Higher Education in Global Economy: Review of Scenarios

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Higher education needs scenarios more than any other sector of national or global economy. Variety of methodological approaches could be used to outline possible futures. The choice of the best of them depends on specific context. Various institutions have tried to suggest a scenario or a group of scenarios. but most of them failed. Huge number of indicators and factors influence the future make it impossible to form long-term forecasts, while the best scenario would be the collage one.

Key words: *foresight, forecast, higher education, knowledge economy, university, Ukraine, Georgia.*

Introduction

The importance of the information society given to the system of higher education, which is one of the key generators of the national intellectual capital, determines the expediency of its expanded reproduction. It is believed that the brightness and maturity of higher education institutions, both public and private, include those key factors that determine the long-term economic growth of nations. It is also worth listening to the expert opinion of J. Douglass from the Center for Studies in Higher Education at the University of California at Berkeley, who convinces that most higher education systems in the near future will have most of the characteristics inherent in the so-called market of structured opportunities [1].

The leading international rankings, which identify the disposition of national economies, use indicators that characterize the development of the higher education system as one of the important arguments. Even the specialized ratings of national educational systems and universities are developing. Most of these ratings give leading positions to developed countries, which most effectively use scientific and educational potential to ensure high level of per capita GDP.

The urgency of studying the prospects for the development of higher education in developing countries is due to the fact that, according to macroeconomic indicators, Ukraine and Georgia belong precisely to this group. Characteristically, they share a common feature that distinguishes them from developed countries. In the late 1990s and early 2000s, it was discovered that developing countries had implemented strategies to increase the number of students, the number of which has been measured by millions (for example, China, India, Indonesia, the Philippines, Russia - more than 2 million, from 1 to 2 million in Argentina, Brazil, Egypt, Iran, Mexico, Thailand and Ukraine). Moreover, the share of higher education graduates in many countries has exceeded this level in developed countries. However, developed countries prioritised not the number of people with higher education, but the quality of institutions, new knowledge and graduates [2].

Methodology for creating scenarios.

The rationale for possible development scenarios is believed to serve as a tool for decision-makers, leaders and politicians, in shaping public opinion about the future and considering possible alternative responses to various future challenges [3]. The complexity and creativity of scenario planning brings the better results, the more aspects and alternatives have been considered, but this also constitutes a limitation to its implementation.

Scenario planning becomes widespread in the activities of enterprises and authorities. It is thought that it comes from the technique used during the Cold War to analyse uncertainty in the absence of reliable information [4]. In practice, it helps to create a consensus reality, open up the advanced ideas and avoid surprises. Writing scenarios begins with an awareness of the existence of uncertainty. But it takes time. It took Rathenau Institute 16 month to

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1 Douglass J. *A Look into a Possible Future: A Global Scenario for Higher Education Systems*. Global University Network for Innovation. December 17, 2007. URL: URL: http://www.guninetwork.org/articles/look-possible-future-global-scenario-higher-education-systems

2 *Higher Education in Developing Countries: Peril and Promise*. The International Bank for Reconstruction and Development / The World Bank. 2000. 135p. URL: http://siteresources.worldbank.org/education/Resources/278200-1099079877269/-547664-1099079956815/peril_promise_en.pdf

3 Kubler J., Sayers, N. *Higher education futures: Key themes and implications for leadership and management*. London: Leadership Foundation for Higher Education & Association of Commonwealth Universities. 2010. 72 p.

4 Rasmus D. Why Higher Education Needs Scenarios. *University Business*. November 2, 2012. URL: https://www.university-business.com/article/why-higher-education-needs-scenarios

shape the "*future of Dutch universities"* [1].

Some theorists argue that the study of the future (futures studies) constitute the novel research direction that complements postformal, integrated and planetary research [2]. The grounds for talking about global knowledge future, as a direction, give such forms of human brain activity as creativity, imagination, dialogue and cooperation.

In contrast to the global knowledge economy, which in views have the features of homogenization, intensification of information and communication technologies, competition, short-term and methodological stagnation, *global knowledge future*, as an alternative concept, lies in dynamic unity in dialogue with diversity. The dialectic of this direction reveals such views on social and economic development as pluralism and multidisciplinarity, epistemological diversity and diversity of perspectives, anticipation of alternatives and foresight of innovations [3].

The following aspects of the development of scenarios are known by the specialists of Foundation for Leadership in Higher Education (UK):

- public role and functions of higher education (internal and external roles - public perception and demand; national, global and market contexts);
- structure and organization of higher education (internal and external - the national system and policy, and institutional organization and policies);
- service provision / technological development;
- university and a person (students);
- university and a person (employees);
- Higher Education Values [4].

On the other hand, the complexity of the educational system necessitates the formation of a vision of the future of its separate components. It is for this that British tried to shape the future of academic libraries (table A). While Brian A. proposed a number of scenarios for the development of scientific publications, as a genre and part of the activities of scientists and universities, a form of scientific communication [5]. These publications include virtually all types that are based on the theoretical and methodological foundations of the argumentation of decisions or explanation of a particular phenomenon, process or state. It is about monographs, articles and textbooks, as well as various reports, notes, drafting documents, electronic publications, databases, blogs, preprints, grey literature etc. Given that the concept of a modern university implies obligatory nature of both academic and research activities, the forms of manifestation of the results of university research should be outlined in high quality scenarios.

The diversity of forms in the classifications of scenarios determines the expediency of their analysis of validity. In particular, to ensure high-quality of business development strategies one may use a matrix analysis of the strategic scenario (Table.1). Although its authors propose to apply for the higher education system, it is obvious that it is suitable for use irrespective of the field of application and scale of activity of stakeholders.

Table ***1***

Matrix analysis of the strategic scenario

	Potential scenario	Current reality	Differences between scenario and reality	Actions for moving in the direction of the scenario	Indicators of motion in the direction of the scenario
Mental model (thoughts and assumptions)					
System components					
Stakeholder behaviour models					
Obvious events and consequences					

Source: compiled after [6].

