



# The Report on Intellectual Capital of Poland

Fragment of the publication  
The entire report is available at:  
[www.poland2030.pl](http://www.poland2030.pl)



# Summary



**THE INTELLECTUAL CAPITAL OF POLAND** is the total of intangible assets of people, enterprises, communities, regions, and institutions, which, properly utilized, may become the source of the present and future well-being of Poland.

Both the economic theory and the experience of other countries indicate that the role of intellectual capital is fundamental to sustainable development of a country.

Certain countries, comparable in respect of their natural resources, geographical position and financial condition, may differ significantly in terms of their successfulness, like Chile and Argentine, or Spain and Italy.

The difference between these countries lies in the ability to develop intellectual capital, which manifests in long-term thinking, readiness to learn, trust in market mechanisms and receptiveness to global competition, but also in efficient government of the country.

Whether Poland will manage to find the proper response to its **key challenges like** demographic regression, increasing costs and worsening accessibility of traditional sources of energy, or constantly accelerating pace of technological progress, depends on its ability to utilize the intellectual capital of the Poles.

**Intellectual capital** consists of the following components:

- **Human capital:** the total potential of all Polish people embodied in their education, life experience, attitudes and skills, which can be used towards increasing the present and future well-being of Polish people.
- **Structural capital:** the total potential of tangible infrastructure elements of the national system of education and innovation, i.e. scientific and educational institutions, research centres, IT infrastructure, and intellectual property.
- **Social capital:** the overall potential of the Polish society in the form of its social norms of conduct, trust and involvement, which support cooperation and knowledge sharing, and thus, contribute to the improvement of the well-being of Polish people.
- **Relationship capital:** the potential related to the external image of Poland, to the level of its integration with the global economy, and to its attractiveness to foreign 'clients': commercial partners, investors, tourists etc.

Cooperation with the Institute of Statistics and Demography of the Warsaw School of Economics resulted in developing a measurement model that allows to benchmark the intellectual capital of Poland and other EU Member States. The adopted method involves presenting intellectual capital in a generational perspective, which enables assessment of the future potential of Poland's development with regard to the individual age brackets. The estimation of the intellectual capital value of each generation in selected countries has been standardized and presented as percentage (from 0 to 100%). All indexes have been calculated as a result of statistical analysis covering from several to several dozen indicators.

Altogether, the measurement model applied in the Report on Intellectual Capital of Poland comprises 117 indicators.

Index of the intellectual capital of Poland in respect of individual generations places Poland among 16 European countries surveyed:

- **13<sup>th</sup> as regards young children and pupils;**
- **13<sup>th</sup> as regards students;**
- **14<sup>th</sup> as regards adults;**
- **16<sup>th</sup> as regards senior citizens.**

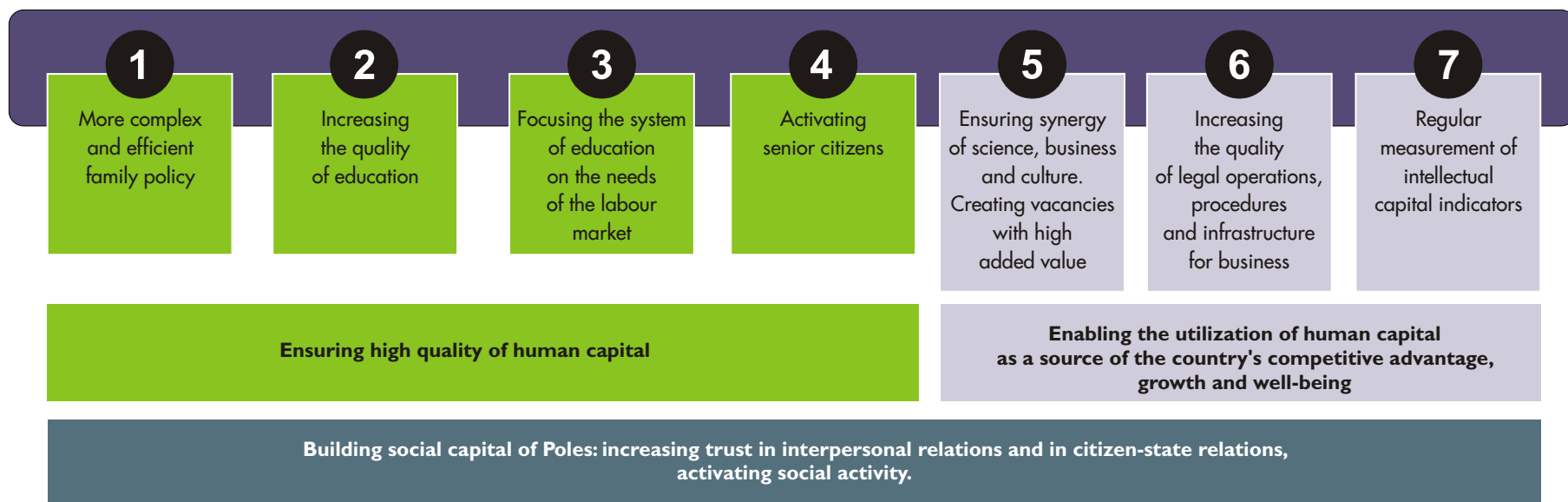
This indicates that the distance separating Poland from developed European countries in terms of intellectual capital is still considerable. Until recently, the relatively low level of intellectual capital did not hinder economic development in Poland, since the country's competitiveness was based on other advantages, such as low labour costs, a relatively big market, or its location in the centre of Europe. However, maintaining the current pace of development in the upcoming decades will not be possible unless intellectual capital, which is the foundation of any knowledge-based economy, is strengthened.



