devoted to IT solutions im-

plementation what significantly contributed to enhancement in quality of IT services in Poland. The growth of the market as well as an increase in the number of entities resulted in price drop, which undoubtedly contributed to broadening the access to IT services.

## CLOUD-COMPUTING SOLUTIONS

The development of IT sector – both in Poland as well as around the world – is fuelled by innovative products and new market trends. As regards the new, the main directions of IT market development are as follow:

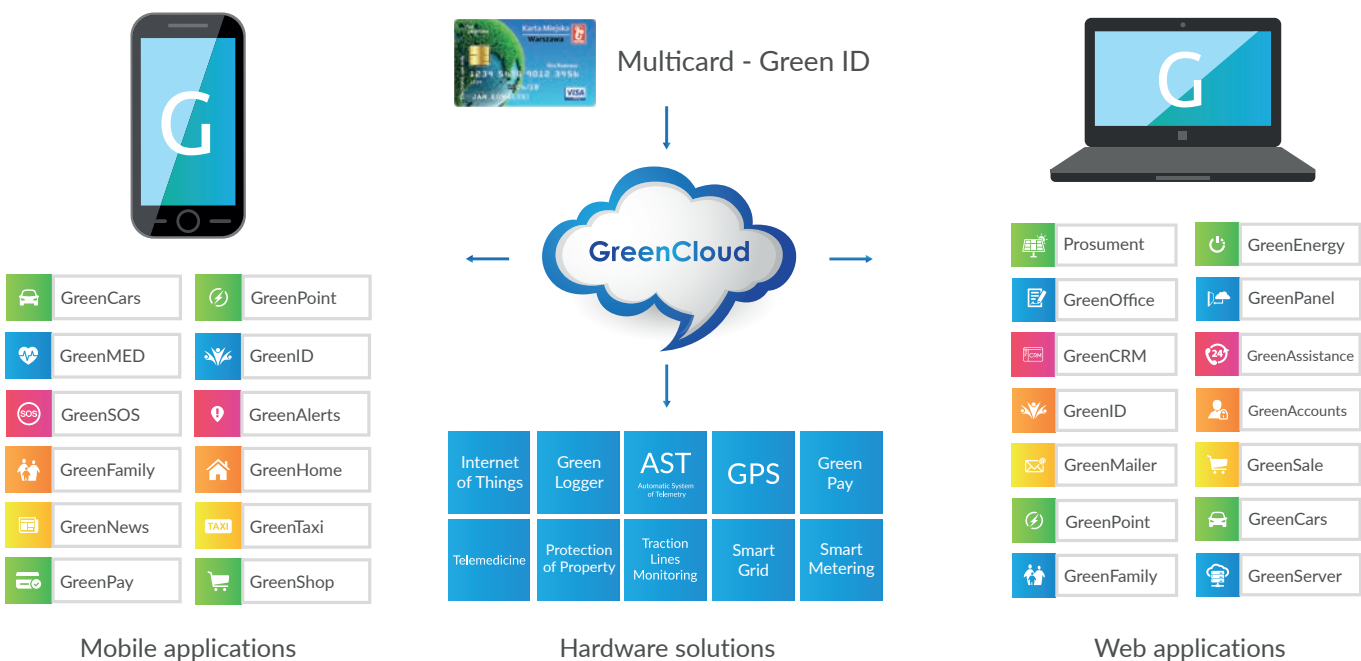
- mobile apps – 92% of Polish IT representatives expect the dynamic development of this sector,
- Cloud Computing – 95% will witness its development in the next 2 years.

Due to wider use of cloud-computing and the Internet of Things (IoT), other markets related to information safety, data safety and cloud software sharing gain popularity.

„Cloud Computing” technology allows a budget friendly computing, saving and analysing flows of variable and diverse data bases – “Big Data” - which are generated by sensors, mobile computers as well as RFID readers. Apart from that, the IoT is also characterised by a tremendous interest. As broadband networks become more and more popular, implementation of IoT seems to run faster and cheaper than it was originally expected. International Data Corporation (IDC) predicts that the value of IoT technology will rise from USD 1.3 billion to USD 3.04 billion in 2020.

## IT PLATFORMS

In comparison to the last several years, there has been a substantial rise in demand for IT platform in both small and medium-sized companies as well as corporations. That sort of bu-



business software is a reaction to modernly-managed companies. The decision to invest in this type of software, results from the scope of advantages it has. Among them are: low costs of implementation and maintenance of the software as well as easier adaptation to the client's needs.

The demand for SaaS application continues to grow. The new system for managing the enterprise is characterized by modularity and swiftness as well as price diversity.

New platforms allow better time-management and can increase workers' potential. The implementation of IT solution gives a chance to facilitate most of the processes and activities, pursued by the company. It is worth noting that IT platforms are commonly used in Poland. Systems of that type are implemented in, for example, primary schools, medical facilities, ministries and public administration institutes. Wide usage of IT platforms both in Poland and around the world does not mean that the demand for custom-made platforms is not rocketing, causing this submarket to develop constantly.

One should also remember about the idea of Smart City, which is now much more recognised among Polish cities than just few years ago. Informatization of urban systems (platforms) is one of the key segments in which specialized IT staff and programming is essential. Thus, the implementation of investments in this area guarantees a high rate of return. It forces the capital to be engaged in meeting these demands, what may also be followed by achieving high profits. Development of this market is also backed by qualified Polish experts.

## OUTSOURCING

The core advantage, deriving from eliminating the side as well as assistive functions, which is the main argument for outsourcing, is cost reduction. Notwithstanding, other factors become even more important. Among them are: striving to provide supreme-quality services, job specialization, focus on business functions and access to expert knowledge. By means of outsourcing, the company's performance augments and its market value rises. In addition, its activity is more flexible due to saving of time and human resource – as well as productivity.

The market of IT outsourcing is marked by constant and dynamic growth. Poland as one of the most rapidly developing markets is on the top of the world rankings. In the last year, the IT outsourcing market has risen by 20%. Poland is seen as a country with one of the best location for modern service sectors directed to business. During the last 5 years, IT outsourcing sector was the most rapidly growing Polish submarket, what, in turn, causes nearly double increase in the number of subcontractors. In SME sector, almost 29% of companies use such type of services, which allows to get quick and effective access to knowledge and experience of market leaders and worldwide data base.

In Poland, the most popular submarket within which outsourcing services are provided are as follows: financial and accounting services, HR, Contact call-center, IT sales outsourcing. According to TMF Group analysis, the growth rate of IT outsourcing can annually maintain at the level of 20% or even exceed

this value. In the International Cooperative analysis conducted by KPMG, Poland was placed 2<sup>nd</sup> best location in the world. According to experts, it has the most mature market among Eastern European as well as South America countries.

The research also suggests that Poland will strengthen its position on the world market in the next years and may become one of the main locations for IT services outsourcing – especially for the European organisations. Poland's location and cultural coherence of the whole region has a great impact on development of this market. Moreover, one can observe a great interest in Polish services thanks to qualified, but in the same time, comparatively cheap human force, caused by country's economic condition.

The range of services that are the most popular within foreign companies is very wide, among which we can enumerate:

- Staff support and fixing of the existing failures, so called service/help desk,
- Administration of IT systems,
- Infrastructure and network management,
- Facilities of external infrastructure, i.e. cloud computing and server collocation in data centre,
- Security of enterprises' operation consistency including restoring the data after malfunctions,
- Application service as well as supervision of business systems,
- IT processes management,
- Counselling in terms of system choices,
- Management of documents and hardcopies,
- IT project support and management,
- Audit and control under software legality,
- Application development and maintenance,
- Recruitment of employees.

The competitive advantage of Polish companies can be seen in their ability to assimilate and adapt the level of own services to trends and technical condition, existing in particular country. Polish managers, while cooperating with companies from a particular region, perfectly understand business processes that are taking place in organizations as well as environment in which they operate, that also results in adapting services and price level.

According to Association of Business Service Leaders in Poland (ABSL) report, within last 2 years, there has been an increase in employment by 36% in business services submarket. It is predicted that till 2020 employment rate in this submarket will rise to 250 thousand people. A significant rise in employment is affected by increasing interest in Polish services within Europe and all over the world. In comparison to European, Polish IT market excels in development of novel business services. What is more, Polish companies, which provide IT services, are able to provide complex IT services to any organization, including end users, network, web and safety management as well as IT processes management.

### Source:

1. [www.informacjebraznowe.pl](http://www.informacjebraznowe.pl)





## ENERGY

In Poland, the production of primary energy is based mainly on fossil fuels. They are the 9<sup>th</sup> biggest deposits in the world. Hard coal and brown coal have been number one resources for many years. They cover almost 56% of the demand. The crude oil is also important – as its contribution amounts to 25%.

Renewable energy submarket develops strongly in Poland. According to data specified in goals of Poland's energy policy, the share of RES in final energy consumption is expected to increase in 2020 to 15.5 percentage points, i.e. for electricity it is supposed to reach 19.3%; for sector of heating and cooling - 17% and for transport fuels 10.2%.

According to data provided by the Polish Government, primary energy consumption within the years 2010-2020 will rise at an average rate of 1.5% per year, while the use of renewable energy sources in the same years, should reach 12%.

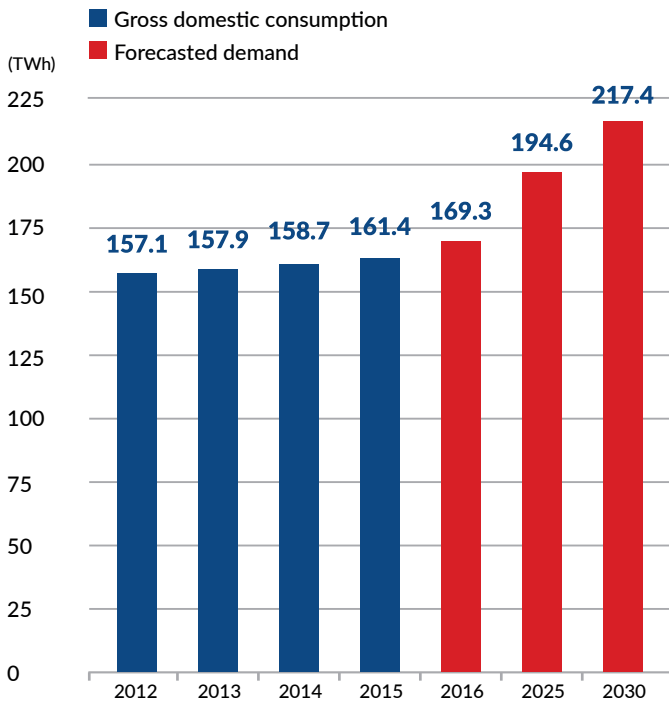
According to the directive 2009/28/EC, EU member states are obliged to increase the share of renewable energy in total energy consumption and, what is important, in the transport sector which, in fact, generates the biggest part of harmful emissions. Therefore, the overall balance of energy consumption and CO<sub>2</sub> emission to the atmosphere has become a priority for change in the coming years for most EU countries, including Poland.

Dynamic economic growth in the last 10 years, a growing number of economic entities and internal market of over 38 million of inhabitants, clearly illustrates an increase in energy demand.

According to the report prepared by Energy Market Agency commissioned by the Ministry of Economy, the demand for electricity in Poland will grow in 2030 to 217.4 TWh. Comparing this result to the previous years, there has occurred a significant growth, which points the need to invest in new generation capacities.



Figure 1: An increase in demand for electric energy in Poland



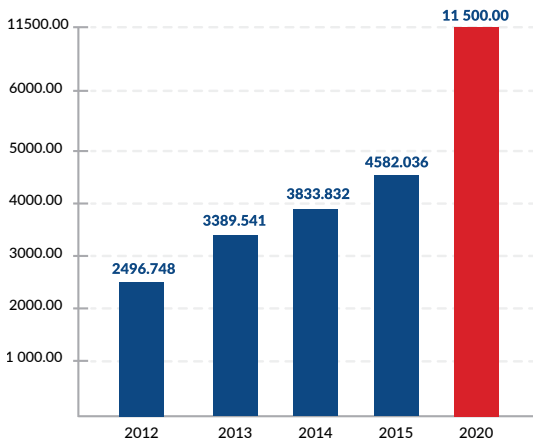
Source: own study based on ERO data.

## WIND POWER

Wind power resides on the leading position among renewable sources in Poland. According to data of Energy Regulatory Office, at the end of September 2012, wind power plants produced a total of 2 496.748 MW of power. Furthermore, at the end of 2015, the power generated by wind power almost doubled to 4 582.036 MW.

Currently, wind power accounts 57.6% of all sources of electricity with renewable origins. It was ranked first among renewable energy sources already in 2009. Most wind farms are located in the north-western Poland regions. Western Pomeranian Vivodeship is a leader, it is followed by Wielkoposka and Pomeranian Voivodeships. A comprehensive summary of the number of wind power stations in Voivodeships is presented in the table below.

Figure 2: Power of wind farms in Poland



Source: own study based on ERO data.

Table 1: Power of wind power plants in Poland

| Voivodeship         | Number of installations | Power of the installations MW |
|---------------------|-------------------------|-------------------------------|
| West Pomeranian     | 69                      | 1 171 347                     |
| Greater Poland      | 169                     | 496 190                       |
| Pomeranian          | 42                      | 465 909                       |
| Kuyavian-Pomeranian | 263                     | 446 749                       |
| Łódź                | 200                     | 413 850                       |
| Warmian-Masurian    | 34                      | 317 724                       |
| Mazovian            | 87                      | 256 835                       |
| Podlaskie           | 27                      | 181 410                       |
| Lower Silesian      | 9                       | 162 360                       |
| Opole               | 9                       | 125 649                       |
| Subcarpathian       | 26                      | 109 410                       |
| Lubusz              | 8                       | 64 000                        |
| Silesian            | 25                      | 23 175                        |
| Świętokrzyskie      | 17                      | 9 532                         |
| Lublin              | 6                       | 6 200                         |
| Lesser Poland       | 12                      | 3 531                         |

It is worth noting that Poland is a country that has favourable climatic conditions. As one can see on the wind map, provided above, the level of wind power is very favorable in Poland.

The technical potential of wind energy is primarily related to spatial distribution of open spaces (with low roughness of the ground and without object disturbing the flow of air). These are predominantly agricultural areas, which currently account to approx. 59% of the country (approx. 18 million ha). According to the forecasts of the changes in structure of land use by 2020, there will not be any significant modification that would limit the area (possible limitations amounts to approx. 1%).

With possibilities of today's world's energy technologies, it is assumed that it is possible to technically effectively manage the areas with wind speed exceeding 5m/s and the energy density greater than 200 W/m2 (at a height of 50 m above ground level).

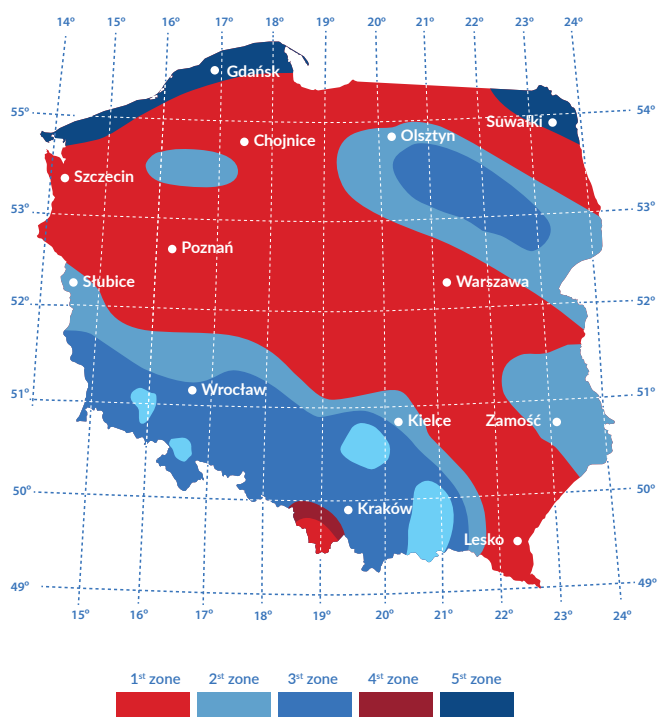
According to the report „Wind Power - current condition and prospects” developed by the Institute of Renewable Energy (IRE), the real market potential of wind energy in Poland until 2020 amounts to approx. 11.5 GW of onshore wind energy and 1.5 GW of offshore wind energy.

## VERTICAL WIND TURBINES

Due to vast range of wind-forced amplitudes there is a certain need to develop technologies which allows the wind power station to work (to generate electricity) at wind speed under 2 m/s and to maintain its functionality even with wind speeds of 50 m/s.



Drawing 1: Poland's wind map.



Source: own study based on [www.bacon.umcs.pl](http://www.bacon.umcs.pl)

Therefore, Poland introduced highly innovative project of vertical wind turbines, which surely became the first of its kind in the world. This innovative power station has been developed by noteworthy Polish engineers in cooperation with domestic experts from Green Vertical Turbin sp z o.o. which owns copyrights laws of aforementioned technology. What is more, the project still marks progress due to the cooperation of companies associated with Green Energy Cluster, which gives a possibility of constant development of the project in cooperation with experts across the Europe.

Specified power stations are characterised with high efficiency – up to 70%. It, in fact, provides profitable correlation of cost of product and effectiveness of power station, which significantly lowers the cost of electrical energy. At the same time, modularity of construction provides a possibility to flexibly adjust produced power to user's requirements and needs – segments of turbines can be configured into one or multi modular columns and also three-column towers, receiving by that a power station adequate for prosumer activities as well as for industrial use.

Moreover, thanks to a unique construction, wind turbines may be localized close to each other without any risk that turbines will deprive themselves of energy. This is particularly important when it comes to wind farms, because it allows to increase density of turbines disposal, decrease total cost of ground required for construction and essential infrastructure.

Singular segment may generate 200W from the kinetic power of the wind when the wind speeds up to 1.5 m/s and 20000W when the wind speeds to 30 m/s. Evidently, those are short time results because acquired power is determined by the speed of the wind, which is not a fixed value. The framework of a vertical wind turbine is 3.2 meters wide and 3 meters high, total weight of segment: 5.2 tone. Segments can be combined into towers and placed anywhere. Such a turbine is quiet, clean and harmless to human being.

Fort of this innovative wind turbines is its resilience to unfavourable wind conditions and stability of construction during the work in adverse wind situation. High wind velocity of turbines (construction produces energy when winds pressure varies from 0.5 to 60 m/s), independence from wind direction and resistance to wind disruptions assures deployment of wind turbines in areas, where use of traditional wind turbines is not possible or impeded by too weak or too strong gusts of





wind. Further, use of intelligent system integrated with energy storage allows to gather overcapacity of energy and automatically use it to sustain and stabilize workings of turbines when wind conditions are unfavourable.

Modular vertical wind turbines, due to its construction values, are totally neutral for natural environment: they are emission-free (do not generate vibrations and noise) and are safe to birds and bats. As an effect, mentioned wind turbines may be deployed everywhere, where use of typical vertical and horizontal turbines is not possible, in other words at built-up areas, settlements, industrial and environment fragile areas. At the same time, thanks to earlier mentioned advantages, installation of wind turbine is conducted according to simplified procedure of acquiring environmental permits, which significantly shortens the time related to investment process as well as reduces the costs involved.

Vertical wind turbines are available in two versions – steel and aluminium, which allows to deploy turbine close to or at already existing buildings (at roofs, posts, existing mast constructions) and also offshore including ships, which is limited when it comes to traditional wind turbines.

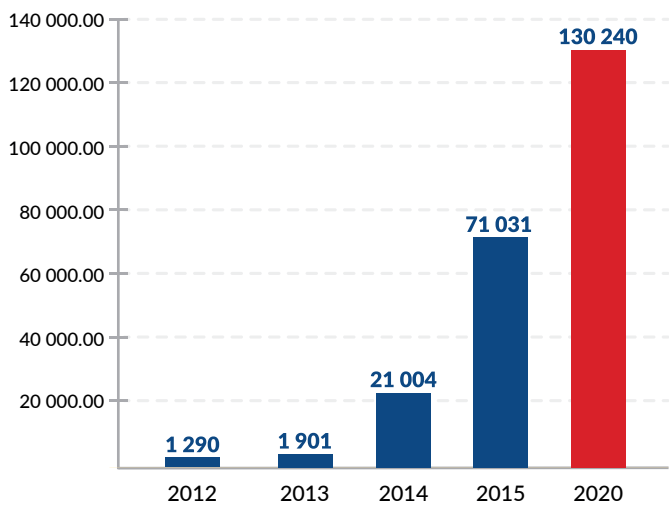
So far, vertical axis wind turbines were used only in prosumer activities. Thanks to advantages of aforementioned technology this situation will not only change but also may revolutionize industrial energy. By investing and using technology of vertical wind turbines created by Polish engineers, one can expect that share of energy obtained from renewable sources of energy may increase in energy-balance sheet of every country.

## SOLAR POWER

Energy from solar radiation has also greatly developed in recent years in Poland. There has been the largest percentage spike at the turn of 2013 and 2015 in this area.

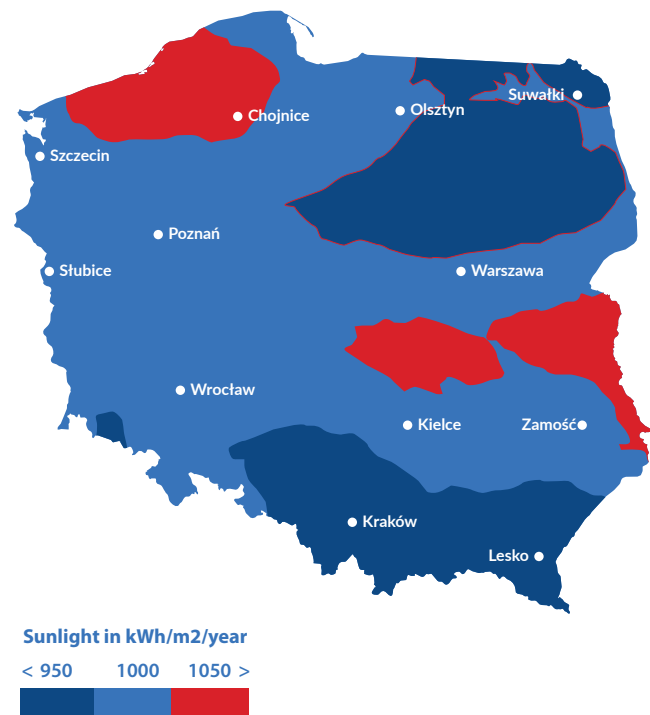
Photovoltaic power plants in Poland produced 71.031MW in 2015. It has to be noticed that in 2009, the level of pro-

Figure 3: Power of solar plants in Poland.



Source: own study based on ERO data.

Drawing 2: Poland's sun exposure.



Source: own study based on [www.zielonaenergia.eco.pl](http://www.zielonaenergia.eco.pl) data

duced energy was merely 0.001MW and in 2010 it increased to 0.033 MW. The following years also gave only slight improvement, since 2011 marked just 1.125 MW, 2012 - 1.290 MW and 2013 - 1.901 MW. A significant rise was seen just in 2014; as a result of an increased investment, the number of photovoltaic plans increased majorly, reaching a spike of nearly 20 000 MW. In 2015, there has been a tremendous investment development, compared to the previous year, a 4-fold increase of installed capacity was recorded as the value of produced energy came to 71.031 MW. Prosumer installation support played a very important role.

The balance of Poland's sunlight is positive. Map of sunlight shows that Poland, compared to other countries in central and northern Europe, has the highest rates. A smaller amount of solar energy is reported in Germany, Great Britain and northern countries. The level of sun exposure is even and constitutes 100 kW/m2 on average. Slightly higher values can be seen in Lublin Voivodeship, max 1050 kW/m2. The smallest sun exposure is attributed to Silesian Voivodeship. Locally, a bit less than 1000 kW/m2.

Solar radiation statistics per year also look positively, around 80% of total annual amount of sunlight falls to 6-7 months of spring and summer. In recent years, the data have been recognized by the investors and individuals that explains such an immense increase in investment in this energy sector.

## ENERGY-PUMPED STORAGE

Currently, the only widely used method of storing huge amounts of energy are pumped storages. This is due to the fact that they get more energy from the network, than bring it

back. At the time when cheap electricity is available, by using pumps the water from a tank, located below, is pumped to the upper reservoir. Electricity is then converted to a future kinetic energy, used to drive electric turbines. In times of peak energy demand, water from the upper reservoir is drained to the bottom, then the turbine passes from the motor-pump to turbine-generator mode.

Power pumped-storage depends on the size of water tanks and the level of difference between them. The tanks can be natural or artificial. The efficiency of energy pumped storage ranges from 65 to 85%. This means that for every 10 kWh taken from the system for pumping water, there are recovered from 6.5 to 8.5 kWh to the top, at a time when the energy is needed. This is a very good result compared to other energy storage technologies. The investment costs of building of pumped-storage are indeed, enormous; however, the corresponding difference in electricity prices between the peak and the lowest level of demand, investment is likely to be profitable. Talking about the thermal power plants and nuclear power plants, it is in turn, an opportunity to work with a constant, more money-saving burden. The greatest losses in energy production occur when switching from high demand for energy during the day and low demand at night.

What is interesting, is that the greatest advantage of this type of plant is the speed of its launching; the full power is achieved in just a few minutes. The operating costs are also characterised by small amounts. More importantly, hydroelectricity does not emit any greenhouse gases, therefore the use of hydro-pump storage does not degrades the natural environment.

In fact, there are exist several hydro-pump storages in Poland. Those with the highest power are as follows:

- Power plant Żarnowiec -716MW
- Power plant Porabka-Zar -500MW
- Power plant Solina -172MW
- Power plant Żydowo -150MW
- Power plant Czorsztyn-Sromowce Wyżne -94,6MW
- Power plant Dychów - 9.3 MW

## THE USE OF WIND ENERGY IN THE ENERGY-PUMPED STORAGE

The renewable Energy Sources, as a result of unstable weather conditions, are unable to adapt to the momentary demand for energy networks. It seems that the more important issue than energy production itself, would be its storage in times of over-production and distribution at times when demand is too high or the production is too small.

Creating energy storage system, powered by renewable energy resources, would create chains of production and distribution that could effectively compete with traditional energy. Techniques for the production of energy from renewable sources are already developed to such an extent that their use in appropriate scale could eliminate oil, coal, and even nuclear power from the market. It is therefore, a matter of time when green energy will become the primary source of energy in the world. One can notice the advancement in the storage of small amounts of electricity. The development and miniaturization of

various kinds of batteries and accumulators proceeds directly exponentially. Nevertheless, there are exist few methods for the storage and distribution of commercial quantities of energy.

One of the existing and proven methods - are pumped storage. These plants consist of two reservoirs, the upper and lower, which are connected to a pipe system with a large cross-section. At the lower tank are mounted the turbines that are also functioning as a pump. The energy production itself basically recover the gravitational energy of falling water pipes, using electrical turbines. When the energy is not produces, the same turbines crowding the water from the lower to the upper reservoir, using the energy taken from the network or installation of renewable energy resources. This is a very advantageous solution from the perspective of their performances - energy pumped-storage is able to generate maximum power within a few minutes after switching it on.

Power plants of this type do not require the slow process of increasing the power in the high demand and quenching, during the so-called plain energy. The process of raising and reducing the amount of energy in the traditional energy is very expensive and consumes large amounts of fuel. The very process of adjusting the amount of energy produced, to the demand, generating a loss of fuel already at the stage of production. Pumped storage are able to compensate the daily demand curve for electricity, acting as a support for other energy sources or as a replacement in case of failure.

Construction of the energy system should include a plan for providing scenarios of surplus and deficit of energy. That is why it is important to diversify sources of energy so that the system can cope with even extreme conditions. The combination of energy production using organic methods and storage of produced energy is a recipe for success.

The existing in Poland pumped storages can be easily converted into the power plants through Vertical Wind Turbines. The largest power plant of this type located in Żarnowiec, an object designed to support never operating nuclear power plant. An increase of the upper reservoir by 15 meters, can generate from 400 to 500 MW of power daily. After the modernization of the pumping system, the filling of new upper reservoir would have consumed to about 300 MW. The modernization of this facility is indicated for proper functioning and increasing of energy efficiency. Power plant Żarnowiecka is placed on a long narrow bay of the Baltic Sea. It is an area with a high level of wind, ideal for wind power. They may be also placed in almost any density and their power is configurable, it is possible to generate their means of energy that would be consumed for filling the upper reservoir of the new power plant. The most effective place to locate the wind towers would be the area of a nuclear power plant in Żarnowiec. Vertical Wind Turbine are very powerful and fully scalable. Since they are characterized by the construction segment, it is possible to build objects with a height, up to 60 m. Such source of clean energy would generate about 200 MW of power for pumped-storage and approximately 200 MW of continuous power for the location covered by the power plant. This would create a stable and secure system of energy supply to local inhabitants and resolve the energy problems of the region.

GEOHERMAL ENERGY

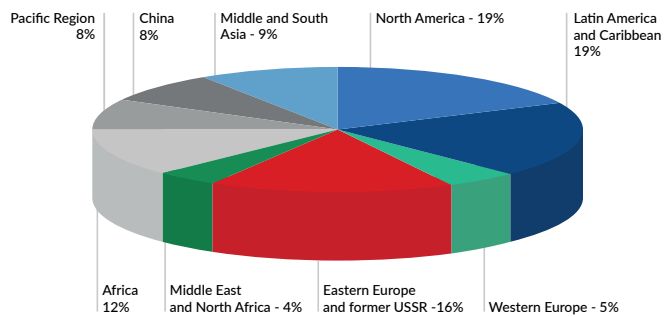
Although Poland is not in the common areas of volcanic or tectonic division, geothermal conditions of the country are exceptionally good. It stems from the fact that Poland is situated in the areas of sedimentary and structural basins, filled with high temperature waters. As a result, almost 80 % of Poland is covered by 3 geothermal provinces: Carpathian, Subcarpathian and Central European. According to various sources, Poland's greatest technical potential from renewable energy lies in geothermal energy.

In Poland, the geothermal waters are at depths ranging from 1 to 10 kilometres, and their temperature ranges from 30 °C to 130 °C, while in some of them the temperature reaches even 200 °C. The optimal level, at which the extraction and use of thermal waters becomes profitable, depends on their depths, salinity and temperature. As experts claim, the depth level of 2 km with temperature reaching 65 °C and salinity of max 30g/l - is the most favorable condition. In addition, the performance of the resource is important in that type of investment. Here, the investors that are planning any investment project should pay their particular attention to the duration.

In Poland, there are also several natural outflows of thermal waters. One can find them in the Sudetenland - Cieplice and in Łądek Zdrój, these objects are exceptionally interesting in terms of tourism.

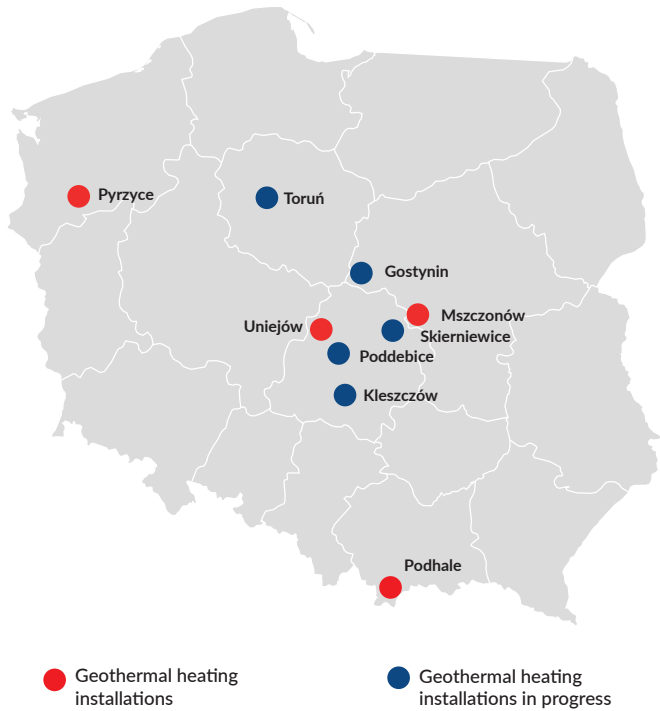
What is important, is that the geothermal energy of all renewable energy sources has the highest technical potential in Poland. It amounts to 1 512 PJ on average, which is a demand for heat of close to 30% in the overall national balance. According to a majority of domestic and foreign experts, it is very meaningful that a significant advantage in competitiveness among all renewable energy sources lie in ecology and economy of extracting geothermal sources. It is worth mentioning that in the case of geothermal resources, their location often overlaps with areas of high population density, either urban or rural. Deposits are, among others, in: Warsaw, Szczecin, Łódź, Toruń, Poznań and Płock. Such location has a positive impact on reducing the cost of investment concerning, among others, proper preparation of industry infrastructure and costs arising from the construction of a installation for the transfer of water over long distances.

Figure 4: The annual potential of geothermal energy in different regions of the world.



Source: own study based on [www.biomasa.org](http://www.biomasa.org) data

Drawing 3: Distribution of geothermal plants in Poland.



Source: own study based on [www.zielonaenergia.eco.pl](http://www.zielonaenergia.eco.pl) data

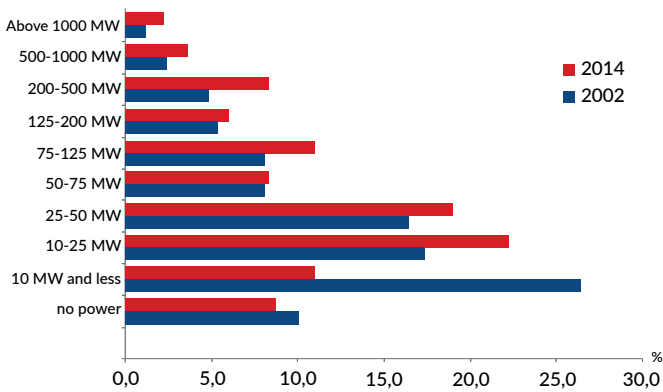
Prospects for the development of acquiring energy from this source, according to most studies, are very promising. Currently, the research and development projects, aimed at supporting and determining the development of energy generation from geothermal sources, remaining in the advancement process. There are several investment projects, which are in various stages of implementation, including those in Gostynin, Kleszczów, Poddębice, Poznań, Toruń, where geothermal drillings have been already done and their exploitation for heating, therapeutic and recreational purposes is expected to begin soon. Already operating installations and the ecological and economic benefits resulting from them as well as the interest in new projects are a sign that geothermal energy is prospective in Poland.

Broadly defined heating, agriculture, recreation and therapeutics are exceptionally promising for the use of geothermal energy in Poland. In selected locations, it is also possible to carry out the work on building the binary installations for co-generation of electric power and heat (using temperature of 80-100° C). Major growth opportunities are associated with heat pumps.<sup>1</sup>

In Poland, there are particular factors fostering investment in the geothermal energy development, starting with a particular amount of resources in the country, demand, a large number of potential recipients of geothermal energy, a high level of scientific community's involvement as well as their cooperation with experienced designers, drilling companies and installation contractors, ending with the need to comply with international and domestic obligations concerning RES and sustainable energy development. In a way, all these factors determine the interest and development of this energy sector, which according to forecasts, is going to expand in the coming years



Figure 5: The power of thermal power plants in Poland.



Source: own study based on ERO report - „Thermal energy in numbers”.

## SMART GRIDS

Poland, like all European countries, would also face up the risks arising from both the scope of the energy resources scarcity and too low efficiency of energy production, transfer, distribution and use. The reality somehow forces the market to introduce a new quality to the power grids. In Poland, many elements of the infrastructure network are already more than 40-year-old. Thus, operators have been investing in the modernization and expansion of the network for many years in order to provide increasingly higher rates of grid reliability and security of supply. Traditional investments of operators, dealing with distribution systems are directed towards adjoining new customers to the network as well as the construction and modernization of the existing network infrastructure.

Intelligent power networks (Smart Grid) by using the latest technologies, allow to improve the efficiency, reliability and security of the electricity supply chain. Smart Grids are able to efficiently integrate the behaviour and activity of all users connected to them, both generators as well as consumers, in order to create energy system that would be efficient in terms of economy and compliant with the principles of sustainable development, which is characterized by low losses, high quality and security of supply.

In the last decade in Europe, the company has invested more than EUR 5.5 billion in approx. 300 smart grids projects. In 2012, there have been conducted about 280 projects all over EU countries (plus Switzerland and Norway), which were focused on research, demonstration and deployment of smart grids; and about 90 of them concerned smart metering. According to the “Smart Grids Projects in Europe” report, the total value of investment in these projects estimated about 1.8 billion.