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1 *Future knowledge: 4 scenarios for the future of Dutch universities*. / ed. P.Faasse, B. van der Meulen, P. Heerekop. Rathenau Institute. February 2014. URL: https://www.rathenau.nl/sites/default/files/2018-05/Future_knowledge_-_4_scenarios_-for_the_future_of_Dutch_universities_01.pdf

2 Gidley, J. M. Global Knowledge Futures: Articulating the Emergence of a New Meta-level Field. *Integral Review: A Transdisciplinary & Transcultural Journal for New Thought, Research, & Praxis.* 2013. №*9*(2). P.145-172. URL: URL: http://www.integral-review.org/documents/old/Gidley,Global-Knowledge-Futures,Vol.9,No.2.pdf

3 Gidley, J. M. Global Knowledge Futures: Articulating the Emergence of a New Meta-level Field. *Integral Review: A Trans-disciplinary & Transcultural Journal for New Thought, Research, & Praxis.* 2013. №*9*(2). P.145-172. URL: URL: http://www.integral-review.org/documents/old/Gidley,Global-Knowledge-Futures,Vol.9,No.2.pdf

4 Kubler J., Sayers N. Higher education futures: Key themes and implications for leadership and management. London: Leadership Foundation for Higher Education & Association of Commonwealth Universities. 2010. 72 p.

5 Bryan A. Future of Higher Education: The Future of Scholarly Publication. *EDUCAUSE review*. March 29, 2011. URL: https://er.educause.edu/articles/2011/3/future-of-higher-education-the-future-of-scholarly-publication

6 Rieley J. B. Scenario Planning in Higher Education. *Community College Journal.* 1997. *68*(1). Pp. 23-26.

German researchers effectively use toilful Delphi methodology to outline the scenarios of European higher education development [1]. In particular, 780 people from 24 countries were involved. Generally, methodologies such as trend extrapolation, expert analysis or Delphi methodology, scenario preparation, crowdsourcing, forecasting markets are often used to form the vision of a future state of a particular phenomenon, process, system or entity.

Unlike the commonly used models that provide a straightforward relationship between the past and the future, a number of scientists suggest applying the methodology of quantum theory. For higher education, the principle approaches will introduce, firstly, more uncertainty, since it is virtually impossible to predict the place of a small object in space and time, and secondly, provide more interaction with the system of higher education, since an observation is clearly not enough to even identify features and regularities. Spanish scientists emphasize on a number of factors the application of methodological approaches to quantum theory, which is generally called "quantum approach to time and change" [2]. In particular, these arguments include the following: identifying new alternatives, because the future often differs qualitatively from the past; the application of the methodology derived from quantum physics will enrich the research concepts and tools; many of the ideas challenge the fundamental assumption of the nature of change.

In practice, the application of a particular method or group of techniques is due to many reasons. Key ones include time constraints, availability of information and financial resources, researchers' competencies, and creativity of participants in defining scenarios. Therefore, depending on the goals and the constraints mentioned, a decision should be made on the choice of the methodological base in each case.

One of the most authoritative tools for forecasting the main indicators of international development, which are systematized into a coherent model, is the "International Futures" system [3]. It is developed and maintained by the Center for the International Future of Frederic S. Pardi at Joseph Corbell School of International Studies within the University of Denver, USA. The decisive feature is the free access for researchers to this toolkit. The logic of the IFs model contains 10 key modules, each of which has from two to six interactions with other modules such as: socio-political, international political, education, health, population, economy, agriculture, energy, technology, as well as resources and quality of the environment [4]. The model implemented in the complex of software allows real-time projection of the main indicators of international development, incl. educational.

Continuing the idea of the need for university educational activities we should also consider the future of its forms, which is changing under pressure and through the development of ICT and other technological innovations. So, Greek researchers point out that web-based learning may have a number of scenarios (table A) [5]. In particular, it is said that two scenarios for developing the role of a person, who learns: a) the role of an active generator (e-course design, adaptive content, web quests, etc.); b) the role of the consumer (response to activity and content, prepared by the experts, in particular on the basis of the project activity). Their formation is influenced by factors such as the aim, sequence of types and types of activity, distribution of roles and availability of tools and resources.

Although, in some cases, there are many more aspects that depend on the specific goals and resources of scenario planning. Thus, at the University of Science (Malaysia), scenario planning took into account 14 aspects, of which the authors, as a result, stopped at three - the regime of public administration and institutional management, the development of knowledge economy and the speed of globalization (table A) [6]. Even in these conditions, 18 possible scenarios of development were identified.

The entrepreneurial scenario of the university's development determines the feasibility of the formation of entrepreneurial universities. We consider it expedient to confine ourselves only to the disclosure of a range of features that are inherent to such institutions, namely:

- responding to the changing needs of students and circumstances;

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1 The European Higher Education and Research Landscape 2020, Scenarios and Strategic Debates. Enders, J., File, J. Huisman, J. and Westerheijden, D. (eds.). - CHEPS. 219 p. ISBN 90-365-2296-X 219 p. URL: https://ris.utwente.nl/ws/portalfiles/portal/5574394/Enders05european.pdf

2 Márquez-Ramos, L., Mourelle, E. *Selecting a suitable approach to analyze the future of higher education*. Procedia-Social and Behavioral Sciences. 2016. №228, p.86-91.

3 Irfan, T. Mohammod. 2017. "*IFs Education Model Documentation*." Working paper 2015.06.16. Pardee Center for International Futures, Josef Korbel School of International Studies, University of Denver, Denver, CO. URL: https://pardee.du.edu/sites/default/files/Education%20Model%20v34.pdf

4 Turner S., Neill C., Hughes B.B., Narayan K. *Guide to Scenario Analysis in International Futures (IFs)*. Working paper 2017.09.10. Pardee Center for International Futures, Josef Korbel School of International Studies, University of Denver, Denver, CO. 2017. URL: https://pardee.du.edu/sites/default/files/IFs%20Documentation Guide%20to%20Scenario%20Analysis%20v15.1.pdf

5 Papanikolaou K. *Web-enhanced learning scenarios*. Procedia Social and Behavioral Sciences: WCES-2010. №15. 2011. p.1158–1162.