Nonetheless, **Poland must do its utmost to create the optimal conditions for utilizing the capital of knowledge, energy, and entrepreneurship of Polish people.** It is absolutely crucial for Poland to promptly become a business-friendly environment. Otherwise, the human capital, i.e. the best students, workers, scientists and entrepreneurs, will move abroad to countries offering better conditions to run operations. A simplified legal system, competitive and open markets, a transparent tax system, and mechanisms stimulating creative cooperation of science, business and culture, may turn Poland into an ideal location for innovative enterprises generating considerable added value.

**What is of top priority among the numerous challenges facing Poland is further investment in its human capital, which is key to the development of the country.**

It is essential that pro-family policies encourage people to have children and ensure equal access to various forms of pre-school education, that the quality of teaching in schools be increased, and that Polish institutions of higher education produce graduates whose qualifications are more relevant to the needs of the labour market. Finally, the ageing society brings new challenges, but also new opportunities related to the intellectual capital embodied in the senior generation.



Initiatives related to activating and developing the potential embodied in Polish people should be joined with the use of social capital. The state can stimulate the process of increasing social capital by improving the credibility of its institutions and by promoting appropriate norms of conduct in mutual relations.



The success of developing the intellectual capital of Poland will require a great deal of effort aimed at changing the traditional attitude to the implementation of key reforms.

The above-mentioned changes should manifest in:

- greater use of teamwork performed beyond government departments and coordinated by the Prime Minister;
- wider scope of consultations, with the participation of representatives of the media, NGOs, and parliamentary opposition;
- engaging highly qualified and well prepared project managers to be operationally responsible for the implementation of reform projects

**What is also essential is a shift from short-term to long term government policies, which should be accompanied by due regard to improving the quality of political debate and focusing it on issues of genuine importance to the country**

**The experience of other countries teaches us that even twenty years of relatively dynamic economic growth is insufficient to bridge the gap separating a country from the developed world. Unless the right decisions are taken at this moment, the pace of Poland's development will decelerate, and the distance to more developed countries will stop shortening.**

Given the intention to initiate a debate on the intellectual capital of Poland, this report has been made available online, with the possibility to add remarks and comments related to its individual parts.

**You are welcome to take this opportunity at <http://www.innowacyjnosc.gpw.pl/kip>**

If the Polish lack courage, determination and readiness to work in the interest of Poland regardless of political divisions, history books of the third decade of the 21<sup>st</sup> century will cite the example of Poland as a warning of possible consequences of failure to invest in the intellectual capital of a country. Poland may become one of the poorest countries of the European Union, which allows the most talented individuals to emigrate and the most prosperous businesses to move to countries with lower taxes.

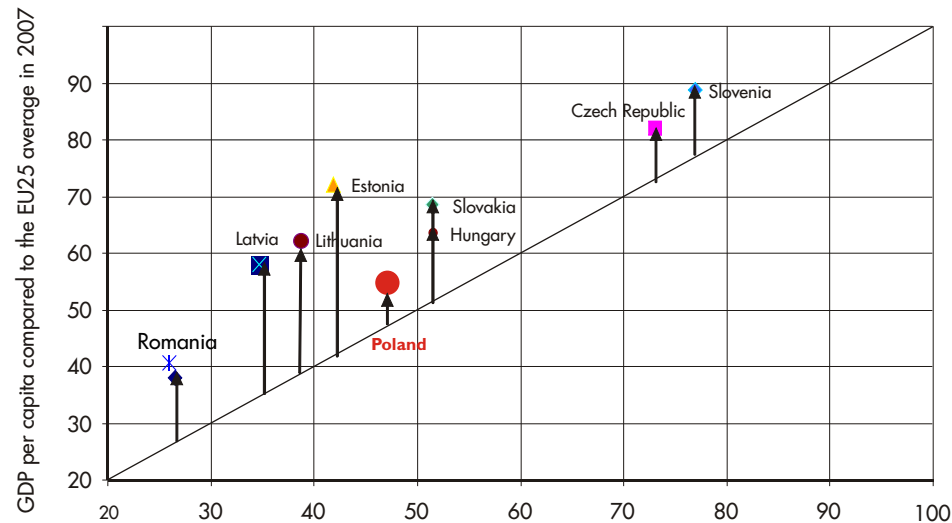
Nevertheless, such a negative scenario does not have to come true. There is yet another possible scenario, in which Poland becomes one of the most dynamic economies in the EU. This scenario predicts that thanks to an extensive network of modern nurseries and kindergartens Polish children receive quality education from the very beginning of their educational path, and Polish families are able to afford having more children and perfectly manage to reconcile their family life and professional careers. Professional activity of women and senior citizens is the highest in Europe, which results in growing tax revenues to the treasury and, consequently, in increased public investments in infrastructure and intellectual capital. There is no room for boredom, local communities are vibrant with life, nobody is left stranded. Several Polish universities make their way to the top 100 universities in the world, and they become the first choice universities for students from all over the world. Many of them take up their permanent residence in Poland, attracted by well-paid jobs for highly qualified and well educated professionals. Polish economy stimulates numerous innovations which are afterwards implemented in other countries on all continents. The choice of the scenario belongs to Polish people. The optimistic one will become realistic provided that challenging reforms in such areas as social transfers, taxes, economic regulations, or public sector operations, including health service, education and science, are introduced successively without delay. One should be prepared for resistance on the part of strong groups of interest, and should be aware that the results of the reforms will be visible not sooner than in 5-15 years.

Nevertheless, such reforms are indispensable if Poland's success is to become more than just wishful thinking.



## Poland failed to develop as dynamically as it should have in the past decade

Poland has advanced towards Europe less significantly than other countries in the region



The length of the arrow illustrates by how much the distance separating each of the countries from the EU average has been shortened.  
GDP per capita as compared to the EU25 average for the year 2007.

The rate of the long-term economic growth in Poland does not exceed 4.3%, which is by far less than in other countries in the region. Moreover, it is not certain whether this pace will be maintained in the nearest years.