In Poland, there are just several such projects, and their value has not exceed \$ 150 million a year. However, the awareness of energy market users increases year by year, and the investment in building the Smart Grid are getting higher. Evaluations of IBM clearly indicate that investments in Smart Grids in Poland are to accelerate over the next two years. This is due to the huge demand, forced by Smart Meterings that

will be used, among others, for the settlement of potential prosumers.

## SMART METERING

Smart Grids, where individuals have communication between all market users, also require Intelligent measurement systems (Eng. Smart Metering - SM). These electronic systems measure the energy consumption, giving more information than a conventional meter, as well as send and receive data using electronic communications. These systems include: smart electric meters of energy consumers, telecommunication infrastructure, a central database and management system. Smart metering is an integral part of smart power grids and should not be considered separately from them.

The installation of smart electricity meters is stipulated in the European Parliament and Council Directive 2009/72/EC of 13 July 2009 concerning common rules for the internal electricity market and repealing Directive 2003/54/EC. By 2020, at least 80 percent of consumers are to be equipped with smart metering. An intelligent meter differs from the standard one. It is no longer a separate device, from which only the user can read the data, but it is a whole set of devices for measuring electricity and transmitting the measured data via data communication system.

Energy Regulatory Office (ERO) estimates that the investment in equipment related to the construction of smart grids in Poland (mainly smart electric meters) alone, requires PLN 7-8 billion by 2020. Demand for this type of solution is proven by the fact that such meters in conjunction with the household appliances management infrastructure will be able to allow manufacturers to monitor the operation of equipment, such as a washing machine or refrigerator, and thus, optimize their production in the near future. In case of TV sets, it will allow to gather information crucial for broadcasters, e.g. the number of viewers.

## INDUSTRIAL TRANSMISSION NETWORK

The forecasted increase in domestic demand for electricity and the lack of spare connection capacity definitely illustrate the need for increased investment in this sector. The modernization of the national transmission system and 400 kV cross-border links are essential. The new 400 kV lines, which transmit the power from large power plants, require adaptation to high power transmissions.

In Northern Poland, modernization of the existing transmission lines and construction of new highest voltage are necessary. This applies to already existing lines, connecting such places as Poznań - Gorzów - Szczecin, Poznań - Piła - Żydowo - Koszalin, Żydowo - Gdańsk, Pątnów - Bydgoszcz - Gdańsk; and possibly building of new lines: Gorzów - Piła; Żydowo - Słupsk; Płock - Olsztyn; Bydgoszcz - Grudziądz.

One must also take into account the fact that by 2020 there will be the need to modernize and construct approximately 2000 km of modern lines at 400 kV and build appro-



ximately ten new highest voltage stations. The estimated average cost of investments in the settling 1 km of new 400 kV line, is determined at the level of PLN 2.5-3.5 million. In turn, the highest voltage stations will absorb an amount of PLN 20 million up to PLN 50 million.

These elements constitute the transmission network development plan for the years 2010 - 2025 carried out by the Polish Power Grid.

## THERMAL POWER

In 2010, the volume of domestic production of thermal energy, generated by a licensed heating companies, amounted to 462.5 thousand TJ. The volume of heat sold in total amounted to 434 thousand TJ and compared to the previous year, it increased by 9%. According to the Ministry of Energy, in 2013 licensed companies produced 395 PJ of heat and electricity production in high performance cogeneration amounted to 24.7 TWh, which accounted for 15.1% of total national electricity production.

Over the last 10 years, heat production of licensed firms declined by more than 15%, although there was 16% increase in the length of heating networks at that time. It results from still increasing energy efficiency in our country, for example, thermo-modernization of buildings, replacement of district heating and energy-efficient operation of customers. Over 62% of the heat, produced by licensed companies, comes from cogeneration. Cogeneration, for many years, has been an indispensable element of the heating system. For the coming years, it is projected that there will be further increase of cogeneration share in the domestic production of both heat and electricity. Due to the fact that the primary energy savings is a way of fulfilling the EU climate objectives, cogeneration is an important element of the

Directive of the European Parliament and of the Council 2012/27/EU.

Coal - 76% - dominates in the structure of production of thermal energy. Other fuels used, include, among others, fuel oil, natural gas and biomass. It should be noted that the coal use gradually decreases, while the biomass use increases. In 2010, the installed capacity of licensed producers of heat amounted to 59.2 GW and the achievable one to 58.1 GW. In relation to 2002, the installed capacity decreased by 16.5%. In 2010, licensed heating companies had 19 400 km of networks at their disposal. However, it should be noted that this number included heating network that connects the heat source with heat nodes as well as network of low values - external receiving installations.

Thermal Energy Market in Poland requires fundamental changes, in some Polish regions where CO<sub>2</sub> emission allowances are significantly exceeded, for example, in Lesser Poland and Lower Silesia. That is why it is important to invest in innovative technologies and innovations, both technological or organizational ones. Investment opportunities should be seen in virtually every area of the market, in particular:

- modernization and expansion of the transmission network of high and medium voltage,
- construction of a nuclear power plant,
- modernization and replacement of existing power units.

### Source:

1. „Geothermal energy in Poland - level of use, development prospects” Geological search techniques. Geothermy. Sustainable development. No. 1-2/2011.





## AGRI-FOOD INDUSTRY

Polish food sector has undergone a significant transformation over the last 20 years. It was one of the industries that quickly reborn after the beginning of the crisis within political transformation, becoming an important stimulus of economic growth. Thanks to constant technical, technological and organizational development of this sector, Poland climbed to the top of modern and innovative European food producers. The result of which is, among others, a remarkable export success of Polish companies.<sup>1</sup>

Poland's accession to the EU, has become a significant factor in development acceleration. This required a number of both pre- and post-accession grants and subsidies, enabling adaptation of production facilities to the European standards. The opening of European markets tripled exports of food products (from EUR 5 billion in 1994 to EUR 17.5 billion in 2012). Indicator of export orientation of production in the food sector, which is a correlation of proceeds from export

sales to the value of the sector, increased to almost 20%.<sup>2</sup> Such a rapidly growing market and export growth determine the fast development of food processing and animal husbandry.

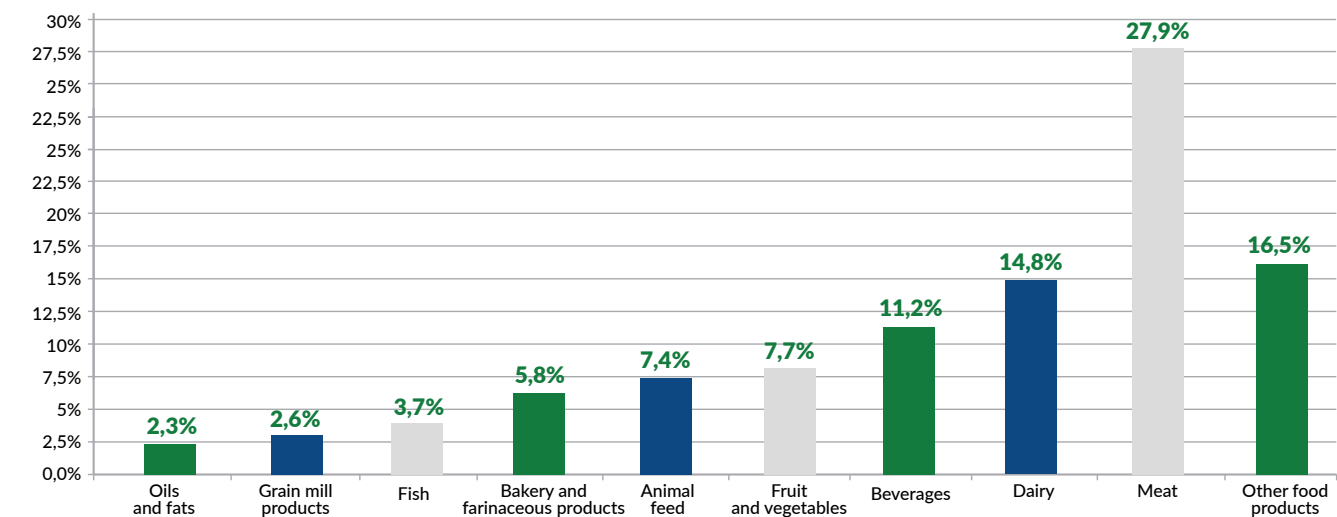
From January to May 2015, value of Polish exports of agri-food amounted to EUR 9.3 billion, in comparison to the same period of 2014, there was an increase of approx. EUR 480 million - 5.5%. In September 2015, this value has already exceeded EUR 17.3 billion and was 8% higher than a year before.<sup>3</sup>

The balance of Polish membership in the EU agri-food sector is definitely positive, despite a number of adverse effects for agricultural producers, such as increasing the barriers to entry, limiting the production and export through production quotas or increasing the cost of administering the management and control systems on agricultural markets.<sup>4</sup>





Figure 1: Polish food products in 2015.



Source: own study based on gathered market data.

According to the „Foreign agri-food trade” report prepared by the Agricultural Market Agency, the EU countries imported from Poland agri-food products worth EUR 14.2 billion, what gives an increase of exports to these countries by 11% , compared to the same period of the previous year. Considering Germany, there were exported the food products worth EUR 3.8 billion. The Great Britain took second place among the EU countries with the 8% share of the Polish market, where agri-food products worth EUR 1.4 billion were exported, an increase of 15% compared with the previous year. Czech Republic, France and Italy remain important recipients of agri-food products from Poland.

## ORGANIC FOOD

The organic food market has great potential for development in Poland. There is a growing awareness of what is healthy, and the era in which food is to be only tasty and cheap is slowly falling into oblivion. Competition has led to a state where producers instead of hiding the ingredients of their products boasting with them. In recent years, one could have observed a significant and steady increase in the number of health shops and organic food in every major city of Poland.

The value of Polish organic food market exceeds PLN 700 million, and the dynamics of its development is estimated at 10-20% per year - for comparison, in September 2014, this market was estimated at PLN 600-650 million. Poland possesses rich agricultural lands not ecologically contaminated, which is suitable for organic and ecologic farming. Currently, there are more than 600 thousands ha of land in Poland occupied by organic farming. About 800 stores, selling the healthy food, are operating on the market. The share of the organic food in these stores usually exceeds 50% and often reach almost 100%. These food markets operate mainly in large cities, but individual shops are beginning to perform well in the agglomeration with less than 100 000 inhabitants. The popularity of organic food among Polish citizens amo-

unts 30 % what indicates that this market has a great potential to growth. Organic food sale is more popular abroad than in Poland. Germany could be an example, where organic food holds 50% of market share. As one can see, good Polish basis in conjunction with product export is a recipe for success in this area. In 2012, Poland took 3 place in the European Union in terms of the number of organic farms.

The potential of Polish processing industry is immense. Modern infrastructure, technology and highly-qualified staff are used to manufacture healthy products with sophisticated taste and dietary value, which is surely appreciated by consumers. The fragmented structure and low-use of chemicals in Polish agriculture allows Poland to produce high quality, organic and natural food that are so desired in Europe. The overall number of organic food processing plants in Europe is as follows: in the Netherlands - 1035, in the UK - 2052, in Italy - 5873, in France - 8957, and in Germany - 9183. In 2013, Poland had 407 organic food processing plants, which compared to 2003 and the number of 22 processing plants, constitutes a major breakthrough. 2015 showed a constant increase in this number, with 484 processing plants in Poland at the end of the year.

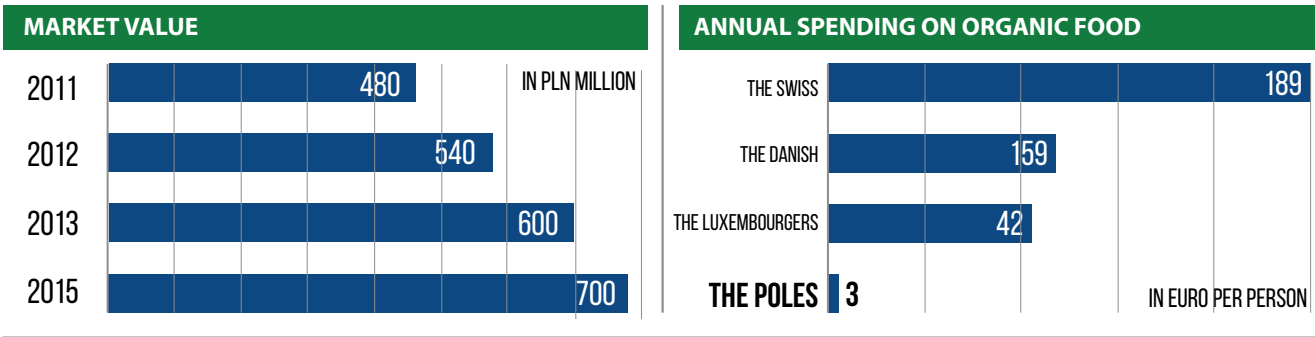
It should be added that investment in the organic food market contributes to the improvement of public health and the quality of human lives. It is a safe, albeit, not easy market, because it mainly follows the passing fads for food products.

## FARMING MARKET

The Polish participation in the European and global agricultural market largely determines medium and large farms. Their importance in Poland is gradually increasing. According to the Agricultural Census conducted in 2010, in comparison to the results of 2002, the number of the biggest farms 50 ha or more increased by 34%, while the number of farms in the group area of 20-50 hectares remained at a same level. For the last 12 years, Poland has ranked first in Europe and

Drawing 1: Polish organic food market

POLISH ORGANIC FOOD MARKET



Source: own study based on gather market data.

third in the world by the production of apples, and since the 2013/2014, the first in the world by the export. In the years 2005 - 2013 the harvest were ranged from 1.1 to 3.1 million tons. 2014 brought the record in the harvest - 3.8 million tons. Growing production potential of Polish orchards will, however, increase the yield, planned for 2020. The increase in fruit production is favoured by: sufficient land and a large group of manufacturers with a high level of expertise and marketing knowledge, as well as their entrepreneurship and innovation. In recent years, the share of this crop in the whole fruit trees area of cultivation in the country has increased to 70%. The largest area of apple orchards is located in the so-called orchard centre of Mazovian Voivodeship, namely in the area around Grójec, Warka, and Tarczyn. Apples are the flagship products of the Polish farming market.

Fields for grain production also cover huge acreage in Poland, consisting of 1.3 million farms, of which 115 thousand are over 20 ha. In 2008-2012, the average annual purchase of grain (including corn) constituted about 9 million tons. It is expected that as a result of farms specialization, the production and commerciality of cereals (including feed grain) will increase. Agricultural Market Agency supports farmers by providing subsidies for the seeds, used of either elite or certified category. In 2012, the area supported by subsidies amounted to 885 thousand ha and was almost 3 times bigger than in 2007. Area of cereal crops in 2015 was estimated at approx. 7.2 mil-

lion ha, consisting of approx. 2.4 million ha of wheat, approx. 1.0 million ha of rye and approx. 0.9 million ha of barley. In the structure of sown area, the share of winter cereals is approx. 60%, and spring cereals - approx. 40%. Compared to the last year, acreage of winter crops increased by approx. 4%. According to the Central Statistical Office, the total grain harvest in Poland in 2015 amounted to 28.0 million tons. National cereal production has been cut by 12% compared to 2014. However, this slight decline occurred for the reason of difficult weather conditions, prevailing throughout 2015. According to the Central Statistical Office, the total area of cereal crops in 2015 amounted to 7.5 million ha, about 0.3 million ha more than was initially expected, with area of cereals sown with corn mixture exceeding 6.7 million ha. The biggest crops are: wheat - 2.4 million ha, and triticale - 1.5 million ha. In the case of other cereal crop, the area was estimated to be: 0.8 million ha - barley and cereals, 0.7 million ha - rye and 0.5 million hectares - oats.<sup>5</sup>

Vegetable production is an important branch of national agriculture. The area dedicated to the cultivation of vegetables in Poland amounts to 170-180 thousand ha, and remains at the level of 4.5-4.8 million tons per year. Vegetables such as onions, cabbage and carrots, field cucumbers, beets, cauliflower and field tomatoes occupy the largest area in the country. In season 2014/15 the production of vegetable products amounted to 1,170 thousand tons, compared to 1,145 tho-



usand tons in the previous season. There has been an increased production of almost all vegetable products, including frozen vegetables which dominate in the production of processed vegetables. The share of food processing in the management of market supply of field vegetables constituted 39%, compared to 38% in the season 2013/14 and approx. 20% at the beginning of the last decade.<sup>6</sup>

## LOCAL PRODUCTS

In the European Union, under the Common Agricultural Policy, activities involving the protection of names and places of origin are carried out. It is possible to record and reserve products' names, recipes and historical places of their production. These are to guarantee high quality and unique nature of the products as well as legally protect the method of manufacturing them. This unique designations are awarded to products which are original and distinctive among the offered food.

Poland is a country with a rich culinary heritage. In 2012, there were 1,036 products registered on the list of traditional products, that are made to unique recipes handed down from generation to generation which are deeply rooted in the traditions and culture of each region. Currently, this list comprising of 1519 products. One can find there dairy products, such as meat, fish, vegetables, fruits, bakery products and confectionery, honey, alcohol, beverages, oils and fats and even ready meals.<sup>7</sup>

According to the data of the Ministry of Agriculture and Rural Development, in 2015 Poland recorded a positive balance in agri-food products trade. In 2015, it reached the level of plus EUR 7.71 billion and increased by 14.3% in comparison with 2014 (EUR 6.74 billion). The balance in trade with EU coun-

tries amounted to EUR 8.51 billion, and compared to 2014, there was an increase of 23%, at that time the value was at the level of plus EUR 6.92 billion. Poland achieved the highest positive balance in trade with Germany (EUR 1.87 billion), the UK (EUR 1.54 billion), the Czech Republic (EUR 1.13 billion), France (EUR 969 million) and Italy (EUR 719 million) - these are countries where the quality of the food is very important what speaks well of Poland.

Industrial and mass production of food and its widespread availability caused huge losses to taste values of these products. For several years, there has been a noticeable increase of interest in regional products. It should be noted that these products are not subjected to typical price fluctuation. It is a premium quality product, prepared in a special way, by definition expensive and addressed to people with higher incomes. Its added value lies in the historical heritage of the region's cuisine. The most important fact is that it also offers a unique flavour that cannot be found in food from industrial mass production.

### Source:

1. Food sector in Poland - The Polish Information and Foreign Investment Agency (PAIIZ)
2. "Polish agri-food sector under conditions of Common Agricultural Policy".
3. [www.arr.gov.pl](http://www.arr.gov.pl)
4. „Polish agri-food sector and rural areas after Poland's 10-year EU membership– review of the most important changes”.
5. Agricultural Market Agency - „Cereal Production in Poland”
6. [www.warzywapolowe.pl](http://www.warzywapolowe.pl)
7. [www.wpr.pl](http://www.wpr.pl)



## REAL PROPERTIES

For a long period of time the prices for land in Poland recorded an upward trend, which coincides with the perception of investing in real estate land as a safe investment. In order to implement the investment project, one would always need to have in his disposition a set of instruments, to ensure the security and calculation of risks. Investing in real estate is often associated with buying a house or commercial premises to appropriate rent. The soil is, however, an asset that rarely attracts the attention of investors. Meanwhile, the land in Poland turned out to be the most favourable and stable type of investment in the past decade. Since the early 90's, land prices were growing significantly regardless of the economic or political situation in the country. Since Polish accession to the EU and the related with it direct subsidies, the price for land has increased almost six fold in 10 years (20% increase per year).

Investing in real properties in Poland is an interesting alternative for local and foreign investors. There are many factors contributing to that, e.g.:

- Availability of EU funds and other investment incentives for entrepreneurs. In fact, Poland is the biggest beneficiary of EU funds, in comparison to other member states.
- Government programmes, aiming at creating favourable

conditions for development of private businesses and promoting foreign investors as crucial partners in developing modern economy.

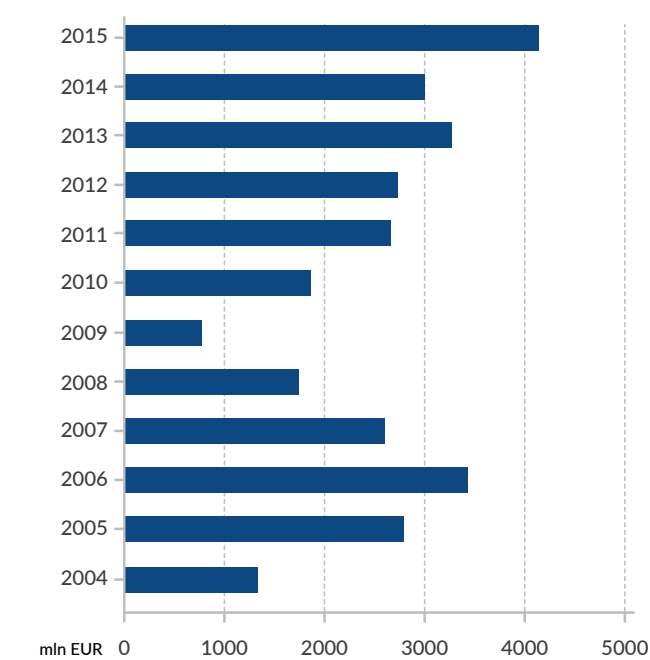
- Special Economic Zones (SEZ) for performing investment projects on preferential conditions. There are 14 such zones in Poland where foreign investors are exempt from taxes and there are tax deductions for companies with foreign capital.

The value of the transactions, finalized on the Polish real estate market in 2015, has exceeded EUR 4.1 billion. According to Jones Lang LaSalle (JLL), the investors were the most active in the commercial retail segment, where projects with a total value of EUR 2.26 billion changed their owners, followed by offices - 1.27 billion euros and warehouses - EUR 473 million.

2015 was an exceptional year in terms of the inflow of new investments and the capital; and the prices for a land in Poland show a steady upward trend. Regardless of the process of reassignment of the land, the investment, indeed, turns out to be profitable. One can follow different paths in order to maximize profits from owned property while waiting for the growth of the prices. Below are presented some of well-trodden ways.



Figure 1: Volume of investment transactions in real estate in Poland 2004-2015



Source: own study based on Colliers International data

RESIDENTIAL PROPERTIES

Poland as a modern country that belongs to the European family, intends to reduce harmful emissions, including greenhouse gases. The technology of energy production, currently based on the combustion of fossil fuels, requires a transition to the technology of obtaining energy from renewable sources. Besides the production of ecological energy, this sector is in need of solutions that would save energy and reduce its loss. These solutions fit the technology of passive and active houses. Passive houses are those that reduce energy consumption and loss; they are equipped with a range of technologies intended to prevent heat loss, reduce the consumption of electricity and water. Whereas active houses embody the idea of energy production by the house itself. This can be achieved by means of photovoltaic cells, geothermal or wind energy. Houses would not only consume less energy, but what is more, produce even more than can be used. By this improving the energy balance of the household and the power grid of the country. Worth noting that the produced energy surplus can be sold out or consumed for domestic purposes, beyond the household. The electricity can charge the vehicles, or on the contrary- the excess of energy produced, can be stored by the vehicle for household use. Due to their multifunctionality, active houses are also called plus energy houses.

Seeing the possibilities that are hidden in this technology, Polish government targets to launch a program „Flat +“. The essence of the project consists in the construction of plus energy houses which will be available to Polish citizens living under the poverty line. In fact, there is a significant demand for building new housing in Poland, which is caused by the rapid development and high life dynamics of society. At the same

time the widespread desire of people to buy new apartment connected with the necessity of obtaining great sum of loans. This constitutes a considerable financial burden for young people, aiming to start families. In order to help them to come out into adulthood and stimulate the economy of the country, the government is planning to build one million apartments, using modern and ecological technology. As the Polish Prime-Minister Beata Szydło said: „The most important pillar of this program is to create a national housing fund. This would be a fund, in which the National Treasury will transfer the land. As a result, houses built on the land will cost much cheaper.” The plan provides a reduction of costs per square meter of the apartment from about PLN 2000 to PLN 3000, which will make this type of housing affordable to young people. The land for the construction of such facilities has to come up from the state-owned companies. At the beginning, the owners will rent a newly constructed apartments at extremely favourable prices. After few years of renting the apartments, the tenants will have an opportunity to take over ownership of this property. This means that after decades of renting, the tenants will become the owners of the apartments.

The second pillar of this government’s project will support the development of social housing. There will be used the potential, contained in already implemented projects on the construction of housing cooperatives, municipal companies and TBS-ah. Local governments, which are requesting a grant, may receive up to 30-35% of money for building public housing.

According to CSO (Central Statistical Office) data, Poland lacks 1.5 mln of housing. Polish construction market is the 7th largest in the European Union and according to the report of Euroconstruct, it is one of the two fastest growing in Europe. Its value in 2014 amounted to EUR 43 billion, placing Poland just behind Germany, France, the Great Britain, Italy, Spain and the Netherlands. Today, the sector of constructional materials and services is responsible for approximately 21% of GDP and creates 2.6 million of workplaces, which corresponds to approx. 19% of total employment in the Polish economy. The analytical platform Building Radar indicates that by 2020 this sector will grow in Poland by over 10%, reaching, together with Portugal, the highest rates in Europe.

INDUSTRIAL PROPERTIES

As proven by time, nothing can affect the land prices, no matter whether it is the financial crisis, political unrest or other problems, which affect investors in different sectors. There is no need to explain the benefits of investing and building on the territory of Poland. This is due to the fact that Poland has favourable geopolitical as well as geographical position. Indeed, it is situated in the very centre of Europe, so its strategic location offers many attractive opportunities for investors. It should be stressed here, that land prices in Poland are still significantly lower in comparison to other EU countries. At the same time, long-lasting visible economic growth, that has a direct impact on the development of the industry, results in an increase in demand for a land that is favourable for construction of such facilities as logistics centres, warehouses, factories, assembly plants, ports, airports, stores of energy materials, etc.

Table 1: Industrial real estate prices in Poland.

|                    | Subcarpathian | Lubusz | Świętokrzyskie | Lublin | West Pomeranian | Lesser Poland | Warmian-Masurian | Podlaskie | Łódź | Mazovian | Silesian | Pomeranian | Lower Silesian | Opole | Kuyavian-Pomeranian | Greater Poland | AVERAGE FOR POLAND |
|--------------------|---------------|--------|----------------|--------|-----------------|---------------|------------------|-----------|------|----------|----------|------------|----------------|-------|---------------------|----------------|--------------------|
| Altogether K/ha    | 19            | 20     | 21             | 23     | 23              | 26            | 27               | 28        | 28   | 29       | 29       | 30         | 32             | 37    | 41                  | 41             | 30                 |
| Land class I - III | 21            | 25     | 26             | 31     | 27              | 32            | 35               | 36        | 35   | 40       | 44       | 39         | 42             | 50    | 50                  | 51             | 40                 |
| Land class V - VI  | 15            | 17     | 14             | 15     | 18              | 18            | 23               | 22        | 20   | 21       | 18       | 24         | 22             | 24    | 29                  | 29             | 21                 |

Source: own study based on [www.amir.gov.pl](http://www.amir.gov.pl) data

Very good indicators of the demand and supply, as well as the lowest rate of not-used warehouses along with stable rates of rent - is an image of storage sector in 2015. The record volume of transactions in 2014 was broken. Last year, a total rent constituted 2.53 million sq. m., over 60% of which were new rent contracts. High activity of the tenants, has also influenced the developers activities, which commissioned 920 thousand. sq. m. A low rate of not-used warehouses affected high growth of demand, which at the end of the year amounted to 4.8% and was 5% lower in comparison to the previous year. According to a report prepared by AXI IMMO, visible high activity in the rental market had also a positive impact on the investment market.

The total value of transactions in the investment market in 2015 exceeded EUR 4.1 billion, of which nearly EUR 470 million belonged to storage sector. Polish logistics sector was placed among the top 10 fastest growing logistics markets in Europe. We are observing the high liquidity of the market, where value-added products, which have the potential to develop and increase their value, are sold. Polish warehouse market due to the scale and scope of activity, will remain a key sector for a growing number of institutional investors. Companies, which actively work in the warehouse sector, are as follow: Hillwood Europe, Deka Immobilien, Logikor, P3 or W.P. Carey. The rates of return in the warehouse sector compared to other sectors of commercial real estate remain the highest – from 7.0 to 7.5%.

During the entire 2015, nearly 2.53 million sq. m were rented, of which over 60% constituted new leasing agreements and expansions. This result is nearly 1 million square meters bigger, when compared to 2014. High outcomes of the demand are the result of economic prosperity, the growth in sales in e-commerce channel and increase in the production of companies present in Poland. Immense demand was recorded throughout the Warsaw region (660 sq. m.), and also in the part of the Central Poland (540 thousand sq. m). Hence, the highest share of new rent agreement appeared to be within the Warsaw area. However, the largest deals were concluded in Central Poland. Besides the dominant warehouse regions, it is worth to note that there was also a rather

high demand in smaller regions and new locations such as Lublin, Rzeszów and Bydgoszcz, which appeared on Polish storage map in 2015. The amount of leasing agreements concluded in these three regions reached 257 thousand sq. m.<sup>1</sup>

It is expected that a high activity of tenants and expanded development activities in major markets should continue in 2016. Among the major markets one can expect the largest number of new investments to occur in the regions of Poznań and Warsaw. The dynamics of supply and demand will depend primarily on internal macroeconomic factors, including the expenditure on investment of the companies, as well as the rates of exports and domestic consumption.

The average prices of good quality lands in the logistics locations vary from PLN 70 to 150 per sq. m with the exception of plots, located within the city limits of Warsaw and Krakow, where prices reach a level of PLN 650 per sq. m. Industrial properties will show an upward trend, while still maintaining a competitive price in relation to other countries. The current real estate prices on the open market are shown in the Table 1.

## PROPERTIES FOR ENVIRONMENTAL INVESTMENTS

Agricultural land with lower agricultural usefulness can be converted and used also as sites for the construction of renewable energy sources. Purchase of agricultural land is a form of capital investment and the preparation for the approaching in Poland revolution in the energy sector. Currently, the sale of agricultural land in Poland is characterized as difficult, however, if the current owner of the land will change its classification to another, the sale process will be greatly simplified. Such territories of lands are constantly sought by the green energy industry. Photovoltaic and wind farms require large open spaces and proper terrain, located far away from human settlements. Investments in this sector may foster further development of real estate market in Poland. Observing the rising trends of the prices on agricultural property, one will surely notice further increase in profits from such investments.



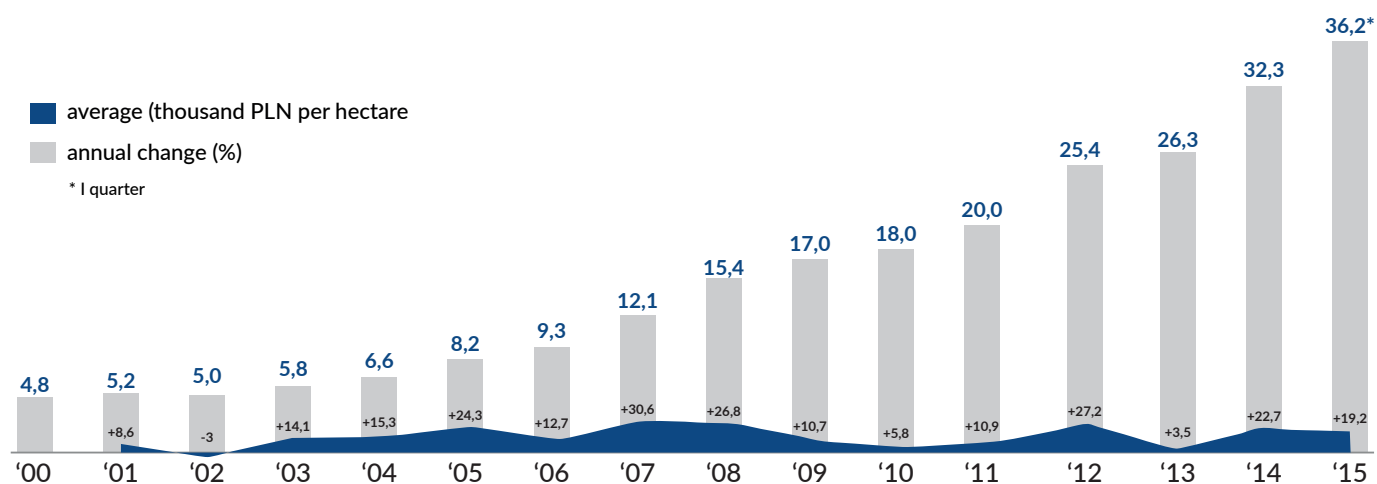


The industry of renewable energy in Poland is expected to significantly expand in the upcoming years, due to the growing trend of rejection the fossil fuels. This opens great opportunities for land investment. Wind and photovoltaic farms, above all need space, which Poland has in abundance. As for the strength of the wind and sunlight, the conditions in Poland are very similar to those in neighboring Germany, where this type of industry occupies about 20% of the energy market and is constantly evolving. High availability of suitable spots in Poland means that the implementation of investments on the well-selected properties, combined with carrying out preparatory activities for investment, allow the

investors to achieve high profits from sailing or leasing the prepared location. Prices of hundreds ha of former farms start at EUR 0,5 per m2 of land.

According to Eurostat, the average price per hectare of land in Poland equals to 6 thousand euros. For comparison, in the Netherlands it value goes to 49 thousand; in Belgium – 25 thousand, while in Germany prices are almost twice as high. These are the areas, which can be then retrained and profitably sold. The relevant fact is that, Polish soil remains to be sold in significantly lower prices, if compared to the land of Western Europe.

**Figure 2: Agricultural land prices in private market in Poland.**



Source: study based on Jones Lang LaSalle

The easiest investment scenario involves purchasing agricultural land with purpose of making profit from the increase of its value in the long term. It is a simple and reliable strategy, since the prices for land will definitely rise, while profits can multiply. The observations of markets and trends lead one to the conclusion that the smaller the number of available for purchase property - the higher are their prices, even in time of constant demand.

In addition to that, the investors of RES industry (renewable energy sources) are looking for a land to lease, around which neither natural (eg. trees), nor anthropogenic (tall buildings) obstacles exist. Therefore, one can observe a growing interest in long-term use of selected agricultural areas, based on the lease agreement. There are solar, wind power and biogas plants that require large undeveloped areas.

## RECREATIONAL PROPERTIES

One of the most popular ways of the agricultural land usage is its designation for a recreational area. Almost every land, agricultural land, forest or building plot, can be used as a recreation ground as long as it is located in attractive natural environment, or among leisure centres.

The attractiveness of the garden plot is determined by its location and the quality of the environment. In Poland, buyers are interested mainly in a land with direct access to the lake and forest, or sea and the mountains.

The cheapest plots are located in the Carpathian mountains: as the average price in this region equals to PLN 13 per sq.m. The most expensive areas for leisure are located in Lower Silesia. Here, one would have to pay an average of PLN 117 per sq. m. However, it is also not cheaper in the West Pomeranian Voivodeship and Greater Poland Voivodeship. For those, seeking to spend the holidays at a lake, surrounded by forests, the purchase of land in Lubusz Voivodeship would be a favourable proposal. Although the average price per 1 square meter in the group of the smallest plots equals to PLN 68. Masuria Voivodeship is much more expensive than the Lubusz Voivodeship. A recreational plot of no more than 1000 sq. m close to the lake, here, would costs an average of PLN 89 per square meter. Despite the high competition on the local real estate market, land prices in Masuria Voivodeship are approx. 20% higher than the national average price.

The most expensive plots are those located near large cities. In Wielkopolska Voivodeship the most frequently sold lands are those surrounded by forests and lakes. The average price per sq. m for a small piece of land is PLN 107. Interestingly, Masovian Voivodeship seemed to reach much more positive results with an average price of PLN 57. In Mazovia, however, 1 sq. m of plot, regardless of its acreage, amounts to approx. PLN 60. Price may drop only at sizes greater than 5 000 sq. m.

Coastal real estate are the most expensive. In the group of the smallest plots (up to 1 000 sq. meters) are the most valued areas in the Pomeranian Voivodeship. However, with the increase in the area, in the following categories, the prices are falling

(the resort area of 1 000 sq. metres are valued by almost 30% lower price). The situation is different in the West Pomeranian Voivodeship. Here, indeed, the minimal price of plots is PLN 91, but a group of plots of 1 000 sq. meter of a large one rises to PLN 132. The average price of land in the coastal towns, regardless of size, are as follows: in West Pomerania Province- PLN 85, in Pomeranian Voivodeship - PLN 69, in the Warmian - Masurian Voivodeship PLN - 64.<sup>2</sup>

## LAND FOR COMMERCIAL BUILDINGS

On the commercial real estate market, each of the sectors has recorded an upward trend. The situation in the warehouse sector seems to be the most stable and positive. In turn, the nature of the office market currently is more beneficial for tenants. Commercial investments focus on large cities, as a supplement to the existing offer. Poland's economy, for many years, has been the fastest growing economy in the region, what is reflected on the growing economic indicators for this country.