6 Azman N., Morshidi S., Azahari M.K. Building future scenarios for Malaysian universities, *Journal of Asian Public Policy*. 2010. 3:1. pp 86-99. URL: http://dx.doi.org/10.1080/17516231003634112

- considering the demand of the labour market and the needs of employers;
- inclusion of entrepreneurial skills and values in the offered training courses;
- development of application of research results;
- conducting joint research enterprises;
- participation in the activities of commercialization of research results;
- use of various sources of income;
- provision of commercial services;
- planning of growth of aggregate income;
- successful competitive behaviour in the market;
- collaboration with others for full service delivery;
- use of flexible employment hiring strategies;
- strategic intellectual property management [1; 2].

Regardless of the level of entrepreneurial activity by universities or their trustees will have to consider improval of management structure. Warwick University (UK) name three basic models of management structures out of which universities will have to choose among alternative models of management structures [3].

Unfortunately, scenario approach has some disadvantages. The main one is that improper use of the scenario method throws negative impressions on its reputation as a serious academic toolkit. Nonsense and non-critical behaviours are more common for journalists, market researchers and consultants, whose aggregate number exceeds the number of true researchers.

It should also be understood that scenarios are not predictions or trends [4]. Although all these genres deal with the future. This is due to the fact that the whole variety of factors that determine the future state of a certain system (in our case, the system of higher education), it is virtually impossible to determine and take into account in the formation of scenarios. Therefore, the scenarios refer to the most probable, sometimes with considerable exaggeration, variants of the future state.

Factors shaping the future.

Nowadays we may judge the scenarios written in 2000-th. While developed countries have various scenarios prepared by numerous institutions, less developed countries lack country specific visions of their future. Back in 2000, the International Bank for Reconstruction and Development prepared a publication that looked at the prospects for the development of higher education in developing countries. Although it does not identify any specific scenarios, it reveals the feasibility of developing higher education in these countries. In particular, the main factors that determine the need for such a development are: increase in the number of specialists, which the labour market demands; formation of a mass of educated people, who are characterized by flexibility and readiness for innovations; increase in the volume and quality of research conducted in the country [5]. The development of the higher education system is conditioned by the effectiveness of its key players. For their successful development, educational systems should develop the characteristics, which are determined in details of the scenarios, namely:

- sufficient autonomy;
- clear stratification, which allows to take full advantage of the competition;
- simultaneous development of both competition and cooperation;
- increased openness and dialogue with stakeholders;
- Yet back in 1997, Riley J. outlined six groups of forces acting on the formation of higher education of the future. In particular, they include the following forces:
- social dynamics (demography, values, lifestyle and consumer needs);
- economic (macro and microeconomic trends);
- political (legislation, regulatory trend, accreditation requirements);
- environment (ecological movement, cost of utilization);

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1 Gallagher, M. *The emergence of entrepreneurial public universities in Australia*. Higher Education Division, Department of Education, Training and Youth Affairs. 2000. 63 p.https://multisite.itb.ac.id/mwa/wp-content/uploads/sites/40/2014/-06/the-emergence-of-entrepreneurial-public-universities-in-australia.pdf

2 Kubler J., Sayers N. Higher education futures: Key themes and implications for leadership and management. London: Leadership Foundation for Higher Education & Association of Commonwealth Universities. 2010. 72 p.

3 Jongbloed, B., Enders, J. and Salerno, C. Higher education and its communities: interconnections, interdependencies and a research agenda. *Higher Education.* 2008. 56(3): 303-324.

4 Ogilvy J. Three Scenarios for Higher Education: The California Case. *Thought and Action*, v9 n1. Fall 1993. P.25-67

5 *Higher Education in Developing Countries: Peril and Promise*. The International Bank for Reconstruction and Development / The World Bank. 2000. 135p. URL: http://siteresources.worldbank.org/EDUCATION/Resources/278200-1099079877269/-547664-1099079956815/peril_promise_en.pdf

- technological (innovation, technology availability, indirect technological impact) [1].

In general, they can be called to be universal for the sphere of services. However, from that time on, the theory of intellectual, human capital has evolved, which should be adequately reflected in the system of factors that determine the development of higher education. For instance, the most critical and indeterminate forces of the system of higher education Americans often call such components as: funding, the "bubble" of educational loans, issue of trust in alternatives between quality and money, pedagogical technology, sources of content of curricula [2].

Massification of higher education creates challenges for financing adequacy, which may be excessive for current expenditure structure of national budgets. Therefore, for example, one of the scenarios for development of higher education in the UK is introduction of a 2% tax to finance education [3]. The situation is similar to the fact that the growth of the share of persons in retirement age causes the complexity of financing the budgets of pension funds.

Often the key trends, which will determine the further development of higher education in a global and local scale in general and will form specific scenarios, referred to in the UK are:

- massification of accessibility of higher education;
- restrictions imposed by public / public funding;
- diversification of training forms;
- growing institutional variety of higher education proposals;
- internationalization and globalization;;
- deployment of knowledge economy;
- impact of technologies;
- growing influence of market forces on the key functions of universities [4].

