



**L. N. Gumilyov Eurasian National  
University, Republic of Kazakhstan**



# **Engineering Education in Kazakhstan**

**Gulnara Abitova, PhD,  
Professor of Eurasian National University**

# Strategy «Kazakhstan-2050» new political course of the established state



«Based on the new course "Kazakhstan-2050" President of the Republic of Kazakhstan Nursultan Nazarbayev has instructed the Government :



➤to create in pilot regime a several independent centers of the confirmation of qualifications on the basis of industry associations;

➤to ensure the development of modern engineering education and technical specialities with assignment of international certificates at 2013 ;

➤in 2014 to begin development of a system for Engineering Education.





- From the Address of the President of the Republic of Kazakhstan

«... the key reference points of a modern system of education, training and retraining of personnel - is the knowledge and the professional skills»



What?

Higher Education System:  
New Challenges and Trends



How?

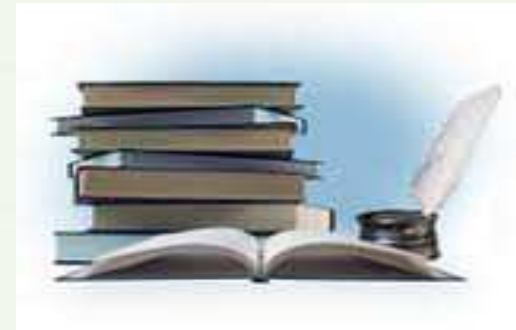
International Trends in  
Engineering Education



# International Trends in Higher and Engineering Education



- From the Bucharest Communiqué
- 2012, April 26-27



## Quality Assurance of Higher and Engineering Education

Optimization of Universities

Development of Systems of Training and Further Training of Teachers

Development of the Engineering Education





# International Trends in Higher and Engineering Education



## DEVELOPMENT OF THE COMMON RESEARCH AREA

### New Classification of Universities

- National Research Universities
- National Universities
- Research Universities
- Universities
- Academies
- Institutes