The retail market is characterized by noticeable interest within the developers and investors, who allocate their resources into the large cities, where the concentration of retail space still creates the opportunities for building new facilities. The investments, implemented in 2015, are mainly located in large cities and will operate as multifunctional shopping centres.

One should bear in mind that warehouse, industrial and trade commercial real estate sector is largely dependent on the economic situation in Poland, which currently remains in a good condition. As long as the Polish economy and the international economic situation remain stable, the dynamics of the market will not be affected.

## CONSTRUCTION MARKET

According to the report prepared by Euroconstruct, Polish construction market is the 7th largest in the European Union and one of two fastest-growing on the Old Continent. In 2014, its value amounted EUR 43 billion and was ranked just after Germany, France, Great Britain, Italy, Spain and the Netherlands. Currently, the market of building materials and services is responsible for nearly 21% of GDP and provides 2.6 million of work places, accounting approx. 19% of the total employment rate in Polish economy.<sup>3</sup> An analytical platform Building Radar indicates that by 2020 this sector will grow in Poland to more than 10%, achieving, along with Portugal, the highest growth rate in Europe.

The building sector in Poland, after a decline in 2012-2013, (caused by completion of big investment project related to the previous financial union prospects as well as organizing UEFA Euro 2012™ Championship in Poland) is experiencing a revival.<sup>4</sup> Already in 2014 it has marked a gradual deviation from the crisis, and in 2015 just consolidated this positive trend. In the first half of 2015, the income of building companies in Poland amounted PLN 10 billion, whereas in the same period of the previous year were equal to PLN 9.2 billion. There has also been a growth noticed in selling margin, amounting 8.3% already in the first quarter of 2015. In 2014, the income of 15 biggest

**Table 2: Ranking of the biggest constructing companies in Poland as far as revenue in 2014 is concerned (in thousand PLN)**

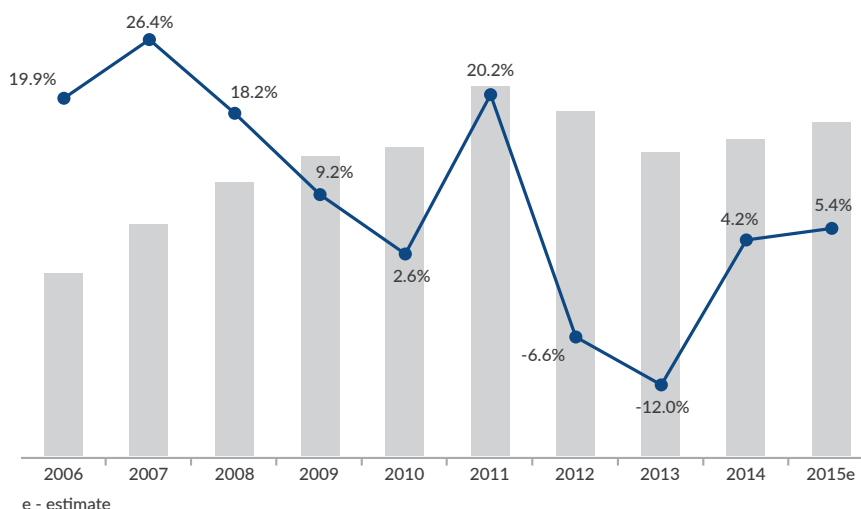
| Number            | Name of the company      | Revenue 2014      | Revenue 2013      | Nominal change   | Percentage   |
|-------------------|--------------------------|-------------------|-------------------|------------------|--------------|
| 1                 | Skanska Group            | 5 081 675         | 4 362 167         | 719 508          | 16.5 %       |
| 2                 | Budimex Group            | 4 949 939         | 4 749 459         | 200 480          | 4.2 %        |
| 3                 | Strabag Group**          | 3 133 492         | 3 298 754         | -165 262         | -5.0 %       |
| 4                 | Polimex-Mostostal Group* | 2 102 197         | 2 362 752         | -260 555         | -11.0 %      |
| 5                 | Erbud Group              | 1 692 055         | 1 223 609         | 468 446          | 38.3 %       |
| 6                 | Trakcja Group*           | 1 601 674         | 1 274 222         | 327 452          | 25.7 %       |
| 7                 | PBG Group*               | 1 530 248         | 1 227 600         | 302 648          | 24.7 %       |
| 8                 | Mostostal Warszawa Group | 1 509 524         | 1 633 363         | -123 839         | -7.6 %       |
| 9                 | Elektrobudowa Group      | 1 108 316         | 905 533           | 202 763          | 22.4 %       |
| 10                | Unibep Group             | 1 079 703         | 920 548           | 159 156          | 17.3 %       |
| 11                | Warbud S.A.*             | 1 049 886         | 1 121 472         | -71 586          | -6.4 %       |
| 12                | PORR (Polska) S.A.       | 1 045 019         | 1 030 076         | 14 943           | 1.5 %        |
| 13                | Mirbud Group             | 971 603           | 937 301           | 34 302           | 3.7 %        |
| 14                | Mostostal Zabrze Group   | 862 650           | 575 117           | 287 533          | 50.0 %       |
| 15                | Torpol Group             | 775 339           | 415 717           | 359 682          | 86.5 %       |
| <b>In total</b>   |                          | <b>28 493 380</b> | <b>26 037 710</b> | <b>2 455 671</b> | <b>9.4 %</b> |
| <b>On average</b> |                          | <b>1 899 559</b>  | <b>1 735 847</b>  | <b>163 711</b>   | <b>9.4 %</b> |

Source: study based on Deloitte data.

construction companies in Poland constituted PLN 28.5 billion and increased by PLN 2.5 billion in comparison to 2013, what accounted for 9.4% growth. The Deloitte ranking of 2015 started with Skanska Group, which managed to gain profit worth of PLN 5.1 billion - 16.5% growth. The second place was occupied by last year's leader – Budimex Group – with revenue amounting PLN 4.9 billion, what accounts for 4.2% growth in comparison to 2013. Among three biggest construction companies in Poland, there also operates Austrian Strabag, which, as the only one from this group, experienced 5% of decrease in comparison to the previous year, making profit of PLN 3.1 billion.<sup>5</sup>

The value of WIG BUDOWNICTWO index increased in the first 6 months of 2015 by 24%, while there was only 4% growth of WIG index in the same time. On June 30, the capitalisation of the construction companies, listed on Warsaw Stock Exchange, constituted PLN 9.11 billion and rose by PLN 1.67 billion in comparison to the value from the end of December of 2014. Nonetheless, it is worth mentioning that the results of construction submarket greatly depend on the rates of Budimex, which share in companies' capitalisation, listed as a part of WIG BUDOWNICTWO, amounts to 46%.<sup>6</sup>

**Figure 3: Dynamics (% YOY) of the construction and installation production in Poland, 2006-2015**



Source: study based on pmrpublications.com data



**Table 3: The volume of certain furniture group production.**

| Products  | Measurement unit | I - III 2014 | I - III 2015 | I - III 2015/2014 |
|---|------------------|--------------|--------------|-------------------|
| Furniture for sitting with sleeping function        | Thousand pieces  | 840.11       | 930.00       | 110.7             |
| Wooden furniture for kitchen                        | Thousand pieces  | 824.70       | 828.00       | 100.4             |
| Wooden furniture for bedroom                        | Thousand pieces  | 857.92       | 1 111.00     | 129.5             |
| Wooden furniture for living rooms and sitting-rooms | Thousand pieces  | 5 351.07     | 5 228.00     | 97.7              |

Source: study based on OIPGM data.

The further growth of construction industry is fostered by macroeconomic factors. Economist Intelligence Unit estimated that 3.9% GDP growth in 2016-2018 should significantly increase the tendency of public sector to invest into infrastructure.

The great encouragement also stems from the inflow of new funds, amounting EUR 82.5 billion, of which EUR 25.8 billion are planned for infrastructure expansion and estimated investment needs, expected to reach by 2020 almost PLN 310 billion. This value comprises mainly of investments connected with road, railway, energy and environment protection infrastructure. However, one should also bear in mind that from the beginning of the announcement of the tender till the commencement of the construction works can delay up to 2 years. Therefore, the greatest revival in construction industry is expected to take place at the beginning of 2017.

## FURNITURE INDUSTRY

Poland is one of the most important countries as far as the furniture industry is concerned. Furniture are one of Polish export flagship products and its furniture are exported to countries all around the globe. On the global market, Poland is outstripped only by USA, Germany, China and Italy, which means that the country is placed on the very podium of global export, remaining third in Europe. In the last years, would be observed and the so-called "Polish phenomenon of furniture production", explained by several reasons, such as:

- positive influence of furniture market fragmentation in the country, hence, synergistic effect, e.g. resulting in the creation of clusters;
- furniture made of wood are based on raw materials, coming from country's forest resources and national companies, manufacturing wood-based products (boards, plywood);
- well-educated staff both of the highest and average levels;
- long tradition of furniture production in several parts of Poland (Swarzędz, Kępno and others).

The furniture constitute also one of the most important commodity group in Polish import – its share accounts for 4.5% of the total value. Despite of growing competition on the furniture market, in 2014 the largest exporters of wooden furniture among EU countries were as follows: Italy (EUR 5.25 billion +4%), Poland (EUR 4.14 billion +12%) and Germany (EUR 4.12 billion +2%). Among serious competitors, exporting furniture to EU can be found Denmark, Lithuania, Sweden, Romania, France, Spain and Portugal. It should be highlighted that approximately 70% of furniture manufactured in the EU, is sold on the EU market.<sup>7</sup> What is interesting, the value of Polish fur-

niture, which reached foreign markets, reached EUR 8 billion. In fact, 90% of Polish furniture is destined for export. It proves that the furniture from Polish manufacturers are highly appreciated by the foreign purchasers.

Year 2015 was a time of a dynamic export growth of Polish furniture to European and other markets. According to estimations of Polish Chamber of Commerce of Furniture Manufacturers, based on Eurostat data, the average growth rate of Polish export constituted 8%. The importance of Poland as furniture exporter is not declining, but, on the contrary, gradually increasing – although the country is still remains on the fourth place in the world ranking of exporters. The country possesses 6.3% share in the international export. The greatest dynamics could be observed in the export to Romania, Slovakia and the United States. However, Germany remains the biggest recipient of Polish furniture (approx. EUR 3.200 million), outstripping the UK (EUR 722 million), France (EUR 522 million), Czech Republic (EUR 485 million), the Netherlands, Sweden and USA.<sup>8</sup>

The figures from the first quarter of 2015, indicating an upward tendency in the volume of furniture production. In three out of four furniture groups, there has been noticed a growth in number of manufactured products, in comparison to the same period of 2014. The demand for furniture like sofas with sleeping function, has increased by 10.7% and the bedroom furniture index rose by 29.5%.

The employment data confirms the fact that Polish wood industry, including the furniture one, has moved away from the crisis long time ago. However, not just the employment in furniture and wood industry increases, which according to Polish Chamber of Commerce of Furniture Manufacturers in 2014 created 140 thousand of work places) but also the level of wages, which noted an increase by approximately 5% in comparison to the same period of 2014.

**Source:**

1. Axi Immo report - warehouse market in 2015
2. [www.zyskier.pl](http://www.zyskier.pl)
3. The Report of Deloitte and Union of Employers – Manufacturers of Building Materials for the Construction Industry
4. "Polish construction companies 2015" report by Deloitte
5. "Polish construction companies 2015" report by Deloitte
6. [www.deloitte.com](http://www.deloitte.com)
7. Meble News - Polish Chamber of Commerce of Furniture Manufacturers
8. [www.biznesmeblowy.pl](http://www.biznesmeblowy.pl)



## WASTE MANAGEMENT

One of the Fund's investment areas is waste industry and therefore, the Fund is interested in implementing projects aimed to increase the amount of the processed waste, which, being collected, endanger the natural environment. The development of aware society and higher industrial output lead to an increase in the amount of waste produced and, consequently, in a demand for waste management technologies. An alternative scenario predicts that the negative impact of human activities on the natural environment will soon be reflected on the worsening of living standards.

National Waste Management Plan 2014 adopted by the Polish government in December 2010 points out specified directions and objectives concerning municipal waste industry for the period of 2011-2014 and 2015-2022. They include increasing waste recovery, especially in terms of the recycling of glass, metal, plastic, paper and cardboard as well as energy

recovered from waste compliant with environmental protection requirements, decreasing the amount of waste going to landfills, supporting economically and ecologically effective waste recovery and disposal technologies, including those allowing for recycling and recovery of energy gathered in waste which undergoes biochemical and thermal treatment. NWMP 2014 notices that agglomerations with above 300 000 residents should use thermal methods of waste disposal with energy recovery in a cogeneration scheme enabling the production of heat and electricity. Such a solution is also one of evaluation criteria for projects applying for the EU funds within Infrastructure and Environment Operational Programme, Priority II: "Waste disposal and earth surface protection". It may be used in regions with above 500 000 residents

Polish municipal waste management market faces the necessity to open to new technologies for the recovery and recyc-



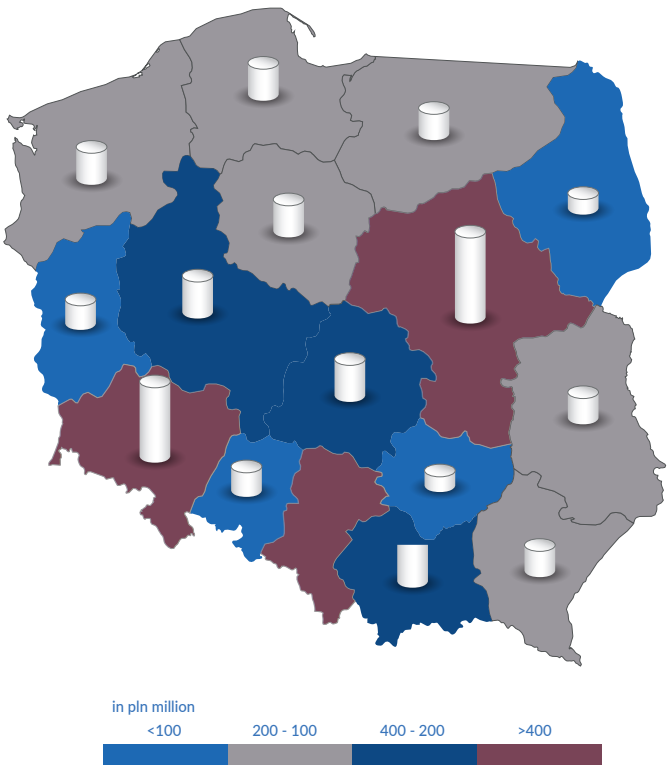
ling of raw materials. The experience of previous years shows that administrative restrictions in this area may constitute an obstacle to the growth of economy innovation and the fulfilment of obligations arising from Polish membership in the European Union. Investment projects from the field of waste management industry focus on designing and building factories for depolymerisation of plastics to paraffin oils. High level of innovativeness which is the feature of the used technologies makes the planned undertakings highly competitive. The investment aims to gain relatively high return rates and to increase the amount of recyclable plastic waste.

## RECYCLING

Every year, landfills are flooded with millions tons of waste, or one should rather say resources, which after being processed can generate profits. The development of the recycling market is largely influenced by Polish membership in the European Union, which places great emphasis on pro-ecological activities. In accordance with the requirements of the European Union, the recycling of materials contained in waste should increase, and by 2030 should reach approx. 70%. The European Union desires to increase the importance of recycling what means that the industries associated with it can count on financial support in 2014-2020. It should not be perceived as a waste elimination system, but as an intermediate production system for industry and manufacturers.

Recycling is an industry for which the raw material will never end. With the development of civilization, there is also increasing the waste. As a result, the entire global waste industry

Drawing 1: The market value of municipal waste in Poland.



Source: own study based on: [www.teraz-srodowisko.pl](http://www.teraz-srodowisko.pl) data

worthed EUR 14 billion in 2011. According to experts' estimations, at the end of 2015, this value has already reached EUR 21 billion. Experts predict that in 2020 the value of the whole industry is expected to reach EUR 35 billion. Therefore, it is reasonable to invest in markets where recycling is just being developed. Markets such as Poland.

According to data from 2014, the average Polish citizen produces 314 kg of municipal waste per year. The National Waste Management Plan 2014 informs that, annually, the Poles threw approx. 1.5 million tons of paper, 1.2 million tons of glass, 0.3 million tons of metal and 1.5 million tons of plastics - a total of 4.5 million tons of raw materials that could be reused. The value of the said secondary raw materials is about PLN 2.6 billion per year. It is worth noting that the law on waste management in Poland was in force already in 2014. Nonetheless, Poland did not recovered above-mentioned secondary raw materials, thus losing opportunity to generate profit. According to the available data, 15% is the current recycling rate, so it is not difficult to calculate that 85% of raw materials goes irretrievably to landfills or is burnt. It is estimated that if recovered, they would generate annually approx. PLN 2.2 billion. Instead of being profitable, raw materials contained in the waste generate substances harmful to the environment and huge cost of storage.

Processing and recovery of the necessary raw materials now seem to gain a new meaning. The great versatility of plastics and their ability to be re-used meant that they are becoming more popular, therefore, sustained increase in demand for this material is expected in the coming years. In addition, European law requires practical solutions, such as a gradual reduction in the number of landfills and waste collection improvement. The European Commission obliges consumers of plastic raw materials to design their products so as to contain min. 20 percent of recycled components. It is clear that investors want to invest their finances in a modern enterprise with a high return rate. One such industry is recycling. In the era of promoting responsible business and sustainable development of the industry, this is an ideal alternative for environmentally questionable investments.

## PYROLYSIS

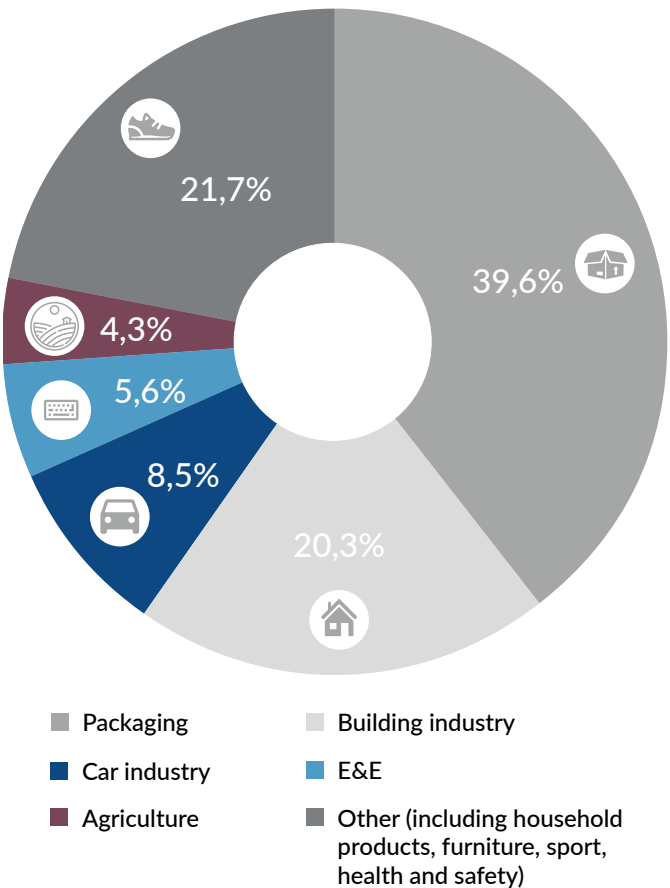
For building an ecologically and economically effective waste management system, not only legislative conditions but also innovative technologies, well-functioning infrastructure and economic balance are equally important.

Pyrolysis is an innovative process of depolymerizing plastic to paraffin oils. It occurs through the decomposition of the hydrocarbon chains at elevated temperature, absence of oxygen and using a catalyst. As a result, we get a product with novel properties. The final product of the catalytic depolymerisation process is a component of liquid fuels, synthetic paraffin - which is a component of diesel and heating oil substitute.

The value of Polish plastics market is currently estimated at around EUR 15 billion. In 2011, in European Union countries, the overall rate of recovery and recycling was 59.6% and in 2014, this value increased to 61.9%. At the same time, the amount



Figure 1: Plastic present in the various sectors of EU economy.



Source: own study based on: PlasticsEurope

of waste collected for landfill decreased by 5.5% and the amount of recovered energy increased by 3.3%. Available estimates suggest that as far as Poland is concerned, there are 300-350 thousand tons of plastic waste recycled per year, with packaging waste being the biggest part of it. Therefore, pyrolysis is a response to the need for development of a large amount of unnecessary packaging, tires and other waste that cannot be

safely disposed of or dumped in landfills without possible harmful effects on the environment.

Currently, recovery scale of waste suitable to undergo pyrolysis processes is small in Poland, while in neighbouring Germany it reaches 80% of waste. According to data from the last few years concerning the plastics industry market, Poland performs positively in comparison to the rest of Europe. Data for 2013 show that production of these materials has increased by about 2.7%, thus reaching 2.9 million tons. This was mainly possible due to the improvement of the situation in related industries. Electrical, electronic and construction industry generate steady demand for such products. In some industries (household appliances, car industry), the past years have been a period of intensive investment, the result of which is an increase in demand for plastics.

The high degree of innovation of available technologies guarantees the competitiveness of the pyrolysis plant projects. One technology line may convert an estimated 3,500 tons of the product each year. The additional result of the investment is the reduction of pollutants emitted to the atmosphere. Recovery and recycling of waste may become one of the economic development instruments and a source of technological innovations. Provisions concerning the recovery of waste require any municipality to achieve by 2020 the 50% waste recovery suitable for recycling. You should therefore find such method of waste management that would allow for its re-use.

The huge problem is caused by not only rubber or plastic waste but also „tetra pack” - milk and juices cartons, which, due to the aluminium content, shall not be processed using simple methods. Currently, they are mainly utilized, burnt or buried deep in the ground.

The process of pyrolysis can be seen as a waste management system or as a method of manufacturing high-energy intermediate for the industry. The investment in this technology is characterized by a high level of income compared to the costs of operation.



## TRANSPORT

Polish transport market - is a highly developed market from the European perspective. Since 2004, when Poland joined the EU, continuous investment and development of transport infrastructure significantly determined the level and quality of transport services. An extensive and widely available network of national roads and motorways, and ongoing implementation of investments dedicated to the rail network, essentially contributed to enhancing the quality of services provided.

The transport sector is one of the key elements of the economy and its share in the overall Polish GDP equals to 6.6%. No doubts, transport market is vital not only in the national, but also European context, for the reason that the smooth flow of goods determines the scale of the opportunities usage, arising from the EU internal market.<sup>1</sup>

According to the report „Where does the European single market go?“, the impact of the MiLoG Act on the road transport industry in Poland, carried out by Deloitte, a road international transport, implemented mainly in the European Union plays an increasingly important role in the Polish transport industry. The industry is an example of the success of Polish enterprises on the EU market, domestic companies in recent years could quickly regain their positions after the slowdown, caused by crisis.<sup>2</sup>

The level of innovation is also of a great significance: transports have increasingly newer fleet providing comfortable conditions of journey, what has positively contributed to the change of image of a passenger transport in comparison to what one could observe 10 years ago.





Transport of goods has also experienced fundamental increase in the quality, thanks to the widely developed road network; the time of goods' transportation has markedly decreased, making the quality of transport a criterion for selection. Despite the enormous evolution of what was done in the last decade, Poland faces many investment challenges.

INTERMODAL TRANSPORT

Intermodal transport industry developed rapidly by the end of the 2015, so 2016 seems to be very optimistic. Without a doubt, Polish transport industry is very diverse - the largest amount of goods is still transported by road. Presently, intermodal transport is responsible for only a few percents of the market, but the prospects of its development are very promising.

One cannot ignore the fact that the Polish transport statistics continue to grow from year to year. According to the data presented by the Office of Rail Transport UTK, huge amount of goods carried in intermodal transport continues to rise. In 2013 it carried by total 2,306.6 thousand tons of goods, while in 2014 this number increased to 2 471 thousand tons and in the third quarter of 2015 - to 2,505.7 thousand tons. The upward trend was also noted in the context of the amount of transport work. 2014 ended up with a result of 858 258.6 thousand tonne-km, while the third quarter of 2015 was characterised with a much higher score, constituting 922 477.6 thousand tonne-km.

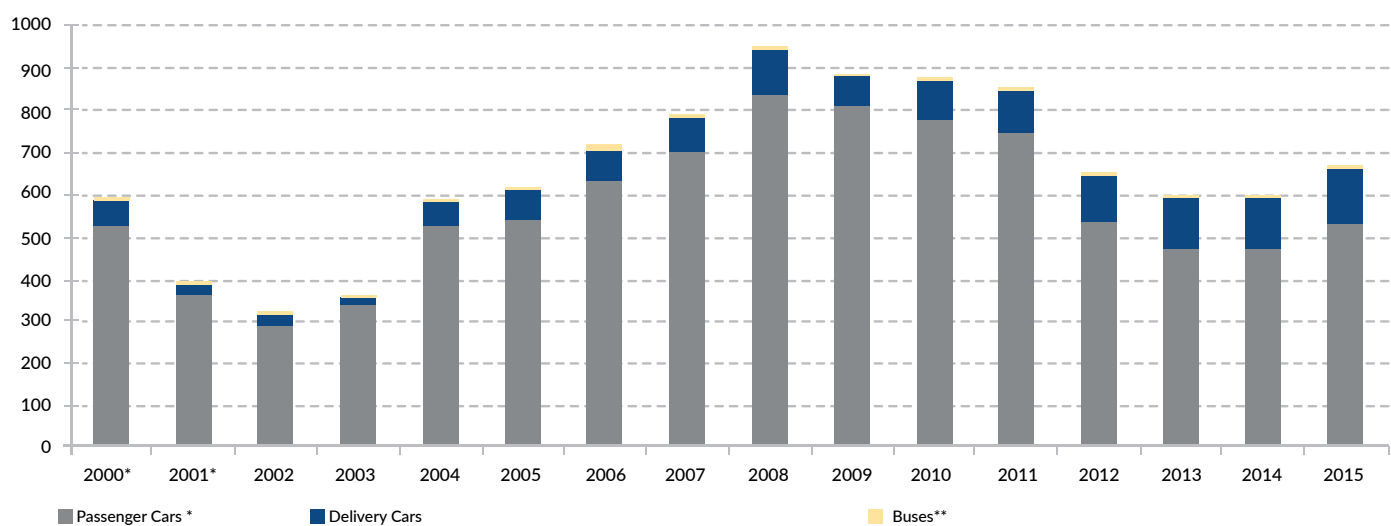
For major carriers, the situation has been stable for several years. Participation of carriers in intermodal transport by weight loss on the Polish market is as follows: PKP Cargo has been a leader for several years, with a score of 47.19% of the total transport; DB Schenker Rail Poland represented with 21.04% of the total transport; Lotos Kolej closed 2015 with a score of 23.47%; CTL Logistics of about 4%; the list ends up with Freightliner, PKP LHS and Ecco Rail. Although statistics show an increase and thanks to stable market the trans-

port is gradually expanding, it still requires investments. Both carriers and authority are constantly encountering problems with the capacity of some parts of the railway, sometimes with timely travel and continuous expansion of infrastructure, both rail and road (grade crossings, viaducts, bridges), enabling stable and uninterrupted movement. Many specialists would agree - time today is much more valuable than money - especially when it comes to transportation.

Polish transport represents 25% of international transport, hence, putting Poland into leading position in Europe. This position is justified by lower costs, which are also related to remuneration. As a result of last year's upheaval associated with plans to impose regulations on foreign employers to pay their drivers minimum wages in more countries of the EU, Poland was flooded with the waves of protests as there was a fear of a significant increase in transport costs. Poland could lose its leading position on the European road transport market. Despite a few brief crises, whether political or resulting from the still developing infrastructure, the Polish road transport is constantly evolving. Analysing data of MIR and GRTI, one can observe an increase in the number of companies performing national and international road transportation. The increase may be observed in amount of vehicles used, or in amount of greening stock..

The number of Polish enterprises, engaged in the carriage of goods within the EU, amounted, by the end of last year, to 29.488 thousand, while transportation of people - 3,188 thousand. A group of companies which possess from 5 to 10 entitlements has the greatest number of vehicles for the transport of cargo, there are 6 015 thousand of them in a total, and together they have in their disposition 40.554 thousand vehicles. The second place was occupied by the carriers, owning from 2 to 4 entitlements (the total amount of 11.818 thousand of companies and 32.652 thousand of vehicles) and from 21 to 50 entitlements (total number of 948 companies and 28.609 thousand of vehicles).

Figure 1: Vehicle productions in Poland 2000 - 2015.



Source: own study based on: Polish Automotive Industry Association





fot. Patryk Kosmider/Shutterstock.com

Industry production of motor vehicles in Poland has remained stable for the last three years. According to PZPM, the number of motor cars in December 2015 increased by 37 358 pcs., it is 26% more, namely 7.7 thousand of pcs. in comparison to the results from December the year before, and 7 thousand more (23.2%) in comparison to the month before. One should also pay attention to the individual customer purchases, which can be assessed positively. They amounted up to 12.7 thousand of pcs. but their growth (18.2%) was lower than expected for the entire market (26%). The number of cars purchased by them has not reached January's record level (15.5 thousand). The high level of interest was further maintained by institutional buyers - their registrations amounted to nearly 24.7 thousand pcs. The growth in this group, for the third time in 2015 (in June and November) exceeded 30%.

In December, the group of 3.5t delivery vehicles was joined by approx. 6 347 additional registered cars. This is the highest number of new registrations per month in this group ever recorded. Poland produced here a high double-digit growth rate, which amounted to 22.8% in the last month. Since the beginning of the year, 53 285 light commercial vehicles have been issued to customers, i.e. 16.9% more than the same time last year.

## INNOVATIVE ROLLING STOCK

Traditions of domestic railway carriage production date back to the second half of XIX century. The biggest development of this industry took place at the beginning of XX century. Soon after the war, the railway manufacturing was resumed and its scale was widened year by year. The largest production per year of 5 Polish plants exceeded 20 thousand units of cars alone in 1976.

Currently, even the world-class manufacturers do not possess such nominal of annual production. Polish producers, however, gain more power and innovativeness with each passing year. At present, it is extremely modern industry that requires use of not railway technologies as such, but state-of-the-art IT solutions, telematics and new technologies. The Poles deal with it very well, building and manufacturing both units and whole trains with parameters often exceeding those of foreign competitors.

To give an example, Polish heavy locomotive – Dragon – can keep working speed on the level of 200km/h and have parameters of much more expensive units of the competitors. The locomotive is very safe and comfortable as far as the job of engine driver is concerned, providing ergonomic organization of the cab and control panel, dual-purpose air-conditioning, camera system, roll cage as well as protecting construction in case of a crash. Dragon is equipped with electronic control system, on-board diagnostics with full visual display of information and data register system, location of possible damage and anti-lock breaking system. Modern production system and high NEWAG quality standards confirmed with certificates of, among others, International Railway Industry Standard IRIS (production and design activities, development and maintenance of locomotives) and PN-EN ISO 90001:2009 guarantee the best European quality.<sup>3</sup>

FLIRT3 vehicles manufactured by Stadler-NEWAG for PKP Intercity is the third generation of already known in Europe electric FLIRT type multiple units in the intercity version. They can go as fast as 160km/h and are characterized by well-equipped interior, which provides high comfort of long distance journeys. The trains are equipped with ergonomic seats, modern toilets and air-conditioning. Additionally, every seat has electric socket and personal lighting. Traditional information boards were replaced by electronic displays, on which messages concerning

the journey will be presented. Advanced passenger information system and WIFI are also available.<sup>4</sup>

Both PESA and Newag continue to widen their offer by diversifying potential clients. They offer wide scope of switchers, diesel locomotives, projects of hybrid locomotives as well as passenger and cargo trains of different comfort and range. Newag already has and Pesa just starts to design new units of underground railway. All types of offered product are modern and take into account demands of the ordering party. With such a diversification of the offer, it is easy to look forward to the future.

Prospects that Polish railway industry has are very broad. The government programme of the so- called “Plan Morewieckiego” [Morawiecki’s Plan] assumes implementing “Luxtorpeda2.0” project. It aims at promoting Polish industry and Polish railway projects. By means of government financing and national technical thought, the railway is going to become one of “intelligent specialization”, which should increase export of Polish products. Two out of four sectors of Morawiecki’s Plan are connected with reindustrialization and innovativeness. It is them that will allow government to reach investment increase in GDP from current 18% to 25% or even more and constitutes a very ambitious task.

Pesa Bydgoszcz, which is the current leader among manufacturers of rolling stock in Poland, will receive nearly PLN 25 million from The National Centre for Research and Development for the development of a subway train prototype. This project will widen Pesa’s offer to all possible rail products. As the Warsaw Metro will soon look for 60 new underground railway units, it might be the project that Pesa is preparing for. It is going to compete with manufacturers from all over the world and experts unanimously indicate that it is already a front-runner of this tender, because of Poland’s support plan for domestic production. The possibility of obtaining grants for Polish railway industry are immense, since “InnoTabor” sector program is going to start soon. As a part of this programme, there will be PLN 600 million available to dispose till 2023. It is still not known what it will be devoted to. However, one can expect that the lion’s share will be distributed in such a way, so that Polish companies benefit economically and technologically.

In 2015, Polish factories produced 2749 freight rail cars, and 2014 resulted in the production of 2426 carriages.<sup>5</sup> The beginning of 2016 was equally fruitful as far as production is concerned. Highly innovative, well-educated staff and low labour costs in Poland appear to be a recipe for success. The country also possesses a number of well-educated engineers and constructors of railway vehicles. Long railway tradition and big financial support from the government provides this industry with great opportunities for development and production. It seems that the railway production industry will turn into a government-protected sector in the upcoming years. It will not be implemented by means of ad hoc financial support, but by using EU subsidies, grants and support programmes for special projects. It is a very good way to help, as it contributes to technology development and getting foothold on new markets by the manufacturers.

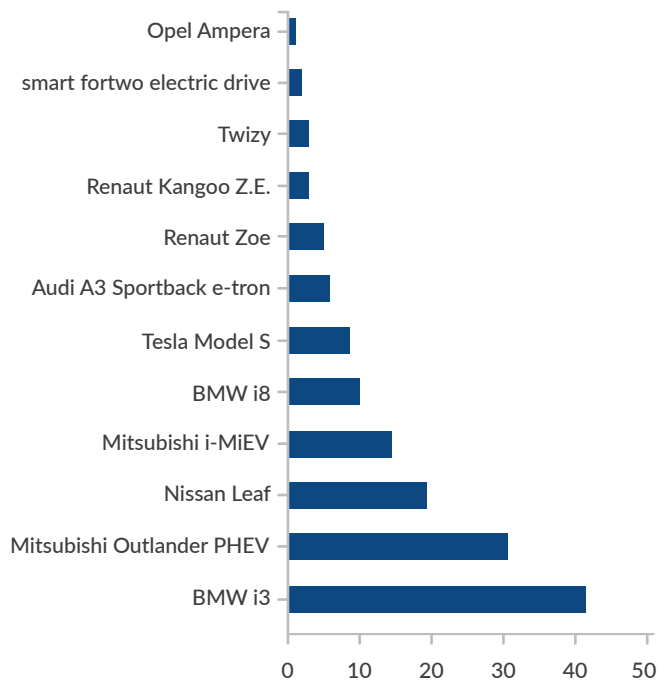
Polish production market of rolling stock managed to undergo a long way from obsolete repair workshops to advanced and modern Polish market leader with ambitions to expand into global markets. None of the companies refrain from improving and it is a matter of time before they achieve worldwide success. There are many opportunities for further development of this production branch and looking at the past achievements of Polish manufacturers, one can be sure that the advantages of these opportunities will be taken.

LOW-EMISSION TRANSPORT

The transport sector gives off the biggest amount of harmful substances to the atmosphere. The share of transport in total greenhouse gas emissions in Poland, according to data of 2012, constituted 11.5%, and the share of the non-ETS - over 22%. Nearly 98% of all emissions from the segment comes from the road transport. Unfortunately, the trend, when it comes to greenhouse gas emissions to the atmosphere, is steadily increasing and according to projections, it will continue to grow faster for at least the next 15 years. Therefore, the transport sector requires fast technological changes. The implementation of low carbon transport is a challenge that will not be realized without domestic and foreign investments. Nevertheless, the aspect of transport is not everything, what is also important is the development of infrastructure, increase of communications network capacity and the expansion of the network charge, adjusted for communal use.