Technological readiness for the massification of higher education is most often associated with the use of information and communication technologies. However, at present stage of development, and possibly in the future, they have both advantages and disadvantages. Managing them is the way one should go to improve the effectiveness of educational activities. So, as shown by the results of a 12-year study by Spanish scientists, the use of chalk, white boards and flip- charts, slide projectors, hinged and opaque projectors, TVs and video, video projectors, electric and smart boards, network resources as part of educational technology has a number of pros and cons [5]. Therefore, educators should flexibly apply a combination of means of displaying certain content without relying only on one of them. To shape the future the futurologists should clarify the refusal of certain means of demonstration and substitution with the latest models that eliminate all the disadvantages of the old, while retaining all the benefits. Moreover, the role of a professor can change significantly along with his skills in using demonstration facilities.

The main aspects, which outline baseline scenarios, are recognized by the World Bank as financing, resources, management and development of curricula [6]. Obviously, the authors of these scenarios did not take into account the importance of technology development and the impact of market environment.

The outline of the scenarios for the development of higher education in the coordinate system of only on two vectors does not lead only to four alternatives. This is proved by the OECD specialists who, in the 2003 institutional forecast identified six scenarios based on variety of institutions of higher education and time interval (table A) [7]. Moreover, overlapping of different contexts and institutional functions in these scenarios so greatly expands their diversity that there is a need to consider only their limited number, which is oriented to the needs of a particular stakeholder.

The key challenges facing future UK higher education were identified by the factors such as: globalization, foreign students, demographic trends and non-traditional social groups, technological advances, including digitalization, as well as public democratization and media [8]. So, they believe that by 2035, the number of

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1 Rieley, J. B. Scenario Planning in Higher Education. *Community College Journal*, 1997. *68*(1), p.23-26.

2 Rasmus D. Why Higher Education Needs Scenarios. *University Business*. November 2, 2012. URL: https://www.universitybusiness.com/article/why-higher-education-needs-scenarios

3 Blass, E., Jasman, A., Shelley, S. Visioning 2035: The future of the higher education sector in the UK. *Futures*, №*42*(5), 2010. p.445-453.

4 Kubler J., Sayers N. Higher education futures: Key themes and implications for leadership and management. London: Leadership Foundation for Higher Education & Association of Commonwealth Universities. 2010. 72 p.

5 del Campo, J. M., Negro, V., & Núñez, M. The history of technology in education. A comparative study and forecas *Procedia-Social and Behavioral Sciences:* International Conference on Education and Educational Psychology. 2012. №*69*, 1086-1092.

6 *Higher Education in Developing Countries: Peril and Promise*. The International Bank for Reconstruction and Development / The World Bank. 2000. 135p. URL: http://siteresources.worldbank.org/EDUCATION/Resources/278200-1099079877269/-547664-1099079956815/peril_promise_en.pdf

7 Vincent-Lancrin S. Building Futures Scenarios for Universities and Higher Education: An International Approach. *Policy Futures in Education*. Volume: 2 issue: 2. June 1, 2004. p. 245-263 URL: https://doi.org/10.2304/pfie.2004.2.2.3

8 Blass, E., Jasman, A., Shelley, S. Visioning 2035: The future of the higher education sector in the UK. *Futures*, №*42*(5), 2010. p.445-453.

international students will be significantly reduced. Therefore, national higher education systems should be oriented mainly towards internal clients.

In analyzing factors and scenarios for the future of higher education systems one of the keys should be to select the stakeholders for which the scenarios will have the greatest impact and without which that future may not occur at all. So, it is about students, scientific and pedagogical and other workers, administrators, politicians and citizens, as well as sectoral specialists – philosophers, scholars, educators, sociologists and artists. In general, the development of science and practice leads to the state that the structure of national systems of higher education tends to a certain universal form. In many countries this will require the vertical and horizontal stratification of the actors of current system.

Therefore, another aspect of the future of higher education is the transformation of roles. Partial changes are observed even during a short lifecycle of educational programs. However, the results of indeep research are more reasonable. In particular, Romanian researchers, based on the study of international scientific databases, found that since 1990, three phases of the development of the role of students in learning activities have been observed [1]. The key changes were in the direction of their formation as an active player, who is fully responsible for results of training, changing of structural approach toward activity and increasing pragmatism of the first and second levels of higher education. Although students are not the only stakeholders, this example demonstrates the likelihood of dramatic changes for all stakeholders.

Scenarios

In 1993, the leaders of University system of California turned to the question of a better future and increased competitiveness. A scenario analysis was carried out to determine the action plan, which revealed three key alternatives to the development of higher education. Scientists agreed with the idea that in the majority of long-term scenarios, there are two pre-determined elements - the economy (dependence on the conjuncture) and demography (the deepening of multiculturalism) [2]. Each of the scenarios focuses mostly on one of the drivers (1 - impact of information technology, 2 - relationship between economics and education, 3 - change in the paradigm to understand what good education is). The resulting scenarios can be summarized in the following theses (table A):

1 - information revolution and software landing. The increase of productivity is based on the use of information technology potentials, in particular for distance learning, the growth of the negative impact of star professionals.

2. university as a business. Scenario eliminates the gap in needs and availability of financial resources for the universities through better interaction with business, privatization and commercialization of activities;

3. new educational order. In this scenario universities intensify the use of information technology, including interactive group software; improve ties with local business, emphasise social justice and community well-being.

The Dutch occupied an active position in the search for scenarios of higher education development. So, Barnett R. outlined alternative visions of the higher education system of the future, which supplemented official scenarios of the Center of Higher Education Policy Studies (the Netherlands) (table A). They have a key place for universities, which will perform several roles, namely:

- critical conscience of society;
- university for the public good;
- a university for human good;
- university for the learning society [3].

At the same time, the educational system as a whole should be considered as a component of society, economic development. One of the samples is the scenario of an ideal storm, in which education is only one of the elements of human development [4]. Under this scenario, by 2030, there will be a critical stratification of countries by coverage of higher education (table A). Currently, there are countries, where this indicator does not increase, as in the main economies. Therefore, it can be assumed that the number of countries, where educational systems fail to perform either social or economic functions, will increase as a result of deepening global competition. In addition, theorists emphasize that education is now positioned as a product in a global competitive knowledge economy, where universities are only one group of actors.