5 National и 15 Engineering Shared Labs



# International Trends in Higher and Engineering Education



- From the Bucharest Communique
- 2012, April 26-27

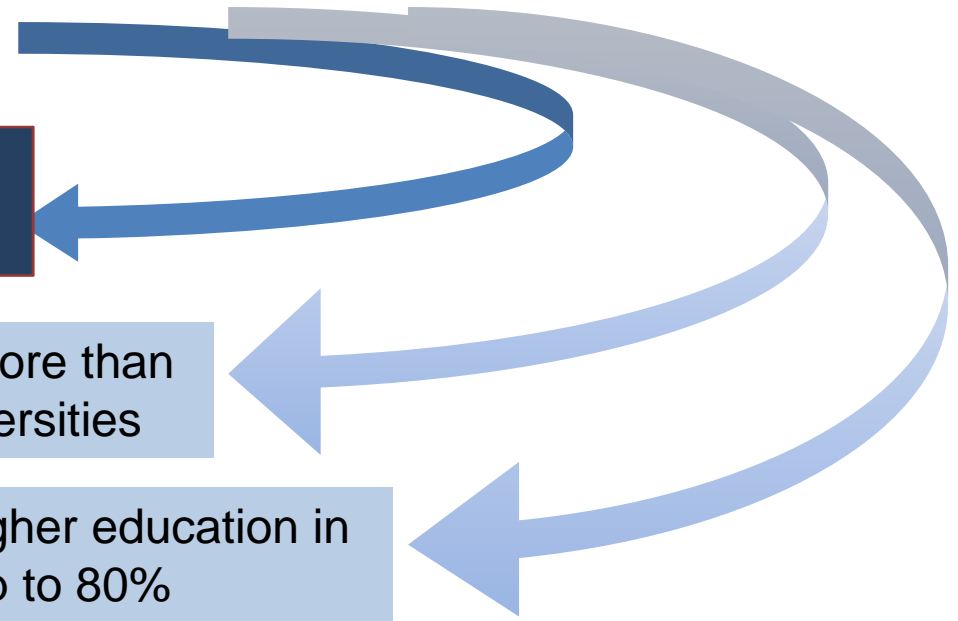


## Quality Assurance of Higher and Engineering Education for All

### Increasing Access to the Higher and Engineering Education

Every year around the world more than 150 million people goes to universities

Accessibility of higher education in some countries up to 80%

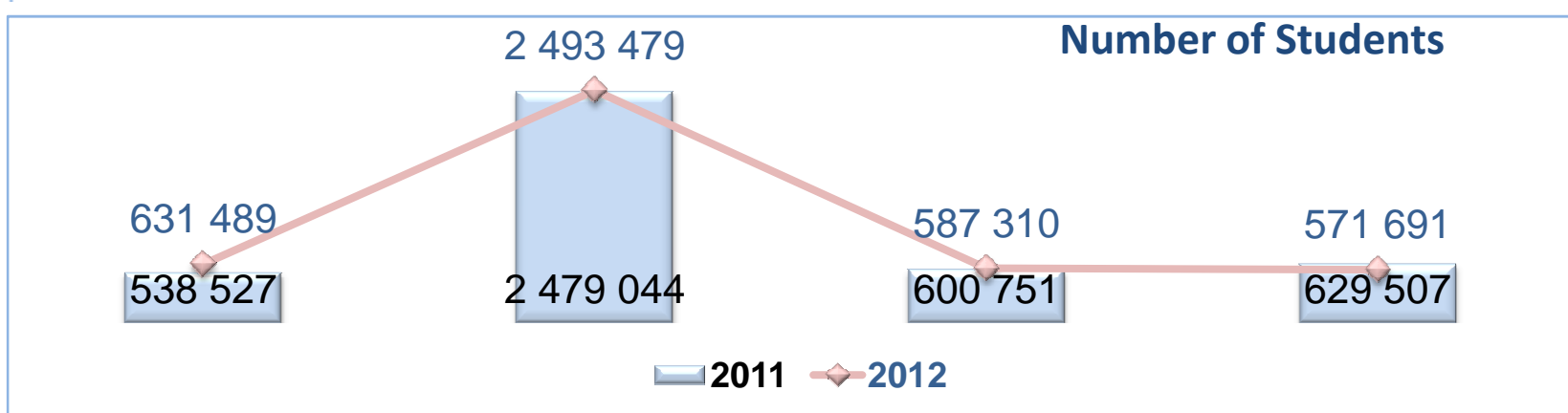
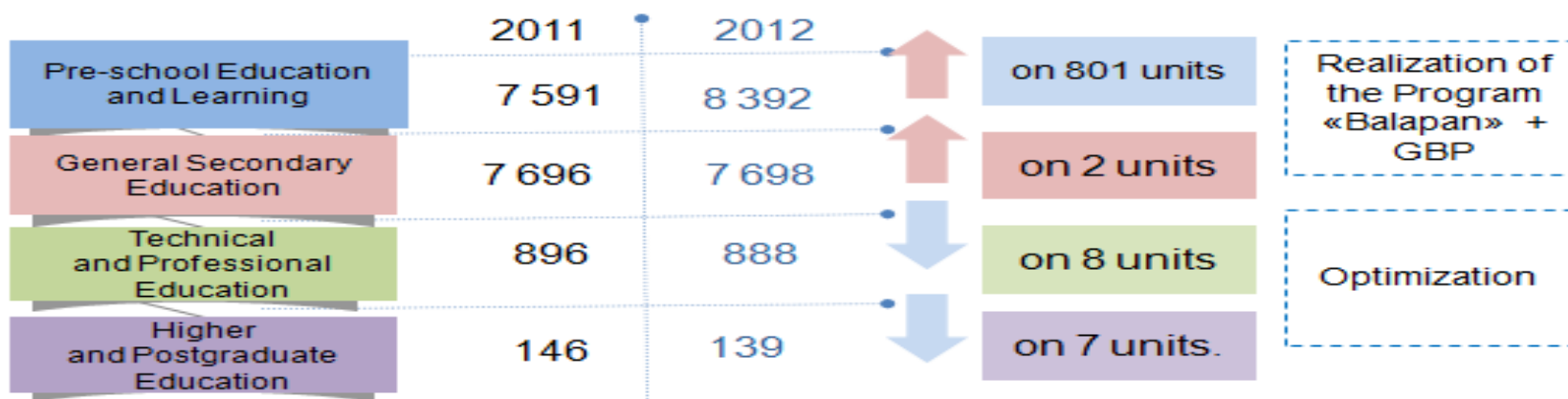