A proverb says that failure is an inherent part of each success. Undoubtedly, a lot has changed for better in Poland for the last 20 years: the society is more prosperous, people are better educated and more open-minded. What the Poles cannot afford at the moment is to rest on laurels. Even a draft comparison of the pace of economic development in Poland and other countries from the former communist block demonstrates that Poland is failing to make the best use of its potential, and is not developing as quickly as other countries in the region, e.g. Slovakia, Estonia, or Lithuania.



## Poland is not doomed to success

The experience of other countries teaches us that even twenty years of relatively dynamic economic growth is insufficient to bridge the gap separating a country from the developed world. Unless the right decisions are taken at this moment, the pace of Poland's development will decelerate, and the distance to more developed countries will stop shortening.

Greece, Portugal and Italy are examples of countries which, after two decades of rapid growth, experienced a decrease in the pace of development, and, as a result, have not yet reached complete convergence with richer EU countries in terms of well-being.

The countries that have achieved a spectacular economic success, such as Ireland, South Korea, or Taiwan, have also managed to maintain their growth rate for 30 to 40 years at the minimum.

A distinctive feature of this group of countries in the overall profile is the exceptional ability of their governments to employ long-term thinking and to give priority to measures aimed at achieving strategic objectives over short-term operations.

Poland is currently facing similar dilemmas. It is compelled to launch subsequent challenging reforms in such areas as social transfers, taxes, business regulations, and the overall performance of the public sector including health service, education, and science.

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What is also essential is a shift from short-term to long term government policies, which should be accompanied by due regard to improving the quality of political debate and focusing it on issues of genuine importance to the country.



# Key importance of intellectual capital to economic development

Both the economic theory and the experience of other countries indicate that the role of intellectual capital is fundamental to sustainable development of a country.

Certain countries, comparable in respect of their natural resources, geographical position and financial condition, may differ significantly in terms of their successfulness, like Chile and Argentina, or Spain and Italy.

The difference between these countries lies in the ability to develop intellectual capital, which manifests in long-term thinking, readiness to learn, trust in market mechanisms and receptiveness to global competition, but also in efficient government of the country.

## What does the term 'the intellectual capital of Poland' refer to?

**THE INTELLECTUAL CAPITAL OF POLAND** is the total of intangible assets of people, enterprises, communities, regions, and institutions, which, properly utilized, may become the source of the present and future well-being of Poland.<sup>1</sup>

Interestingly, the first recorded use of the term 'intellectual capital' comes from the correspondence between two outstanding economists of the 20th century, John Kenneth Galbraith and Michał Kalecki from 1969. Galbraith wrote in a letter to Prof Kalecki the following words: *"I wonder if you realize how much those of us in the world around here owe to the intellectual capital you have provided over these past decades"*<sup>2</sup>.

The definition of intellectual capital was formulated by Prof Leif Edvinsson, who often refers to it as 'the ability to generate future income'.

Listen to the statement by Prof Edvinsson recorded specially for the purposes of this report, in which he defines intellectual capital and explains its significance, at:

<http://www.innowacyjnosc.gpw.pl/kip/index.php?m=9>

Source: <sup>1</sup> Literature on the subject does not offer one generally accepted definition of intellectual capital. The one accepted by the authors of this report is close to the definitions formulated by Malhotra and Bontis: Intellectual capital is the 'hidden assets' of a state/a nation which are the basis of its economic potential growth, its well-being, and its position in the world (Malhotra, 2000).

Intellectual capital comprises the 'hidden properties' of people, enterprises, communities, regions, and institutions which are the source of the present and future well-being (Bontis, 2004).

<sup>2</sup> A. Serenko, N. Bontis (eds.), "Meta-Review of Knowledge Management and Intellectual Capital Literature ..." (MacMaster University, 2004).



## Poland does not exist in a vacuum

Poland is not a country that functions in a vacuum. A complex network of economic, political, social and cultural relations makes us a part of the world's social and economic ecosystem.

Important events and global trends have and will have an impact on the pace of the country's development, and for this reason Poland must observe them and consider their implications for Poland.

The 1998 crisis in Russia, the attacks of 11th September 2001, the epidemic of SARS, or the most recent crisis in the US mortgage market are examples of events that influenced Poland, although they took place in distant countries.

**Therefore, it is important to have a closer look at the key challenges in a worldwide perspective and their implications for the development strategy of Poland as the economy based on intellectual capital.**

The most important of them are as follows:

- ageing population of European countries and the increasing flow of immigrants from Africa and Asia;
- demographic regression in Poland;
- rising costs and deteriorating accessibility of traditional sources of energy;
- increasing role of China and India in the global economy;
- knowledge becoming outdated, and the increasing pace of technological progress.



## Ageing Europe, and the flow of immigrants from Asia and Africa

Over the next 20-30 years every city in Europe, i.e. in Poland as well, may expect an increase in the number of immigrants.

Source: The cover of the World Bank's report on migrations

This is how a pedestrian crossing in a Polish city in the year 2030 may look like.



Poland needs immigrants due to a dramatic decrease in population, quickly ageing society and workforce shortages in certain professions. If immigrants work, pay taxes, and become part of the Polish society, the Polish economy will only profit from that. However, if a proper immigration and integration policy is not implemented, Poland will face the risk of emergence of ghettos for immigrants from poorer countries, as well as of an increase in unemployment rate and social welfare expenditures.