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1 Orîndaru A. Changing perspectives on students in higher education. Procedia Economics and Finance: 22nd International Economic Conference "Economic Prospects in the Context of Growing Global and Regional Interdependencies". 2015. №27. p.682-691.

2 Ogilvy J. Three Scenarios for Higher Education: The California Case. Thought and Action, v9 n1. Fall 1993. P.25-67

3 Barnett, R. Two rival forms of scenario. In Enders, J., File, J. Huisman, J. and Westerheijden, D. (eds.) The European Higher Education and Research Landscape 2020, Scenarios and Strategic Debates. 2005. CHEPS, p.133-139

4 Beddington J. 2030: The perfect storm scenario. The Population Institute, Washington, DC, USA. 2010. 12 p. URL: https://www.populationinstitute.org/external/files/reports/The_Perfect_Storm_Scenario_for_2030.pdf

The 50 leaders of the Kwantland Polytechnic University (Canada) in March 2013, based on the scenario planning methodology and thoughts of 200 participants have developed four scenarios for long-term development of higher education [1]. Although no specific dates were indicated, the most frequent is period after 2035. Scenarios have received the names of people (Julian, Tagomi, Frank and Robert), therefore, to understand their content, it is necessary to study the result obtained in-depth (table 2). The common features of all scenarios include the merger of work and education, as well as dramatic impact of technology on education. Based on scenarios a university strategic plan for the period up to 2018 was developed. It relies on three priorities of a group of activities that include *quality* (successful global citizens, students involved, effective organization), *reputation* (recognized learning and research, unique identity, continuing education and vocational education), and *relevance* (community engagement, enhanced access to education, a combination of theory and practice). The assessment and analysis of university's development uses data collection of 71 indicators [2]. This brings in the need for data collection and monitoring.

Table 2

Conceptual provisions of scenarios for the development of higher education after the Kwantlen Polytechnic University

aspect	the scenario			
	Juliana	Tagomi	Frank	Robert
students' role	a student as a learner	student as an employee	student as a student (traditional role)	student as a client
finances	social fund for education	personal financing of education (through employment)	a hybrid model of education financing (the consumer pays with some social support)	stratified education funding (niche programs)
geography	local emphasis on educational services	global emphasis on educational services	local emphasis on educational services	global emphasis on educational services
technology	technology as core feature of education	technology as core feature of education	technology as core feature of education	technology as core feature of education
socium	excessive digitalization leads to desocialization	excessive digitalization leads to desocialization	excessive digitalization leads to desocialization	technology replaces teachers and corps
university	merger of state universities, partnership between local stakeholders and the government	corporatization of universities	university corporatization, education in exchange for services to corporation	global educational corporations

An alternative could be the study by Riley J., who identified the level of centralization and service provision in the coordinate system (traditional and alternative) [3]. The main characteristics of the four scenarios were the following: centralized provision of traditional services (increased need for basic skills, lower incoming skills, increased material and technical costs, price escalation), centralized provision of services in alternative forms (increased operating costs, labour contract conflicts, drawbacks in organizational subordination, difficulty in maintaining leadership), decentralized (local) provision of traditional services (learning at the workplace, increased partnerships, higher expectations of incoming skills) and decentralized (local) provision of services in alternative forms (no central building, faculty on call, intensive use of IT, foreign students and increased requirements for entry skills).

The OECD's 2007 forecast of possible four scenarios is in fact a holistic structured foresight, which considers single variant of development, but from different aspects (table A). For example, the importance of technology contribution is found only in the *open network* scenario. About export specialization of the United Kingdom, United States, Australia and New Zealand, Malaysia and Singapore we read only in the *corporatization of higher education*.

In South African region there are scenarios composed for future higher education systems. Specialists of the Southern African Regional Universities Association used approach, which outlined four strategic scenarios in a coordinate system that is defined by availability of technological progress and advances in human capital development (table A). further each of them have been analysed in three likely ways of possible development (optimistic, realistic and pessimistic), taking into account the implications for such important aspects for higher education as funding, quality issues, availability and assets, as well as results of research activities.

Working on a forecast of development of supply and demand in labour market in the South African Republic by 2025, a group of researchers considered the scenarios that had been identified [4]. These scenarios were actually

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1 Scenarios of the Future of Higher Education. Kwantland Polytechnic University. URL: http://www.kpu.ca/president/strategicplanning/kpu-scenarios-of-the-future-of-higher-education

2 VISION 2018 - Annual Performance Report: 2016 Interim. Kwantlen Polytechnic University February 2016 Update. – 12 p. URL: http://www.kpu.ca/sites/default/files/President/VISION 2018%20Annual%20Performance%20Report%20Feb%-2018%20Interim.pdf

3 Rieley, J. B. Scenario Planning in Higher Education. *Community College Journal*, 1997. *68*(1), p.23-26.

4 *Modelling Future Demand and Supply of Skills in South Africa: 10 Year Skills Demand and Supply Forecast. - Technical Report*.

grouped into two main blocks by factors that will determine the future of labour market - scenarios of economic development and scenarios for development of education. As a result, low, moderate and high economic and educational development were used in the forecast (table A). This forecast also shows the specificity of national economies, their structure and educational profile. For example, in South Africa the share of employees, who have got higher education, is at 20% with a tendency to increase. This sets a country goal of raising up this indicator and imposes certain constraints on the scenarios, both educational and economic.

The development of a similar project took place in better off Norway, where scientists of the statistical body carry out forecasting since 1993 [1]. The specificity of the forecast by 2030 is that the design of labour market indicators, depending on the educational level, considered only the scenario of balanced development. Although the Scandinavian countries are known for their gravity to sustainable development, in this case they have demonstrated that the best use is given by a balanced scenario. It has practical value when it comes to a significant number of related indicators.