# Accessibility of Educational Services / Education



## Number of Education Organizations



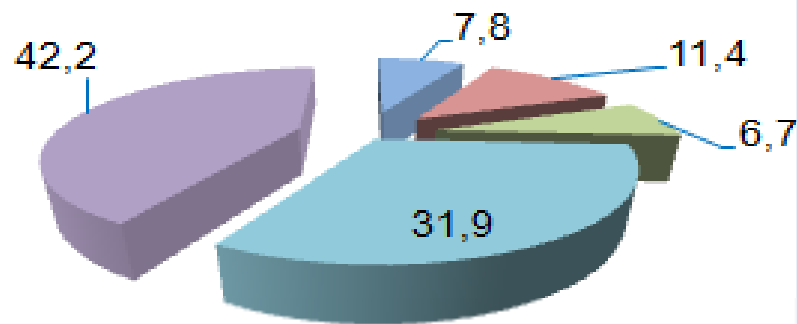
Pre-School Education    Common Sec. Education    Techn.&Prof. Education    Higher Education



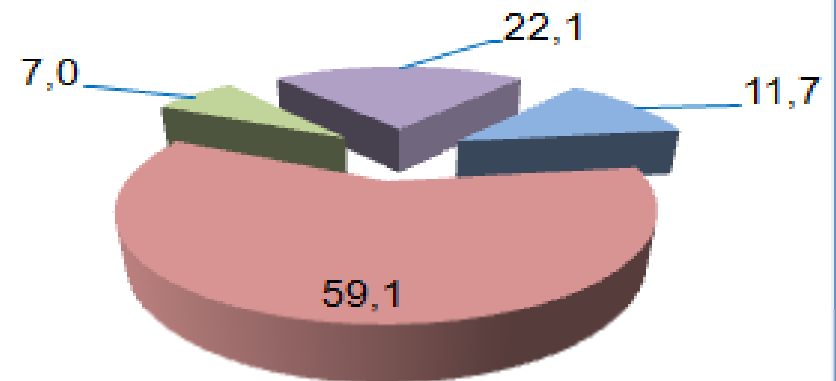
# Funding of the Education from the Government Budget