Year	Percentage of Population Aged 65+		
	1950	2005	2050
Worldwide	5,2	8,1	16,2
Africa	3,3	3,4	6,9
East Asia	4,4	8,8	24,8
South and Central Asia	3,7	4,7	13,5
South East Asia	3,8	5,4	17,6
Eastern Europe	6,5	14,3	26,6
<b>Poland</b>	<b>5,2</b>	<b>13,3</b>	<b>31,2</b>
Western Europe	10,2	17,2	27,7
Latin America	3,5	6,3	18,5
South America	3,4	6,4	18,5
North America	8,2	12,3	21,5

Year	Average Age of the Population		
	1950	2005	2050
Worldwide	23,9	28,0	38,1
Africa	19,1	19,0	28,0
East Asia	23,5	33,4	45,9
South and Central Asia	21,2	23,2	37,2
South East Asia	20,6	26,0	40,2
Eastern Europe	26,4	37,5	48,1
<b>Poland</b>	<b>25,8</b>	<b>36,8</b>	<b>52,4</b>
Western Europe	34,6	40,5	46,7
Latin America	20,0	26,0	40,1
South America	20,4	26,5	40,0
North America	29,8	36,3	41,5

Source: UN, "World Population Prospects: The 2008 Revision" [<http://esa.un.org/unpp/index.asp?panel=2>]

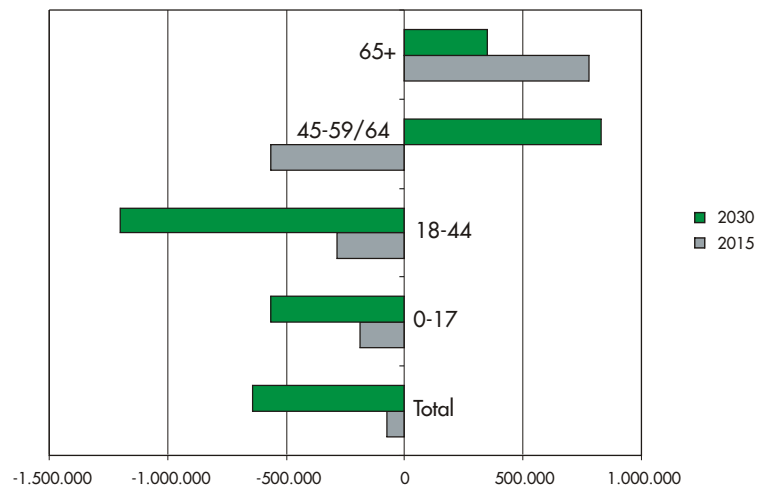


# Poland is in danger of secondary demographic regression

**Secondary demographic regression entails exposure to the collapse of economic growth and of the public financing system in Poland in a long-term perspective.**

If the current retirement age is maintained, the Polish population of productive age will have decreased by over 800 thousand by the year 2015.

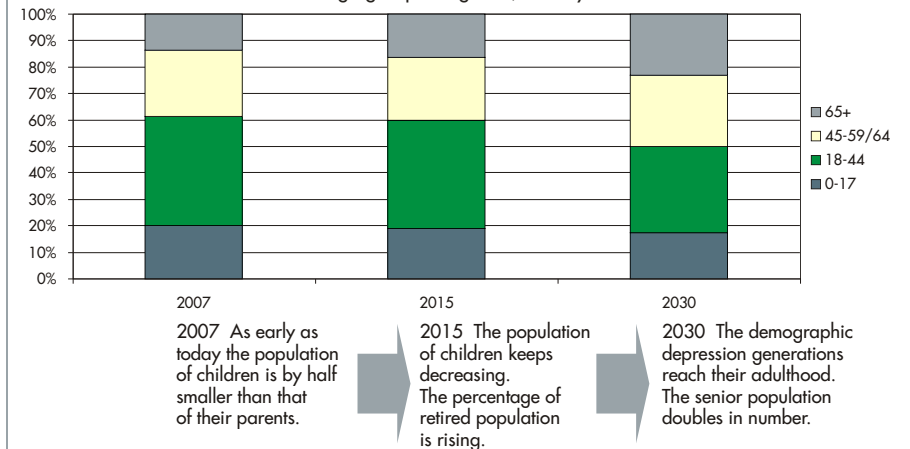
Change in the population of Poland in the years 2007-2030



If the unfavourable demographic processes continue, Poland will face the risk of public financing system collapse and inability to provide welfare benefits for the senior generation. The 'social welfare states' are threatened with bankruptcy.

The secondary demographic regression crisis may be avoided by way of stimulating the activity of senior citizens in the labour market and by extending the period of professional activity.

Change in the demographic structure of the population of Poland as broken down into age group categories, in the years 2007-2030



**The challenge to be faced by the Polish state is a shift from the passive policy of social transfers on behalf of senior citizens, through an active policy taking advantage of the increasing demand of the senior generation, to introducing new products and services and utilizing the intellectual capital of senior citizens.**

Source: Population forecast for the years 2003-2030 based on the results of the 2002 Polish Census, Central Statistical Office (GUS).



## Lack of a strategic attitude towards investing in the Polish power industry, combined with the reductions of CO<sub>2</sub> emissions, has caused a significant barrier to our growth

- Due to low prices of energy, investments in the Polish power industry has been marginal. This may result in temporary problems with ensuring the continuity of energy supplies over the nearest 2 to 3 years, while the energy reserve in 2008 was de facto lower throughout the year than what is required under the relevant energy security regulations. Within 3 to 6 years' time Poland will be facing a permanent energy deficiency, which will be impossible to compensate with the country's limited import capacity.
- Over 90% of the energy in Poland is generated from coal, which means that the country's CO<sub>2</sub> emission per capita is higher than the EU average, although it uses as little as half of the EU energy consumption average.

- Poland may have to face dramatic dilemmas, as, in the short run, it has no alternative to coal-based energy, whose resources in Poland are substantial, and as 'clean coal' technologies are not yet accessible in Poland on a commercial basis.

A low level of intellectual capital manifests itself also in inability to develop strategic plans, which is likely to cause inevitable energy deficiencies in Poland within a few years' time. Poland must overcome this weakness, otherwise it will be constantly 'surprised' by events which might be foreseen if the strategic planning mechanisms were in place.

It pays to learn from the experience of others. For example, in the Parliament of Finland a new committee was established a few years ago. Its name is the Committee for a Constructive Tomorrow, and its aim is to facilitate reflection and to conduct debates on the strategic challenges facing Finland, such as the growing importance of Russia, the development of nanotechnology, or the ageing of the society.