In 2018 European Center for the Development of Vocational Training proposed a comprehensive forecast of indicators relating to such dimensions as labour, employment, job creation, country profiles, professions and sectors of the economy. The ability to predict a significant number of indicators by 2030 simplifies strategic and tactical planning, which is of particular interest to investors and capital markets. They examine a variety of scenarios, ranging from one or two alternatives. For example, countries should determine what is going on in the educational market – segmentation or polarization, whether current trends will continue and what will happen with supply and demand [2].

Analysis of development scenarios may have practical applications even in the nearest future. Universities, in order to ensure the quality of educational outcomes, should maintain regular contact with researchers to identify ways to improve skills of graduates. A success story is the results of analysis of scenarios of medical education development conducted by Austrian researchers [3]. In conditions when the progress of medicine has already contributed to increase in life expectancy, several non-medical factors have been identified that may contribute to greater effectiveness of doctors' activities. Such factors are social and communication skills, the mastery of which greatly affects the quality of diagnoses and effectiveness of treatment.

The International Institute for Applied Systems Analysis has run a large-scale project, which resulted in the formation of five scenarios of human development by 2100. The determinants were the following factors: population, education, urbanization and economics (for example, GDP). As a result, the description of each of the scenarios was delivered in scientific articles in a respectable journal with a high impact factor [4, 5, 6, 7, 8]. In each of the scenarios an important place is given to education, namely (table A):

1-st – investment in education accelerates demographic changes, economic development focuses on human well-being;

2-nd – trends of the past are preserved; inequalities continue to take place, some global achievements and problems;

3-rd – investment in education is decreasing, economic development is slowing down, inequality is increasing;

4-th – fragmentation of global community, defined are internationalized knowledge-intensive and low-educated societies operating in labour-intensive low-tech sectors;

5-th - intensive investments in education increase human and social capital, technological development intensifies, incl. resolving of ecological challenges.

- ed. Adelzadeh A., Department of Higher Education and Training RSA. March 2017. http://www.dhet.gov.za/Commissions Reports/Modelling future of demand and supply of skills in south Africa/Modelling future demand and supply of skills in South Africa.pdf

1 Bjornstad, R., Gjelsvik, M. L., Goday, A., Holm, I., & Stolen, N. M. *Demand and supply of labor by education towards 2030. Linking demographic and macroeconomic models for Norway* (Report 39). 2010. Oslo-Kongsvinger: Statistics Norway. 44 p. URL: https://www.ssb.no/a/english/publikasjoner/pdf/rapp_201039_en/rapp_201039_en.pdf

2 *Building on skills forecasts — Comparing methods and applications*. Conference proceedings. Cedefop February 2011. 284 p. URL: http://www.cedefop.europa.eu/en/publications-and-resources/publications/5518

3 Seitz T., Löffler-Stastka H. Diagnostically fit for the future? The students' perspective. *Procedia-Social and Behavioral Sciences.* 2016. №*228*, p.541-546.

4 Vuuren van D.P. etc. Energy, land-use and greenhouse gas emissions trajectories under a green growth paradigm. *Global Environmental Change*. №42. 2017. p.237-250.

5 Fricko O. etc.The marker quantification of the Shared Socioeconomic Pathway 2: A middle-of-the-road scenario for the 21st century. *Global Environmental Change*. №42. 2017. p.251-267.

6 Fujimori S. etc. SSP3: AIM implementation of Shared Socioeconomic Pathways. *Global Environmental Change*. №42. 2017. p.268-283.

7 Calvin K. The SSP4: A world of deepening inequality. *Global Environmental Change*. №42. 2017. p.284-296.

8 Kriegler E. etc. Fossil-fueled development (SSP5): An energy and resource intensive scenario for the 21st century. *Global Environmental Change*. №42. 2017. p.297-315

From today's standpoint it can be argued that none of the scenarios did take place in its pure form, but otherwise it could not be. Another conclusion is that the inertia and significant internal resistance of the higher education system to transformations under the pressure of external factors affect the future of this system more than would be expected. Although it should be remembered that the readiness for change differs among actors, but systemic changes will take place in any case. And what place will contemporary actors take in the future system depend not so much on external circumstances or scenarios, but on the understanding and actions of these actors.

Most likely the actual state of the higher education system of the future (10-20 years) will not look like any of the scenarios. However, one should support the idea of S. Stoer and A. Magalhães, one of the authors of the study of the landscape of European higher education in 2020, who called it a collage of the above scenarios [1]. Eclectics, which is inherent in the socio-economic systems, must be taken into consideration in scenarios of future of higher education in any country.

Conclusions.

Scenarios of the future higher education should comprehensively cover all levels of its development. Beginning with the identification of its role and place in society, the economic dimension (economy, sectors, industries) should move to the functions and positioning of individual stakeholders and actors, which may also be quite dynamic. On the example of the formation of scenarios, we observe the dialectics of modern higher education. It is conditioned by growth of aggregate influence of various factors, revision of models of social and economic development, rejection of certain types of activities, models and technologies of learning and emergence of new. Technological developments, especially growth of the possibilities of storage, processing, generation and transmission of information, occupy a special place in the outline of future higher education, because higher education deals with the activity, the object of which is knowledge itself.

As a result of formation of scenarios, from our point of view, there should be only a few alternatives (from one to three). And the best is consensus scenario, which in most cases will depend on the particular context in which its outline takes place. The attractiveness of the consensus scenario is due to its pragmatism, which, however, is derived from the position of a particular actor. This actor should be the very person - as a citizen, as a student, as a teacher, as a researcher – or institution (public or private).

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1 Enders, J., File, J. M., Huisman, J., & Westerheijden, D. F. *The European Higher Education and Research Landscape 2020-Scenarios and Strategic Debates*. 2005. Center for Higher Education Policy Studies. URL: https://ris.utwente.nl/ws/portalfiles/portal/5574394/Enders05european.pdf

Appendix

Table A.