Funding from the Government Budget, %

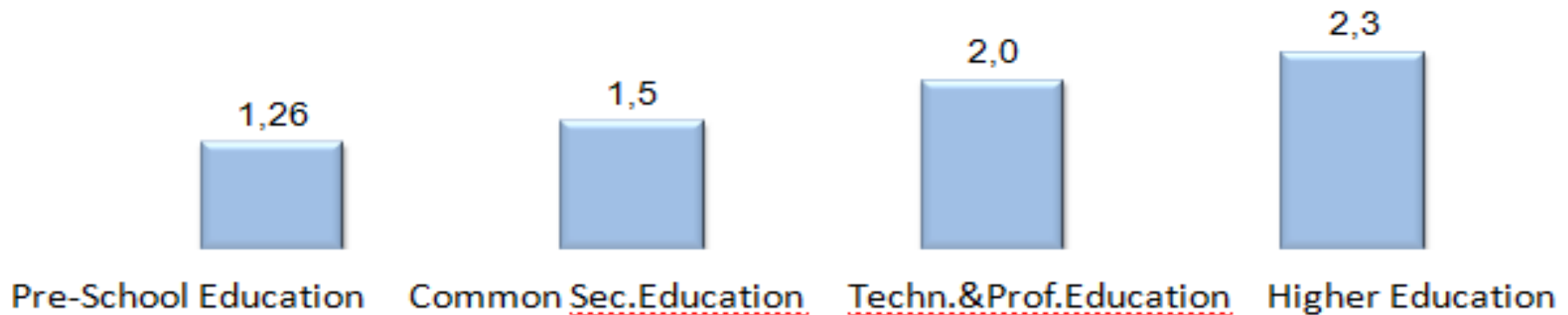


Funding from the Municipalities Budget, %



## Quality Assurance of Higher and Engineering Education for All

Government Finding for One Person / Student / Education Level/ US Dollars / \$





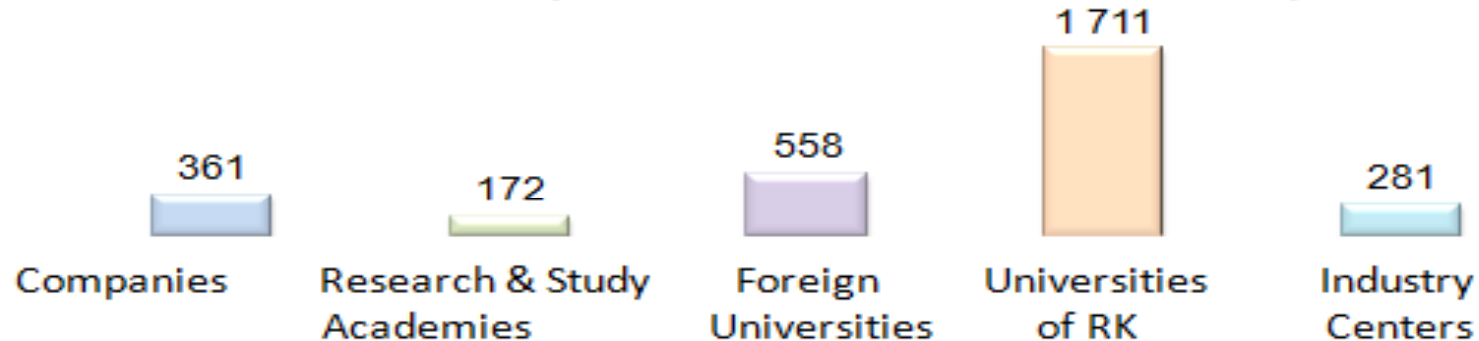


# International Trends in Higher and Engineering Education

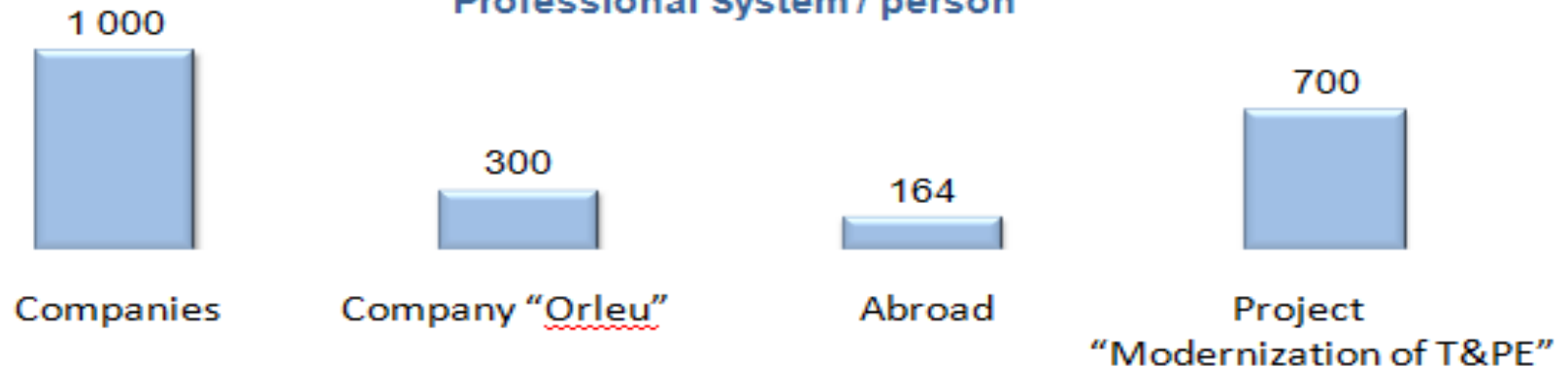


## Increasing of Competence and Continuing Education

Professional Development, Retraining and Internships of the P&T of the Universities/ person



Professional Development, Retraining and Internships of the Engineers and Teachers of the Technical & Professional System / person