The sale of cars and hybrid electric cars in Poland is growing. According to Toyota in 2015, Poland managed to sell in total 3,819 hybrids of this brand. The number was surprisingly higher (51%) if compare to 2014. Toyota company currently remains producer of hybrid and electric cars in the world. In

Figure 2: The number of EVs registered in 2014



Source: own study based on: Polish Automotive Industry Association

Europe in the first half of 2015 year, there were nearly 80% more electric cars sold than in the same period of 2014. In Poland, this trend has been also characterized by growth.

The experts of the automotive market predict that by 2020 the share of hybrid and electric cars sales worldwide will constitute about 52%. According to Frost & Sullivan, in the following years on the world's roads nearly 6.5 million of vehicles with alternative fuel will operate. In turn, on territory of the whole country the extension of about 300 points in the 14 largest cities is planned. Naturally, the demand for electric cars is lower than for the hybrid for several reasons. Hybrid cars exist longer on the market and at the moment, the prices for oil are falling. Purely electric cars need a charging infrastructure and the hybrid cars load their batteries independently. That is why electric cars will quickly achieve growth in sales, thus, surpassing the sales of hybrid cars, only when their future users will get access to the charging infrastructure. Poland puts great emphasis on its construction. Soon, these proportions may change. Since 2011, system of charging points has been developed all around Warsaw; so today one can easily recharge electric vehicle in many public places. A further expansion of the charging infrastructure with another 38 points throughout the city is planned. Moreover, Warsaw, together with the neighbouring municipalities, is planning to build 35 parking spots, called "Park & Ride", by 2020 to help residents outside Warsaw get easy access to the centre.

Nowadays, in Polish cities, a substantial amount of investment in environmentally friendly solutions can be observed. Expansion projects are launched almost in every major city. It is worth noting that modern developers are already looking for ways to realize the projects of building innovative infrastructure in the near future. Almost every commercial building or office which is currently being built, provides an installation of electric vehicle chargers or is prepared for its installation. The brightest example of such projects is the company Skanska, which enters the Łódź office market with a second project of this type. "Nowa Fabryczna" office building will be constructed on the territory of the New city centre, expected to be completed already in 2017.

Car sharing is another idea, which takes into the environmental protection into consideration in terms of transport, through short-term rental of small electric vehicles in urban areas. Instead of buying one's own car, one can rent them to get to a desired destination. The system works similarly to the generally known public transport, except that it is the lender who decides on the destination. The user of such a system does not bear the cost of service, charging and buying a car. The vehicle is used only when needed. The development of this type of system on a larger scale is cost-effective for both the investor and the user. As the car sharing assumes the use of electric cars only and rental as well as return takes place at the point of loading it is a highly ecological idea. Ideas of this kind are already implemented in many European cities at the stage of developed system or in the testing phase. This is definitely the future of urban transport. Wrocław is the first city in Poland, which will introduce car sharing service.

It must be emphasized that in Poland in the near time, major changes will come in terms of support for low-carbon transport. In some larger cities of Poland, ecological public transport is already widely spread. Hybrid buses, produced by Solaris, are already running throughout Warsaw roads. In addition to that, Poland is one of the leading manufacturers of electric and hybrid buses in Central Europe.

Environmentally-friendly rail transport, both short and long-distance, is still being developed in Poland, with the help of the leading manufacturers of rail vehicles (Rail Vehicles Pesa Bydgoszcz SA and NEWAG). Poland is constantly evolving in that respect. A broad expansion of investments is planned, dedicated to a nationwide charging infrastructure, modern and ecological assortment of urban and railway kinds. One should not forget about the prospects for change in the regulatory rules, providing relief for users of low-emission vehicles. The possibility of conversion of internal combustion cars into electric ones is very important at the moment. This form of green transport provides great opportunities, without imposing, at the same time, any restrictions on users of older cars, which do not meet the EU's standards.

## ELECTRIC URBAN TRANSPORT

Electric buses can be observed more and more often on the Polish streets. In November of the previous year the fleet of MZA [Eng. Municipal Bus Company] was restocked with vehicles with photovoltaic panels. Electricity plays an increasingly important role in cities' plans of development regarding issues of green transport. Currently, the biggest Polish cities such as Gdańsk, Gdynia, Kraków, Toruń, Zielona Góra, Warsaw and Wrocław are making their first steps towards the development and introduction of e-mobility. Another challenge faced by Poland, is the introduction of state- centralized projects, destined to encourage the purchase of electric vehicles by both local governments and private users.

So far, Warsaw has purchased 10 electric buses, while Zielona Góra plans to acquire as many as 80 of them, seeking to become one of the first cities with completely emission-free public transport. Gdynia, in turn, invests in trolley buses: within the last few years it modernized 5 tractions and built another 4. Among others, thanks to such solutions, the energy consumption in Gdynia decreased in 2009-2014 by 23%. Cracow and Katowice are working on the development of support system for electric car users. The self-government of Rzeszow and Lublin want to install proper infrastructure of charging stations, which is an important step towards popularization of eco-friendly transport in Polish cities.<sup>6</sup>

It has been already nearly five years since Solaris presented the prototype of electric city bus for the first time. Pre-production charger with a capacity of 100kW was replaced by batteries with capacity of 125 kWh, which in combination with pantographic charging give almost unlimited possibilities for exploitation. Since September of 2015, the latest Solaris Urbino 12 Electric buses entered the streets of Hanover, thus, supplying the fleet of hybrid vehicles of this brand, already present in Germany. Urbino 12 Electric is an innovative,





12-metre model equipped with two independent electric motors. This solution allows better usage of the passenger space and, moreover, reduces the weight of the vehicle. Interestingly, during the journey the passengers can keep an eye on the monitor where the battery charge is displayed.

Although the Polish Solbus has something to boast of, in January 2016, 40 modern buses of this brand came out to the streets of Częstochowa. The transport company presented unique and fresh solutions of hybrids with gas-electric drive. These buses are the first of this type in the world. They are equipped with drive system, which combines technology of powering the vehicle with CNG compressed gas and electricity, allowing to decrease CO<sub>2</sub> emission by even 850 tons per year. Ultimately, gas and electric vehicles constitute 1/3 of the whole bus fleet, used by MPK [Eng. Municipal Communication Company] every day. A very interesting prospect has the initiative of European electric cars manufacturers, namely Irizar, Solaris, VDL and Volvo as well as fast charging stations, such as ABB, Heliox and Siemens, which developed cooperation as far as universal charging interface is concerned. It is obvious that without a uniform solution and unification of standards, some manufacturers will push their own solutions that will result in incompatibility of buses and stations. The agreement aims at facilitating the process of transition from commonly used vehicles to electric ones, as well as create reliable system, which would be universal for different bus brands and charging systems.

Public transport still remains a favorable ground for investment. The matter of electric transport is an issue that still requires improvements. It is worth to develop business cooperation with experts of transport sector, enhance the staff and

invest in marketing, which would popularize the idea of ecological public transport. Charging points and parking spots are the areas worth of investment, and this true not only because of shortage that one can observe in this field, but for the reason of constantly developing automotive technology.

## INFRASTRUCTURE

For Poland, joining the European Union seemed to boost transport and infrastructure development. Namely, the access to the EU's funding programs, such as The European Regional Development Fund, the Cohesion Fund and the funds provided for the implementation of TEN-T projects, and earlier - pre-accession funds, played a crucial role in the progression of those sectors. The development was possible thanks to aforementioned financing sources. Financial support that was provided from operational programmes, are invested into road transport, maritime economy, railway vehicles and urban transport. Investment effort is undertaken at all administrative levels - national, regional and local.

During the years 2004-2013 Poland had at its disposition approximately EUR 28.7 billion for projects dedicated to transport infrastructure. In the years 2004-2006, i.e. the first two years after joining the EU, this amount was equal to EUR 5.4 billion, while in 2007-2013 it already amounted to EUR 23.3 billion. In the years 2007-2013 in Poland, motorways and expressways were built and modernized, a total cost of which showed EUR 16 billion (PLN 69.2 billion), of which about EUR 10 billion (PLN 42.6 billion) was co-financed together with EU funds. Since 2004, 673 km of motorways has been built and 808 km of expressways has been modernized. Upon 2004 - 2015 the number of national roads and motor-

ways rose to 3,050.6 km, of which 1,553.2 km constituted the motorways, while the express roads - 1,497.4 km. The investment in infrastructure was inevitable, because of the strategically important location of the country. Poland, in fact, lies at the intersection of major transport north-south and east-west routes. The quality of infrastructure significantly determined the decision on the choice of transport routes.

Prospects for the upcoming years also look impressive. By 2020, 21-modal nodes (hubs) are expected to have been constructed in Poland, reloading on the trans-European transport network TEN-T (a program implemented by the EU concerning transport networks). More than PLN 45 billion was allocated into Poland in 2008-2014 for the construction of motorways and expressways. More than PLN 67.5 billion of investments were dedicated for the development of railway infrastructure in the framework of the Long-Term Railway Investment Programme for the years 2014-2023. More than PLN 140 billion – is an amount, which is planned to cover the construction of road infrastructure in the new EU's financial perspective. In the framework of this amount, domestic expenditure will be equal to about PLN 90 billion; the rest belongs to EU funds. Further 1 800 km of national roads and expressways will be built by the end of 2023r.<sup>7</sup>

The network of infrastructure, supporting maritime transport, is also greatly expanded. Poland currently has in its possessions three modern and constantly modernized marine loading terminals:

- Szczecin- Świnoujście Port, with handling capacity of 78.4 thousand of TEU (twenty-foot equivalent unit, the

unit capacity - about 39m3) in 2014. Planned investments until 2020 will amount to PLN 1.3 billion.

- Port of Gdynia, with a handling capacity of over 850 thousand of TEU in 2015.
- Port DCT Gdańsk, with a handling capacity of 1.5 million of TEU in 2015, will increase the capacity to 4.5 million TEUs by 2020.<sup>8</sup>

Cargo turnover in seaports continues to grow (in 2014 it amounted to 68.9 million tonnes, i.e. 7.2% more than in 2013).

One should note that in the following years, a low-carbon transport, which requires a properly prepared charging network throughout the country, will become a priority. Investments in that kind of transport sector is yet to be defined.

A grant from the EU, targeted for the period of 2014-2020, will contribute to the realization of investment in charging infrastructure. The Cohesion Fund, designed for countries such as Poland, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Greece, Latvia, Lithuania, Malta, Portugal, Romania, Slovakia, Slovenia and Hungary, has allocated a total EUR 63.4 billion to activities in the following categories:

- Trans-European transport networks, cohesion funds used to support the infrastructure projects under the instrument „Connecting Europe”;
- Environmental field, in which the Cohesion Fund would also support projects related to energy and transport, as long as they provide obvious benefits to the environment in terms of energy efficiency, use of renewable energy sources, the development of rail transport, supporting intermodality, strengthening public transport and so on.



Initially, its budget has been set at EUR 50 billion (transport – EUR 31.7 billion, energy – EUR 9.1 billion, telecommunications – EUR 9.2 billion). However, as a result of the final cuts in the budget for 2014-2020, the pot has been reduced to EUR 29.3 billion. For 2014, EUR 366 million are expected to be allocated to this sector.

Many countries have already benefited from the programmes described above. For example, the Czech Republic invested in the expansion of a network of 200 charging stations for electric cars throughout the country, and Estonia, managed to set up to 700 charging points.

Polish transport infrastructure is being constantly modernized, as the statistics shows. Gradual modification of the transport network and infrastructure in Poland, will result in the expansion of connections with other European countries and the rest of the world. This objective will undoubtedly require significant investment in the upcoming years. European funds will continue to boost modernization in 2020. Their proper spending, or should we rather say investment, will definitely determine the level of both regional and national development.

## PARTS MANUFACTURING

The production of parts and components, both mechanical and electrical, sheet metal and interior trim distributed to car manufacturers and independent distribution networks is the key to the development of Polish automotive industry. Having looked comprehensively at the Polish industrial production, one would see that about 10% of its value belongs to the automotive industry, and the Polish automotive exports equals to more than 18.8% of the total national exports.

Poland is currently the 8th largest automotive exporter in Europe, competing in this segment with Slovaks and Dutch. In recent years, Poland has recorded an increase in industry export's value. Between 2010 and 2014, it amounted to 14% and was responsible for 12% of total Polish export.

According to „The automotive sector in Poland 2014” report prepared by the Association of Producers and Distributors of Automotive Parts, 80% of the parts produced in Poland are manufactured on request of Producers for the purpose of installation of new cars. Car makers produce only 20% of the parts and these are most likely the car components, for instance the floor boards. At the same time, Polish automotive market is very extensive and varied. According to the Polish Agency for Information and Foreign Investment, there are over 900 manufacturers of automotive parts operating in Poland, approximately 300 entities of which have foreign capital.<sup>9</sup>

According to the last report by SDCM (Association of Producers and Distributors of Automotive Parts), the market value of manufactured parts and assemblies in the Polish automotive industry reached almost PLN 60 billion in 2014. Looking at 2013 one may notice a significant growth of PLN 7 billion, due to the fact that the production and manufacturing va-

lue reached PLN 53 billion. In 2012 and 2011, the industry underwent a stabilization and overall production value amounted to PLN 51 billion.

Analysing the markets, it should be also noted that nearly half of the production is exported to countries such as Germany, Italy, the Czech Republic and the Scandinavian countries. In the settlement percentage, about 31% of production goes to German companies like Audi, VW, Mercedes; approx. 9.5% is exported to British manufacturers of passenger cars; 9.3% and 7.5% of the production goes to Italy and the Czech's Skoda respectively. In turn, the goods exported to Scandinavia include parts such as bus chassis, fabric heated seats, car mats, tires, engines, or even door seals.<sup>10</sup>

One should also pay attention to the fact that apart from the production of new components on carmakers order, Polish industry has been a supplier of spare parts and mechanical components. Polish manufacturers produce high-quality substitutes of brake systems, both for passenger cars and heavy transport. The qualified staff of engineers and high level of technology allows same quality production of substitutes as the original parts (as example Bosch, etc.) at a relatively lower price compared to the latter.

Poland is by far the automotive basin, which guarantees employment for more than 160.4 thousand of people. Thanks to qualified staff and continuous development, the Polish automotive industry grows and becomes more and more promising. It has been noticed by the companies already present on the Polish market, such as Michelin, Kormoran, Kleber. New factories in four Polish locations were also built by a Japanese company, called Bridgestone.

## SHIPBUILDING

Polish shipbuilding industry is functioning in various areas of the market and continuing its dynamic development. According to expert's analyses, it occupies the 2nd place in Europe and the 5th in the world. As a result of political transformation in the 80s of the last century and bankruptcy of shipyards in Gdynia and Szczecin with a very large and top-down managed shipyards, great number of private small yards were set up. Among them are: MARS Group Shipyards & Offshore, Shipyard CRIST, or Nauta SA Repair Shipyard. Polish shipyards constitute modern entities, providing specialized and highly professional services; they are able to construct complex ships with more and more added value.

Currently, there are about 1.6 thousand of companies functioning in the sector of the Polish maritime economy. The companies based on constructing and equipping ships are registering a growth of employment. In 2009, the shipyard employed 23 thousand people, which nowadays equals to almost 32 thousand. Until 2017 Polish shipyards have a guaranteed contract for the construction of dozens of vessels with a value of nearly EUR 1 billion. 2015 showed that the Polish shipbuilding industry is one of the most dynamic in Europe, broadening a balance with PLN 10 billion of revenue.





The management level has significantly changed and as a result of wide-scale activities, exporting to different markets, Polish shipyards significantly raised the level of competitiveness of the market. Thanks to the high quality of services and great conditions, private companies can successfully compete with the giants of the Scandinavian countries. Therefore, the expected growth in the industry by 2016 may reach as much as 10 %.

Poland is a country that has great potential for producing marine products. Highly qualified staff and extensive experience allow Polish companies to compete with other companies in a variety of sectors: in the production of modern fully-equipped vessels of various types; renovations or modernization of old constructions. In addition to that, Polish shipyards implement projects of various complexity associated with the marine and mining industries. Such projects include, among others, construction of drilling platforms or building construction of wind farms and their installation on the water.

The production and repair of the units for allocation of the passenger car or specialized cargo ships is a very important element of the shipbuilding industry, besides the installation of vessels for mining or construction of new oil tankers and oil rigs. Polish industry specializes in many types of ships, and it allows it to diversify the risk. Polish shipyards support the construction and modernization of specialized units, which are to carry all kinds of products to the Arctic areas, where structures must guarantee resistance to extreme conditions of carriage resulting from, among others, atmospheric conditions prevailing there.

One should emphasize the elements, which are important for the dynamic development. These are: the Polish technological thought, the knowledge and experience of engineers. It was Poland, where the first ferry with the ecologically driven LNG, called Samso was produced. It was an entirely Polish project, Polish technical thought and execution, and was launched in the "Remontowa Shipbuilding" shipyard.

Polish shipyards are also able to build various types of ships as well as military maritime infrastructure. More information about this sector can be found in the military technologies section.

#### Source:

1. Deloitte report: „Where is the European single market going to? Influence of MiLoG Act on road transport industry in Poland”.
2. Deloitte report: „Where is the European single market going to? Influence of MiLoG Act on road transport industry in Poland”.
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5. Data of Central Statistical Office, 2015 and 2016.
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7. [www.paiz.gov.pl](http://www.paiz.gov.pl)
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## TOURISM

Tourism is a crucial area of economic and social activities. Touristic activity is one of the ways of measuring the living status of the citizens; it is also an indicator of the civilizational development of the societies.

The development of tourism is a significant impulse, boosting the social and economic growth of the country. Its meaning is reflected in a high ability to generate new workplaces, raise the quality of life of the local societies or make certain regions more competitive. Simultaneously, tourism contributes to exploring the most precious cultural and natural goods, which exposition improves both the local and international image of Poland, particular regions and cities.

Tourism is considered to be one of the fastest – developing branches of economy, which is confirmed by the statistics of the World Tourism Organisation (UNWTO) and World Travel and Tourism Council (WTTC). According to that data, there is constant increase in both the numbers of tourists as well as in the profits gained. That is why more and more countries become involved in development of tourism and similar areas.

### TOURISTIC EXCHANGE

With each passing year, Poland is becoming an increasingly desired country for tourists. There is a constant growth in tourist traffic, both foreign and – what is more important – local one. These statistics include not just the business travels, but also tourist one, indicating about an increase in the middle-class society. Tourists seem to be fond of using the hotel accommodation of a high standard while being on holidays. Average occupancy rate of hotels in big cities of Poland reaches about 50% (and even 70% in the immediate surroundings of the airports).

One of the positive aspects of Polish accession to European Union was the acceleration of the tourism development. What is more, joining The Schengen Area in 2007 also changed a lot. As the necessity of border control disappeared, travelling to Poland became much easier for all citizens of EU.

Favourable geographical position of Poland also plays significant role in tourism fostering. Country's millennial history, which left great number of antiquities, terrains, afflicted by



wars that took place on this territory, attracts great numbers of visitors and travellers from all around Europe every year. In addition to that, the country is also famous with its beautiful and breathtaking nature. In fact, there are mountain areas in Poland, which can serve as a perfect place for active recreation during the wintertime. Seaside almost ideal for summer relaxation and the primeval forests, with their exceptional flora and fauna, huge amount of lakes and desert terrains can be found rarely in the world. However, modern and constantly developing urban centres can also offer tourists many interesting activities. It is really difficult to get bored in Poland. Abundant and fast transport system allows everyone move through Poland and travel abroad easily. These features make Poland attractive place for sightseeing, tourism, rest and every way of spending free time and other ways of spending free time for considerably lower prices, than in other parts of Europe.

According to the data from the last years, the number of foreign tourists visiting Poland has increased up to 16 million. Most of them come from Germany; moreover, double-digit growth in travels was reported in case of tourists from Sweden (16 %), Belgium (17 %), Norway (17 %), Lithuania (16 %) and Portugal (27 %). Great increase was observed in the amount of Chinese travellers, which reached a point of about 28 %. In the third quarter of 2015 estimated number of crossing Polish border reached 76,7 million, from which 44,1 million crossings were made by foreigners (57,6% at all) and 32,5 million by Polish citizens (42,4%). About 74,5% of crossings were made through Polish land border with other countries of European Union, 12,9% - air border and 0,9% - maritime one. Most of the tourists used to cross Polish border with Germany (44,0% of the general number of crossings Polish border in the third quarter of 2015), then with Czech Republic (22,8%), Slovakia (14,4%), Ukraine (9,0%), Belarus (3,3%), Lithuania (3,1%) and Russia (2,5%).<sup>1</sup>

Following the GUS (Central Statistical Office of Poland) data, estimated value of commodities and services purchased in Po-

land by foreigners (not-residents) in the third quarter of 2015 constituted PLN 10,5 billion and outgoings made by Polish people while being abroad – PLN 6,4 billion. The foreigners' expenses were about 0,7% higher than at the same period of 2014 and Polish ones – approximately 1,5% higher.

Estimated value of goods and services bought by foreigners crossing Polish land border with the EU was equal to about PLN 2,7 billion only in the third quarter of 2015.

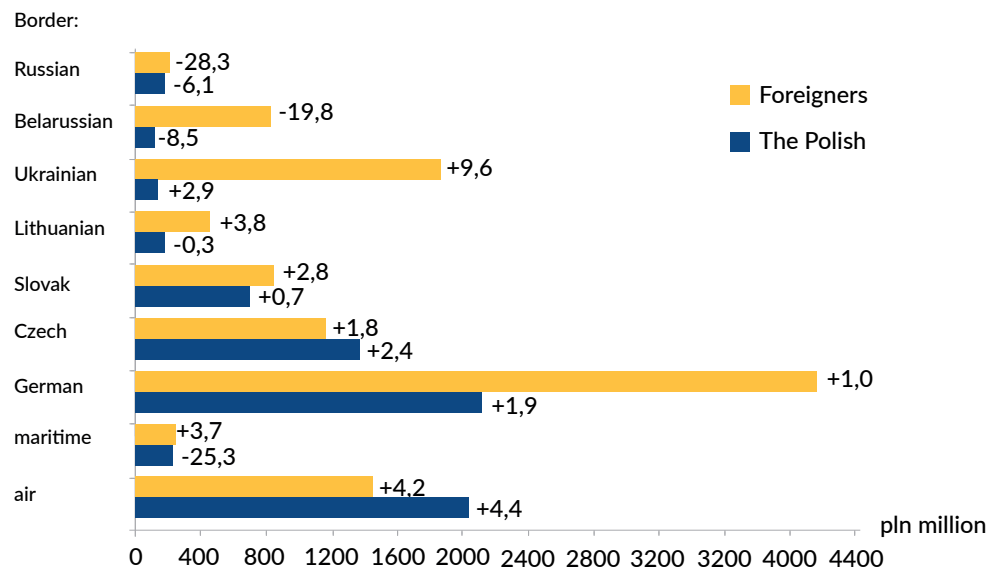
Since 2013, in Poland can be observed growing number of hotel services provided. In 2014 the demand raised by 1,5%, which was measured by the number of provided accommodation from the overall sum in the EU. The stake of accommodations that foreign tourists used reached more than 90% in case of Malta, Cyprus and Croatia, in Romania and Poland it was not higher than 20%. The indicator of the level of using accommodations in hotels and similar places in Poland was 34,7% in 2014 and stayed the same as in Hungary, Luxembourg and Czech Republic, but was definitely lower than in the countries of Southern Europe, such as Malta (68,3%), Cyprus (61,6%), Spain (55,7%) and Croatia (52,7%), where tourist season lasts much longer than on the north.<sup>2</sup>

Index of using the available accommodation keeps improving every year, which encourages investing in this branch of market. These types of investments are quite specific because of their limited risk. They also allow Poland to generate relatively high income.

### HEALTH TOURISM

The value of the world's market of the health tourism is estimated at the level of USD 188 billion every year. According to the forecasts, some markets of developing countries expect even 20% growth. Global market of the health tourism is still developing – in 2012 its value reached USD 100 million. For

Figure 1: Expenses of foreigners in Poland and the Polish abroad, II quarter of 2015.



Source: own study based on Central Statistical Office „Boarder traffic and foreigners' expenses in Poland”.



Poland there were more than PLN 800 million for many different touristic and health services, which were left here by foreign tourists.

In short time Poland has become an important place for the acceleration of the world's health tourism. One may venture to say that in the nearest future Poland may become a leader in the Middle-Eastern Europe, despite the fact that it nowadays remains almost at the forefront within the entire Europe. It is not a surprise, as Poland is a great country that favourably differentiates from other European states by various opportunities for development. American interest in Polish implantologists can serve a good example of this tendency. Having recognized country's huge potential, Americans enabled Polish dentists to take part in certain training courses of implantology at the New York University. Foreigners come to Poland because of dental treatments, plastic surgery; orthopaedics, eye surgery, cardiosurgery, aesthetic surgery and rehabilitation.

Health tourism in Poland, in the international and especially EU area, has a great potential to develop. Medical staff, high quality and standard of treatment are our edge in the international market of medical services. In Polish clinics, modern medical equipment is used and all of the treatments are provided on the highest level.

The main reason of such an attractiveness of Poland's medical treatment offer is the correlation of a low cost and high-quality services. Very often the prices of diagnostics and medical treatment in Poland are 60-80% lower than in other EU countries, the United States or Canada; some of these services are not even available for the citizens of some countries. By now, Poland has hosted patients mostly from the UK, France, Germany, USA, Canada, Scandinavia, Austria and Czech Republic. It is estimated that since Poland's accession to EU 450.000, patients from all over the world have visited it.

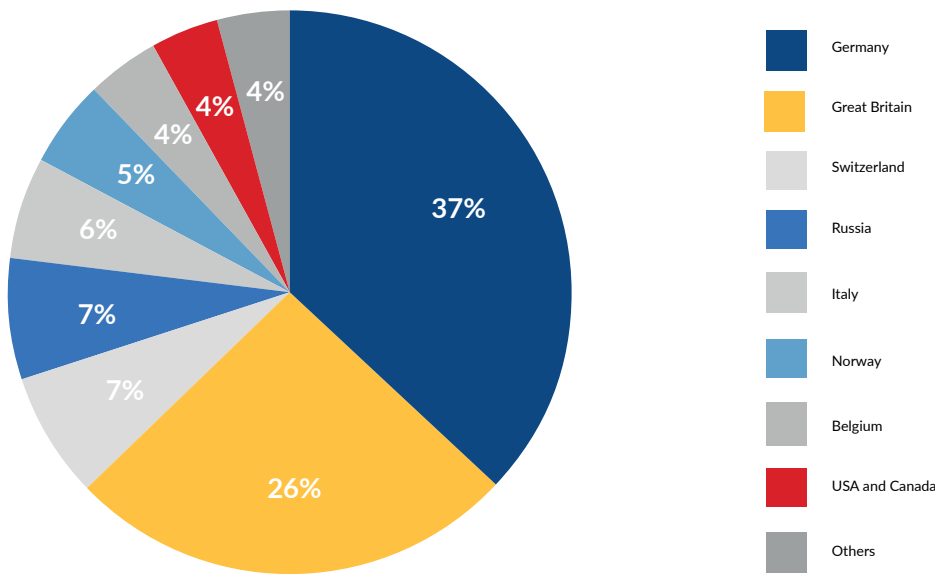
Polish spas providing opportunities of visiting progressive medical centres, equipped with professional technologies; institutions of natural treatment with attractive facilities. Medical offer of Salt Mine "Wieliczka" is exceptional in the world scale. The spa stands out from other ones because of the fact it provides innovative rehabilitation and cure of the respiratory system ailments, following the best standards of contemporary medicine with use of natural microclimate of the underground salt chambers, which cannot be reconstructed on the surface of the Earth.

In fact, on the 29<sup>th</sup> of March 2012 Ministry of Economy signed the agreement for realization of the program which is thought to promote health tourism. This program had established 18 promoting activities for businessmen who would have accessed it after the 1<sup>st</sup> of June 2013. The project, which was launched on the 29<sup>th</sup> of March 2012, works on supporting Polish companies, while inventing and implementing unitary conception of promoting Polish health services and medical tourism. Certain activities of the consortium are thought to grab the attention of patients from Great Britain, USA, Germany, Norway, Denmark and Sweden and encourage them to visit touristic regions of Poland with respect to health tourism and medicine.

The representatives of Polish health centres, who take part in the project, got involved in some international conferences, markets and exhibitions, training courses and trade missions. Promoting activities were to point the actual status and perspectives of the medical tourism sector, as well as the medicine in Poland. What is important, the project has not been finished yet and for sure will have significant influence on creating the image of Poland as a worth-visiting place.

Touristic attractiveness of our country, professionalism, high quality of medical services and support from the agencies of the public administration and local governments confirm the benefits from locating the capital in the health tourism in Poland.

Figure 2: Medical tourism statistics by incoming countries the most frequently



Source: own study based on tourmedica.pl



## HORSE BREEDING

Horse breeding is a type of investment, aiming at acquisition of the thoroughbred horses of both physical and psychological values. In order to gain as good breeding effects as possible, appropriate selection within certain breed, creating optimal conditions for right growth and congruous maintenance are necessary. In fact, there is no need to present the breeding of Polish Arab horses, as they are appreciated and renowned all over the world.

Polish breeding, as the only one in the world, has a real chance to beat the Middle-East studs. The stud in Janow Podlaski became a synonym of a role model (the Arab horse). However, there are many other studs and private breeders in Poland. Those animals have achieved successes on the international arena over the past few years and the number of champions amount more than 500. There are many exhibitions, competitions and auctions organized in Poland. The most important ones take place of course in Janow Podlaski. "The Days of Arab Horse" including the auction "Pride of Poland" and "Polish National Show of Thoroughbred Arab Horses" or "Sport Masters Arab Horses of Europe" are well known events all over the world, attracting the most eminent guests connected with art, culture, business or politics. Polish state-owned studs with their two hundred years tradition of horse breeding, dispose genetic material of a great potential. Merchants from all over the world can be sure that the animals they intend to buy in Poland, possess genes of the finest line of ancestors.

For the last years, more and more aficionados of Arab horses from Poland have taken part in different auctions. Private breeders often buy almost ideal horses from the state-owned studs and also successfully sell their animals. In the lineages' database of Janow Podlaski, 52000 genealogies of Arab horses can be found. This stud was formed in 1817, survived two wars

and rough history of Poland. Since 1927, the stud has been organizing the races of Arab horses – the most important test for breeders. Not only the exhibition value is important, but also the maintaining of the original fighting character of the animal.

The Arab horses from Polish studs are perceived as the most valuable ones in the world. The record-breaking price was paid for the mare from the stud in Janow Podlaski – „Pepita”, which was sold to a merchant from Switzerland for EUR 1.400.000. The second highest amount auctioned dates back to 2008 and constituted EUR 1.125.000 that was paid for the mare „Kwestura”. 24 Polish Arab horses were sold during the auction "Pride of Poland" and went to Qatar, the United Arab Emirates, Saudi Arabia, Great Britain and Czech Republic.

The first documented breeder of thoroughbred horses in Poland was King Zygmunt August (1520-1572). The stud was located in Knyszyn, today's Bialystok. The first authentic Arabian horses were brought to the Polish equerry by Cajetan Burski. Then, there have been organized many expeditions into the desert within several generations. At the beginning of the 19th century, Arabian horses were grown in Poland massively. Merchants imported horses to Istanbul or Odessa, and on request to the studs. Among them were distinguished the studs of Brannicki family in the White Church (and related to it provinces) in Ukraine, the stud of Sanguszko family in Sławuta in Volyn, Wacław Rzewuski family in Sawran, Podol, Dzieduszyckis family in Jarcowcach and Jezupolu in Malopolska Voivodeship.

### Source:

1. Central Statistical Office „Boarder traffic and foreigners' expenses in Poland”.
2. Central Statistical Office – "Tourism in European Union".
3. [www.allekonie.pl](http://www.allekonie.pl)



## MILITARY TECHNOLOGIES

In 2016, a global aerospace defence sector is expected to record a huge (up to 3%) increase of income, as indicated in the reports, prepared by the Deloitte Touche Tohmatsu Limited (Deloitte Global) Consumer & Industrial Products Industry group pt. 2016 global aerospace defence sector outlook. These are the good news considering the fact that for the past three years this sector was ranked among declines. In 2013 it constituted 3,2% per year; in 2014 -1,9%; and in 2015 - 0,5%. The greatest role in this respect played the growing threat of conflicts in Europe and the Middle East, as well as an increase of the amount of money, spent on defence budgets. In addition, the increase in military spending also coincided with a revolution of new technology and computer science. Today, the most powerful weapon is precise information and its quick processing, so every army in the world is forced to participate in this race.

Modern technologies enter daily use and change every aspect of human life. To the key sectors one can include cyber - technologies, tools, intelligent and electronic systems and devices, designed to improve the precision of the attack; navigation equipment and control systems, fire control and detection units for the faint radar technology, including electronic camouflage. The acceleration of the terrorist threat has turned previously peaceful urban areas into true battlefields. There have been also invented new ways of attacking, such as hybrid warfare, and for such threats the military sector must also find a solution. Defense budgets

of the USA, the UK, France, Japan, some of the Middle East countries are growing with increasing threats to their security.

After 17 years of membership in NATO, the Polish Army has faced a huge transformation; with the army focused mainly on territorial defense, very mobile and equipped with multiple static systems, it has evolved into a modern army in all aspects, starting with the signment of the doctrines on the hardware, and ending with the entire frame. With significant investments into equipment and defence systems, the training and development of human resources, the Polish Army increased operational capabilities, becoming able to participate in a wide range of allied operations. Such a transformation would not be possible without the stabilization of the political-military framework for the development and funding mechanisms of the armed forces. Polish membership in the North Atlantic Alliance opened it a path to stabilization. In many overseas missions, the Polish Army has proven stabilization that is counting the fighting force. Polish troops are trained and equipped with the accordance to the international standards. Implementation of the investment projects in the military sector - is one of the priorities for the Polish government.

The budget is constantly getting bigger every year. In 2015 the Ministry of National Defence of the Republic of Poland boasted PLN 32 billion, and in accordance to the guidelines of Polish Government for 2016 has been increased by more than PLN



fot. PLRANG ART/Shutterstock.com



3 billion and will reach PLN 35.9 billion – constituting 2 % of Polish GDP. PLN 10.5 billion are planned for capital expenditures, which equals to 29.5 % of defense spending and will ensure implementation of the provisions of the Act of 25 May 2001 on reconstruction, technical modernization, and financing of the Polish Armed Forces; while PLN 898 million 804 thousand were spent on research and development in the field of defense. As a part of capital expenditure, technical modernization of the Polish Armed Forces will consume PLN 9 billion 688 million 195 thousand, of which PLN 5 billion 647,266 thousand will be allocated for the implementation of the multiannual program ‘Priority tasks of technical modernization of the Polish Armed Forces in the operational programs’, aimed at increasing operational capabilities of the Armed Forces as well as increased modern armaments and military equipment.

According to the document ‘Plan for technical modernization of the Armed Forces for the years 2013-2022’, purchases and orders for the Polish army will include 131 new units to combat air targets and 400 rockets. There will be constructed or purchased about 90 new transport, exploratory, and combat helicopters. The transport and training aviation will be replenished with more than 30 aircraft, modern transport and 2 training systems with flight simulators. The Navy will acquire 14 new warships; the land troops will be enriched with some 1,400 of new vehicles, armored infantry, tanks and modules fire. Another interesting purchase is a new system of equipment and armaments for soldiers. It will include thousands of sets of personal equipment, weapon and armour for infantry. It all has to be produced, purchased and put into service by 2022.

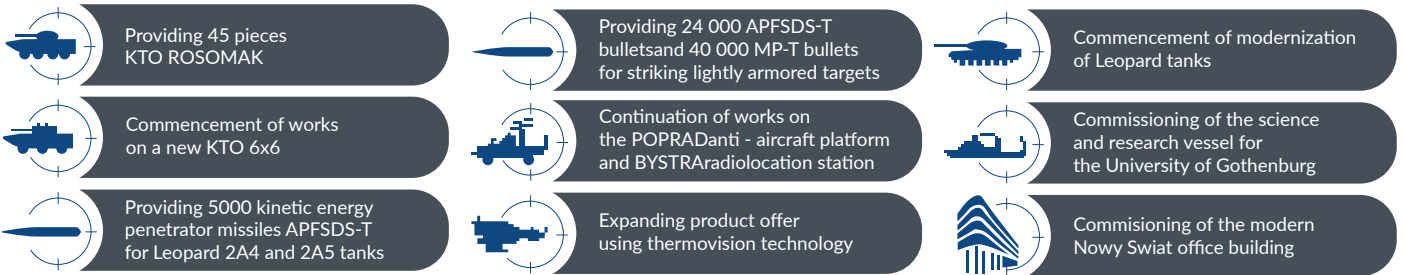
Improving Polish defense system would not be possible without the constant expansion and modernization of the that industry. Poland attaches great importance to this issue by as much as possible equipment and technology utilized by the army, came from domestic production. It serves a powerful stimulus for the development of economic, industrial and technical ideas. There are about 200 of state-owned and private companies operating in Poland. In terms of the status of ownership, the backbone of the defense industry recognizes the potential of the Industrial Defence (PPO), which is an important element of state's economic structures executing the tasks economically - defense. Poland became one of the largest manufacturers of Unmanned Aircraft Systems (UAS), the so-called unmanned drones. We have a large team of aviation experts and engineers, and this enables a constant improvement of intelligence-gathering systems in the Polish Army. We constantly develop and purchase unmanned

systems, not only at the tactical level, but also with an operational range. Additionally, for many years we have been developing manned air forces and the Polish fleet of the F-16 fighters is constantly upgraded.