Listen to Paula Tiihonen, a Finnish MP, discussing the tasks of the Committee for a Constructive Tomorrow here, at: <http://www.innowacyjnosc.gpw.pl/kip/index.php?m=15>

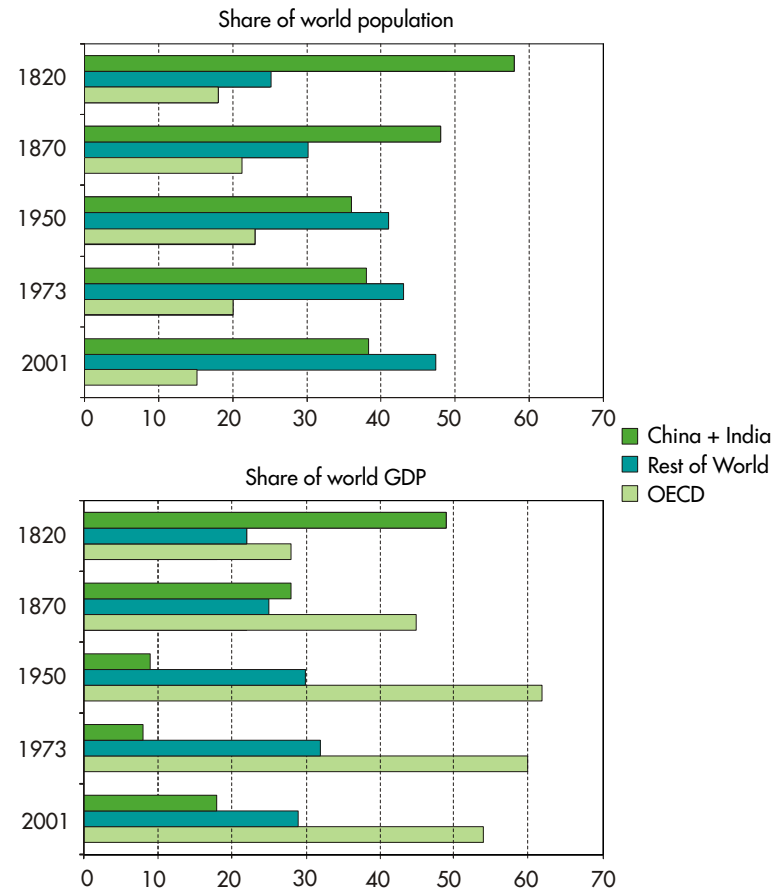


# Growing Importance of China and India in the Global Economy

- Over the nearest few decades Chindia will significantly increase its share in the global GDP. It may once more account for half of the global production of goods and services, as at the beginning of the 19th century. China is becoming a global competitor not only in the production of footwear, garments, computers, household appliances, and radio and television equipment. It is also strengthening its position in sectors requiring advanced knowledge and innovative approach.
- The student population in China has exceeded 30 million, which is more than in the European Union and the United States put together.
- China is the world's biggest exporter of computers and telecommunication equipment, while India is the world's capital of software outsourcing, earning over USD 12 billion yearly from software production<sup>1</sup>.

**China and India are quickly developing their intellectual capital, viewing it as their chance for an evolutionary leap. Being aware of these trends, does Poland develop its relational capital with these two countries properly?**

% shares of China/India, OECD and the rest of the world in global population and GDP



Source: <sup>1</sup> European Commission, "Globalization: Trends, Issues, and Macro Implications for the EU", Economic Papers, (EC, 2006).



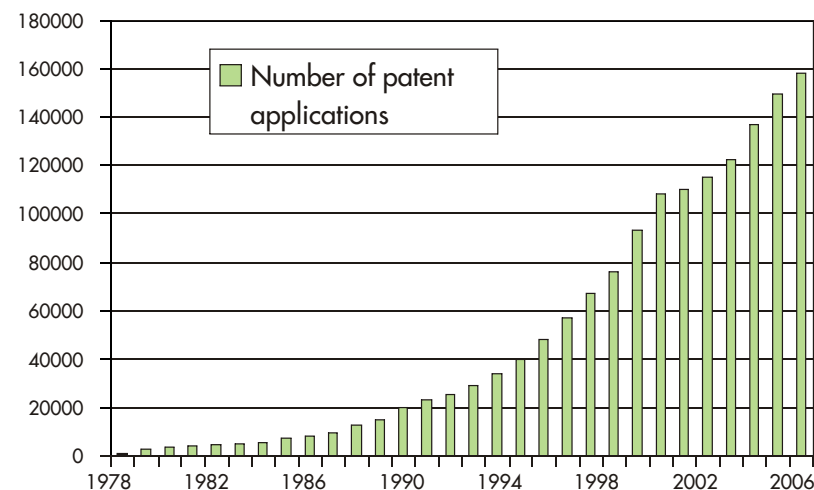
## Knowledge becomes outdated instantly, and technological progress has reached a staggering pace

- A sharp increase in the number of patent applications indicates an accelerated pace of technological progress in the 21<sup>st</sup> century.
- Asian countries are fast in developing their knowledge-based economies; during four years the number of patent applications tripled in China, and increased by 140% in South Korea.

There is a huge gap separating Eastern and Central Europe from the top ten leaders in the world's innovativeness, and Poland has been regressing in recent years.

Does the Polish system of education teach the right skills, such as creativity, analytical thinking or teamwork, which are indispensable in the innovation process?