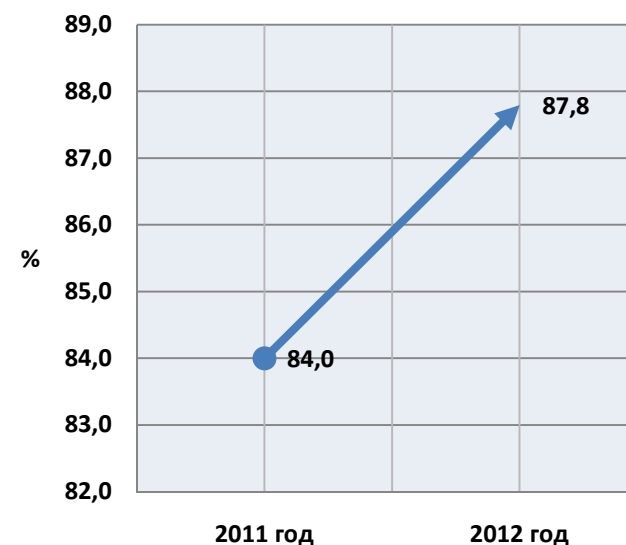
## International Trends in Higher and Engineering Education



### Increasing of Employment and Employability of Students and Engineers

#### % Employment of Graduates with Engineering Education

University Category	2011	2012
National	89,6	93,1
International	60,9	54,2
State	87,9	88,2
Corporatized	79,5	93,2
<b>Total</b>	<b>84,0</b>	<b>87,8</b>



Dynamics of Graduate Employment of Undergraduate



# International Trends in Higher and Engineering Education



## *Academic Mobility of the Students*

### □ Academic Mobility Strategy in the Republic of Kazakhstan for 2012 - 2020 years

### □ Institutional Strategies for Internationalization of Higher Education



**For 2012-2013 academic years:**

For the international academic mobility of students is given  
**\$ 34,000**

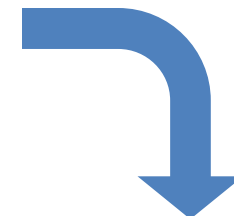


# International Trends in Higher and Engineering Education

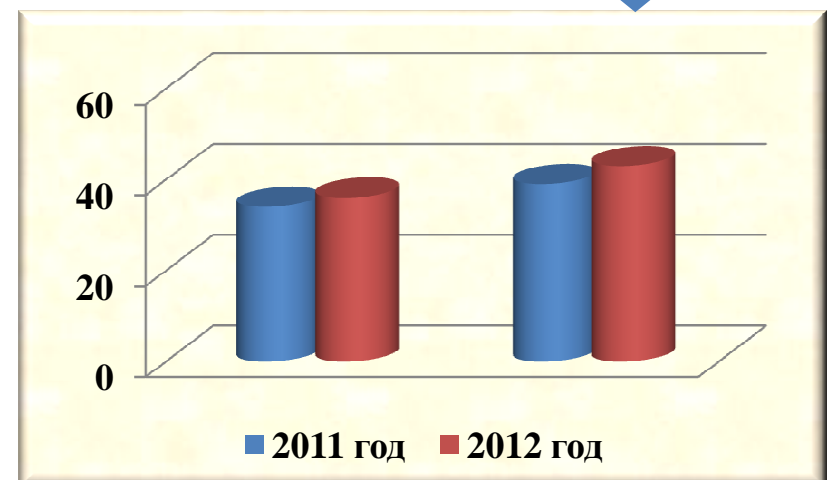


## Academic Mobility of the Students

Universities	Undergraduate		Master	
	2011	2012	2011	2012
<b>National</b>	<b>44,0</b>	<b>33,3</b>	<b>66,0</b>	<b>77,0</b>
<b>State</b>	<b>15,0</b>	<b>24,0</b>	<b>27,0</b>	<b>33,0</b>
<b>Corporatized</b>	<b>68,7</b>	<b>62,5</b>	<b>50,0</b>	<b>43,7</b>
<b>Total</b>	<b>34,0</b>	<b>36,0</b>	<b>39,0</b>	<b>43,0</b>



There are Universities, which are implementing two degree programs





## International Trends in Higher and Engineering Education



### Quality Assurance in Engineering Education

*From the State Program of Education Development of the Republic of Kazakhstan for 2012-2020 years*

	to 2015	to 2020
universities, which have a national institutional accreditation according to international standards	-	65%
universities, which have a national specialized accreditation by international standards	20%	30%