Our high level of training is well-recognised in Europe and globally. Thanks to investments in innovative training schemes and very restrictive selection criteria our fighter and helicopter pilots are the world's elite. Moreover, we manufacture high-class „Black Hawk” helicopters which are globally renowned and distributed to almost every country in the world. Our Navy is stable and equipped with well-developed fleet of minesweepers and missile destroyers, but it still requires financing and modernisation, which will be performed. Thanks to a highly-qualified team of engineers and new technologies, we constantly modernise security, rapid response and navigation systems in our units. The Polish shipyards, thanks to cooperation with the Polska Grupa Zbrojeniowa and MON (Ministry of Defence), develop manufacturing of patrol ships that have functions of fighting mines and coastal defence.

The constantly modernised Wheeled Armored Vehicles “Rosomak” are doing very well in Land Forces. Since many years Poland has been a leading country in manufacturing of anti-tank weapons. The Polish “Spike” missiles or anti-aircraft “Grom” missiles are popular on international markets. Personal equipment and weaponry of a soldier underwent substantial changes and Polish infantry units are on a high, European level. The Weapons Factory “Łucznik” supplies Polish soldiers with the highest-class handguns and rifles. The Polish Armed Forces also focuses on development of robotisation and constantly develops more accurate weapons with longer range, so that it could use more weapons and less people. Domestic manufacturing is a very important factor in the development of the Polish Army. We established Polska Grupa Zbrojeniowa, PGZ (a group of state enterprises from the arms industry) which closely cooperates with the Ministry of Defence. PGZ comprises of over 60 companies which are specialised in military development. Cooperation with these companies and considerable financial outlays ensure constant and fast development of the Polish Army. The Polish Armament Group comprises of more than 60 companies and a group of these companies is still being developed. It is now one of the largest defense companies in Central Europe that is able to present an offer full of products and services for defense. PZG employs 17,500 of workers in its subordinate entities, and has a turnover of more than 5 billion PLN. We successfully compete in both international and domestic markets.

**Drawing 1: PGZ - projects implemented in 2015.**



Source: own study based on PGZ.



The key industries in which the PZG Group operates are as follows: reinforcement, shipbuilding, offshore, new technologies and real estate. The most important project, which the Polish Armaments Group has occupied in 2015, is the production of infantry transporters, called Wolverine; started to work on a project generation of 6x6 drive armored personnel carrier; providing a great amount of bullets APFSDS-T for the Leopard tanks. It has also delivered ammunition APFSDS 24000-T and 40000 rounds MP-T for destruction of lightly armored targets; the development of anti-system platform "Poprad" and a radar station "Bystra" (both projects are the latest of its kind in the world); the development of products in thermal technology; finally, the modernization of Leopard tanks. There was also transmitted a research vessel for the use of the University of Gothenburg.

PGZ, therefore, offers a full spectrum of services in terms of production, modernization and renovation of missile systems; production and delivery of ammunition and small arms; production and modernization of armored vehicles, command; communications and electronics equipment of soldiers and weapons; as well as production and modernization of aviation, naval units and real estate. In September 2015, Polish Armaments Group has sought for acquisitions of Naval Shipyard. It is located in the same complex as the Nauta port shipyard. It mainly deals with protection of the Polish Navy and the construction of new units for it. There is also a full technical facility for repairs, maintenance and construction of other units. Despite facing financial problems in recent years, it does not cease to continue operations in building and renovating of various units. Polish Navy shipyards of military naval would soon finish, among others, the construction of the patrol „Silesian” for the Polish Navy. PGZ was invited by the Polish Ministry of Defence for conducting the individual projects, called „Heron” and „Swordfish.” These are the projects, designed to build new and highly modern types of warships for the Polish Navy. It stands up from other projects by its modular design, which enables fast adjustment of parameters of the unit to the requirements of the battlefield. They will also have landing and hangar for the helicopter slip; for the boat landing, and more importantly, would be able to use cameras and unmanned boats. Depending on the version, there will be also two or four driving engines. Their displacement will constitute more than 2645t, with the possibility of future modernization and expansion during exploitation. What

is interesting, they will be built in the technology that is invisible radar. The project of corvette „Swordfish” and the patrol „Heron” – are the largest orders ever made for the reinforcement of the Polish Navy.

Polish shipbuilding industry has made a great technological breakthrough, so that now it manufactures products on a global level. The innovative project launched in Polish shipyards in 2014 (tugs hybrid) – is a clear evidence for this. It is the world's first unit of this type. The tugs operate usually close to shore and ports, utilizing electric motors and internal combustion for the sake of air and water pollution reduction. Worth noting that the units use internal combustion engine only when it is necessary. Hence, most of the time they use the electricity is stored in the batteries. Projects that are built in Poland, based on the latest world standards.

It should also be noted, that the Polish armed forces are also information systems and other IT solutions, Ministry of Defense and the Polish Army; the police and other armed and operational units, which significantly developed the security systems, both internal and external. The flow of information, both through closed and open network, cannot be disturbed. Investments in this sector are among the most important for years. Moreover, one shouldn't forget that in addition to the transfer of information, the military constitutes also logistics and transport. Military logistics constitutes a part of the defense logistics, and together represents a service, responsible for organization and delivery of sourcing and provision of services to operating bodies and institutions of the armed forces. The primary goal of the logistics security is to maintain high combat capability of troops, for some period of time, in order to reach strategic goals. It targeted to meet the needs of troops in the field of armaments and military equipment; munitions and materials, necessary for training and fighting; maintaining technical efficiency of armaments and military equipment in peacetime; maintaining of a technical efficiency of weapons and military equipment, designed to conduct combat operations. Operations of this type require innovative technologies and solutions, such as a system for monitoring of the transport of cargo, monitoring of field units with the option to remotely intervene and respond. In these respects, strong investment opportunities exist, both in the system and infrastructure.



## MEDICINE

As indicated by conducted studies, health is mentioned by the bigger part of the society as the most appreciated value. It also has the greatest impact on all aspects of human life. In recent years, the traditional concept of health as „the absence of disease or infirmity” has been changed into the „physical, mental and social well-being.”

The level of the provision of medical services in Poland has shown an upward trend for many years. The reason that had contributed to this fact is the privatization of the medical sector. High quality of services in private institutions contributed to the increase of services in the public sector as well. Poland, in fact, is enriched with highly specialized staff and modern medical equipment, which favorably allocate country among the EU members. In 2014, according to the records conducted by Chambers of Nurses and Midwives, Pharmaceutical Chambers and Chambers of Laboratory Diagnosticians the right to conduct medi-

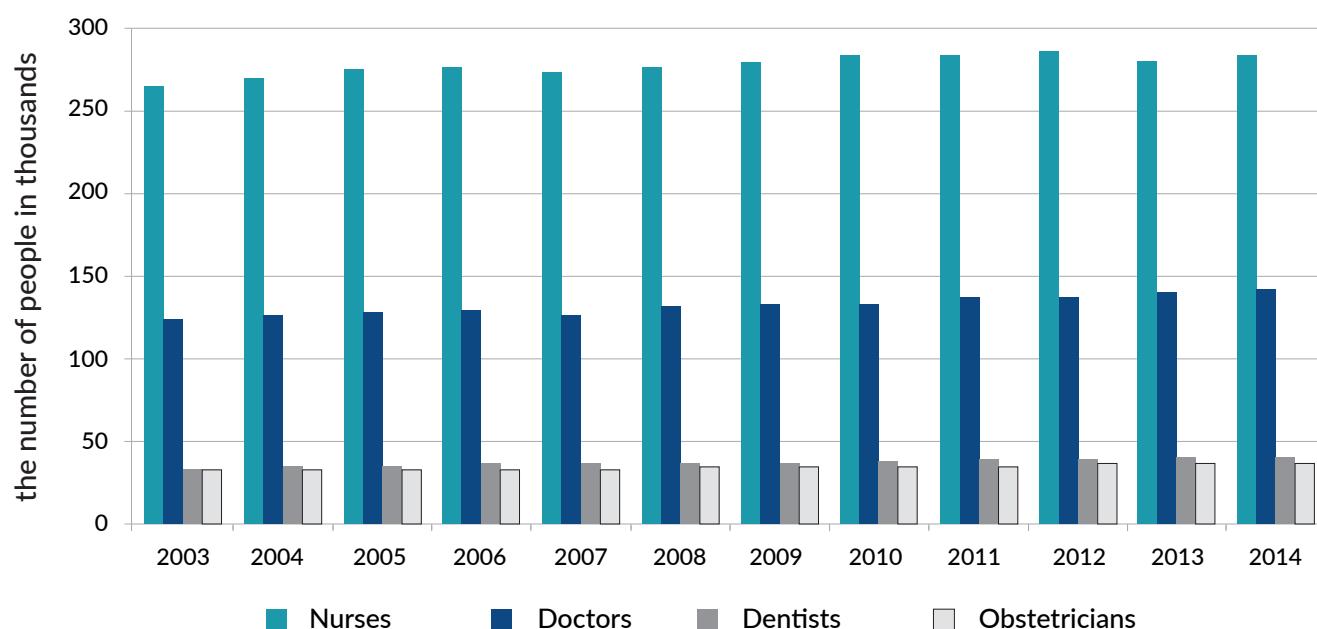
cal practice was possessed by 141.4 thousand of doctors, 40.1 thousand of dentists, 282.5 thousand of nurses, 35.5 thousand of midwives, 31.4 thousand of pharmacists and 14.7 thousand of diagnosticians. In comparison to the previous year, medical experts can notice an increase in the number of persons entitled to practice, and the highest was recorded in the group of pharmacists and laboratory diagnosticians (up to 3%).

Beyond the „availability” of medical staff, expressed by the correlation of the number of working with the patient to the number of potential patients, an important factor, which affects the quality of health care system- is a qualified medical staff. Dating back to 2014, 59.5 thousand of medical specialists were registered in Poland, which accounted 67.9% (by 0.3% more than last year) of all physicians working directly with the patient; 2.7 thousand of dentists specialists, which corresponds to 20.9% of the market.





**Figure 1: The people authorized to practise as: doctor, dentist, nurse, obstetrician in 2003-2014**



Source: own study based on Central Statistical Office „Health and health care in 2014“

It is worth noting that approximately 10.5 thousand of doctors and 4.3 thousand of dentists with first-level degree specialization, worked in the health care system, but which currently are not specified among specialists. This group is steadily decreasing - older individuals finishing their practices, while some doctors with first degree specialization are using fast modes to improve their skills and professional qualification.<sup>1</sup>

During the recent years, there has been registered a significant activity in the development of selected segments of medicine in Poland. The interest in many fields, such as E-medicine, or e-health has noticeably increased. This can be explained by the continuous technological progress and growing market demand. In fact, nowadays commonly used tools and applications are being used for daily monitoring of patient's health status. This segment of the Polish medicine is constantly being developed, and the provision of electronic services into the health sector is a priority for the coming years.

## TELEMEDICINE

The given innovative form of the medical services' and health care provision, which combines the elements of medicine and telemetry, is based on the use of modern communication technology, designed to break down geographical barriers and secure the exchange of medical data between specialists on distance.

According to the Central Statistical Office, in 2030 one can expect the increase in demand for health care services, which will be dictated by demographic changes that will in turn affect the increase in the number of people over 65 years old. CSO also reports that: „In the next 20 years the population of working age will steadily decrease to 20.8 million in 2030.“<sup>2</sup>

The progressive aging of the Polish population is a major challenge for the health care system. At the end of 2014, elderly population of 65+ years old composed of almost 5.9 million of people. In comparison to 2010, this number increased by 13.2%, while the total population decreased by 0.1%. Thus, the percentage of elderly people in the total population increased from 13.5% to 15.3%. One of the factors of the changing age structure of the population has been observed since 1992, lengthening the life expectancy.

In conjunction with the scale of the changes, a coordinated action in many areas of health and social care is evidently required, ranging from training of medical staff, the application of advanced technological solutions, to support the application of new technologies in the practical applications. The development of telemedicine solutions, in the light of projected changes, is not only a possibility, but a necessity, aimed at efficient use of human resources, physical health and social care as well as increase of its effectiveness in price-effect correlation.<sup>3</sup>

Despite the fact that legal and regulatory system in Poland has not define telemedicine yet, one should emphasize the growing popularity of this form of medical care. Tools and applications that must support the patients and physicians, who care for them in a distance, are becoming increasingly easier in use and functionality. Devices, intended to perform home measurements and tests, are no longer a barrier even for the elderly people.

## CENTERS FOR DIAGNOSTICS OF LIFESTYLE DISEASES

Civilization diseases - are defined as occurring globally and the progress of modern civilization contributed to their spread. For this reason, the term can be also correlated with the „disease of XXI century“. This definition applies,

however, to a particular time and place. The disease, once classified as civilizational, will remain such until humanity can deal with that problem, and because of that the morbidity and mortality are not reduced and do not lose a global dimension.

The National Research Programme defines the diseases of civilization as the greatest danger to the health of the Polish population in the coming years. The list of civilization diseases includes: cardiovascular diseases (e.g. hypertension, myocardial infarction and stroke), cancer, kidney disease, diabetes and obesity, mental illness (including depression), diseases of dementia and alcohol dependence, drugs and communication disorders. For many years, one could have observed a steady increase in the incidence of allergic diseases, especially among younger patients.

Increasing the availability of innovative treatments and preventive care will save the costs and allow to maintain a greater number of people in the active group. Particularly in those areas special emphasis on issues related to innovative solutions and prevention, diagnosis and treatment as a means of quick respond to the challenge of an aging population, should be placed. It should be noted that the longer people remain in good health, are physically and mentally fit, and respectively able to work – the longer they will be able to contribute to the growth of GDP.

It is expected that Centres for Diagnostics of Civilization Diseases will be created in Poland. From the initial phase of the project, the Centre would be available nationwide through the use of innovative technologies and telemedi-

cine. Then, it is planned to extend those activities to a European scale. Centres will ultimately deal with, treatment of civilization diseases and scientific work – research, using the latest and most advanced technology. The aim of these projects is to provide comprehensive healthcare services and ensure the conduction of a scientific research, reaching the global level.

Therefore, it would be right to say assert that the issued question is the future of medicine, which today, constitutes one of the largest and important markets in the world. In Poland, the healthcare sector is one of the least organized, so one should expect a significant demand for such services. Hence, investments in this area will involve a small risk along with attractive rates of return.

### THE PLATFORM OF MEDICAL SERVICES

Polish health care system is characterized by a high level of complexity associated with the multitude of entities cooperating within it. Thousands of healthcare facilities of different sizes are operating in order to provide care for around 38 million of recipients. To ensure effective supervision of the system and present a medical care to those in need, its computerization is essential- emphasizes the Ministry of Health.

Polish Ministry of Health plans to spend high sums of money on electronic platform, which part comprises of written descriptions. Projects that are intended for implementation in 2030 by the Ministry of Health are as follow:

- P1 - Electronic Platform for Collection, Analysis and



Sharing of digital Medical Health Events;

- P2 - Medical Registry Platform - a versatile informational tool, destined for keeping records, providing electronic services, as well as ensuring the optimum level of safety;
- P3 - Health Registry Platform - systems associated with reconstruction, adaptation, maintenance and monitoring of records and other health care resources by public authorities, including the state administration and local government;
- P4 - ICT - systems of informational domain system in health care that deal with improving business processes related to management and access to information in the health system,
- P5 - Electronic platform for telemedicine consultation of the Ministry of Health, the National Health Fund and a network of highly specialized hospitals, which gives one a good chance of obtaining support for consistency between different telemedical projects in Poland.
- P6 - Reinforcement of the strategy for Polish public information of Liaison Institutions.

These solutions make possible the integration of all Polish medical facilities, so that the communication between selected institutions or access to the patient card in various places around Poland will be unlimited.

Joining the www project of telemedical systems would surely facilitate contact between patient and high-class specialist, increase access to life-saving treatments, as well as shorten the time between the occurrence of e.g. heart attack and the initiation of treatment. An additional benefit lies in the fact that it will raise the level of knowledge about illness

prevention and treatment, due to the exchange experiences as well as direct participation in operations through Internet connections. It will significantly raise the quality of services and reduce the degree of mortality among patients, for instance, from heart or circulatory system diseases.

## AESTHETIC MEDICINE

Polish market of aesthetic medicine in recent years is one of the fastest growing - according to the Lea Future company. Polish sector, in this respect, is growing faster than the Asian market, which recorded 12% of growth per year. The slowdown was noted only in Southern Europe. Experts emphasize, however, that such sudden acceleration is taking place due to the fact that the Polish market of aesthetic medicine is still a developing market.

According to the latest market analysis, Polish customers much more likely to benefit from the aesthetic medicine treatments, spending in 2014 in clinics of plastic surgery and aesthetic dermatology almost USD 1 billion. Widespread interest and general availability of services caused a 15% increase in 2014 and reached up to 20 % in 2015, thereby increasing the market value of over USD one billion.

A segment of aesthetic medicine, which recorded the largest increase, is a plastic surgery. According to the report of the research company PMR, Poles spent PLN 200 million for plastic surgeries and beauty treatments in 2013. Among the most commonly performed procedures one can distinguish breast augmentation, facelifts and nose correction. In turn, among less invasive treatments the most





popular are the treatments with use of botulinum toxin and fillers.

The PMR research company in its press-release presented that the most important trend, noticeable in the market, serves a diversification of the offer in terms of new technologies, which allows one to change existing products (such as the use of thread in lifting) to new, none previously proposed services (e.g. Aesthetic gynaecology).<sup>4 5</sup>

Most of the companies on the market, that are providing services in the field of broadly defined aesthetic medicine - in particular plastic surgery- have modern facilities, with separate sectors for consulting services and part of the hospital or treatment facilities. The development of plastic surgery, as well as the growth of technology can increase standards of living, and often its rescue. In Poland, the number of patients that is in need for such benefits constantly increases. Polish doctors are counted as world-class specialists with not a minor importance achievements. For the first time performed face transplantation on the territory of Poland (2013) was recognized by the Annual Meeting of the American Society of Reconstructive and Microvascular Surgery as the best reconstructive surgery in the world. The operation, which was carried out in Gliwice Oncology Centre by the team led by prof. Adam Maciejewski, was the world's first face transplantation, performed to save live.

Plastic surgery in Poland, in some cases, is refunded by the NFZ (National Health Fund), but this applies to situations of threatening the health / life or that, being congenital or acquired. It should be noted, however, that these are the benefits of one of the longest waiting periods: the average time for which the patients have to wait is from 4 to 5 months. Therefore, they often decide to take advantage of paid services in the private

medicine sector that are available to them immediately, in a comfortable medical facilities.

Prospects for the development of the aesthetic medicine market in the incoming years are very promising, due to the huge demand among people, which is indifferent to current state of the market.

COSMETOLOGY

Cosmetology and the entire cosmetic industry are currently very popular segment of the Polish market. Poland is one of the two European countries where cosmetology is taught at the university level, such as BA and MA level. The amount of students interested in this direction has not decreased since 1997, when the course of this type was introduced for the first type. In 2014, the cosmetics industry in Poland provided work for about 19 thousand of people and this number is keep on growing till this day. Among them one can find both experienced staff and world - class scientists.

Cosmetology - is a kind of science that specializes in maintaining, restoring or improving human appearance. It deals with improving the quality of life of patients, and is closely related to the aesthetic medicine and plastic surgery; however, uses less invasive methods of treatment. The methods of cosmetology comprise mainly of cosmetic and beauty treatments, dietary interventions, and rehabilitation.

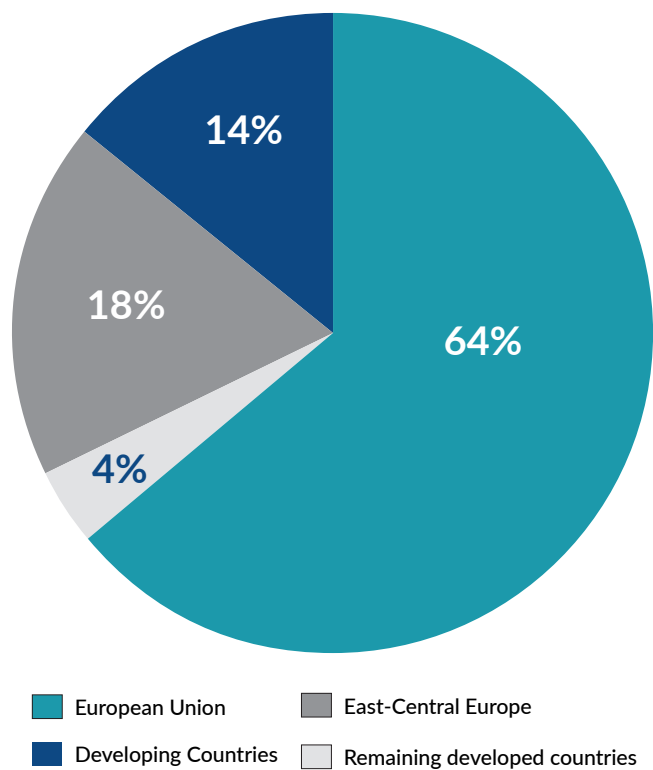
The development of Polish cosmetic companies started about two decades ago, but has accelerated since country's accession to the EU. The industry is still characterised by the growing trend, showing an average annual growth

Table 1: Value of cosmetics export from Poland in 2014 divided into regions

| Categories                                | 2012    | 2014    | 2012    |
|---|---------|---------|---------|
| Skin care cosmetics for babies            | 121,6   | 121,6   | 121,6   |
| Skin and body care cosmetics              | 301,0   | 301,0   | 301,0   |
| Color cosmetics                           | 334,4   | 334,4   | 334,4   |
| Antiperspirants                           | 279,6   | 279,6   | 279,6   |
| Hair removal cosmetics                    | 45,6    | 45,6    | 45,6    |
| Perfumes                                  | 451,8   | 451,8   | 451,8   |
| Hair care cosmetics                       | 619,6   | 619,6   | 619,6   |
| Shaving accessories and cosmetics for men | 365,9   | 365,9   | 365,9   |
| Teeth care products                       | 262,3   | 262,3   | 262,3   |
| Skin care products                        | 576,4   | 576,4   | 576,4   |
| Sun care products                         | 34,7    | 34,7    | 34,7    |
| Together                                  | 3 392,8 | 3 392,8 | 3 392,8 |

Source: own study based on polcharm.com.pl data

Figure 2: Cosmetics value by category, Poland 2012 -2016.



Source: own study based on Euromonitor International data

of 25 %. Polish cosmetics market structure does not differ from other European markets. The biggest part of the mar-

ket consist of the hair care products (EUR 616.5 million - 18.1 % in 2014), and skin care cosmetics (EUR 582.4 million - 17.1 %) that together constitute over 35 % of the market. Other important categories include: perfumes (13.1%), cosmetics for men (11.2%) and colour cosmetics (10%).

Poland was the 6th world’s exporter of cosmetic products and personal hygiene in 2012. Polish beauty brands are well recognized, but only few consumers (even in Poland) draw attention to the fact that the product comes from Poland. About 60% of Polish cosmetics exported to the EU amrket, 18 % to European markets, including Russia. The rest is sold throughout the world - Polish cosmetics are sought even in New Zealand.

According to analysts, the Polish market of cosmetics follow the path of growth, because the long-term segment has very good development prospects. The key factors, which affected this tendency, are, for instance, the macroeconomic situation and trends in Western Europe.

PRODUCTION OF GENERIC DRUGS

Nowadays, when the demand for medical services is rapidly growing, relatively cheap generic drugs bring large benefits to society: provide patients with access to safe and effective medicines of high quality; and health systems in the EU countries – with a chance to save more than EUR 20 billion per year. Thanks to these savings, the state can more easily find the resources to pay for the new, innovative treatments.





Polish pharmaceutical market is, in terms of sales value, takes 6th place in Europe - sales at the end of 2015 constituted nearly PLN 29.9 billion, a 4.8% more than in 2014. From the perspective of value terms, the market grew by nearly PLN 1.4 billion, while the value of the refund at the end of 2015 showed less than PLN 7.9 billion (+ 3.5%). That's about PLN 264 million more than in 2014.<sup>6</sup>

In 2015, Polish pharmaceutical market could boast with a significant share of generic drugs, as it constituted 85% of prescription medicaments. They are of a great popularity due to the low price if compared to the original drugs. Manufacturers introducing to the market a drug, which contains the same active substance and have the same pharmaceutical form as the original drugs, and bio-equivalence studies confirm their effectiveness. It is also estimated that „generics” constituted about 65 % of all drugs, sold in 2015 (non-prescription medicaments, and others). For comparison, generics in Italy occupied only 2% of the market in terms of value and 4% - in terms of quantity; Germany 22,7 % and 41% respectively; while in the Czech Republic - 32 % and 55 % respectively.

The price of generic drugs placed on the market, is an average of 25% lower than the price of the original drug before patent expiry. This difference increases with the passage of time and often reaches up to 90%. Thanks to the pharmaceutical drugs of this type, increases also the purchasing power of poorer buyers. Launching „generics” also affects the possibility of increasing the funds, intended to reimburse and develop innovative products in the pharmacy.<sup>7</sup>

#### Source:

1. Central Statistical Office in the publication „Health and health care in 2014”.
2. Central Statistical Office in the publication „Population prognosis for years 2003-2030”.
3. [www.izbamedpol.pl](http://www.izbamedpol.pl)
4. [www.rp.pl/wwwww.euromonitor.com](http://www.rp.pl/wwwww.euromonitor.com)
5. EMI report - Pharmaceuticals & Cosmetics Sector Poland, March, 2013.
6. Report: „Generic medicine ensuring patients' access to efficient, safe and modern therapies”, Warsaw, 2007.
7. [www.pharmaexpert.pl](http://www.pharmaexpert.pl)





## CULTURE AND ART

The way we perceive art is a measure of advancement and development of a society. The degree of appreciation of art is a measure of its potential to the increase of its value. In Poland, we have plenty of artists, both world-famous as well as those whose artistic careers have just begun. The artists who live, work and study here. Moreover, our country has a rich artistic heritage and many works of art to offer.

Investing in art is one of the oldest ways of raising capital. In the most developed countries, auctions serve not only as places where you can acquire works of art but also as areas of investment, networking and cultural meetings, accompanied by other forms of social activity. Art shows and exhibitions, the grand finale of which are auctions, have excellent settings of high artistic value, such as concerts given by distinguished composers. Investors wishing to combine profit with passion are searching for highly valuable works of art which will gain in value in the future and become great investments. Interestingly, investors compete against one another with respect to the highest price for a sold work of art. With a specific collection of works by an artist, the owner sells a single work at a high price in order to increase the value of the collection as a whole. Surprisingly, such tactics can significantly increase the value of other copies by that artist. Such a strategy also works the other way round. Market forecasts show a robust growth in investment in this area in the next few years, such growth being directly affected by an increasing wealth of the society. More than three-qu-

arters of collectors and investors acquire works of art to gain profit as they consider such works of art mostly to be long-term investments with a very high rate of return. Importantly, the global financial crisis did not affect the art market, the one the investors hoped would help them to wait out a decline in the market. New technologies have been broadly applied in that area. Today, auction houses speak openly about a transition to E-Auctions which will facilitate investing and may significantly change and accelerate trade, profit and trading in works of art.

The Ministry of Culture and National Heritage, by supporting and cooperating with cultural institutions, significantly affects the development of the prestige of Polish culture, and thus, contributes to building a positive image of Poland on the international arena. This form of country's promotion has positively reflected on other sectors, such as politics, economy and the development of international business. The greater the number of international cultural events will be held in Poland, the greater the number of investors will be interested in investing their capital into the art and culture, consequently, the wider Poland will be recognizable in the world.

Therefore, the promotion of art and culture is important on the international arena and is becoming one of the priorities of the Polish Government in the coming years. Polish experts predict that by 2020 there will be carried out a number of projects and supportive programs for the development of investment







in the arts. Allocation of investors' capital in the promotion of art and culture may not bring immediate profits, but in the perspective of the next years will have a resounding success, both reputational and business. Nowadays, the experts are assured that the Polish art market, compared to world markets, is rather characterised by a growing tendency. At the same time, no other art market in the world is growing as quickly as the Polish one. This gives a person many opportunities to commune with great masterpieces, and multiply its value. Polish art market was valued in 2014 at approx. PLN 300-350 mln, but as noted by „judges of art”, the true interest in the market is undervalued, by even seven times. In 2020, the investments in art can reach a threefold increase compared to the current value. In 2013, in Warsaw Desa Unicum auction house, were sold the masterpieces with overall value of PLN 23.1 million. A year later it already constituted PLN 45 million.

In 2015, the auction house scored sale volume of PLN 65 million, with 56% market share. Certainly, in subsequent years this trend will be preserved. As regards the market auction houses, in 2015 sales of old art in the biggest Polish auction houses reached PLN 53.5 million. Second best - is the contemporary art, which sale in 2015 reached PLN 45.5 million. However, one should also pay attention to sculpture and video art, which currently, seem to be a favorite form of investment. Interestingly, the most important transaction of the Polish art was the sale of the most expensive picture at auction in Poland that took place on December 11, 2014. That day, the painting of Roman Opalka was sold for PLN 1.750 million.

In 2015, during the June auction, for PLN 1.65 million was sold „History Lesson” by Jacek Malczewski. In December of the same year, for the PLN 1.2 million was sold the picture of Joseph Chelmoński, named „Around”. According to the portal „Market and Art”, the trade value on Polish auction art market constituted PLN 60.6 million in 2014, and the year 2013 resulted in PLN 62.5 million.

Only in 2014 Totalizator Sportowy, following the regulations of the gambling's law, conveyed to the appropriated funds con-

nected with culture, more than PLN 150 million. There is also some kind of rivalry among bigger Polish cities because of new widely opened museums, theatres and art galleries. These buildings definitely have no value without a defined destination and certainly will have to be filled with valuable assets.

History is also an important part of the Polish culture. The Poles are full of respect and take care of nearly 830 working museums in Poland, which are visited by about 30 million tourists every year. The leader in this field in attracting the highest number of visitors is still Mazovia, followed by Małopolska Region. Relatively lower results gained such regions as Lower Silesia and Pomerania.

Technological development in turn, foster the development of the museums; in many Polish museums the tourists can enjoy interactive exhibitions, presentations and reconstructions of the most important historic events, such as the Battle of Grunwald or many other from the II World War. Thanks to the support of the Departments of Culture and National Heritage and significant amount of financial means forwarded from 2004, the image of Polish museums has been prominently changing: from the boring and obsolete institutions they turned into the range of interactive and modern ones. According to the TripAdvisor.com, which is one of the most important touristic portals, on the list of the 10 best Polish museums are placed:

10. Historical Museum of the City of Cracow;
9. Auschwitz Jewish Center in Oswiecim;
8. Galicja Jewish Museum in Cracow;
7. Museum of the Cracovian Salt Mine Wieliczka;
6. The Malbork Castle Museum;
5. National Museum of Majdanek in Lublin;
4. Rynek Underground in Cracow;
3. Polish Aviation Museum in Cracow;
2. The Warsaw Rising Museum in Warsaw;
1. Auschwitz – Birkenau Memorial and Museum in Oswiecim.









# 03



## INVESTMENT SERVICE CENTER



The fundamental objectives for each capital-owner are primarily to protect accumulated wealth and ensure further attempts of its multiplication. The entrepreneurs, however, seek for capital for development of their business. In both cases, it is necessary to take risks by involving the assets into the available market investment tools.

Investment Service Center (ISC) is an international business structure associating high-level experts. Their task is to finance investment projects and look for projects with high business potential for the Investors.

We act in countries such as: Poland, Croatia, Spain, Belgium, Ukraine, Romania, Bulgaria, the United States, the UAE, Qatar, India as well as China. As a part of our activity, we cooperate with a dozen world-biggest investment funds, which are financing business enterprises described hereafter.

All our investments create a great business potential thanks to high profitability and effective management of both technological and financial risk. Additionally, the obtained grants increase effectiveness of implemented projects. The experts of the Center can assist you on every stage of your business activity.

Advantages of using the Investment Service Centre:

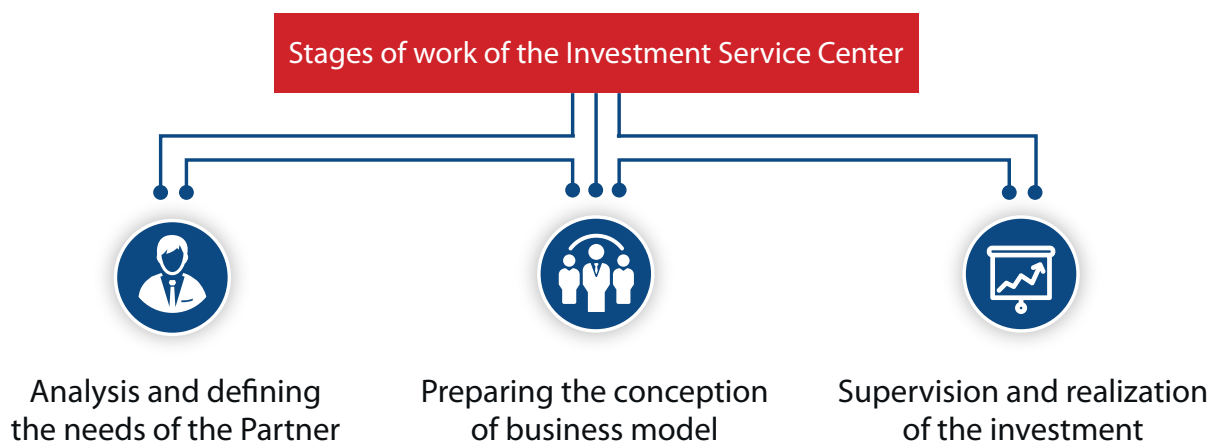
- Time saving - no need in continuous training and gaining experience;
- Entrusting capital to professionals;
- Risk minimization;
- Full control over the executed transactions;
- Fast realization of orders;

The main goal of the ISC is to provide help in the elaboration of investment projects based on cooperation with a private investor, their evaluation and implementation, ensuring such conditions as:

- integrating public subsidies, private financial resources,
- integrating loans and funding from the EU financial institutions,
- matching the purposes of each side of the partnership to the characteristics of the given project,
- achieving mutual compliance on the effective legal structures of the project,
- comprehending the aspects of risk management and its financial impact on the project,
- assessing the costs and the ability of effective implementation and management, constituting key factors for the selection of the project structure,
- creating transparent rules on how to choose partners from the private sector and methods of rational usage of the funding.

The support of the Investment Service Center starts at the moment when the investor plans the visit, aimed at conducting first discussion on potential cooperation. As a part of cooperation, we provide Partners with all-embracing and professional help with realization and further supervision over specific investment projects. The ISC's specialists perform all the tasks necessary to carry out particular phases of the investment process, they stop only at the moment of setting up the business in accordance with the previously established objectives of the accepted project. Therefore, ISC's Partner can be sure that, regardless of the stage of investment process, the Investment Service Center will ensure that the project is led by professionals.

The main goal of ISC is to provide Investors with complex services. As a part of the cooperation, we offer all-embracing and professional support in implementation and further supervision over specific investment projects, starting from searching for innovative technological solutions, through realization of the investment plans and ending with the completion of the investment.