Scenarios for the future higher education

author	time horizon	main scenarios
general scenarios		
Beddington J., Institute of Population, USA	by 2030	scenario of a perfect storm: critical stratification of the countries of the world for coverage of higher education
general scenarios for higher education		
University of California, 1993	by 2008	information revolution and software landing university as a business a new educational order
Center of Higher Education Policy Studies, 2001	10 years, by 2010	Palatial garden Polder garden Natural garden
Center of Higher Education Policy Studies, 2005	15 years, by 2020	centralization (Centralia – the city of the Sun) networking (Octavia – the Spider-web city) knowledge flexibility (Vitis Vinifera – the city of Traders)
University of California Berkeley, Center for Studies in Higher Education, J. Douglass	by 2022	Higher education - market of structured opportunities factors of formation of higher education market (open access, mission differentiation, institutional autonomy, private sector flexibility, institutional and regional experiments, affirmative actions and international students) curricular reform (degree compatibility, bank credits, transfer/matriculation function) funding and availability of higher education (variety of sources, average fee and model of financial support, favourable taxation)
Brian Alexander, New Media Consortium	by 2024	two cultures (on-line universities and hybrid mixed learning) Renaissance (revival of digital content technologies, social media and computer games) nation of health care (higher education is largely a subsystem of the health sector, which accounts for up to 40% of US GDP)
Southern African Regional Universities Association	by 2025	knowledge village (availability of technology and human capital) missed opportunity of higher education (availability of technologies and lack of human capital) the university is looking for its soul (lack of technology and surplus of human resources) legacy of the higher education system (lack of technologies and lack of human capital)
OECD, 2004 (system)	by 2025	traditional marginal openness marginal elitism comprehensiveness
Universities UK, NGO	by 2030	slow adaptation of changes market power and competition flexible training on the demand of employers
OECD, 2003 (institutional)	by 2030	traditional entrepreneurial free market lifelong learning and open institutions global network of institutions variety and extinction
OECD, 2007 (public)	by 2030	open networking serving local communities new public responsibility Higher Education Inc.
International Institute for Applied Systems Analysis	by 2100	sustainable development - the choice of the green path middle way regional rivalry is a rocky road inequality - crossroads intensive development is provided with resources
regional higher education		
University of Science, Malaysia, 2007	by 2020	diversified world class university university is invisible corporate university state university university in the garden: the glow of reason
Rathenau Institute, Niederlands, 2014	by 2025	future of Dutch universities national solidarity (fortress Europe, education institutions, large social challenges) regional power (regions dominant, large variety, economic opportunities)

		European variation (North West Europe, many levels, public and private funds) international selection (global competition, quality and choice, volatile)
South African Republic	by 2025	low (slow GDP growth, high unemployment) (benchmark scenario) moderate high
UK Higher Education Sector	by 2035	leading knowledge creation responsive knowledge creation regional conglomerates no government funding total government funding
specific educational aspects		
Brian Alexander, New Media Consortium	by 2017	scenarios for future scientific publications overflow of the biosphere and diversification of forms bubble burst extinction of the genre flowering of grey literature world of open access
British Library & Co., 2011	by 2050	academic libraries of the future Wild-West scenario beehive scenario walled garden scenario
Papanikoluu K., Ministry of Education of Greece	-	Students' role in hybrid web-technologies-based learning a) the role of the active generator b) the role of the consumer

Source: compilation based on all references.

References:

1. Azman N., Morshidi S., Azahari M.K. Building future scenarios for Malaysian universities, Journal of Asian Public Policy. 2010. 3:1. pp 86-99. URL: http://dx.doi.org/10.1080/17516231003634112
2. Barnett, R. Two rival forms of scenario. In Enders, J., File, J. Huisman, J. and Westerheijden, D. (eds.) The European Higher Education and Research Landscape 2020, Scenarios and Strategic Debates. 2005. CHEPS, p.133-139
3. Beddington J. 2030: The perfect storm scenario. The Population Institute, Washington, DC, USA. 2010. 12 p. URL: https://www.populationinstitute.org/external/files/reports/The_Perfect_Storm_Scenario_for_2030.pdf
4. Bjornstad, R., Gjelsvik, M. L., Goday, A., Holm, I., & Stolen, N. M. Demand and supply of labor by education towards 2030. Linking demographic and macroeconomic models for Norway (Report 39). 2010. Oslo-Kongsvinger: Statistics Norway. 44 p. URL: https://www.ssb.no/a/english/publikasjoner/pdf/rapp_201039_en/rapp_201039_en.pdf
5. Blass, E., Jasman, A., Shelley, S. Visioning 2035: The future of the higher education sector in the UK. Futures, №42(5), 2010. p.445-453.
6. Bryan A. Future of Higher Education: The Future of Scholarly Publication. EDUCAUSE review. March 29, 2011. URL: https://er.educause.edu/articles/2011/3/future-of-higher-education-the-future-of-scholarly-publication
7. Building on skills forecasts — Comparing methods and applications. Conference proceedings. Cedefop February 2011. 284 p. URL: http://www.cedefop.europa.eu/en/publications-and-resources/publications/5518
8. Calvin K. The SSP4: A world of deepening inequality. Global Environmental Change. №42. 2017. p.284-296.
9. del Campo, J. M., Negro, V., & Núñez, M. The history of technology in education. A comparative study and forecas Procedia-Social and Behavioral Sciences: International Conference on Education and Educational Psychology. 2012. №69, 1086-1092.
10. Douglass J. A Look into a Possible Future: A Global Scenario for Higher Education Systems. Global University Network for Innovation. December 17, 2007. URL: URL: http://www.guninetwork.org/articles/look-possible-future-global-scenario-higher-education-systems
11. Enders, J., File, J. M., Huisman, J., & Westerheijden, D. F. The European Higher Education and Research Landscape 2020-Scenarios and Strategic Debates. 2005. Center for Higher Education Policy Studies. URL: https://ris.utwente-.nl/ws/portalfiles/portal/5574394/Enders05european.pdf
12. Fricko O. etc.The marker quantification of the Shared Socioeconomic Pathway 2: A middle-of-the-road scenario for the 21st century. Global Environmental Change. №42. 2017. p.251-267.
13. Fujimori S. etc. SSP3: AIM implementation of Shared Socioeconomic Pathways. Global Environmental Change. №42. 2017. p.268-283.
14. Future knowledge: 4 scenarios for the future of Dutch universities. / ed. P.Faasse, B. van der Meulen, P. Heerekop. Rathenau Institute. February 2014. URL: https://www.rathenau.nl/sites/default/files/2018-05/Future_knowledge_-_4_scenarios_for_the_future_of_Dutch_universities_01.pdf
15. Gallagher, M. The emergence of entrepreneurial public universities in Australia. Higher Education Division,