# International Trends in Higher and Engineering Education



## National Register (of Accreditation Centers

Independent Accrediting Agency and Ranking (NAAR) (2011, SC)



Independent Kazakhstan Quality Assurance Agency in Education (IKQAA) (2008, SC)

Austrian Agency for Quality Assurance in Education (AQA) (2003)

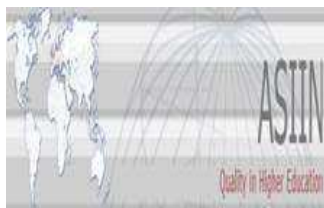


Österreichische  
Qualitätssicherungsagentur  
Austrian Agency for Quality Assurance



Accreditation Board of Engineering and Technology (ABET) (USA)

Institute for Accreditation, Certification and Quality ACQUIN (2001, Germany)



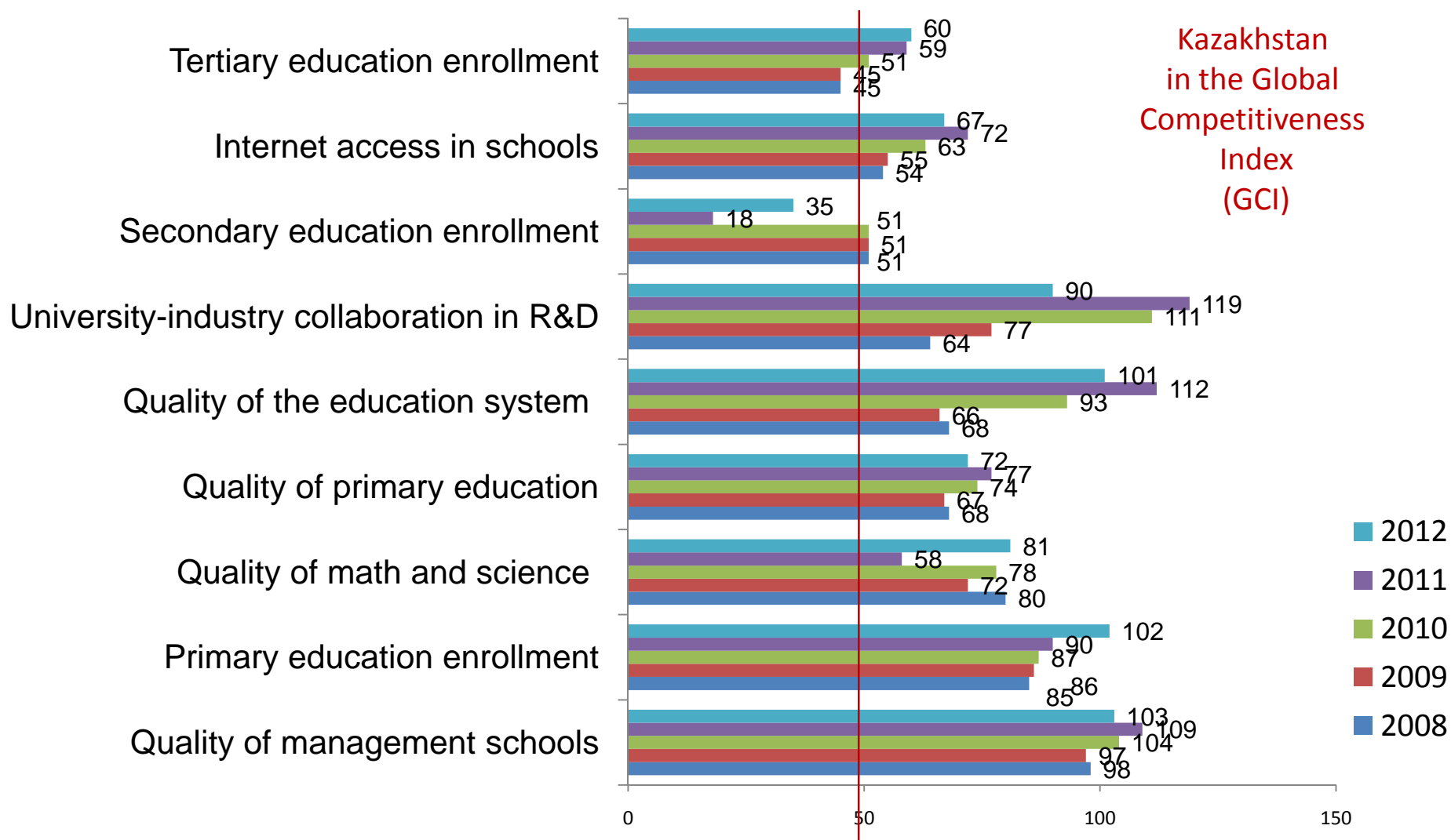
Accreditation Agency for programs of engineering, computer science, natural sciences and mathematics ASIIN (2002, Germany)