In order to optimize the work and provide high-quality care to our Clients, we have distinguished 6 departments, each of which is responsible for subsequent stages of the investment process.

| DEPARTMENT  | TASKS  |
|---|--|
|  <b>Legal Department</b>                             | <ul style="list-style-type: none"> <li>• issuing opinions about investment projects as far as formal and legal terms on the particular territory are concerned,</li> <li>• reviewing and providing support in creating projects of the documents containing the position of the Investment Service Center,</li> <li>• providing legal assistance for investment projects within the framework of the support programs,</li> <li>• coordinating the legislative process concerning the conclusion of international agreements,</li> <li>• conducting formal proceedings related to obtainment of intellectual property protection.</li> </ul> |
|  <b>Financial Department</b>                        | <ul style="list-style-type: none"> <li>• supervising target companies and Closed-end Investment Funds, which are implementing investment projects,</li> <li>• developing financial plans and projects of their change,</li> <li>• monitoring investment realization and making an on-going analysis of it,</li> <li>• preparing financial information as well as periodic financial reports from the realized investments.</li> </ul>  |
|  <b>Department of European Funds</b>               | <ul style="list-style-type: none"> <li>• researching among the available forms of support,</li> <li>• selecting appropriate assistance programs for the planned investment projects,</li> <li>• preparing an audit of investments eligible for support,</li> <li>• preparing application documentation,</li> <li>• supporting in the appeal process,</li> <li>• settling the received assistance.</li> </ul>   |
|  <b>Department of Marketing and Communications</b> | <ul style="list-style-type: none"> <li>• performing IT activities directed to the mass media,</li> <li>• maintaining the contacts with media in order to efficiently inform the public opinion about goals, tasks and actions of the ISC,</li> <li>• promoting the intellectual output of ISC and its Partners,</li> <li>• organizing marketing endeavors,</li> <li>• creating a cohesive visual identification system of ISC and managing it.</li> </ul>  |
|  <b>Department of Innovative Technologies</b>      | <ul style="list-style-type: none"> <li>• searching for and selecting innovative technological solutions with the aim of implementing them,</li> <li>• cooperating with a highly developed structure of R&amp;D centers in Poland as well as technological parks,</li> <li>• technological verification of the projects,</li> <li>• evaluating innovativeness of the projects,</li> <li>• determining directions for expansion to international markets.</li> </ul>   |
|  <b>Department of Business Security</b>            | <ul style="list-style-type: none"> <li>• reviewing and optimizing security and corporate governance,</li> <li>• integrated management of information security in an enterprise,</li> <li>• reviewing threats and sensitivity to the adverse occurrences,</li> <li>• designing and implementing identity management,</li> <li>• providing security services "in the cloud".</li> </ul>  |



FOUR APPLICATION PLATFORMS



INVESTMENT PROJECTS PLATFORM

The task of this unit is to acquire funds and to find a project partner. ISC experts prepare optimal investment offers for entrepreneurs looking for capital, or looking for high business potential projects for the investors. The advancement of the projects does not play a grand role – a more important factor is its prospective value and high reimbursement rate of the investment. After undertaken analyses of economic market in Poland and in countries which economically attractive, the most stable and the fastest developing regions and branches are chosen. The experts of the Centre are accurately analyzing the market have distinguished the sectors of broad investment prospects.

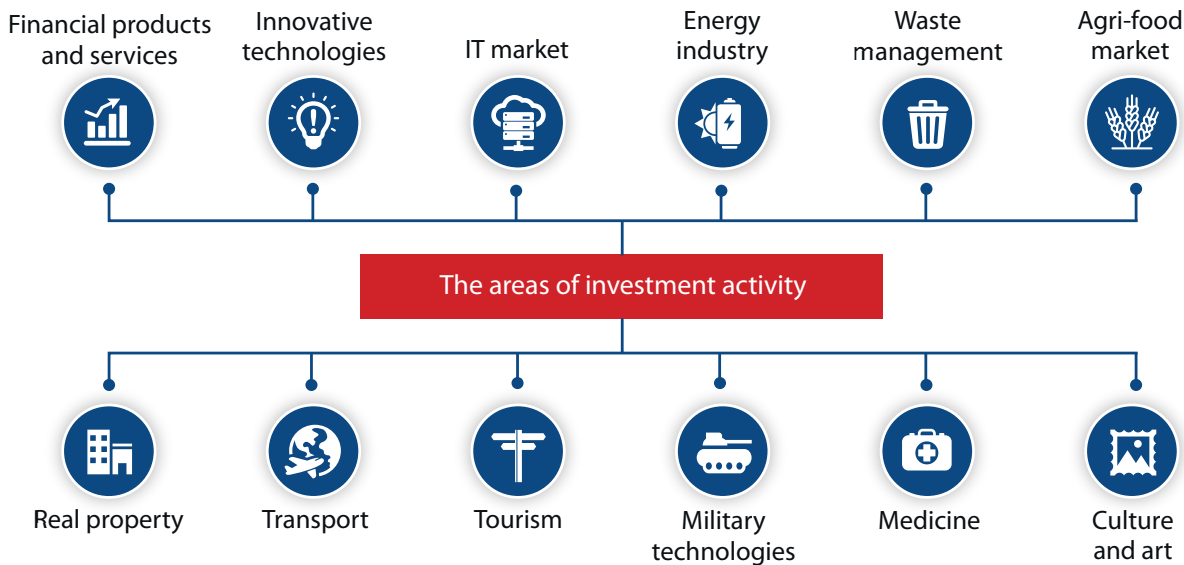
The four key fields of interest for ISC specialists are:

- **Passive and plus energy housing**, which means energy-saving building and those which can lead the overabundant amount of generated energy to the transmission network, thus improving the energy balance. The demand for this solution was enforced as a sort of directive, which obliges all member countries to execute an obligation in 2021 which states that all newly built constructions shall be nearly zero energy use objects. The aforementioned field includes: innovative construction technologies, weatherization and thermal systems,

- door and window carpentry, plus energy materials and devices producing thermal and electrical energy.
- **Renewable power engineering.** Renewable energy sources are becoming an element essential to maintain the world's energy balance. Gradual depletion of conventional power sources leads to the need of use of innovative technologies based on acquiring energy from renewable sources on which ISC concentrates their attention.
- **Low-emission transport.** Just as in power engineering sector, a revolution in this branch is being made, which is to replace combustion-powered vehicles with electric and hybrid ones. They will contribute to the increase of energy independence and the reduction of greenhouse gases emission. The field of interest includes not only factory-made electric cars, but the conversion of combustion cars as well and, what is the most relevant case in this matter, the development of vehicle loading infrastructure.
- **ICT market** is one of the faster and more stable developing markets in our country. Our specialists from IT sector are highly esteemed in the world. Investment Service Centre is looking for would-be start-ups here, as well as for innovative technological solutions worth investing in.

In the field of interest of Investment Service Centre there are also projects included from following areas:

- **Financial products and services** are a vast area of the entire financial market. ISC focuses mainly on investment projects realization as a result of proposed cooperation which includes introducing unique systems of micropayment or multisystems on which the demand is constantly increasing.
- **Waste management.** The amount of waste produced by mankind is increasing every year. ISC promotes development of projects which are to increase the amount of recycled wastes. Those, when stored, threaten the natural environment and human health. Such solutions would allow an absolute disability of wastes or to use them as a source of energy.



- **Military technology** is a grand resource of innovation implemented in an organized and precise manner. ISC experts follow the development of Polish arms, shipbuilding and aviation industry, seeing a chance for a development of profitable projects.
- **Immovable properties.** The value of transactions finalized on Polish property market in 2015 exceeded €4.1 billion. ISC being an accelerator for innovative projects possesses knowledge and experience crucial to locating the capital in lands and immovable properties.
- **Technological innovations.** The implementation of new goods production or improvement of existing ones, opening new market by introducing a product or a service unavailable earlier, applying a new way of sale, or finally implementing new distribution and organization. Such projects are the field of interest for ISC experts.
- **Medical and recreation tourism.** It is an important area of economic activity, and a relevant branch of social activity at the same time. Poland, on the other hand, is becoming more and more eagerly visited country by tourists. Rates of hotel accommodation use being constantly improving every year encourage to invest in this part of the market, and investments in this sector are characteristic for their limited risk and allow to generate relatively high income.
- **Food market** Poland has got rich traditions in producing regional food and great possibilities for producing healthy and eco food. The potential of this branch has not been used entirely yet.
- **Medicine.** The emphasis is put on tele-medicine – an innovative form of providing medical treatment and service, binding the elements of medicine and telemetry, aesthetic medicine and cosmetology altogether.
- **Culture and art.** It has been always a field and a chance for increasing the capital. What is important, the art market prices are not vulnerable on crises and financial problems of economy. A well-directed purchase strategy might ensure a high rate of investment reimbursement.



## EU GRANTS PLATFORM









Using European Grants increases the profitability of every investment. The European Union grants enable enterprises to realize complex, long-term development actions thanks to significantly lower costs. EUR 82.5 billion are to be allocated within new Financial Perspective by 2020. The money will reach beneficiaries through 5 operation programmes implemented at central level, 16 regional operation programmes and one supra-regional programme. The support

for entrepreneurs will come from three main sources: Intelligent Development Programme, Eastern Poland Programme and regional programmes. In the EU directives for new prospects, the European Commission indicated areas for which the EU funds may be allocated. For two of them, which are targeted directly at companies and concern investments in research and innovations as well as increasing competitiveness, nearly EUR 16 billion were earmarked. The resources will improve Polish economic competitiveness and will positively reflect on the projection of Poland's image on the international arena mainly with innovations, which are to be developed thanks to entrepreneurs and scientists cooperation.

In fact, the Investment Service Centre possesses rich experience and has already fulfilled about 150 projects with the use of EU grants. ISC specialists and experts, basing on their vast knowledge and experience, promote and acquire EU funds for the projects. They represent an invaluable help for units, searching for that kind of financing, being the link that binds the capital with the investors and start-ups looking for them. It should also be stressed that the industry is not a relevant issue in that matter. It is due to the fact that the Centre focuses on shaping the strategy and effective obtaining of the capital for individuals' investment projects. The scope of our activities includes complex assistance in acquisition of financial support. After carefully learning and analyzing the investment needs, we offer our clients: assistance in choosing an appropriate support program and preparing the application form; supervision over proper adherence to the schedule of the project as well as its settlement.

European Funds 2014-20

# 82,5 BN EURO

-  innovations
-  entrepreneurship
-  highways and expressways
-  research and development
-  green energy
-  environment - friendly transport
-  information community
-  social inclusion

Under the support for entrepreneurs in the process of raising funds, it warrants a complete service in project and finance analysis and, what is important, in planned projects profitability area. ISC also offers performing a detailed verification of all available and possible sources of financing, offering not one, but several available options. No matter if the grant comes from EU funds or from another support program ensuring the achievement of pursued goal, one can count on ISC's help without any fear of high service costs- for ISC payment depends on the investment's success.



## STARTUPS PLATFORM

The introduction of technological innovation begins at the stage of concept creation and planning. It's a long and risky path, passing of which results in a birth of technology. A proper conduct of this process with a precisely foreseen stages of technology implementation ensures the success of the project. However, to raise funds for the development of own business constitutes one of the biggest problems that are faced by young entrepreneurs.

Poland is currently proceeding towards the development of innovation. Thanks to the government project „Start in Poland”, technological initiatives with high economic prospects would be supported. Planned pool of funds intended for the use of approximately PLN 3 billion and will become the largest in Central and Eastern Europe support program. The continuation of Poland's development and the promotion of new technological inventions would allow to implement modern solutions, produced in Poland, in a short time. However, the funds could be also gathered outside of Poland. It would increase the economic competitiveness and stability of the country and improve the quality of Polish society. In fact, Poland for many years has invested in innovations and undoubtedly, achieves many successes in this field. The project, which is presented below, perceived as the greatest entrepreneurial start-up not only in Poland, but within the entire Europe. In the immediate future, Poland would have great financial opportunities for the introduction of modern, creative and innovative start-up programs.

ISC (Investment Service Center), with the help of Start-up Platform, gains an increasing number of new applications and runs the acceleration programs for start-up units. The Platform also deals with the key start-up acceleration process, which means it helps to gather the capital, recommend projects for financing from EU funds and commercialization of the products. Regardless of state of advancement, each projects receives access to infrastructure, mentoring, co-

aching and all other services necessary for realization of a new business concept. Cooperating with economic partners and local authorities, Special Economic Zones, Entrepreneurship Incubators, ISC provides its clients with constant support and the highest quality service, starting from a development of start-up idea, ending with a full shaping of the business, renewing its position on the market. In fact, the offer is also directed to those individuals, who seek financial funds for developing. ISC helps verifying and spreading the idea, creating a business and marketing plan of implementing it to the market, and most importantly, finalizing investment needs of a young entrepreneur. In addition to that it ensures each partner the promotion of projects for obtaining financial support from the EU funds. ISC cooperates with international entrepreneurship incubators, located in such countries as the USA, China and the United Arab Emirates, supporting constant international contacts with its experts. Saying that, ISC is about to help entrepreneurs to know their limitations and maximize their value.



## TRADE MISSIONS/ FAIR PLATFORM

There is never such a time when a company can afford lack of its promoting. Nowadays, in order to sell a product, it is crucial to show it to the largest number of people which could eventually lead to sell increase, for the competition is so big that no one would notice a product or a brand without its exposure beforehand. The very asset of the Fair is the face-to-face formula, which could allow for direct contact with the current and potential clients. As a part of the platform for Trade missions and Fair, the experts will select a trade program or trade mission plan adequate to the needs of a client. The effectiveness of this formula can be proven by long-lasting participation of entrepreneurs, who purposefully chose exhibition on fair as an element of building the image and position on the market. The ISC supports clients also with obtaining funds and capital for the planned action programs. The Marketing Department carries out relevant analyses and plans, which are then evaluated, thanks to which the Investment Service Center can customize the financing programs appropriately.

The platform provides lists and schedules of the most important industry fair and conferences across Europe and the world. The base is strictly connected with the companies cooperating with ISC and is updated all the time. The ISC's experts, thanks to long-lasting experience in the business, have wide spectrum of business contacts, therefore, the cooperation process with the event organizers is considerably shorter and lacks any unnecessary formalities.



## KEY PROGRAMMES AS A PART OF INVESTMENT COOPERATION BETWEEN POLAND AND UAE

As a result of cooperation between Poland and governmental part of Emirates, 6 key investment programmes have been established. They will be coordinated by Emirates & Europe Business Development Cluster – an initiator of cooperation between these countries. Their main goal is to develop and support Polish economy. Ministries of both countries are the leaders of particular programmes. They are responsible for certain cooperation areas and determine goals and methods of achieving them.

### 1. POLAND AS A TOURISTIC DESTINATION FOR THE MIDDLE EAST.

Cooperation as a part of program realization has been undertaken by Polish Ministry of Sport and Tourism and Visit Dubai.

The program aims at, among others:

- increasing touristic flow between Poland and Middle East countries,
- increasing frequency of air links,
- adopting existing standards available in means of transport to needs of tourists from particular countries,
- adopting food options to needs of tourists from both countries,
- increasing the range and unifying promotion campaigns.

### 2. STRATEGY FOR TRADE DEVELOPMENT BETWEEN POLAND AND UAE FOR 2016-2020 – AGRI-FOOD MARKET.

Cooperation as a part of program realization has been undertaken by Polish Ministry of Agriculture and Rural Development as well as Government of Dubai.

The program aims at, among others:

- increasing export of Polish products of agri-food sector,
- adopting agri-food products to UAE's consumers,
- increasing the range and unifying promotion campaigns,
- promotion of Polish organic food on UAE market.

### 3. SUPPORTING ENTREPRENEURSHIP BY INVESTMENT INCENTIVES OFFERED BY POLAND FOR INVESTORS FROM UAE.

The cooperation as a part of project realization has been undertaken by Ministry of Finance in Poland and Emirates.

The program aims at, among others:

- increasing the scope of investment conducted in Poland,
- increasing interest in Polish capital market,
- raising investment in newly-established projects,
- co-financing investment projects by UAE.

### 4. COOPERATION OF YOUNG GENERATION BETWEEN POLAND AND UAE AS FAR AS INNOVATIVENESS DEVELOPMENT IS CONCERNED.

The cooperation as a part of program realization has been undertaken by Polish Council of Ministers and Minister of Happiness in UAE.

The program aims at, among others:

- increasing educational exchange of young generation,
- increasing implementation of innovative solutions on Po-

lish and UAE markets,

- increasing volume of support for start-ups,
- creating conditions for entrepreneurship development and technological innovation by means of international incubators.

### 5. ECONOMIC DEVELOPMENT PLAN FOR POLAND AND UAE BASED ON BILATERAL COOPERATION FOR 2016-2020.

Cooperation as a part of program realization has been undertaken by Polish Ministry of Development and its equivalent in UAE – Ministry of Economy.

The program aims at, among others:

- considerable and sustainable rise in productiveness in enterprise sector,
- leading to increase of their international competitiveness,
- stimulating innovativeness through rise in efficiency of knowledge and work,
- determining development programmes for certain industries,
- increasing internationalization of Polish economy.

### 6. POLISH CULTURAL HERITAGE – PROMOTION AND SETTING UP RELATIONS BETWEEN POLAND AND UAE, STRATEGY FOR 2016-2020.

Cooperation as a part of program realization has been undertaken by Ministry of Culture and National Heritage in Poland and UAE.

The program aims at, among others:

- increasing awareness concerning Poland's history and cultural heritage,
- increasing involvement of artists in international contests,
- increasing financial spending on development and promotion of culture,
- increasing number of available sources of cultural information and channels of their distribution,
- increasing cooperation between organisations promoting culture in UAE and Poland.

### 7. DEVELOPMENT OF ICT TECHNOLOGY AND CLOUD COMPUTING, STRATEGY FOR 2016-2020.

Cooperation as a part of program realization has been undertaken by Ministry of Digital Affairs in Poland and UAE.

The program aims at, among others:

- implementation of IT solutions in enterprises and budget entities,
- unifying administrative procedures in governmental entities,
- improving effectiveness and efficiency of public services,
- rationalizing expenses in public administration and enterprises through implementation of IT solutions.





# 04



## BUSINESS MODEL





Within the framework of cooperation we can offer implementation of investments in the abovementioned areas, and in one of the two models that differ from each other especially in terms of the stage on which the invested capital is controlled. Additionally, there are different legal procedures regarding commitment of resources in specific investment projects.

The first of the offered models consists in forming Closed-end Investment Funds, which will use the obtained financial resources for the purchase of interest or shares of the special purpose vehicles, thus transferring the capital for financing of the selected investment projects to them. The proposed model involves transfer of a substantial amount of financial resources to the Closed-end Investment Fund, which subsequently uses the capital to finance several projects from a given industry sector. Analysis and the decision-making process are performed at the level of the investment fund and can be independent from the capital sources. This solution does not require constant involvement of the individual in the decision making process, but on the contrary assumes giving full trust to specialists, managing the Fund, as well as to members of the Board Experts.

The second proposed model is based on direct investment into entities, which basic objective lies in the implementation of a thoroughly analysed and accepted investment projects. It is possible through purchase of securities like: stocks, shares or bonds, which according to the Polish legal system do not require the collection of percentage from the invested capital. Thus, they also meet the criteria set by the Sharia Law. In this model, any and all decisions concerning the choice of investment projects are made before the capital is transferred to the special purpose vehicles. Within the frames of the described solution, it is possible to directly participate in the process of analysis of the offered business concepts and make decisions about the possible commitment of funds in the selected projects. However, it requires a more active role within the investment process but, at the same time, it gives much better control over commitment of the capital.

The aforementioned investment models reflect the most common approaches to the investment issue in the best possible way. The offered solutions give the possibility to both participate in all investment decisions, and also transfer the referring competences to the team of experts, who shall select business concepts while taking into account the best interests of all parties.

## CLOSE-END INVESTMENT FUNDS

Functioning of Closed-end Investment Funds in Poland is regulated by the Polish law, in particular by the Investment Fund Act and other related implementing regulations. The act states

that the sole subject of activity of funds involves investing financial resources, collected by offering the purchase of investment certificates in, as specified in the act, securities, monetary market instruments and other property rights. Proposal of purchase investment certificates can be made through public offering (directed to unspecific receiver) or private offer (directed to not more than 149 investors).

## INVESTMENT FUNDS ASSOCIATION

Closed-end Investment Funds are established by Investment Funds Associations with the task of managing the Funds and function as a body representing a given Fund in all legal relationships with the third parties. Investment Funds Associations are legal persons, and their activity is strictly supervised by the Financial Supervision Authority, which is the state financial supervisor. This ensures transparency of Associations and their compliance with all legal regulations and best market practices.

## FUNCTIONING PRINCIPLES OF CLOSED-END INVESTMENT FUNDS

It should be stressed that, despite the fact that the basic legal act regulating establishment and functioning of Closed-end Investment Funds is the Investment Fund Act, other regulations are very often applicable for their activity, for instance, the Act on public offering, conditions governing the introduction of financial instruments to organized trading and public companies, or the Act on trading with financial instruments.

The basic document that regulates the principles of operation of a given Closed-end Investment Fund is its statute, which is agreed before a notary that being a state official ensures additional security of the entire process) at the time of establishing the Fund by the Investment Funds Association. In compliance with regulations of the Investment Fund Act, the fund participants are not liable for its commitments. After establishment of the Fund, it is registered by the Association in the National Court Register, which verifies all documents in terms of their compliance with legal requirements. In the case of a positive result of verification, the Fund is introduced into a generally accessible register of investment funds, where everybody can access basic information concerning a given fund. Public access is yet another factor ensuring transparency of the establishment and registering process of Closed-end Investment Funds.

At the time of forming of the fund, the first series of investment certificates are issued. The certificates are purchased by the investors in return for certain assets and financial resources. Investment certificates are documents confirming the title of participating in a given Closed-end Investment Fund. They give the right to participate in assemblies of investors,

and increase their value results from the increase of value of investments completed by a given fund.

Emission of new certificates and resulting acquisition of new financial resources or other assets requires a resolution of the investors assembly. In this way new investors can join the Fund and acquire benefits from the implemented investments. At the same time, it is possible to purchase investment certificates from the existing Fund participants, provided that the statute of the Fund does not include restrictions in this matter.

In order to ensure full security of transactions within the frames of the proposed cooperation, transfer of any financial resources will always be performed by means of two globally accepted international banks.

## EVALUATION OF CERTIFICATES

In conformity with the Investment Fund Act, valuation of certificates must be performed periodically at the day of valuation, which means - at least quarterly. Additionally, valuation should be made in sufficient advance, also before the date of commencement of subscriptions for new certificates and on the day of purchase of the certificates. The performed valuations are verified by a Depositary that in most cases represented by a large bank which has a department specialising in servicing of investment funds.

Valuation of certificates is performed in two stages. During the first stage a net value of assets of a given Fund is determined on a selected day of valuation. For this purpose the value of Fund assets is reduced by its commitments. In turn, during the second stage, the result is divided by the total number of investment certificates issued until the day of valuation.

## PERMITTED INVESTMENTS

Closed-end Investment Funds are allowed to implement investments consisting in purchase of various classes of assets. Among others they include: securities, derivatives, real properties, and also liabilities. It has to be stressed that the Investment Fund Act imposes restrictions on funds that prevent concentration of all fund assets in a small number of investments. Thus, the investment policy of each fund must assume placement of acquired financial resources in at least 5 independent investments.

There are no limitations regarding concentration of funds in a given class of assets, but they cannot be instruments of the same entity.

One of the main benefits of investment execution through Closed-end Investment Funds are the matters connected with tax optimisation. By virtue of the act on income tax, investment funds are excluded from corporate income tax. As a result, it is possible to accumulate the income from investments without the need to pay 20% of earnings annually in the form of tax. The income is taxed only at the moment of sale of investment certificates by a given Fund member. However, it is possible to form a structure which allows minimising fiscal burden.

## WITHDRAWAL FROM INVESTMENT

The basic way of withdrawal from the Closed-end Investment Fund is a submission of a request to redeem investment certificates. Any and all regulations regarding the course of this process, including the buyout procedure and time-limits when it can be performed should be included in the statute of a given Fund. At the time of buyout, certificates are redeemed by law. The statute should regulate the manner of transferring financial resources from buyout of certificates to the fund participants. Resale of the owned certificates to third parties, interested in purchasing them, is an alternative solution. Any income of investors result from the increase of investment certificates value and the resulting difference between the purchase price and the sale price.

Within the offered cooperation we encourage specialisation of the established Closed-end Investment Funds. It consists in concentration of investments executed under a given fund in a given economy sector or a selected industry. This allows concentrating specialists from a given field under one Fund. They provide support to those, who are managing the Fund, which has a positive impact on the results from investments achieved by the Fund. At the explicit request it is possible to create a mixed Closed-end Investment Fund.

## SHARIA INVESTMENTS

Many instruments on the Polish capital market do not ensure compliance with the Sharia Law. In short, this law prohibits driving income from interest or speculative activities. However, there are financial instruments that are regarded as correct. The investment instruments are definitely not enough and the means of managing investment risk are also needed. Those financial instruments include: shares in limited liability companies, shares in the public limited-liability company and zero-coupon bonds.

We offer cooperation which will enable execution of investment on the basis of a specially designed Closed-end Investment Fund. It is compliant with the Sharia Law, as it will only use the above-mentioned financial instruments.

## SHARES OF LIMITED LIABILITY COMPANIES.

Limited liability companies are compliant with the Code of Commercial Companies. It is one of the two basic forms of activity in the form of limited companies in Poland. The partners of a limited liability company through establishing a company and paying agreed amount of share capital acquire interests in this company.

Thus, the shares are a form of security, which entitles to receive share in the profits of the company operating as a limited liability company. Return is paid out to the partners in the form of dividends on the basis of a resolution of the basic body of the company which is the general meeting of shareholders. Additionally, the interest gives corporate rights to the partners of the limited liability company and the rights are granted by the Code of Commercial Companies.

It should be stressed that shares, as securities, do not generate income from interest on capital employed. The investors who transferred financial resources to a special purpose vehicle, in return participate in the company profits. The profits are generated from the basic business activity of the company. Moreover, the increase of company value may result in the increase of shares value. In this respect, in the case the investor decides about its intention to withdraw from the investment, it can sell its shares and earn profit resulting from increase of the shares value when compared to their initial price.

At the same time, all shareholders participate in the risks related to the company's business activity. The concerned risks are limited to the value of financial contributions of the individual partners.

## THE SHARES OF A JOINT STOCK COMPANY

Joint stock companies are compliant with the Code of Commercial Companies. It is one of the two basic forms of activity as limited companies in Poland, apart from the abovementioned limited liability companies. The shareholders of a joint stock company through establishing a company and paying agreed amount of share capital acquire shares in this company.

Thus, the shares are a form of security which entitles to receive share in the profits of the company operating as a joint stock company. Return is paid out to the partners in the form of dividends on the basis of a resolution of the basic body of the company which is the Annual General Meeting. Moreover, shares provide a number of corporate rights granted by the Code of Commercial Companies to the shareholders of a given joint stock company.

Similarly as in the case of interest, it should be stressed that shares, as securities, in accordance with the Polish law, do not generate income from interest on capital employed. The investors who transferred financial resources to a special purpose vehicle in return for shares, participate in the company profits, generated from its basic business activity. Moreover, the increase of shares value may result from the increase of the company value. In this respect, in case if the investor decides to withdraw from the investment, it can sell its shares and earn profit, resulting from the increase of the shares value, when compared to their initial price.

At the same time, all shareholders participate in the risks related to the company's business activity. The concerned risks are limited to the value of financial contributions of the individual shareholders.

## ZERO-COUPON BONDS

There are different kinds of bonds on the Polish and international financial markets. Vast majority of them are not compliant with the basic laws of Sharia, as they are a debt instrument which incorporates generation of interest income from the capital employed. However, there is a kind of bond that is free from the abovementioned factor, namely the zero-coupon bonds.

The company which issues the zero-coupon bonds offers its investors the possibility to purchase bonds with a specific nominal value and at a specific price agreed with the investors, which includes discount in relation to the nominal value. As a result, the investors purchase zero-coupon bonds (sometimes called discount bonds), and in turn, provide capital to the company. The company uses the capital for its basic business activity purposes or for execution of a given project. Thanks to the investments the company gains profits, which in turn are used to repurchase the bonds from investors at face value.

Thus, the investors profit from the difference between the purchase price (the nominal value with a discount) and repurchase price (the nominal value) of bonds purchased by the company. The company, during the life cycle of the zero-coupon bonds, derives income from execution of investments that are based on the funds from the issue of bonds.

## RISK MANAGEMENT TOOLS

Management of investment risks is one of the crucial aspects of investment execution, both in the model involving raising capital through Closed-end Investment Funds, and also from direct investments. Often, availability of risks minimising tools is a decisive factor concerning commitment of funds in projects implemented in selected industries. It needs to be emphasised, that there are efficient tools available on the Polish capital market, which allow to sufficiently minimise the risks, mainly through the possibility to influence the way the capital is utilised.

In the case of Closed-end Investment Funds, the following risk management tools are available:

- The Board of Investors: a fund participant can participate in the Board of Investors and regularly control realisation of the investment objectives of the investment fund and its investment policy. The members of The Board of Investors have the right to browse books and all documents of the fund, as well as request explanations from the Investment Fund Society;
- The Assembly of Investors– is a body of the Closed-end Investment Fund, and it is empowered to pass new resolutions, e.g. concerning issuing of investment certificates in order to acquire new financial funds. Participation in Assembly of Investors allows to control the process of capital raising and thus, distribute the income of the present investors;
- Participation in an entity that manages the fund assets– represents the strongest tool of risk-management, allowing to make direct decisions about the choice of investment projects, which are implemented by the fund. Thus, supervision over the entity that manages the fund assets ensures the possibility to reject too risky projects and choose only those that meet the criteria which is accepted by the investors.

Additionally, it should be noted that the Investment Fund Societies, which establish Closed-end Investment Funds, remain under constant supervision of the Financial Supervision Authority. It is an additional mechanism reducing the



investment risk, as the Financial Supervision Authority cares about the transparency and compliance with the applicable laws of the transactions made by the Closed-end Investment Funds.

In turn, within a model that includes Sharia Investments, it is possible to use the following risk management tools:

- provisions of the Code of Commercial Companies – is a set of applicable provisions that govern the operational principles of limited companies in Poland. They empower the shareholders of limited liability companies to have direct supervision over the activities of management boards of these companies. Therefore, the investors who acquire shares of limited liability companies under the applicable law can minimise the investment risk by verifying the decisions made by the management boards and, if required, react to unfavourable actions by passing a regulation about the replacement of persons managing the special purpose entity;
- the possibility to introduce desirable persons into the management board. It is possible to make certain arrangements which will empower the investors to introduce their representatives into the management boards of the special purpose vehicles. This tool would enable minimization of any risks any risks related to the investment execution, as the investor would have direct control over literally all decisions made by the special purpose vehicle at every stage of implementation of a given investment project;
- creation of Supervisory Board – in the case of joint stock companies, the Polish law allows creating a Supervisory Board, which has the mandate to conduct direct supervision over the activities of the company's management board. Thus, the optional introduction of investors' repre-

sentatives to the Supervisory Board would provide the possibility to have indirect control over the decisions of the management board concerning execution of the investment. Additionally, in certain cases the regulations impose the need on the management board to obtain the acceptance of the Supervisory Board to the performance of certain activities. This gives direct influence of the Supervisory Board on the activity of the special purpose vehicle;

- the necessity to carry out audits of financial statements by independent auditors. In accordance with the applicable law, the joint stock companies in Poland, have the obligation to perform auditing of their annual financial statements by an independent auditor, in other words, a person who has special certificates to issue opinions about the correctness of financial calculations. It is an important tool for shareholder of joint stock companies, and it minimises the risk level of such investment, as every annual financial report will undergo audit by a certified auditor. It means that the investor will obtain an independent external expert's opinion on the correctness of the financial report compiled by the management board. Thus, this tool provides the possibility of additional verification of the activities of the special purpose entity;
- legal regulations concerning bonds. In the case of acquisition of the zero-coupon bonds by investors, if the bond issuer has any problems, the provisions of the Bonds Act give bondholders the right to receive repayment for all claims before any other creditors. It means that the risk of investors who acquire bonds of special purpose entities is comparatively lower than the risk of entities that finance the activities of the companies, e.g. by the provision of loans.









# 05



**PARTNERS**







## PARTNERS

### THE COUNCIL OF EXPERTS

Before Closed-End Investment Funds will implement investment projects, all of them are analysed by the Council of Experts, which operates within each fund. The investment projects can be launched only in case when the Council of Experts gives it a favorable opinion and a positive assessment.

The Council of Experts consists of specialists in various fields concerned with further Fund's investments area, and includes, among others:



**SAIF BIN ABED**

He has a dual degree in law and finance & banking. He has proven experience in the governmental services, auditing, companies formation and venture capital in UAE, in addition to his practical knowledge in UAE's fiscal laws. Saif has a particular interest in socially responsible investments, SMEs, capability building as well as industry knowledge in real estate, trading, security services, education and professional services.



**PROF. DR HAB. KRZYSZTOF OPOLSKI**

Professor of Economic Sciences, the Director of the Chair of Banking, Accounting and Finances on the Faculty of Economic Sciences of the University of Warsaw; a specialist in strategy development, including marketing and quality strategy, as well as banking problematic issues; an author of many book publications concerned with quality management and strategy.



**SHUHAIL ALSAEDI**

He has a bachelor degree in Business Administration , UAE University ,1989. He has long experience in agriculture ,he worked from 1991 to 2010 in Department of Agriculture , he worked in Abu Dhabi Control Authority from 2010 till now. He started working as real estate broker since 1994 , he has his own office as broker.

Krzysztof Opolski, apart from remarkable scientific achievements, has also an extensive experience in the areas of management and counselling. He is also an expert and advisor to many Polish and international companies including RUCH S.A., PKO BP, NBP, AXA Poland, Citi Handlowy, New Connect at Warsaw Stock Exchange and radio and television commentator (TVN CNBC, TV Biznes, Program 1 Polskiego Radia, etc.).

He was the co-author of many economic programmes in TVP ("Ekonomiczny Kalejdoskop Jedyński", "Z Euro w kieszeni"), a member of "Teraz Polska" Competition Chapter, a member of international research CHER group (Consortium for Higher Education) with its registered office in Kassel (Germany) and the editor-in-chief of "Ekonomika i Organizacja Przedsiębiorstwa" magazine.



**SALEM ALEISAYI**

He supervise all AAA activities in Abu Dhabi including UAECA qualifications. Mr. Aleisayi as Board Member in AAA attend UAECA announcement which was in UAE Flag Day 2014 , this day was considered to be the accountants day Mr. Aleisayi participate in UAE targets to create more than hundred local chartered accountants by the year 2021. Mr. Aleisayi is The Editor of The Economy And Accounting Magazine which is issued every 2 months by The Accountants And Auditors Association. Aleisayi interest is the consultancy services , he provide business and financial services based on his experience which is more than 23 years in many projects, he is the founder and CEO of Sama Management Consultancy.

**DR INŻ. PIOTR JANUSZ ZAPRZAŁEK**

Dr Piotr Janusz Zaprzalek holds a PhD in Agricultural Economics from Agricultural University of Warsaw. He was a lecturer in the Lincoln University in New Zealand. Besides that, he possesses extensive experience in working in a directorial role, including Head of the Economics Department in the Research Institute of Pomology & Floriculture in Skierniewice, Director of the Department of Agricultural Markets in the Ministry of Agriculture and Rural Development and Director of Non-public Health Care Facility on the Warsaw University of Life Sciences. He has extensive experience in food production research, resource manage-

ment and agricultural consulting. Between May 2007 and May 2008

Mr. Zaprzątek was responsible for coordinating the European Research Area Agricultural Research for Development Program in Poland. His main area of activities include economics, organisation & management in the agricultural industry, public university administration and real estate management.



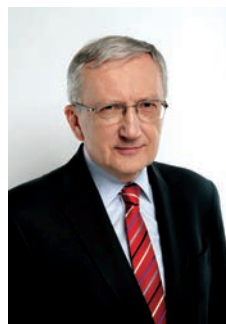
**PROF. DR HAB. MAREK GRZYSBOWSKI**

Mr Grzybowski was the President of the Management Board of POLISH MARITIME CLUSTER, a member of Athens Institute of Education and Research, and the head of Department of Economics and Management in Gdynia Maritime University, he also held the position of visiting professor at Mid Sweden University MITTUNIVERSITET.

Mr Grzybowski was also the Chairman of the Scientific Council at Security & Safety Research Institute ([www.sasri.eu](http://www.sasri.eu)). He also held the seat of the Director at Baltic Sea Region Observatory. He was also the editor-in-chief in Internet Manager and Transfer Wiedzy. Expert in "Horizons 2020" program. Chairman of the Cargo Transport Logistics Department in Gdańsk in years 2014-2016.

Mr Grzybowski also participated in "Intelligent Cities" program committee, as well as in European Committee for "Skills and Careers in the Blue Economy". He was a Maritime Think Tank leader in LinkedIn, and a member of Intelligent Specialization of Pomerania "Offshore technologies as well as harbor and logistics technologies, and working Team for coordination of implementing SUERMB in Poland at Ministry of Foreign Affairs". He was also the project manager of "Commercialization of research results as well as creating entrepreneurial framework by Gdynia Maritime University", project no.: WND-POKL.08.01.01-22-009/10, type of the project: Priority VIII: Regional Economy Staff, Operation 8.2: Knowledge transfer, implementation period: 2010-2012, and the Coordinator of Polish part of the MARCHAIN project – realized as a part of cluster of BSR StarDust projects (Baltic Sea Region Program), project no.: VINNOVA#058 StarDust, type of the project: international project, period of implementation: The Strategic Project on Trans-national Commercial Activities in Research & Innovation, Clusters and in SME-Networks, financing sources: European Union.