Department of Education, Training and Youth Affairs. 2000. 63 p.https://multisite.itb.ac.id/mwa/wp-content/uploads/sites/40/2014/06/the-emergence-of-entrepreneurial-public-universities-in-australia.pdf
16. Gidley, J. M. Global Knowledge Futures: Articulating the Emergence of a New Meta-level Field. Integral Review: A Transdisciplinary & Transcultural Journal for New Thought, Research, & Praxis. 2013. №9(2). P.145-172. URL: URL: http://www.integral-review.org/documents/old/Gidley,Global-Knowledge-Futures,Vol.9,No.2.pdf
17. Higher Education in Developing Countries: Peril and Promise. The International Bank for Reconstruction and Development / The World Bank. 2000. 135p. URL: http://siteresources.worldbank.org/education/Resources/278200-1099079877269/547664-1099079956815/peril_promise_en.pdf
18. Irfan, T. Mohammod. 2017. "IFs Education Model Documentation." Working paper 2015.06.16. Pardee Center for International Futures, Josef Korbel School of International Studies, University of Denver, Denver, CO. URL: https://pardee.du.edu/sites/default/files/Education%20Model%20v34.pdf
19. Jongbloed, B., Enders, J. and Salerno, C. Higher education and its communities: interconnections, interdependencies and a research agenda. Higher Education. 2008. 56(3): 303-324.
20. Kriegler E. etc. Fossil-fueled development (SSP5): An energy and resource intensive scenario for the 21st century. Global Environmental Change. №42. 2017. p.297-315
21. Kubler J., Sayers, N. Higher education futures: Key themes and implications for leadership and management. London: Leadership Foundation for Higher Education & Association of Commonwealth Universities. 2010. 72 p.
22. Márquez-Ramos, L., Mourelle, E. Selecting a suitable approach to analyze the future of higher education. Procedia-Social and Behavioral Sciences. 2016. №228, p.86-91.
23. Modelling Future Demand and Supply of Skills in South Africa: 10 Year Skills Demand and Supply Forecast. - Technical Report. - ed. Adelzadeh A., Department of Higher Education and Training RSA. March 2017. http://www.dhet.-gov.za/Commissions Reports/Modelling future of demand and supply of skills in south Africa/Modelling future demand and supply of skills in South Africa.pdf
24. Ogilvy J. Three Scenarios for Higher Education: The California Case. Thought and Action, v9 n1. Fall 1993. P.25-67
25. Orîndaru A. Changing perspectives on students in higher education. Procedia Economics and Finance: 22nd International Economic Conference “Economic Prospects in the Context of Growing Global and Regional Interdependencies”. 2015. №27. p.682-691.
26. Papanikolaou K. Web-enhanced learning scenarios. Procedia Social and Behavioral Sciences: WCES-2010. №15. 2011. p.1158–1162.
27. Rasmus D. Why Higher Education Needs Scenarios. University Business. November 2, 2012. URL: https://www.uni-versitybusiness.com/article/why-higher-education-needs-scenarios
28. Rieley, J. B. Scenario Planning in Higher Education. Community College Journal, 1997. 68(1), p.23-26.
29. Scenarios of the Future of Higher Education. Kwantland Polytechnic University. URL: http://www.kpu.ca/president/-strategicplanning/kpu-scenarios-of-the-future-of-higher-education
30. Seitz T., Löffler-Stastka H. Diagnostically fit for the future? The students’ perspective. Procedia-Social and Behavioral Sciences. 2016. №228, p.541-546.
31. The European Higher Education and Research Landscape 2020, Scenarios and Strategic Debates. Enders, J., File, J. Huisman, J. and Westerheijden, D. (eds.). - CHEPS. 219 p. ISBN 90-365-2296-X 219 p. URL: https://ris.utwente.nl/ws/-portalfiles/portal/5574394/Enders05european.pdf
32. Turner S., Neill C., Hughes B.B., Narayan K. Guide to Scenario Analysis in International Futures (IFs). Working paper 2017.09.10. Pardee Center for International Futures, Josef Korbel School of International Studies, University of Denver, Denver, CO. 2017. URL: https://pardee.du.edu/sites/default/files/IFs%20Documentation Guide%20to%2-0Scenario%20Analysis%20v15.1.pdf
33. Vincent-Lancrin S. Building Futures Scenarios for Universities and Higher Education: An International Approach. Policy Futures in Education. Volume: 2 issue: 2. June 1, 2004. p. 245-263 URL: https://doi.org/10.2304/pfie.2004.2.2.3
34. VISION 2018 - Annual Performance Report: 2016 Interim. Kwantlen Polytechnic University February 2016 Update. – 12 p. URL: http://www.kpu.ca/sites/default/files/President/VISION 2018%20Annual%20Performance%20Report%-20Feb%2018%20Interim.pdf
35. Vuuren van D.P. etc. Energy, land-use and greenhouse gas emissions trajectories under a green growth paradigm. Global Environmental Change. №42. 2017. p.237-250.