The number of patent applications submitted to the World Intellectual Property Organization increases significantly each year



	Number of patent applications submitted to the WIPO in 2007	Growth dynamics of number of patents (2003-2007, %)
USA	52280	27,4
Japan	27731	59,2
Germany	18134	23,7
South Korea	7061	139,4
France	6370	23,2
Great Britain	5553	10,5
China	5456	321,3
Netherlands	4186	-6,5
Switzerland	3674	28,4
Sweden	3533	35,3
Hungary	160	40,4
Czech Republic	123	48,2
<b>Poland</b>	<b>102</b>	<b>-33,8</b>



Poland abounds in statistics presenting the **past, or, what has been left behind.**



How to show what is still  
ahead of us?  
How to present our **potential  
for growth?**



## The Report on Intellectual Capital of Poland is intended to show growth potential in Poland as compared to other EU countries



With this report Poland has joined a group of pioneer countries in measuring and describing national intellectual capital.

Before Poland, intellectual capital reports were issued among others in such countries as:

- Sweden (1999);
- Israel (2000);
- Taiwan (2003);
- Arabian Peninsula countries (on the UN initiative, 2004).

The team responsible for compiling this report comprised over 21 members including Andrzej Wodecki, Tomasz Rudolf, Katarzyna Królak-Wyszyńska, Szczepan Figiel, Małgorzata Dąbrowska, Tomasz Kardacz, Tomasz Schimanek, Hanna Nowakowska, Anna Blumsztajn, Teresa Ogrodzińska, Mikołaj Herbst, Alek Tarkowski, Krzysztof Rybiński, Eliza Durka, Paweł Kaczmarczyk, Mateusz Walewski, Maciej Duszczyk, Maciej Bukowski, Dorota Poznańska, Jakub Wojnarowski.

Additionally, the report was enhanced by observations and suggestions of several dozen other people, representing institutions of public administration, science, education, health service, NGOs, and business.



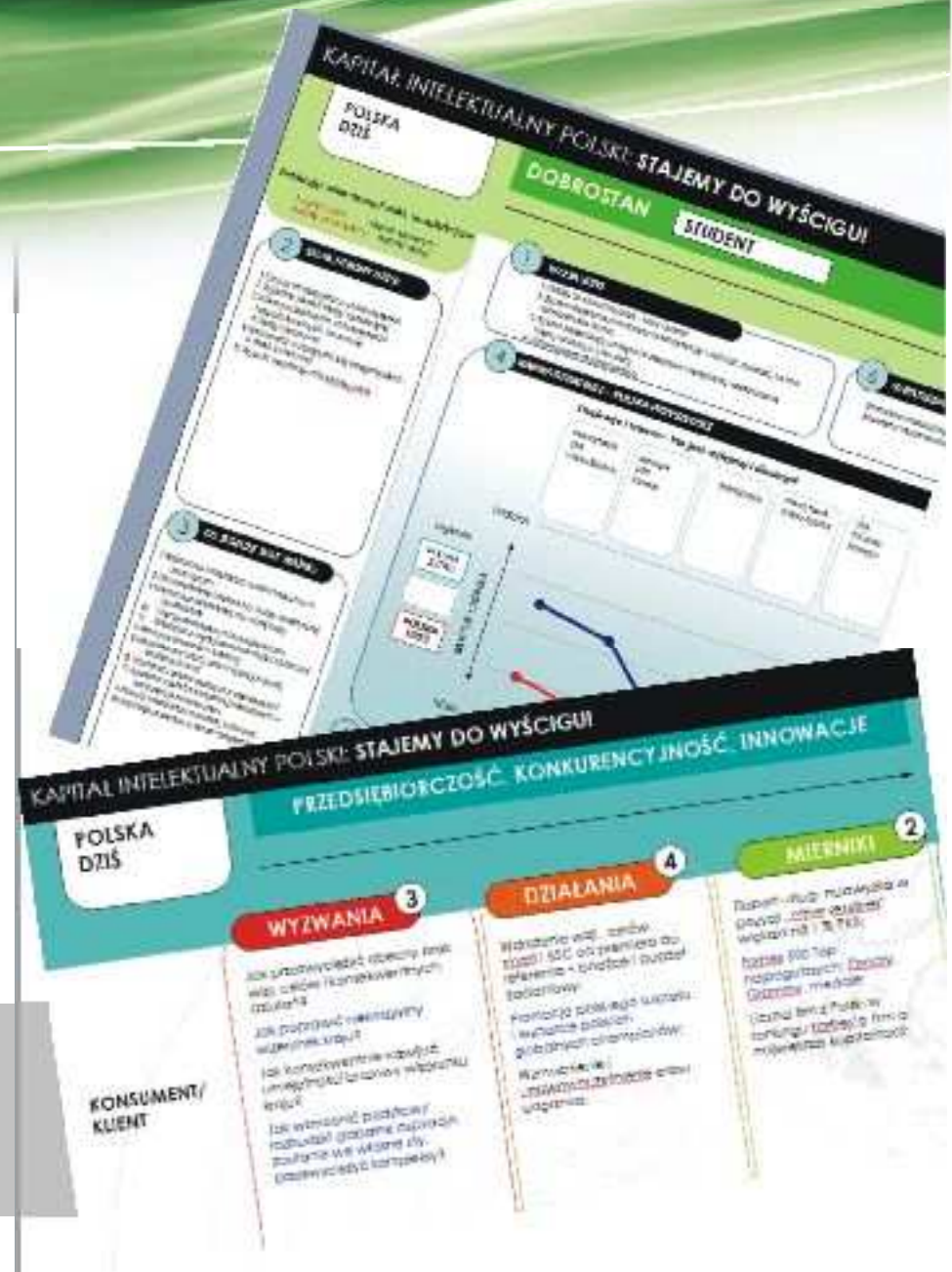
In the course of creating the present report, a series of interactive workshops with over a hundred participants were conducted. The workshops were intended to engage representatives of government administration and NGOs in the debate on the key challenges related to the intellectual capital of Poland.

A prototype of the report was presented at the fourth annual conference of the New Club of Paris devoted to intellectual capital, held in Paris in May 2008.

That offered a chance to gather opinions on the Polish concept of the report from the world's leading authorities on intellectual capital.