Mr Grzybowski also occupied the position of the President of Baltic Sea Region Observatory. He also organized the Innovation Center and of TENTacle Gdynia THIK TANK – for the TENTacle project, leader of Region Blekinge, period of realization: 01 March, 2016 – 01 March, 2019 (co-funded by the Interreg Baltic Sea Region Programme), as well as approx. 90 conferences, seminars and panel discussions, including the ones of European Maritime Day. He was also the chairman of scientific seminar "Economics and Management in 21st Century"



**PROF. JERZY LANGER**

Prof. Jerzy Langer held the position of Wrocław Research Centre EIT+ 's President of the management board.

He is one of the originators of creating Wrocław Research Centre EIT+. A physicist working at the Institute of Physics of Polish Academy of Sciences in Warsaw. He has over 250 highly rated scientific works, lectures on the most important world-scale conferences on solid physics and over 150 publications and presentations concerning Polish and European scientific policy among his academic achievements. He was the chief advisor for Polish Academy of Science's President, and the Vice Minister of Science afterwards. He has also been the President of Wrocław, Rafał Dutkiewicz's advisor for many years. Mr Langer was appointed as a member of APS – American Physical Society, he also received a Maria Skłodowska-Curie award, which is the highest and most prestigious merit in physics and chemistry. He is also a member of Academia Europaea and its foreign secretary, as well as the founder and an honorable member of EUROSCIENCE.

In his professional career, he was also a member of main advisory cells in the European Commission for Science (EURAB, ISTAG and the Management Board of Joint Research Centre). He co-created main program documents referring to ERA (European Research Area). He is one of the initiators of ERC (European Research Council) creation, in which he led the evaluation panel for the most prestigious grants for European research teams leaders on condensed matter.

Prof. Langer also participates as an advisor for the General Directorate for Regional Policy– DG Regio (the member of Smart Specialization Strategy High Level Mirror Group) and General Directorate for Communication Networks, Resources and Technology (DG Connect) in FET program (Future & Emerging Technologies).



**DR INŻ. PIOTR KARDASZ**

PhD Eng in technical sciences - academic discipline: construction and operation of machines, specialty: combustion engine and synthetic energy sources. A graduate of faculty of Mechanical Engineering at Wrocław University of Technology, major -Transport, specialization - Management and Transport System Design as well as Engineering and Ecology of the Means of Transport. He also graduated from Computer Science and Management, major – Financial Analysis.

Deputy Coordinating Supervisor of B+R&I Cluster, Economy Specialist at The National Centre for Research and Development in the field of business assessment of applications for co-financing, a specialist at KSU in technology counseling. He was

a President of the Management Board at Finance Group sp. z o.o. and a Supervisory Board Member at Polish Eko Energia sp. z o.o., cooperated with science and research entities in order to implement research and development project, a lecturer at The International University of Logistics and Transport in Wrocław and Wrocław School of Information Technology.

He has practical experience in: conversion of heat energy into electrical energy using Thermoelctric generator (TEG), waste use to supply combustion engine with power, creation of cogeneration systems, management of preparation and implementation of investment projects in the aforementioned fields and support with creation of research and development departments in SME.

He is a cocreator of 6 inventions submitted to Polish Patent Office, an author or a coauthor of 2 coursebooks and over 30 publications in prestigious national and foreign scientific journals, a speaker or coorganizer of number of scientific and/or business conferences.



**DR INŻ. JERZY MATRASZEK**

A graduate of Warsaw University of Technology Electric Faculty, subject: Automation and Robotics, M.Sc. degree, Power Electronics specialty (M.Sc.) Institute of Control and Industrial Electronics, PhD (Eng.) Warsaw School of Economics – postgraduate studies, College of Management and Finances, postgraduate studies on project management

Chosen work experience:

- By 2000 - work in arms industry – powering systems in special vehicles and fueling system projects evaluation,
- Since 2005 – director of fueling section in SAM electric vehicle implementation project,
- In years 2004-2005 – tech director – East European Solution Centre with its factory in Slovenia under Semikron International,
- In years 2005-2006, director of thyristor boost model series production launching for welding and creating and implementing model series 400-800 A transistor boosts for welding industry,
- In years 2011-2015 he held the seat of implementation of 200kW test boosts project manager for Research Centre of the global company, director of hardware implementation for main fueling project and measurement converter for electric vehicle electrification project, project manager of implementation of 20kW test boosts systems for Research Centre of the global company in Kraków and project manager of implementing web creating implementation for global client under EU grants.

Specialty:

- Control system project for web-cooperating boosts
- Hardware projects for transistor and thyristor boosts

Main publications:

- Koczara Włodzimierz, Matraszek J.: Clean reactive power compensator, w: IECON 02 [Industrial Electronics Society, IEEE 2002 28th Annual Conference of the], vol. 4, 2002, 2951-2956 vol.4, DOI:10.1109/IECON.2002.1182865
- Koczara, W.; Matraszek, J.; Variable speed integrated generating set an emerging technology for distributed power generation. 2003 / IEEE / 0-7803- 7967-5
- Koczara W. Matraszek J. Seliga R. "Three-Phase Four-Quadrant Sinusoidal Voltage dc/ac Converter as Non-polluting Interconnection Link to Utility" - 8th European Conference on Power Electronics and Applications.



**DR TADEUSZ WOŹNIAK**

Mr Woźniak was the CEO of strategic consultancy and Top Management training company for the Francuski Instytut Gospodarki Polska for 20 years. He conducts seminars and conferences and strategic consultancy for owners and managing crews of Polish and foreign businesses. He cooperated with

over 100 enterprises, including: Ciech, the European Leasing Fund, Work Service Group, Pilkington, Rockwool and ZPUE.

An expert on strategic management in Polish and foreign companies, he specializes in enterprise development projects with use of strategy implementing systems related to Balanced Scorecard method. In the past he worked in France, with such companies as: Alcatel and in French branch of Ernst&Young.



**DR JACEK JANISZEWSKI**

He graduated from Animal Husbandry Faculty in Technical and Agriculture Academy in Bydgoszcz and obtained his doctoral degree in sociology. In the years 1985-1989, he was working in Kombinat PGR Goleniów (a State Agricultural Farm), first as a livestock specialist, later as a manager of agricultural farm in Bogusławie. In the years 1989-1990, he was a Vice-President of Kombiat PGR Wapnica.

Since 1990, he was a Director of Agriculture Department in voivodship office in Szczecin. In the years 1992-1995 he was a Director of branch of the Agricultural Property Agency of the State Treasury in Szczecin.

On 12 July 1993, he became the Secretary of State – director of department for agriculture and food management in 1993 in the government led by Hanna Suchocka. In 1995-1997, he was holding a position of the Director of Settlements in Agricultural Property of the State Treasury Agency. He was also the Ministry of Agriculture and the Country's



Development in the years 1997-1999 in the government led by Jerzy Buzek.

After finishing his work in the parliament, he went into advisory activity for private companies. He defended a PhD thesis on sociological phenomena in the country in the context of Polish integration with European Union. He is a lecturer at universities, among others, at the University of Economy in Bydgoszcz. He is also a founder and the president of programme council of association called 'Integration and Cooperation'.



**DR ŁUKASZ JERZY BOBEREK**

PhD of economics in the field of management sciences; a graduate of Warsaw School of Economics, College of Management and Finance (doctor's degree); a graduate of Faculty of Law and Administration of the Warsaw University.

Assistant professor in the Faculty of Commercial Law at the Institute of Political Economy, the Faculty of Law and Economic Policies, College of Management and Finance at WSE; since 2014 the Head of the Postgraduate Studies „Akademia Energetyki”; since 2011 a counselor to Głuchowski Siemiątkowski Zwara Law Firm, Metro Properties Group, Navigator Capital and Green Way FIZ Investment Fund. He was holding a position of the Director of the Legal Office (2010-2011) and the Vice Director of Public Auction of the Legal Office (2006-2007) at TP S.A.



**DR TADEUSZ ŁAMACZ**

Tadeusz Łamacz has a PhD degree in economics and specializes in enterprise financial management and public finances. He was a lecturer at University of Warsaw and Academy of Trade and International Finances. He held administrative governmental positions (he was the advisor for the Vice Prime Minister and the chief of Cabinet's Economic

Committee), as well as in companies of various profiles. He was involved in the privatization process of food industry as an advisor. He is the author of many publications on economic crises, as well as the interpreter for Oxford Dictionary of Finance and Banking. In years 1993 – 94 he was a member of an international team, analyzing the process of financial reforms in CEE. The results were published in the "Financial Reform in Central and Eastern Europe (The MacMillan Press Ltd, 1995) – his participation was in the "Financial Sector Development and Macroeconomic Policy in Poland 1990-3) part. Mr Łamacz also promoted many B.A. and M.A. degree theses, Polish and foreign students alike in the field of economics and business culture. He is the author of dozens of articles on international trade from his period of work as a publisher in the editorial office of "Rynki Zagraniczne" 1980-1990).



**DR WIESŁAW SKWARKO**

Graduate of Warsaw School of Economics (Faculty of Foreign Trade). In years 1990-1999 he held the Partner's position in Access Ltd., and he was made a member of the management board of Rothschild Polska Ltd afterwards. In years 2005-2006 he worked as the Privatization Office President in Nafta Polska PLC. Mr Skwarko held the seat of the Financial Strategies and Capital Development President in CLT Maczki Bór company in Sosnowiec, and in CTL Logistics PLC thereafter. In years 2008-2009 he was a member of the Nafta Polska PLC management board, and next he was its liquidator. In years 2008-2015 he was the President of supervisory board in Lotos PLC. In years 2010-2012 he held the position of Vice President of the ZAK PLC management board in Kędzierzyn-Koźle. He is the President of the Kędzierzyn-Koźle Industrial Park Ltd since 2012.



**DR MIRON MAICKI**

Since 2008 the President of the Board of ATTIS Holding S.A. and ATTIS Broker Sp. z o.o.; PhD of Economics Department of the University of Warsaw; a graduate of the Management and Marketing Faculty and History Institute at the University of Warsaw. He has experience in managing holdings, Treasury-owned companies as well as cooperating with state and local government institutions.

In 1987-1990 he was holding a position of the Protocol Team Manager in the Foreign Cooperation Department of the Ministry of the National Education, a Member of the Management Board of hotel and tourism Gromada – Tourist group, an Executive Director of the Gromada Hotel in Warsaw, a Member of the Management Board of RUCH S.A., a Member of Supervisory Board of PHZ Bartimpex S.A. and an advisor to the Management Board of PHZ Bartimpex S.A., where he was responsible, among others, for trade cooperation with Israeli and Japanese companies. In 2001-2005 he was also the President of the Board of RUCH S.A. – the largest distributor of newspapers in Poland.



**DR HAB. RAFAŁ TUZIMEK**

Mr. Tuzimek currently holds a position of CEO in Navigator Capital Group S.A. and CEO of Brokerage House Navigator S.A. He is a graduate of Warsaw School of Economics and IESE Business School - University of Navarra. He is a member of the Supervisory Boards of dozens of companies, listed on the Warsaw Stock Exchange.

In addition to that Mr. Tuzimek can boast of working in such companies as Ipopema, Credit Lyonnais and Arthur Andersen.

He has over 20-years' professional experience in financial and strategic advisory, among others, he stood as an advisory to the companies, introduced on Warsaw Stock Exchange (IPO), in mergers of listed companies, during the transaction processes of sale/purchase on the private market and privatizations, as well as led the comprehensive restructuring programs in many sectors.



**DR STANISŁAW PIASECKI**

PhD in technical sciences, a graduate of f. ex. The Faculty of Electrical Engineering of Warsaw University of Technology. A specialist in the field of production processes automation and energy creation and distribution systems, including renewable energy (photovoltaic, wind energy, biogas, cogeneration).

He has got over thirty years of practical experience in projecting and constructing power and waste-recycling installations as well as in preparing and managing of investment projects implementation in these branches. Mr Piasecki participated in such projects as: large photovoltaic power stations construction, wind farms, sewage plants, waste utilizing facilities and many more. He received the Polish Electricians Society's authorization as an expert in electrothermics and process automation.

Dr Piasecki performed his research works as a member of the international experts team implementing advanced development works in terms of solar collectors, photovoltaic links and Stirling engines.



**DR TOMASZ ZIELIŃSKI**

Doctor of technical Sciences in chemical technology. A graduate of Chemical Technology in Construction Department, Mechanics and Petrochemicals Department in Płock, Warsaw University of Technology as well as Finance Management and Marketing Postgraduate Studies at Warsaw University of Technology. He was also awarded Master of

Business Administration degree after completing University of Illinois programme. A graduate of Virtus Bering Centre for Higher Education in Horsens in Denmark. In 2001-2004, he was an assistant professor at Industrial Chemistry Institute where he was awarded a doctor's degree of Technical Sciences in chemical technologies. In 2004-2006, he worked for PKN ORLEN SA, holding a managerial position. In 2006-2007, he also acted as a Managing Director of Innovation and Technological Investment Center, he was a head of Technological Investments De-

partment in AKJ Capital SA (2006-2007). Then, in 2007-2008, he was a Partner in The Energy Studies Institute. He continued his career in DGA SA as a Director for Strategic Projects in Business Consulting Department (2008-2009). Since 2009, a Board Vice-president, a Director for Strategy and Development in "Police" SA Chemical Plants. In 2010-2013, once again in OLREN Group where, in Anwil SA, he has a seat on the Board and holds a position of the Director for Strategy and Operational Activity. At the turn of 2012-2013, he acts as a Board Director of Chemeko which is a part of Anwil Group. Since 2011 – a Board Member in Fertilizers Europe Organisation with registered office in Belgium.

He also had a seat on Supervisory Boards of capital companies. What is more, he is a recipient of Honorary Order of T. Sendzimir for special merits to innovation movement in Poland, awardee of FSNT Federation Silver Order of Polish Federation of Engineering Associations - NOT. He is also an Expert in Chemical Technology and Polymer Technology in Association of Polish Inventors and Rationalizers, a member of national and foreign lines of business. He is an author and a coauthor of patents and over 80 publications and numerous speeches on conferences in Poland as well as outside the country.

Currently, he is, among others, a member of Polish Academy of Science Committee for Chemistry, a member of National Chamber of Commerce Committee for Climate and Energy Policy, a member of ECEG Board (European Chemical Employers Group) and a member of Advisory Board in World Refining Association.

Since June 2013 - a Board Director of Polish Chamber of Chemical Industry.



**DR KRZYSZTOF BUCZKOWSKI**

A Director of CIFAL Płock, a UNITAR/ UN affiliated training centre. A coordinator for Poland of an international European Committee project – ENDURANCE- supporting local governments with preparing Sustainable Urban Mobility Plans (SUMP). An author of many publications on sustainable and green transport, an advisor and a creator of

local government strategic documents as well as a moderator of numerous social consultations. An Editor-in-chief of popular science magazine raising the matter of sustainable city development "Innowacja i Rozwój" [Eng. Innovation and Development] ([www.innowacjairozwoj.eu](http://www.innowacjairozwoj.eu)). An author of a blog – [multimodalny.pl](http://multimodalny.pl) – sustainable urban mobility in practice.

Till 2012, a Deputy Mayor of Płock for public utility (he prepared and conducted, first ever in the history of the city, marketing research on public transport and passenger flow on basis of which a new transport network was developed, what led to systematic growth in use of public transport). Previously, a Deputy Director of the Regional Traffic Centre. An academic lecturer at Warsaw University of Technology

(since 2002), a founder and long-time President of Information Society Innovation Centre. A member of Scientific Society in Płock. An author of several dozens of articles and books touching matters such as sustainable and safe transport as well as information technologies; the most important are: Development of IT network for Local Authorities. Selected organization and management problems (2007); Broadband access to the Internet (2009); E-competence in local government e-administration (2012). He has graduated from MBA studies – at The Academy of Leon Koźmiński. An enthusiast of SMART-CITY concept as a part of urban transport.



**DR INŻ. JACEK DOSKOCZ**

He obtained PhD at Wrocław University of Technology after defending an interdisciplinary thesis on synthesis, physics and chemistry as well as molecular modeling. Apart from his scientific activity, he also cooperates with entrepreneurs to create and implement innovative solutions. He can boast of patent applications, patents, implementations and

more than 12 international publications.

Subject areas of his works are as follows: nanotechnology, innovations in medicine, materials engineering, automation, IT, business models, R&D management as well as Innovations.



**DOC. KRZYSZTOF SIKORA**

Mr Sikora is a founder of a computer company "PC KOLFER" and a multi-sectorial enterprise "KOLFER" LLC – a renowned tour operator, which has been operating in the tourist and hotel industry for over 25 years. The "KOLFER" LLC was one of the first regional private institutions, dealing with national and international tourism, information technology as well as

training in these industries.

Currently, he is the President of the University of Economy (WSG) in Bydgoszcz. WSG is a non-profit organization, providing educational services in 19 faculties including, among others, tourism and leisure, economics, mechatronics, creative industries, architecture, building engineering and computer science. The University conducts scientific activities with the support of the Department of Scientific Research and Development of Scientific Staff, which is responsible for organizing and conducting activities related to financing scientific research of the staff, supporting the process of professional development of the staff and initiating scientific and research cooperation with external entities.

Krzysztof Sikora is also stands as an organizer of economic missions and study trips to the EU member states. Represented the Kujawy-Pomerania Voivodeship on the biggest European fairs,

such as ITB Berlin, CeBIT Hannover. From 2006 until 2010, he was holding the position of Chairman of the Kujawy-Pomerania Regional Council, and managed to implement multiple number of initiatives for entrepreneurial regional development.

From 2012 Mr Sikora holds the position of the President of the Economic Council of the Kujawy-Pomerania Voivodeship, which aim lies in the selection of a strong, unified and long-lasting representation of the business community of Kujawy-Pomerania Voivodeship, able to effectively articulate and defend its interests before local self-government and government administration.



**DR WOJCIECH BLECHARCZYK**

Mr Blecharczyk worked in the local self-government for many years and is a former Vice President of the National Ecological Council and ZG LOP in Warsaw. He has vast experience in working as a lecturer and he is also the author of multiple publications in the field of environmental valorization, ecology and tourism promotion.

Dr Blecharczyk is member of the Polish Olympic Committee, sport and environment commission, co-organizer of many sports competitions in the National, European and World championships, hockey as well as speed skating, Ice Racing on the sports facilities of Sanok city. He participated in various national and international conferences and congresses, related to the subject sports and tourism infrastructures improvement in accordance with the principles of eco development. An expert in the field of environmental protection and nature conservation. After finishing work in local government he became a director of the Polish Chamber of Labor "Loyd S.A." in Cracow. Currently associated with investments of the cogeneration as well as prosumer programs, based on renewable energy sources, as a managing director in the Verbum Trans Group in Warsaw. He is a member of Alumni Association U.S. Department Exchange Programs - Leadership Program as a former participant of scholarship programs Poland - USA, member of the Scientific Council of Economic Cluster Poland - Arab Emirates. He was awarded with the Gold Medal of the Polish Success Academy, Patron and Partner of Polish Ecology, Merit for environmental protection.



**RYSZARD SAWA**

A graduate of vocational degree course – management, marketing, economic analysis and controlling, electrical technician electronic engineer foreman. Russian – good, English – mediocre. An electronic engineer constructor in industries such as energy, geophysics and nuclear power – control room dispatcher in a power station. He took part

in exploration and study of Polish copper deposits as well as in protection against radiation – participation in construction and



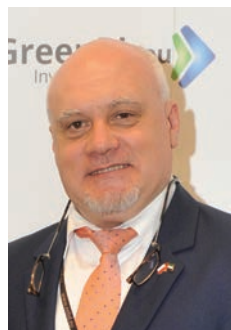
study of tissue-like materials for measurements of consumed dose.

In 1960-2000 an entrepreneur. At first, company of natural person Ryszard Sawa in Otwock. Since 1993 company with share capital – RYSZARD SAWA Ltd, in Józefów, employment of up to 83 people, production and trade: electronic language classes, telecommunication, including retro-style phones as well as automotive electronics. Export 70%: North America, Europe, North Africa. Conducting research and development projects of own innovations implementation in cooperation with research institutions.

In 1979-2000 a member of executive committee of Polish Foreign Trade Chamber, then a co-organizer of National Chamber of Commerce, and organizer and chair of Exporter Club at Polish Foreign Trade Chamber. Since 1999, an organizer and participant of numerous government and business trade missions.

In 2000-2016, a co-author of “Mazowsze w drodze do Unii Europejskiej” programme [Eng. Masovia on the way to European Union], a founder and CEO at “Życzliwy Przedsiębiorca w Polsce” [Eng. Kind Entrepreneur in Poland] – dealing with development of entrepreneurship, especially of micro and small ones [www.bifund.org.pl](http://www.bifund.org.pl)

An expert at Innovation Centre of Polish Federation of Engineering Associations FSNT–NO as well as an expert in „Polska 2020” [Eng. Poland 2020] Foresight’s National Programme, an organizer and manager of INNOWATORZY PL. Cluster [www.KlasterINNOWATORZY.pl](http://www.KlasterINNOWATORZY.pl).



**JUAN DAVI**

Mr Juan Davi Ferrer is the President of the European Green Technology Alliance Cluster, (EGTA), which composes of 21 European Technological Clusters, focused on knowledge transfer, joint research, development and commercialization of activities. The purpose of the Cluster also lies in promoting the technology, undertaking joint business endeavors and creating a global platform for technology transfer.

As the vice-president of the Emirates & Europe Business Development Cluster, formed with the aim to integrate Emirati and European business environments, Davi Ferrer is also responsible for activities related to projects financing.

He is deeply involved in business-related issues in Poland. Possesses rich experience in managing Clusters (i.e. Smart IT Cluster, Electric Cars Cluster, Green Energy Cluster) and a specialized technological background, (Electrics Cars PL, Green Auto Control, Green Vertical Turbines).

He devoted almost 20 year of professional life to a work in Spanish bank, cooperating with the biggest companies from the field of energy technology.



**EWA JAWORSKA**

CEO of Polski Instytut Eko Energii Sp. z o.o., Manager for innovation and development of B+R&I Cluster.

Master of Mathematics - a graduate of University of Wrocław, faculty of Mathematics, specialization - Mathematics in economy and insurance. Manager for innovation.

CEO of Polski Instytut Eko Energii Sp. z o.o., Manager for innovation and development of B+R&I Cluster. She has 5-year executive experience in managing operational activity of SME sector, practical experience in assessing business plans, managing processes of drawing up, implementing and settling investment and R&D projects, experience in conducting courses in financial and insurance mathematics as well as economics.

She is a co-author of 3 inventions submitted to Polish Patent Office, a co-author of trade publication and a co-organizer of numerous science and business conferences.

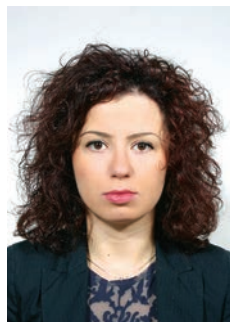


**RAFAŁ LIPIŃSKI**

Graduate of Stefan Batory’s Upper Secondary School in Warsaw, Graduate of Environmental Engineering Faculty of Warsaw University of Technology and French Institute of Management IFG. He began his career in “Hydrobudowa 6” company. In years 1988-89 on behalf of Geokart Constructing Office, he held the project manager seat in Kuwait. An entrepreneur, who established SEEN Technology company in 1990 consisting of seven units in Poland and in Hungary, Ukraine and Belarus. During recent 25 years of activity, the company built several dozen environmental protection objects and installations in Poland and abroad. He is an organizer, participant and panelist of many branch conferences. He is also the recipient of a prestigious title of “The Silver Engineer” in 2002 and “Employee of the Year” in 2014. The founder of SEEN Holding group in 2007, the biggest engineering-technology company structure consisting of long-lasting traditions companies. He initiates and supports research-progression activities of those companies, implementing dozens of innovation projects. A participant of many social activities. He co-founded “Wodociągi Polskie” Chamber of Commerce and Polish Entrepreneurs Club under IFG, and was its President. The co-author and chairman of the NOT “Aquarina” award chapter house, distinguishing activities related to environmental protection. The founder and a member of “Aquaeductus” award chapter house. He supports the Fund for the Blind in Laski for many years.

He is also a member of History and Literature Society in Paris. In years 2005-2009 he held the function of vice president and treasurer in the Catholic Integration Club’s Family section.

n's management board. He is the vice president in Józef Piłsudski's Family Fund since 2010. Since 2012, he is a member of Józef Piłsudski's Museum Council in Sulejówek. A member of Polish Housing Employers Society Board since 2012. Vice president of PKEB since 2015.



**LYUBKA ALEKSANDROVA**

Mrs Aleksandrova has got vast experience in sales and customer services, as well as in wholesales, supply chains and logistics process. She is a systematic person in terms of solving complex problems. Additionally, Mrs Aleksandrova possesses account management skills and has broad knowledge on IT products and different applications, and has the background on project management and new products development. She is very precise and cooperative. She has got M.A. degree in International Trade. Mrs Aleksandrova specializes in investment promotion activities, free trade and industrial zones, public-private consultations, business & governmental negotiations, and EU programs. Her fields of activities are: providing detailed information to potential investors about the necessary documents for certification procedures, assisting potential investors to make contacts with potential partners, organize and participate in meetings, providing expert advices on the legal aspects of the investment process in the Republic of Bulgaria, assisting potential investors to realize their investment projects, after sales service of implemented investment projects.

**NEMANJA MILIVOJEVIĆ**



Nemanja Milivojevic is a graduate of the Faculty of Mechanical Engineering, with a B.A. degree in Mechanical Construction and Mechanization in 2005 and later on, a MSc in Investment Banking at Belgrade Banking Academy (2010). In years 2004-2007, he held the position of CEO of NOM company in Belgrade. Mr Milivojevic was an IT freelance consultant since 2008 in Serbia. In the second half of 2012, he worked as a senior consultant for World Bank, providing his modification of software, used for the comprehensive regulatory review, project management. Milivojevic's experience since 2011 until present included his involvement in Secretariat for Public Policy in Belgrade on behalf of the Republic of Serbia. He is also the founder of ITClusterSerbia, in Belgrade. His main tasks in the period between 2013 and 2016 and his contribution in the company, which eventually became his (and the company's) fields of activity, were as follows: development and implementation of information systems, creation of its network, ERP solutions, business software and operating systems with elements of GIS, web and portal design (CMS solutions), e-Business solutions, business solutions for small and medium-size enterprises- accounting and financial software, POS systems and IT consulting.



**GULAY AVCI**

Ms. Gulay Avci is the Regional Manager for RAK Free Trade Zone in Turkey. She received her BA degrees from the Middle East Technical University (ODTU), Ankara and eventually earned her spot as Marketing Supervisor in RAK Free Trade Zone of United Arab Emirates.

Gulay lived in Dubai, for 10 years between 1995 and 2005 where she gained diverse experience in international marketing, sales and business development to create a platform for mainly Turkish investors in United Arab Emirates.

She was then promoted as Regional Manager of RAK FTZ in Turkey. She has setup the structure of Turkey Liaison Office of the free zone in Istanbul in 2007 where she is still promoting Ras Al Khaimah and RAK FTZ internationally. She currently resides in Istanbul with her husband and daughter.



**FERNANDO SAGANETA**

He began his studies at the "Yule Technical College" in the UK and then graduated from the faculty of Law at the University of La Laguna.

He is the founder and the Director of "Sagaseta y asociados" company which deals with legal issues and development of different commercial actions.

He has worked as a lawyer for more than thirty years.

He is a member of the Court of Arbitration of the Chamber of Commerce and Navigation of Las Palmas; a member of the Board of Directors in Association of Industries of Canaries (ASINCA); Vice President of Association of Arinaga Industries. He carried out different industrial activities in cooperation with the group of companies.



**CIPRIAN MORCAN**

He has over 13 year's of experience as management consultant, manager, trainer and business owner. Since 2012 he is the manager of Transylvanian Furniture Cluster, coordinating the Development Strategy of Cluster and being involved in implementation of the integrated package of projects funded through the Sectoral Operational Programme Increase of Economic Competitiveness in Romania 2007-2013. The integrated package of projects has over 12 million euro buget and includes 10 projects: 2 R&D projects, 2 soft projects and 6 infrastructure projects. As cluster manager he initiate and coordinate an RDI project for the next

5 years with a total budget of 2.5 million euros. The project is founded from European funds and is meant to consolidate the position of Transylvanian Furniture Cluster as innovative cluster. As a recognition of excellence in cluster management, the cluster was awarded with Silver label by ESCA at the end of 2015. During his career as cluster manager he attended to many trainings as Cluster Academy, Linz, 2014 and Introduction to Cluster Management Excellence, Barcelona, 2015.



**ANTONI SZLAGOR**

Antoni Szlagor was born in Żywiec on 29 April 1950. He is a graduate of the University of Mining and Metallurgy Academy, Technological University and Higher Pedagogical School in Cracow. He received education in the field of Electronics, Founding, Mechanics and Administration, obtaining also pedagogical certificate.

Since the beginning of the 1990s, he was holding a position of a counselor, a deputy Chair of City Council (1994-1998) and a Chair of City Council in Żywiec (1998-2002). Since 2002, he has been a Mayor of Żywiec. Thanks to his personal engagement, the city became an important industrial center in the region. According to experts, Żywiec is a national leader in terms of acquiring EU funds.

Mr Szlagor is the winner of the award titled „The success of the past tenure” prepared by prof. Paweł Swianiewicz from the University of Warsaw.

## CAPITAL MARKET ENTITIES

### BANK GOSPODARSTWA KRAJOWEGO

Bank Gospodarstwa Krajowego (BGK) is the State Development Bank of Poland. The main objective of BGK is to support economic development of the country and enhance the life-quality of the Polish society. Thanks to State ownership, big scale activity and exceptionally stable position, the Bank takes part in financing the biggest infrastructural investments and stimulates the development of enterprises in Poland and foreign markets. BGK operates with the thought about the future and is not afraid of implementing the long-term investments. It gives the first and the last coin, encouraging others to take part in ambitious projects. The Bank successfully supports entrepreneurship, which it perceives as a national treasure.

BGK has unique experience in financing, investing, granting loans and guarantees as well as distributing EU funds. It takes an initiative and develops new solutions. It is a valuable partner for national and local institutions, enterprises and banks. BGK's employees are distinguished from others by pro-national attitude and exceptional competencies in the realization of project for country's development.

BGK brought to Poland great history of achievements, which serve it a true inspiration for the conduction of further activi-

ties. Indeed, the Bank works for the bright future of Poland and its subsequent generations.

The new strategy of BGK for 2014-2017, defines its current function as a national development bank. It underlines the mission, which assumes support of social and economic development of Poland and the sector of public finance in the performance of its tasks. The aims, stipulated in strategy, meets Bank stakeholder's expectations as well as internal and external operating conditions, including priorities of economic policy of the Polish Government.

The most important strategic goals of the Bank include strengthening of BGK in terms of its position of a development bank by means of increasing current involvement in financing enterprises as a part of Polish Investments programme as well as loan and guarantee activities. BGK is planning to gain and maintain the key role in the implementation of European programmes, especially those, concerning repayable financial instruments.

### BANK PEKAO S.A.

Bank Pekao S.A. operates on the market for almost 85 years and represents one of the largest financial institutions in Central and Eastern Europe. Bank Pekao belongs to one of the biggest Pan-European financial groups, UniCredit Group, which operates in 17 European countries with a network of 8000 branches and around 146,000 employees.

In terms of capital strength, measured as capital adequacy ratio, the Bank is a leader among large banks, operating in Poland, and one of the safest banks at the Pan-European level (Pekao Core Tier 1 ratio at the end of 2015 was at the level of 17,7%). Bank Pekao S.A. has a network of 1000 branches across the country and offers its clients access to more than 1700 free of charge cash dispensers in Poland and around 20 000 in 17 European countries. The Bank Pekao Group consists of the Investment Fund Company, pension fund, two leading brokerage houses in Poland, as well as leasing and factoring subsidiaries.

Bank Pekao was awarded with many prestigious prizes and titles, both on the national, as well as international level. The mobile banking application „PeoPay” was hailed in 2015 as Financial Innovation of 2014 in a prestigious ranking of „The Gold Banker”; while the Bank's mobile solutions took first places in Bankier.pl ranking. In addition to that, Bank Pekao was also awarded a title of „Most innovative Bank in CEE & CIS” according to EMEA Finance magazine.

In the corporate field in 2013, Pekao was awarded the Best Bank in Poland in terms of Transactional Banking Service, according to Euromoney Magazine, for the third consecutive time. Pekao was awarded „Bank of the Year in CEE 2013” by Europa Property. It has also gained Warsaw Stock Exchange award as a leader of Polish capital market in 2013 - Award for the biggest value of issues of non-Treasury debt instruments introduced to Catalyst in 2013. The bank gained prestigious awards for the Best Bank in Poland of „Global Finance” and „The Banker” magazines for the third time.



## WARSAW STOCK EXCHANGE

Warsaw Stock Exchange (GPW) has helped Polish companies to grow for 25 years, enabling them to raise capital for investments, job creation, international expansion, research and development. Thanks to the developed capital market infrastructure and the strength of the local economy, investors from around the world have invested their capital in Polish companies. Another major source of capital are the savings of nearly 20 million Poles, managed by domestic investment and pension funds.

Companies listed on the GPW are the biggest investors in Poland, which makes them a key driver of the economic growth of the regions. Listed companies employ more than 776 thousand people in Poland, i.e. approximately 14% of the total workforce of the corporate sector (source: Central Statistical Office, PwC, 2015). In 2015, companies newly listed on GPW's stock markets and their owners jointly raised EUR 440 million of capital, which ranks Poland #10 in Europe. As measured by the number of IPOs, Warsaw came third in Europe after London and Stockholm. The strong interest of local and regional companies in listing on GPW has for many years strengthened the position of the Exchange as one of Europe's leading and CEE's top market by the number of listed companies. The markets operated by GPW offer trade in stocks and bonds of nearly one thousand local and international issuers. Most of the issuers are small and medium-sized companies of Polish origin.

The Exchange also offers trading in debt instruments, derivatives and structured products, and promotes economic education through the GPW Foundation. Warsaw Stock Exchange is a dominant company of the Warsaw Stock Exchange Group, whose offer includes, in addition to the financial market, commodity market. 25 years of experience, security of trade, operational excellence and a wide range of products make GPW one of the most recognized Polish financial institutions world-wide.

Acting through the Polish Power Exchange (TGE) the GPW Group makes a major contribution to the liberalization of Poland's energy and natural gas markets and helps to improve the country's energy security. TGE is an active participant of the European energy market as a member of PCR (Price Coupling of Regions) and supports trade via the link with Sweden and Lithuania. It is also an important part of the national support scheme for the production of energy from renewable sources and cogeneration.

## EXPORT CREDIT INSURANCE CORPORATION JOINT STOCK

### COMPANY (KUKI)

For more than 25 years, the Company has been providing insurance services to Polish entrepreneurs. It covers both export and domestic transactions of their clients, facilitating safe trade in Poland and abroad. The activities of the Company focus on insuring trade receivables, arising from sales of goods and services with deferred payment. As part of insurance activities, KUKI issues bonds and guarantees.

As the only insurance company in Poland, KUKI is authorized to provide export insurance backed by the State Treasury, thus, offering insurance cover on markets, exposed to higher political risk. As the only insurer in Poland, the corporation cover export transactions with payment terms exceeding the period of two years.

It also facilitates the access to external financing. The factoring company of the corporation, KUKI Finance, provides export and domestic factoring services in all available forms, particularly within the framework of non-recourse factoring i.e. where the factor assumes the risk of non-payment by his client's buyer.

## GREEN WAY PRIVATE ASSETS CLOSE-END INVESTMENT FUND

The missions assumed by the Fund is to contribute to the innovative investments' market in Poland and to acquire a significant part in it. The Fund's investment philosophy makes an assumption of active and disciplined asset management, under strictly defined principles. Innovative approach of Green Way (PACIF) towards constantly changing market trends allows it to be a reliable and firm partner for the Investors, offering the highest quality of the investments and complex financial solutions suited for their needs.