# International Trends in Higher and Engineering Education



## Kazakhstan in the World Educational Space







# International Trends in Higher and Engineering Education



## National System of Qualifications

### National Qualifications Framework

is compatible with the European Framework of Qualifications

is continued to be a self-certification

### Industry Qualifications Framework

is developed in the field of education and science, labor, agriculture

### Professional Standards

### Independent Certification Centers





## International Trends in Higher and Engineering Education



**Factors that Contribute to the Need Establishing National System of Certification and Registration of Professional Engineers in Kazakhstan:**

### National System of Qualifications

- Globalization of the economy and education
- Kazakhstan's integration into the world economic and scientific-educational space
- The increasing role of the engineer
- The need to improve quality of engineering education
- Three levels of education

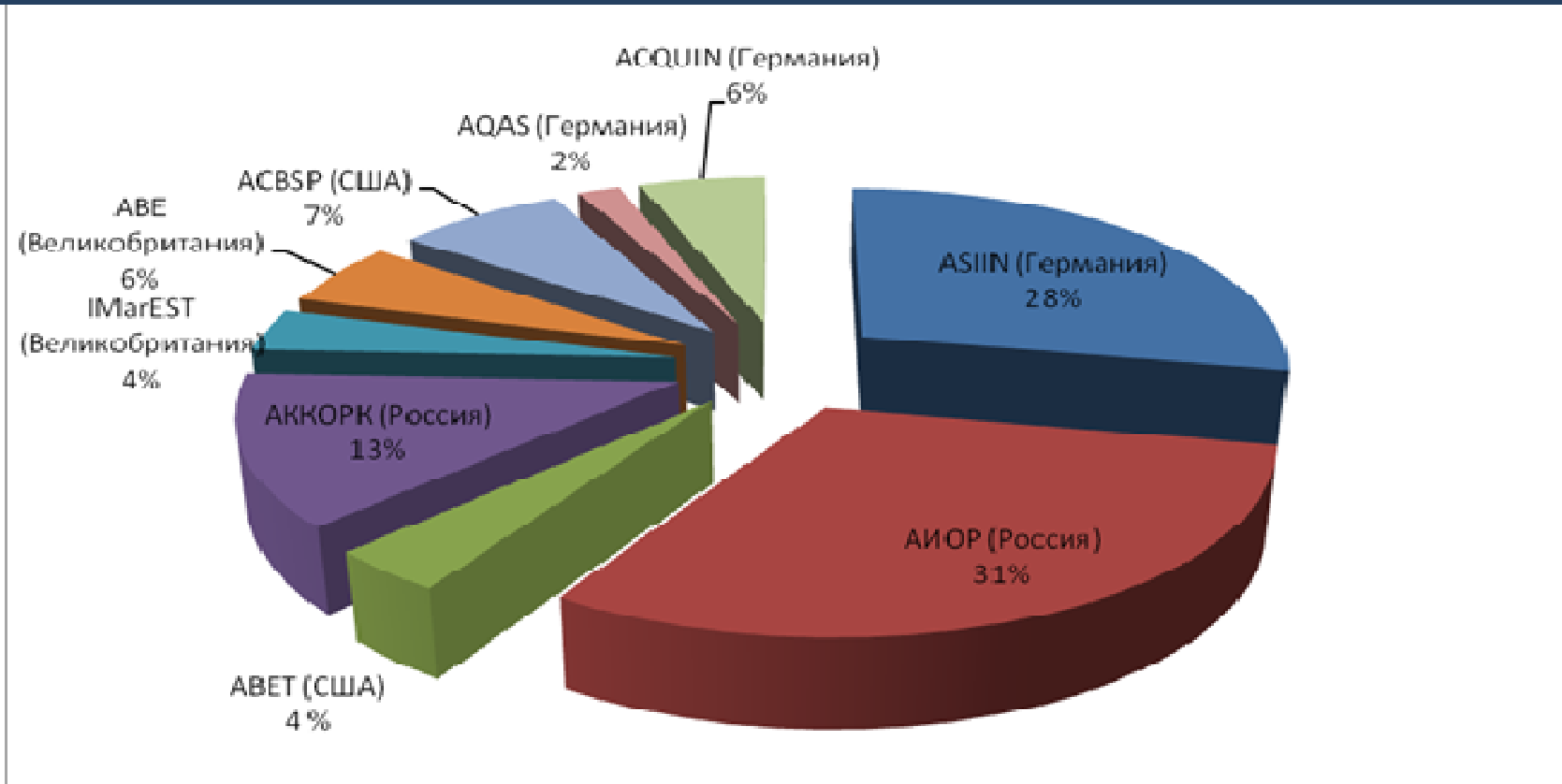




# International Trends in Higher and Engineering Education



## Accreditation of the Education Programs in the Kazakhstan





## International Trends in Higher and Engineering Education



**There are Several Social Organizations in Kazakhstan. They are solving problems of increasing the quality of engineering education.**

### National System of Engineering Qualifications

- National Academy of Engineering of the Republic of Kazakhstan
- National Academy of Sciences Graduate School of Kazakhstan
- Association of the Kazakhstan Universities
- Association of Professional Education of the Kazakhstan
- Kazakhstan Monitoring Committee (IGIP)
- Kazakhstan Association of Engineering Education (KazSEE)



## International Trends in Higher and Engineering Education



### Kazakhstan Association of Engineering Education (KazSEE)

## National System of Engineering Qualifications

- It was established in the June 2007
- The Association was established at the Seminar - Meeting of University Rectors.
- Kazakh Society of Engineering Education was included in an International Consortium Society for Engineering Education.





# International Trends in Higher and Engineering Education



## The structure of Kazakhstan Society of Engineering Education

**affiliated society in  
Astana**

**affiliated society in  
Aktau**

**affiliated society in  
Pavlodar**

**affiliated society in  
North-Kazakhstan**