Listen to Prof Edvinsson comments at:

<http://www.innowacyjnosc.gpw.pl/kip/index.php?m=10>





## What are the components of intellectual capital?

What is intellectual capital? Can it be measured on the level of a country, region, city, or company? Why is the growth of intellectual capital so essential for the future of Poland? Every one of us knows the right answers to these questions. Moreover, when making life decisions, we are usually driven by the necessity of generating and developing intellectual capital or by the opportunities of using the already existing one. For example, when planning professional careers for our children, we often try to foresee what occupation will be best for them, and what skills they will have to develop to succeed in the labour market. Our decision is influenced by tradition, e.g. a child born in a family of lawyers, physicians, or scientists is more likely to follow the career path of his/her parents since they already know the environment and may assist the child in his/her future career. In other words, the parents possess a firm relational capital (commonly and not quite adequately referred to as 'contacts' or 'friends in high places'), which the child may benefit from. When we found a business, we often ask ourselves whether we will manage, whether we are competent enough to remain in the market and to succeed afterwards. In other words, we analyze our human capital. If it is too low, we sometimes enrol in extra courses to raise that capital. If, on the other hand, we establish a joint venture, we usually trust our partners, which means that we have high social capital in our environment.

People with well developed human and relational capital tend to hold higher positions and earn more money than those who have low level of these kinds of capital. The following four components: human capital, relational capital, organizational capital (also termed 'structural'), and social capital constitute intellectual capital.

It can be easily noticed that intellectual capital is not tantamount to intelligence as it is a much broader notion.

### The four IC components:

#### INTELLECTUAL CAPITAL

##### **HUMAN CAPITAL:**

the total potential of all Polish people embodied in their education, life experience, attitudes and skills, which can be used towards increasing the present and future well-being of Polish people.

##### **STRUCTURAL CAPITAL:**

the total potential of tangible infrastructure elements of the national system of education and innovation, i.e. scientific and educational institutions, research centres, IT infrastructure, and intellectual property.

##### **SOCIAL CAPITAL:**

the overall potential of the Polish society in the form of its social norms of conduct, trust and involvement, which support cooperation and knowledge sharing, and thus, contribute to the improvement of the well-being of Polish people.

##### **RELATIONAL CAPITAL:**

the potential related to the external image of Poland, to the level of its integration with the global economy, and to its attractiveness to foreign 'clients': commercial partners, investors, tourists etc.

Listen to Prof Salim Al.-Hastani, University of Manchester, commenting on the crucial role of intellectual capital, and, in particular, on moral standards as a component of intellectual capital, at:

<http://www.innowacyjnosc.gpw.pl/kip/index.php?m=17>



## Cooperation with the Institute of Statistics and Demography of the Warsaw School of Economics resulted in developing a measurement model which enables comparing levels of the intellectual capital of Poland and other EU Member States

In the literature neither the notion nor the concept of intellectual capital of a region have been formulated in an explicit and comprehensive manner. Consequently, no common measurement method has been established. Nonetheless, two procedures of informing about regional national intellectual capital have been developed until now. The first one, chronologically earlier, is based on assessing the position of a given country or city in comparison with others by applying various indicators related to the components of intellectual capital. The other one, gaining increasingly more popularity, involves methods for creating synthetic indicators of intellectual capital or of its components or elements.

Only the latter approach may be referred to as intellectual capital measurement procedure. In the case of the first one, such terms as 'reporting' or 'describing' should rather be used. Currently, professional literature in the field reflects a debate focused on selecting a set of most adequate indicators for assessing intellectual capital of a region.

The controversies regard both the concept itself and the accessibility of required statistical data. Additionally, the discussion covers the issue of establishing a measurement model which would enable quantification of intellectual capital being in fact a conventional notion.



The search for the best formula of the measurement model of intellectual capital was based on the following assumptions:

- It is possible to express intellectual capital of a region in numerical terms as one number;
- Individual indicators suggested in the professional literature as describing intellectual capital do not have equal role in diagnosing intellectual capital, as some of them, at a given time and in a certain region, tend to reveal the level of the region's capital in greater extent than others;
- Consequently, it is possible to rank intellectual capital indicators, and to select those which are of key importance to measuring the value of intellectual capital of a region at a given time;
- The intellectual capital model applied in this report was estimated for the region of 16 EU countries, while the individual member countries were considered as observation units, and their intellectual capital was assessed in respect of its elements and components.

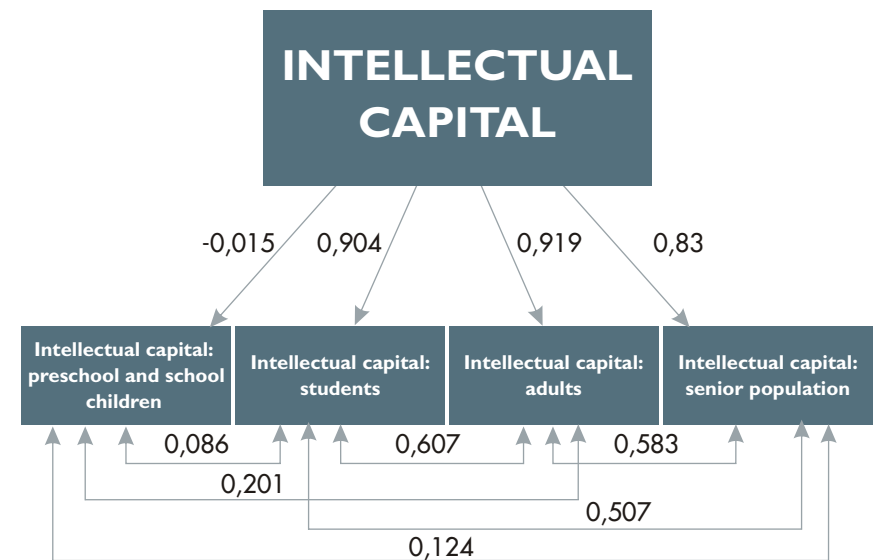


Diagram 1: Path diagram of the intellectual capital model: components of intellectual capital, and their interrelationships