Main investment fields of Green Way (PACIF):

- Reorganization of enterprises – subjects showing the possibility of restoring the inner balance and opening for system changing process with the high income generation ability,
- Logistics – developer projects related to constructing and projecting of logistics centres for renting or sale, located near main roads, highways and agglomerations
- Industrial immovable properties – purchase of attractive immovable properties of a high value increase potential and high income generation, f. in. from lease
- Telemedicine and oncology diagnostics – subjects from developing branch of telemedicine and medical centres using innovative diagnostic techniques
- Power engineering – enterprises dealing with the production of electrical, thermal and cooling energy, including alternative fuels. It also involves the companies realizing RES (Renewable Energy Sources) projects, mostly photovoltaic and wind farms. The Fund is planning its investments into electric vehicles market companies.
- Waste management – enterprises dealing with the recycling of plastics wastes and rubber to oils, causing increase of the recyclable wastes and allowing to obtain a relatively high reimbursement rate
- IT solutions – companies dealing with projecting and implementing the software, mobile apps, cloud solutions and fleet and telemetric systems monitoring.

The Fund performs an active management policy, which means that it constantly monitors the course of the investments and actively participates in project management. The Fund is obliged to act in accordance with the principles of a limited investment risk, defined in The Investment Funds Act. Green Way (PACIF) makes its every effort in order to provide the financed projects with the highest possible potential profitability and limited risk in order to ensure the Investors' capital safety.

Cooperation between the experts in terms of technology as well as business, is aimed at increasing the chances of success of those projects. The capital acquired under Investment Certificate emission in 2016, shall be devoted to key projects development, including logistics centres and to attractive industrial immovable properties purchase made by the Fund.

## FINCREA INVESTMENT FUNDS ASSOCIATION S.A.

Establishing and managing closed-end investment funds prepared and designed according to the clients' needs is FinCrea's main activity. In 2008, FinCrea was taken over by UCFS Advisory Group and became the Group's flagship. Activities of FinCrea focus on the Group's own and foreign investors' projects in the field of corporate receivables, illiquid assets, real properties, clean-tech and transaction optimisations.

The company has well-qualified management staff and closely cooperates with many leading international advisors and investors, who enjoy an excellent reputation on both local and global markets. Their relations are based on a mutual respect and trust, thanks to an in-depth recognition of each other's investment goals and strategies.

In wider context the company, as a part of FinCrea Group, participates in:

- diligence processes, valuation and acquisition of the corporate debt (and other asset-backed securities) both in the portfolio and individual debt context,
- legal and debt collection processes (and other asset-backed securities) both in the portfolio and individual debt context (single names),
- investment projects in the segment of commercial real properties and also development projects, including structuring of financing for such ventures,
- M&A projects - counselling, structuring and optimisation of a given transaction,
- investment projects connected with alternative energy sources and waste disposal,
- investment projects from the energy sector,
- counselling and diligence processes in the discounted loan sale transactions,
- restructuring and acquisition of projects connected with illiquid assets,
- optimisation projects in cooperation with renowned counselling companies concerning both solutions for individual projects/customers, and also structures of the broadly understood investment market.

## NAVIGATOR GROUP

Navigator Capital provides investment banking services and specialises in fields of transactional and financial advisory. It consists of 3 specialised entities: Navigator Capital S.A., Brokerage House Navigator S.A. and Navigator Debt Advisory LLC.

Navigator Capital is an Authorised Adviser of NewConnect market. It offers share issue services, introducing them to ASO NewConnect and transferring company's quotations from NewConnect to a regulated market.

The Navigator's managers have already coordinated more than 70 bond issues with a total value of more than PLN 900 million in the cooperation with nearly 50 issuers. The Navigator's Management Staff is associated with corporate bonds market since the Catalyst was established. Since the beginning of the 2015, the group has conducted bond issue with a total value of PLN 173 million and in 2014 - PLN 166 million. All of them were successfully acquired by investors.

Navigator Capital specializes in investment banking services for mid-sized and large companies. It provides complex services in fields of acquiring share capital on the private market. Thanks to its business relations, the Group is able to acquire, for clients, appropriate financial measures from private market, including sources such as: private equity/venture capital funds, industry investors, individual investors.

Navigator Brokerage House S.A. provides licensed brokerage services within transactions performed by Navigator Group. It is a licensed entity conducting brokerage activity under the supervision of the Polish Financial Supervision Authority and a specialised entity in the capital raising transactions (mainly through issue of shares and bonds) for middle-sized and large companies operating on the capital market. Navigator Brokerage House S.A. has the necessary authorisation to carry out brokerage activity in accordance with the Polish Financial Supervision Authority's decision of 27 September 2007.

Navigator Debt Advisory offers services regarding comprehensive advisory in terms of corporate bonds issue. Apart from acquiring capital for their clients, the services include indicating optimal transaction conditions regarding clients' financial position and investors' expectations as well as after-issue advising in terms of contacting investors, National Depository of Securities, Warsaw Stock Exchange and BondSpot. Navigator Debt Advisory also analyses financial situation of companies, searches for opportunities to acquire debt financing, evaluates debt servicing capability and prepares reports on corporate bonds market in Poland. As an independent advisor it ensures the reliability and objectivity of its publication.

## UNIVERSITIES



### WARSAW SCHOOL OF ECONOMICS

[www.sgh.waw.pl](http://www.sgh.waw.pl)

SGH - is the oldest school of economics in Poland, and one of the leading economic universities in Europe. For many years, it has been ranked in the top forty universities according to elite

Financial Times magazine and moreover, remains in the top ten rankings with its CEMS Master in International Management programme.

Cooperation with foreign countries is an important element of the university's educational and research offer development, resulting in an enhancement of quality and strengthening of university's position among other economic and business universities. SGH is currently working with over 200 foreign universities as well as international organizations. Its main partners are institutions from the European Union, the USA and Canada. Every year, about 500 students from the Warsaw School of Economics take part in an international students' exchange programmes and the university hosts over 300 students from foreign universities.

Among the most important international cooperation programs are:

- Socrates-Erasmus
- CEMS (The Global Alliance in Management Education)
- Polish-German Academic Forum at SGH
- double diploma of Warsaw School of Economics – Sciences Po
- Partnership in International Management (PIM)[13]
- bilateral agreements and others.

CEMS (The Global Alliance in Management Education) is important for the school. It associates leading universities of economics from selected European countries. Since November 2001, Warsaw School of Economics has been the only Polish member of the leading universities of economics network - PIM[14] (Partnership in International Management) and MBA programmes offered in cooperation with Canadian Universities of Quebec at Montreal (UQAM) - Canadian Executive MBA (CEMBA) or Warsaw School of Economics' MBA programme[15]. Other initiatives concerning international cooperation are: programme for American students carried out in cooperation with CIEE (Council on International Educational Exchange) as well as educational program - Academic Initiative – East, having been realized since 1991 for the Central and East Europe in the field of economy and management.



**THE UNIVERSITY OF WARSAW**  
[www.uw.edu.pl](http://www.uw.edu.pl)

The University of Warsaw was founded in 1816 and is recognized as the largest and one of the best Polish universities. The strength of the University lies mainly in high-qualified teaching staff and students, who may boast with many suc-

cesses in Poland and around the world. The educational process at this University is closely linked with acquiring practical knowledge and conducting the researches, for which University offers excellent facilities. Thanks to its modern approach, it can accelerate cooperation with the world's best scientific and research institutions, which focusing mainly on innovation and the exchange of technology. The University cooperates mainly with renowned Polish and international companies, which appreciate its graduates.

The University implements the Bologna Process and develops cooperation with the most reputable educational institutions abroad. The University employs more than 7,000 people (including 3,556 lecturers) and has more than 50 000 students. University educational offer accounts for 39 faculties and more than 100 specialties and specialisations in the field of humanities, sciences and natural sciences.

The University of Warsaw can boast of 5 Nobel Prize winners, namely:

- Henryk Sienkiewicz who started his education at the University in 1866, first at Law Faculty at the Main School (University's name at that time), and then at Medical and Philology Faculty, graduating from the latter in 1871, however, not being awarded a diploma.
- Menachem Begin, former prime minister of Israel, graduated from the studies at Law Faculty in 1935.
- Czesław Miłosz, in 1932, was studying at Law Faculty, however, and continued his education in Vilnius. During WW II he worked at the University as a caretaker.
- Joseph Rotblat, a physicist and a radiologist, in 1938 he defended the PhD in physics, in 1932-1934 was attending lectures at Humanistic Department.
- Leonid Hurwicz, an economist, who graduated from law studies at the University in 1938.



**WARSAW UNIVERSITY OF TECHNOLOGY**  
[www.pw.edu.pl](http://www.pw.edu.pl)

The tradition of Warsaw University of Technology – the biggest and the oldest University of Technology in Poland – dates back to the beginning of XIX century. It was founded in Warsaw in 1915 by Gen Hans von Beseler. It is one of the best technical universities in Poland and in East-Central Europe.

Warsaw University of Technology, for many years, was ranked the 1<sup>st</sup> among the technical Polish universities in the „Ranking of Universities” published by the „Perspectives” magazine. According to Webometric Ranking of World Universities from



January 2015, which shows the involvement of academic institutions in the Web network activity, the university occupies the 2<sup>nd</sup> place among technical universities in Poland and the 522<sup>nd</sup> place among the best universities of the world.

Warsaw University of Technology associates the biggest number of promising science and research academics in technical sciences. This is the place where the most of nationally and world-renowned scientific studies are carried out. Its superiority is proven by dozens of successful agreements on cooperation with world-known universities, staff and students' exchange as well as joint research programmes.

None of technical universities in Poland has such wide range of faculties and specialisations. It enables meeting individual interests and market needs. Premises' conditions and equipment are the factors that facilitate realization of such a wide offer.

The organization of studies, based on point assessment of student's level, which is consistent with international standards, simplifies the process of doing some part of the course abroad. Benefits resulting from it are enormous and close integration with European Union will open new, great possibilities in this area.



## THE JAGIELLONIAN UNIVERSITY

[www.uj.edu.pl](http://www.uj.edu.pl)

The Jagiellonian University is the oldest higher education institution in Poland and one of the oldest in Europe. It was founded on 12 May 1364 by the Polish king Casimir the Great. Since its very beginning, the Jagiellonian University has been an international institution. Some of its students and academics have been major historical figures, including world famous scholars, such as Nicolaus Copernicus or Karol Olszewski, as well as Karol Wojtyła, the future Pope John Paul II.

Today, the Jagiellonian University comprises of 15 Faculties, where 4 thousand academic staff conduct research and provide education to almost 50 thousand students, within the framework of more than 80 different fields of study. The eminent researchers and state-of-the-art infrastructure make the JU one of the leading Polish scientific institutions, collaborating with major academic centres from all over the world. The Jagiellonian University is also home to about 150 student societies, where young researchers pursue their academic interests and develop friendships with people who share their passion.

The University's prestige in both Poland and abroad is illustrated by its widely recognized research achievements. The scientists and physicians from the JU Medical College carry out pioneer studies, e.g. in cardiac surgery, urology and neurology, often leading to the development of novel treatment methods. Their findings have been published in some of the most prestigious international journals, for instance, European Journal of Cardio-Thoracic Medicine, New England Journal of Medicine, and Lancet. JU astronomers take part in the most important international projects in their field, including H.E.S.S. and VIPERS, whereas the results of research by JU biotechnologists have been published in such reputable specialist journals as Bioorganic and Medicinal Chemistry, Molecular Ecology Resources or European Journal of Human Genetics.

The current position of the JU is also reflected in the growing number of patent applications and the growing number of patents granted to its academic staff members - there were 8 applications and 2 patents in 2007 and as many as 60 applications and 11 patents in 2013. Yet another advantage of the Jagiellonian University is its location in the historic city of Kraków, the former capital of Poland and a great cultural centre, visited by millions of tourists. Some of the University buildings are major historical sites themselves.



## POZNAN UNIVERSITY OF TECHNOLOGY

[www.put.poznan.pl](http://www.put.poznan.pl)

Poznan University of Technology (PUT) grew out of the State School of Mechanical Engineering, which was established in 1919. Currently, it is one of the leading technical universities in Poland, which has become one of the most recognized landmarks of the region and even the whole country.

The autonomous state institution consists of ten faculties, providing didactics for about 21 thousand students. PUT offers Bachelor, Master and Doctorate courses, conducted both in Polish and English. Moreover there are postgraduate courses and workshops for people interested in updating their technical knowledge. The students of Poznan University of Technology have an access to more than 150 labs equipped with modern and high-quality technologies together with 12 hundred academic staff members, conducting researches and running educational tasks there.

Among other aspects, Poznan University of Technology operates within the field of scientific research and design together with companies from the following sectors: automotive (VW Poznań, Solaris Bus & Coach, MAN Bus); precision (SKF, Aescu-

lap-Chifa); home appliances (Samsung Electronics, Amica); industrial automation (Phoenix Contact); engineering (HCP-Poznań); chemical (Luvena); pharmaceuticals (GlaxoSmithKline); Energy (Dalkia); construction (Budimex, Skanska); exhibition (MTP-Poznań); banking (BZ WBK – group Santander).

PUT plays an important role in international scientific life: the university takes an active part in scientific exchange and international projects and cooperate with multiple research institutions both from Poland and abroad. The University combines the development of the latest scientific disciplines with the transfer of this knowledge and technology into the practical dimension.

## BUSINESS ENVIRONMENT INSTITUTIONS

### EUROPEAN GREEN TECHNOLOGY ALLIANCE

In times of globalization, an knowledge-based economy, which uses mechanisms of international technology transfer constitutes the key to the development and competitiveness of the country. The spread of technology between entities from different countries builds their economic power and represents a source of innovation on a global scale.

European Green Technology Alliance (EGTA) is an international platform for cooperation between European clusters, designed to transfer technologies between member entities, directed to the needs of modern, sustainable and intelligent economy. It was established at the beginning of 2015 by Smart IT Cluster, which aims at creating network of cooperation between innovative companies and integration platform of their potential.

European technological clusters are members of European Green Technology Alliance. Their goal is to generate further technological solutions as well as to commercialize them on a global scale. Currently, EGTA consists of 21 clusters from 18 EU countries, which in general provides 300 economic entities and research institutions. EGTA's development strategy assumes doubling this number by the end of 2016.

Goals and priorities of EGTA:

- Creating European ecosystem of innovation, serving the purpose of knowledge transfer, mutual research, development and commercialization of studies by providing coordination, communication and information technology tools,
- Creating new business opportunities for EGTA members on a European and global scale by undertaking mutual business and marketing ventures,
- Supporting EGTA members with international strategy implementation by establishing cooperation with non-European countries and creating global platform for technology transfer.

Implementation of EGTA requires four complementary activities:

- European Platform for Technology Transfer
- European Base of Technology Experts

- European Platform for Knowledge Exchange
- European Platform for Goods and Services Exchange

The strategy of EGTA internationalisation is realized due to cooperation with non-European countries as a part of Global Network of Business Innovation and Development.

### NATIONAL CHAMBER OF COMMERCE

National Chamber of Commerce, which is the biggest independent business organization in Poland, was established in 1990. It represents the biggest number of entrepreneurs, associating more than 130 business organizations, consisting of around 300 thousand national enterprises. Polish Chamber of Commerce promotes social business sensitivity. Its courses and conferences help the entrepreneurs to implement ethical standards. The most socially-sensitive companies are rewarded in "Fair Play Entrepreneurship" programme.

Polish Chamber of Commerce takes care of Polish entrepreneurs on international arena. PCC is a member of Eurochambers (Association of European Chambers of Industry and Commerce) and International Chamber of Commerce in Paris. PCC has signed agreements on cooperation with majority of national chambers of commerce all over the world. Being a vice-president since 2008, the chairman of PCC – Andrzej Arendarski – has strengthened the position of Polish Chamber of Commerce on international arena.

The activity of Polish Chamber of Commerce is performed by 20 committees and 4 platforms, which are ruled by prominent economists, academics, local government and social activists. Committees have two basic functions – counselling (for the NCC Presidium) and integration since they associate economic societies in order to resolve particular problems. Committees that take part in works of Parliament's Committee are also active in formulating and commenting on deeds which directly influence the enterprises' activity.

### EMPLOYERS OF POLAND

Employers of Poland - the oldest and the biggest employers association in Poland – has been acting since 1989. It represents more than 10 000 companies, employing nearly 5 million people. It consists of mainly private companies – 85%. The power of Employers of Poland in rights and arguments presented to political and economic decision-makers as well as in the number and variability of the members: unions, federations and companies.

The organization's aim is to create an employer-friendly country, however, with respect to worker's rights. The economy has to developed in a sustainable way, and economic aspects cannot ever dominate social ones. That is why employers in the Republic of Poland strive to create harmony between the employer and the employee. Since 9 September, it is also achieved by participation of this organization in activities of Social Dialogue Council. It is an institution for which Employers of Poland fought since the trade union representatives left Trilateral Commission. As a represented organization, Employ-

ers of Poland has more possibilities to influence proper law establishment.

The Organization's Representatives are presented wherever important events for business and employers take place: during Parliament and Senate sittings, during decision-forming and advisory works of assemblies at different government administrative levels as well as committees that decide on UE fund distribution. Recruited from the most renowned specialists and authorities, expert of Employers of Poland publish extensive academic studies, advise policy makers and comment on economic reality. Conferences organized by Employers of Poland not only host distinguished speakers, but also significantly contribute to development of debates and public consultations.

The tasks, performed by the organization, cover:

- activities, directed to secure common employers' interest associated in member organisations of enterprises, which often compete with each other. However, they are aware of the necessity to act together for the benefit of employers and entrepreneurs society,
- support of initiatives which seek to strengthen the role of Polish employers and cooperation among the employers and entrepreneurial organizations, in order to achieve mutual goals of business society,
- cooperation with social partners – employees organizations, which aim is to attain common objectives of employers and employees, resulting from economic growth, fair and stable working conditions, work safety and social peace,
- engagement in a dialogue with public authorities at all levels, with the aim of realizing common goal of the society, entrepreneurs and the rulers, as well as highlight the opinion of employers during the decision-making process for the future of Poland,
- formation and promotion of the employers and entrepreneurs' images as the ones who create national income, new workplaces and contribute to country's flourishing and prosperity; as well as realization of individual aspirations of its citizens.

## EIT +

EIT+ Wrocław Research Centre is the first research and technology organization in Poland that is entirely focused on the development of innovations, new technologies, and the research reflecting the needs of the modern industry.

We have the most comprehensive research infrastructure in the entire East-Central Europe (totaling more than 23,000 sq. meters of area), which has been fitted with the state-of-the-art laboratory equipment. Hence, we are able to run research projects that remain interesting for the industry as well as to perform basic tests compliant with the global development trends. The EIT+ Wrocław Research Centre is formed by the people who perceive science as a practical tool for driving the economy. They have been gaining experience in collaboration with some of the most notable scientific hubs that serve the world's industry, i.e. Berkeley, Stanford, Princeton, Fraunhofer Institute, and Gent University. Today, this priceless experience

bears fruits in the form of a permanently growing cooperation with business organizations.

Our scientific personnel, as well as freelance scientists with whom we cooperate, conduct research in the fields of biotechnology, medical diagnostics, pharmacy, nanotechnology, laser techniques, materials science, and chemistry. Our inventions and technologies have been appreciated on international trade fairs and scientific conferences.

EIT + it is, among others, 48 Polish patent applications and PCT, 59 research projects, 6 Polish patents and 14 created firm of spin-off type.

## MAZOVIAN UNIT OF EU PROGRAMMES IMPLEMENTATION

### (MUEUPI)

Mazovian Unit of EU Programmes Implementation in Warsaw was established based on Resolution No. 47/07 of 19 March 2007 of Mazovian Voivodship Council and started to operate on 1 July 2007. Under the statute provisions Mazovian Unit of EU Programmes Implementation took over the operation of the Integrated Operational Programme of Regional Development 2007-2013, carried out by the Office of the Mazovian Voivodship and carries out the tasks arising from the Regional Operational Programme in years 2014-2020 and as the intermediate body for the regional component of Mazovian Human Capital Operational Programme.

The tasks of Mazovian Unit of EU Programmes Implementation are connected with implementing the Regional Operational Programme of the Mazovian Voivodship (ROP MV) are particularly the following: preparing and updating the manuals and procedures' descriptions for implementing ROP MV according to the directives of the Management Body aiming at their approval, cooperation with the Management Body in terms of preparing a detailed description of ROP MV priorities, preparing the application forms specimens, agreements and other documents for beneficiaries in accordance with the Management Body directives, elaborating annual and long-lasting costs forecast under the Priority and passing them to the Management Body, conducting competition procedures of the projects taken into consideration for financing under ROP MV, preparing agreement projects on project financing, performing payments from ROP MV funds for the beneficiaries' favor, factual and financial progress monitoring in terms of projects realization, reports and applications verifying on payments prepared by the beneficiaries, controlling the realization of particular projects financed under ROP MV, recovering funds paid independently to beneficiaries, managing the registration system and storing the accountancy register details in an electronic for all the projects and gathering essential data for financial management, monitoring, verification, audits and evaluation, managing electronic monitoring system of projects and priorities realization, managing IT and promoting activities, storing all the documentation related to project realization for a period of 3 years from the date of a projects' closure, realizing tasks connected with the use of Technical Support means under ROP MV.



## SPECIAL ECONOMIC ZONES

**Special Economic Zones (SEZ)** are the selected areas of Poland where investors are exempted from income tax in reference to income gained in a particular zone. In fact, there are 14 special economic zones in Poland. At the end of 2014, the area amounted to nearly 18134 ha in aggregate. In September 2015, it rose to 18687 ha, thus, systematically increasing year by year without changing the number of zones as such. They are located in 162 cities and 232 communes.

They perfectly suit to those, who will to start investment project on the territory of Poland. These zones are created mainly in areas with considerable demand for work and large workforce. Since the main purpose of such zones is to boost economy and give jobs, they seem to be a great place for implementing investment. It allows for minimizing costs of employment or costs of a new investment. Moreover, mostly companies from modern industries are operating in SEZ, which gives a possibility to interact as far as business and investments are concerned.

In the SEZ area, the entrepreneurs can benefit from tax exemption due to bearing costs of new investment and creating new vacancies. The level of support depends on maximum intensity of help planned for the places where investment is realized. For entrepreneurs who will take advantage of vacancy-related benefits, there is a grant covering the costs of 2-year work of a new employee. In case of entrepreneurs who will decide on investment-related help, cost of new investment is covered.

At the beginning of 2015, there were 2056 business licenses in force in all 14 special zones. In 2014, there were issued 436 licenses, which constitutes more than 21% of total number of licenses. It indicates about big support, provided to national and foreign investors. At the end of 2014,

Drawing 1: Distribution of SEZ in Poland.



Source: own study based on kpmg.pl

Drawing 2: Location of Science and Technology Parks in Poland



Source: own study based on [www.kpmg.pl](http://www.kpmg.pl)

entrepreneurs, which were running business in such zones, invested over PLN 101.9 billion and provided around 395.6 thousand vacancies, of which nearly 2013.9 thousand (i.e. 72%) referred to new vacancies created by investors after being awarded a permit to run business in the zone, which directly resulted from realisation of new investments.

## SCIENCE AND TECHNOLOGY PARKS

Science and Technology parks are to join entities with mutual development and investment objectives. Cooperation with them provides an access to specialized laboratories and human resources as well as technical support necessary to realise investment projects. These parks aimed at economic development in terms of innovativeness, new technologies, job market development, increase of investment level and sustainable development.

A technology park is a complex of real estates and technical infrastructure, created in order to transfer knowledge and technologies between scientific entities and entrepreneurs. Entrepreneurs who use new technologies are offered services such as:

- counselling in terms of enterprise creation and development,
- technology transfer,
- transforming research studies and development into technological innovations,
- creating favourable conditions for running a business.

In Poland, there are as much as 75 industrial land technological parks. Such places can differ from each other significantly. Each of them is created in such a way, so that allowing to suit the assumptions on which it operates. Such factor makes this group a very diversified one, since all entities, which operate within it, can deal with different areas.







fot. Przemysław Szablowski/Shutterstock.com

## CONCLUSION

The main objective of this Guidebook consisted in showing the reader the basic scope and areas for the development of particular investment projects connected with Polish economy, as well as introducing all available tools, thanks to which those investments can be implemented.

Poland, as one of the most dynamically developing EU economies, provides its foreign partners with perfect economic conditions, which will surely foster the development of prosperous business activities on its territory. Summing up the fruit of our research and observation, the most favourable industries of Polish market worthy of investment, are those connected with energy, modern technologies, transport and waste management. Indeed, this is not surprising, as namely those areas inspire hopes for fast development in the upcoming years and are characterised by evident low risks and high rates of return.

Emirates & Europe Business Development Cluster can become your reliable partner on the path towards the market of profitable investments. We are always open to new ideas and incentives, and are ready to assist our partners in all business endeavors and aspirations.

We strongly encourage you to contact us:

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**Green  
Way** FIZAN

**LOGISTICS**

**RESTRUCTURING**

**ENERGY  
INDUSTRY**

**INDUSTRIAL  
AND AGRICULTURAL  
REAL ESTATE**

**WASTE  
MANAGEMENT**

**TELEMEDICINE  
AND ONCOLOGY  
DIAGNOSTICS**

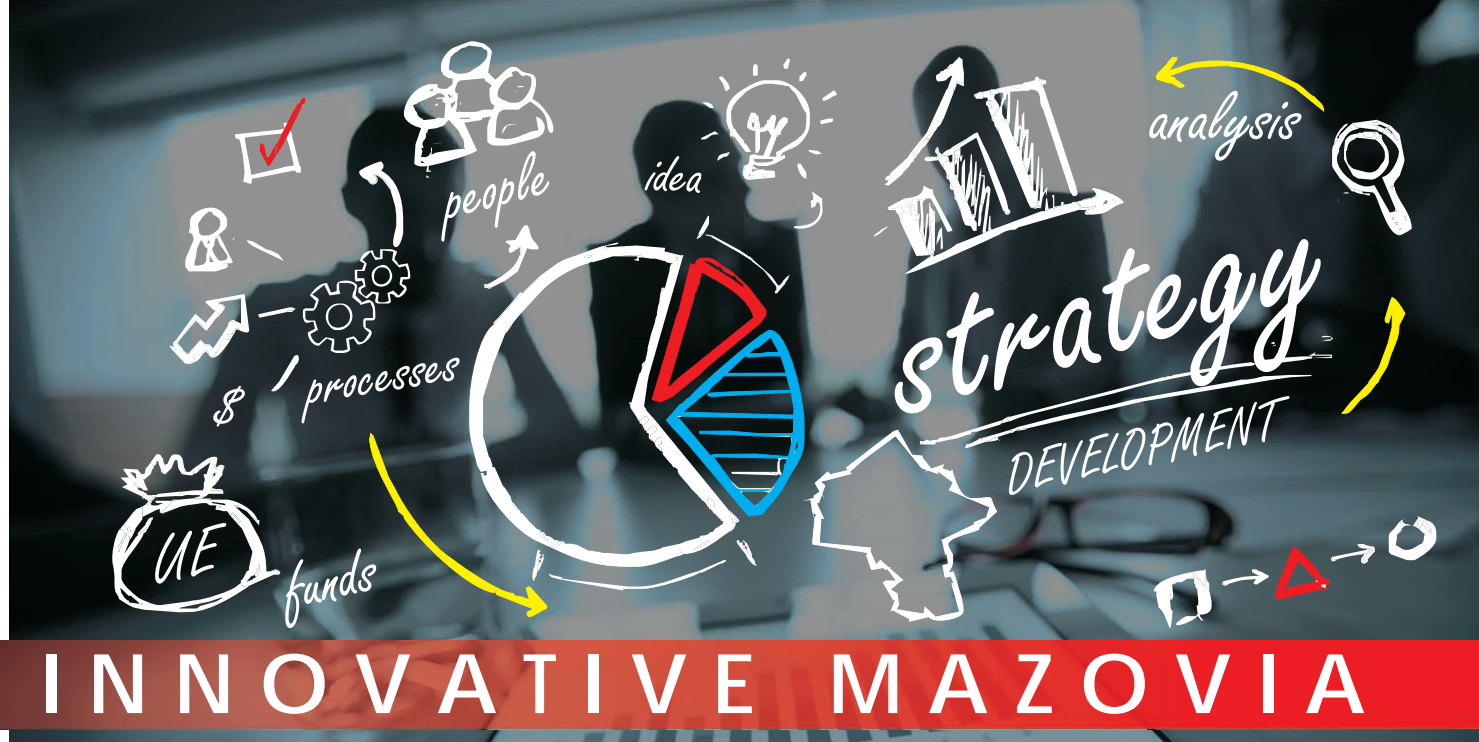
**IT SOLUTIONS**

Greenway FIZAN was established to develop innovative investments in Poland. The Fund offers investors a unique investment opportunities, combining several aspects: financial, legal and tax, for optimal allocation of funds. Green Way FIZAN manages its own assets and gives to the investors the opportunity to participate in ongoing projects.

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# INNOVATIVE MAZOVIA

The tasks of the self-government of Mazovian Voivodeship in terms of the development of innovation are defined by Regional Innovation Strategy for Mazowsze 2020 (RIS Mazovia) and include:

- ♦ actions supporting the development of regional innovation system,
- ♦ stimulation and enhancement of scientific and business cooperation in the region,
- ♦ promotion of a greater cooperative and innovative mindset in the region.

The self-government of Mazovian Voivodeship is the initiator and at the same time animator of the activities, building the **ecosystem of innovations**. An important element in the promotion of innovation is also a regional cluster policy, which submissions have been included in the RIS Mazovia.

Regional authorities adopted a system of selection, called **Mazovia Cluster Key (MKK)**, which basic premise is to catalyze the development and self-improvement of cluster organizations. Thanks to implemented selection criteria, a system serves to verify the institutional capacity of the applicants to perform the role of MKK and partner for regional authorities in the area of implementation of economic policies. Granting the status of MKK and support of its development is also inextricably linked with strengthening Mazowsze smart specialization. Undertaken so far activities, which are related to key clusters, should be treated as an introduction to the creation of additional instruments of support policy.

Aiming to strengthen the potential of Mazovian clusters, the regional government announced offers competition that has to choose the projects supporting the development of cluster initiatives. The projects submitted to competition concern the development of partnerships among cluster members, stimulation of co-operation network and activation of cooperation between scientific and entrepreneurial spheres. Additional elements, which support the promotion and internationalization of clusters, are as follows:

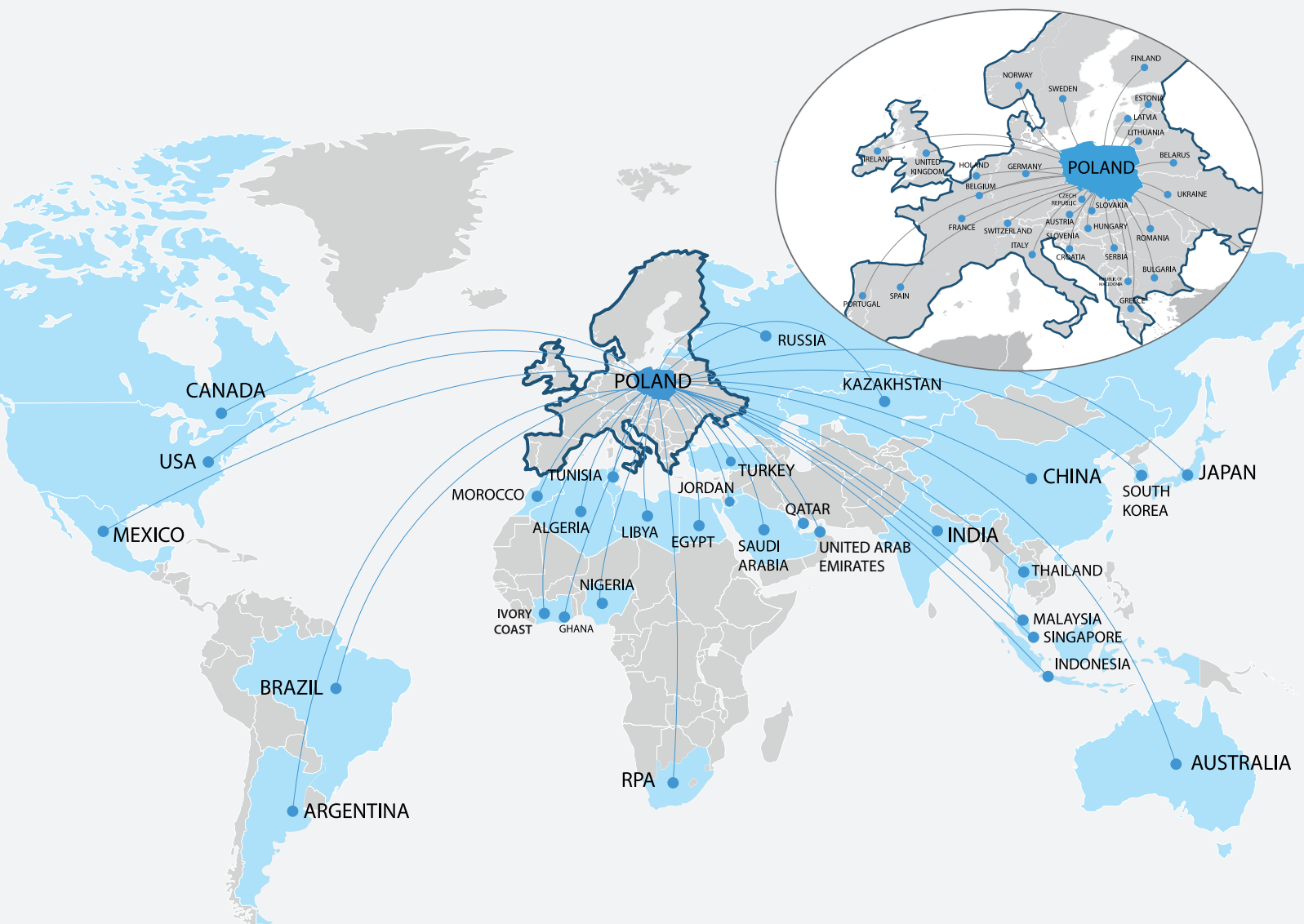
- ♦ initiating or developing cluster cooperation with scientific research units,
- ♦ developing cooperation within the cluster,
- ♦ promoting clusters on international markets, including participation in fairs, markets, exhibitions, study visits in clusters industry,
- ♦ training and workshops dedicated to the development of cooperation within the clusters, transfer of knowledge, creation of cooperation networks.

Clusters are also present in many projects aimed at promoting innovation and intelligent specialization, directed, among others, to the institution of business environment, or for monitoring Mazovian innovation. More information about the activities of the self-government of Mazovian Voivodeship policy innovation can be found at: [www.innowacyjni.mazovia.pl](http://www.innowacyjni.mazovia.pl).

**Mazowsze.**  
serce Polski

# European Green Technology Alliance

[www.egta.eu](http://www.egta.eu)



European Countries : 18

European Clusters : 21




European Companies : 325




World Cooperation : 58

EGTA is an international platform for cooperation among European clusters in order to set up the technology transfer between entities, oriented to the needs of a modern, sustainable and intelligent economy.

The members of European Green Technology Alliance are European technology clusters, whose aim is to support further development of technological solutions and their global commercialisation.

We kindly welcome to cooperate with us.

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 **European Green  
Technology Alliance**





# Emirates & Europe Business Development Cluster



In recent years, the United Arab Emirates have been showing growing interest in European market mostly due to superior quality products and services and highly developed innovative technologies. In turn, European entrepreneurs are willing to broaden their markets.

**Emirates & Europe Business Development Cluster** was formed in response to the expectations on both sides, in order to integrate the Emirati and European business environment and to provide enhanced methods of communication.

**EEBD.eu** is an international cooperation organisation for European and Emirati environments. Its activity is based on associating and supporting member institutions: enterprises, governmental units, researchers and

scientists interested in investment cooperation in the field of:

- Financial products and services
- Innovative technologies
- IT market
- Energy
- Waste management
- Agricultural and food industry
- Real estate industry
- Transport
- Tourism
- Military technologies
- Medicine
- Culture and art



TECHNOLOGY  
TRANSFER



INVESTMENT  
PROJECTS



ECONOMIC  
EXCHANGE



REDUCING POVERTY  
& SOCIAL EXCLUSION



LEGAL & INVESTMENT  
SERVICE



# Invest in **Poland!**



## Why Poland?

- financing of PLN 3 bln in the largest support program for start-ups in Central and Eastern Europe - "Start in Poland"
- 500,000 apartments under the National Housing Fund program worth investing EUR 30
- 82,5 billion euro of EU investment funds for 2014-2020
- modern RES installations worth investing EUR 8 mln
- maintaining high GDP growth over 2014-2016
- 67 billion euro of EU investment funds in 2007 - 2013
- 10th place while taking into consideration the amount of remuneration of the EU countries employees
- 21st place in terms of the quality of economic growth
- 27th place in the ranking of the most socially developed countries
- 8th place in the ranking of the biggest EU economies
- 6th most populated country in the EU
- 8th place among Europe's biggest economies