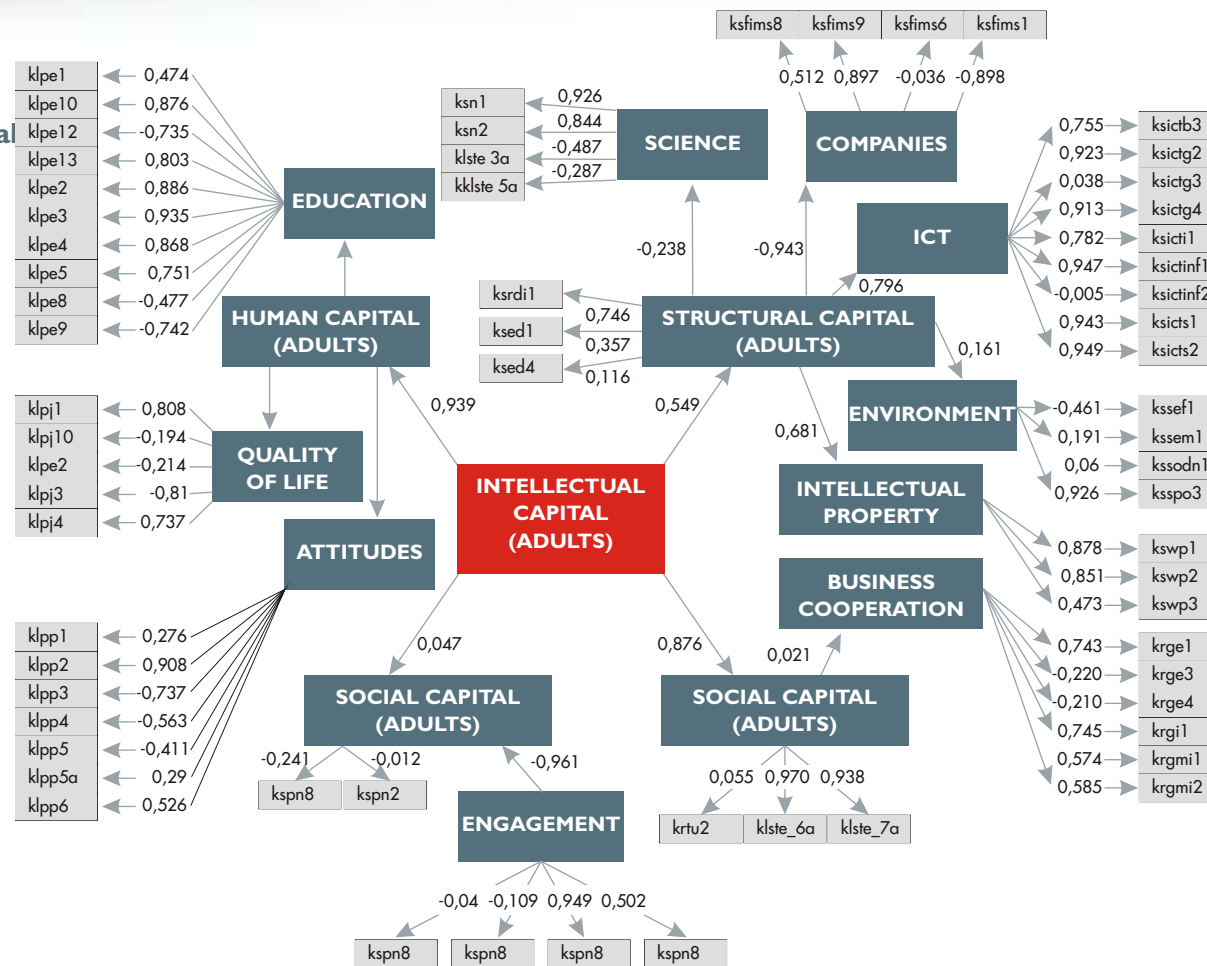
The underlying assumption was that this report would present the measurement of intellectual capital in a generational perspective, which would enable assessment of the developmental potential of Poland related to each individual generation.

The conceptual model of intellectual capital of individual generational groups was designed in compliance with the general framework of the intellectual capital concept established in the professional literature [Edvinsson, Malone, 2001; Andriessen, Stam, 2004; Bontis, 2004; Lerro, Carlucci, Schiuma, 2005; Rószkiwicz, Węziak, Wodecki, 2007].

Therefore, certain subcategories of intellectual capital were distinguished, and afterwards separate measurement models were developed for each of them, which were then used as variables enabling construction of the measurement model of intellectual capital of a given generation.

Measuring and describing national intellectual capital in a generational perspective is an innovative approach. In other countries' reports which have been produced so far the age groups not participating in the labour market have been omitted. The Polish approach, recognizing the importance of inter-generational harmony and solidarity, was acknowledged by international experts:

<http://www.innowacyjnosc.gpw.pl/kip/index.php?m=12>



Path diagram of the intellectual capital model of adults



The estimated values of intellectual capital (IC) of individual generational groups in selected countries have been standardized in the range of  $<0; 1>$ , and shown as percentages

Applying this approach enabled creating generation-based indexes or ratings of intellectual capital and of its individual components, including:

- human capital;
- relational capital;
- social capital;
- structural capital.

Each such index is generated on the basis of statistical analysis of several to several dozen indicators.

The measurement model used in the Report on Intellectual Capital of Poland includes 117 indicators.

A full list of indicators, together with the relevant data for the 16 Member States included in this comparison, can be viewed on the website:

<http://www.innowacyjnosc.gpw.pl/kip/index.php?a=wskazniki>

Additional information on the applied methodology is also available on the above website.

The report was originally intended to present comparative data for all EU Member States. However, this occurred unfeasible due to data inaccessibility. For countries not present in the IC ratings in the report several indicators included in the model were unavailable.