**affiliated society in  
Kzyl-Orda**



**affiliated society in  
Ust-Kamenogorsk**

**affiliated society in  
South-Kazakhstan**

**affiliated society in  
Dzhambul**

**affiliated society in  
West-Kazakhstan**

**affiliated society in  
Kostanai**

**affiliated society in  
Aktyubinsk**

**affiliated society in  
Karagandy**

**affiliated society in  
Atyrau**





# International Trends in Higher and Engineering Education



## The Regional Structure of KazSEE: For Development of Engineering Education





## International Trends in Higher and Engineering Education



### Mission of the Kazakhstan Association of Engineering Education

## National System of Engineering Qualifications

- Improving of engineering education;
- Development engineering activities in all directions:  
educational, scientific and technological;
- Development of the teaching, counseling, research, development,  
engineering solutions and technology transfer;
- Providing a wide range of educational services;
- Providing public relations, production, science;
- Integration into the international scientific and educational space.



# International Trends in Higher and Engineering Education



## Main Projects of KazSEE

### National System of Engineering Qualifications

Training and certification of teachers of engineering universities in centers, accredited by the European Society for Engineering Pedagogy(IGIP).

Certification and registration of Kazakhstani professional engineers, contributing to the international registries.

Accreditation of educational programs in engineering and technology, with the support of ENAEE AEER.





# International Trends in Higher and Engineering Education



## National System of Engineering Qualifications



KazSEE was included in an International Consortium of Engineering Education Societies (IFEES) in 2007 .



## International Trends in Higher and Engineering Education



### Memorandum of Cooperation Between ENAAEE, AOIR and KazSEE

- Collaborate on training in Kazakhstan personnel with higher education, specializing in engineering and technology
- Development of professional accreditation of educational programs in engineering and technology in Kazakhstan
  - Development of international contacts and relations of Kazakhstan Engineering Universities
  - Promoting the integration of Kazakhstan higher technical educational institutions in the international scientific and educational space.

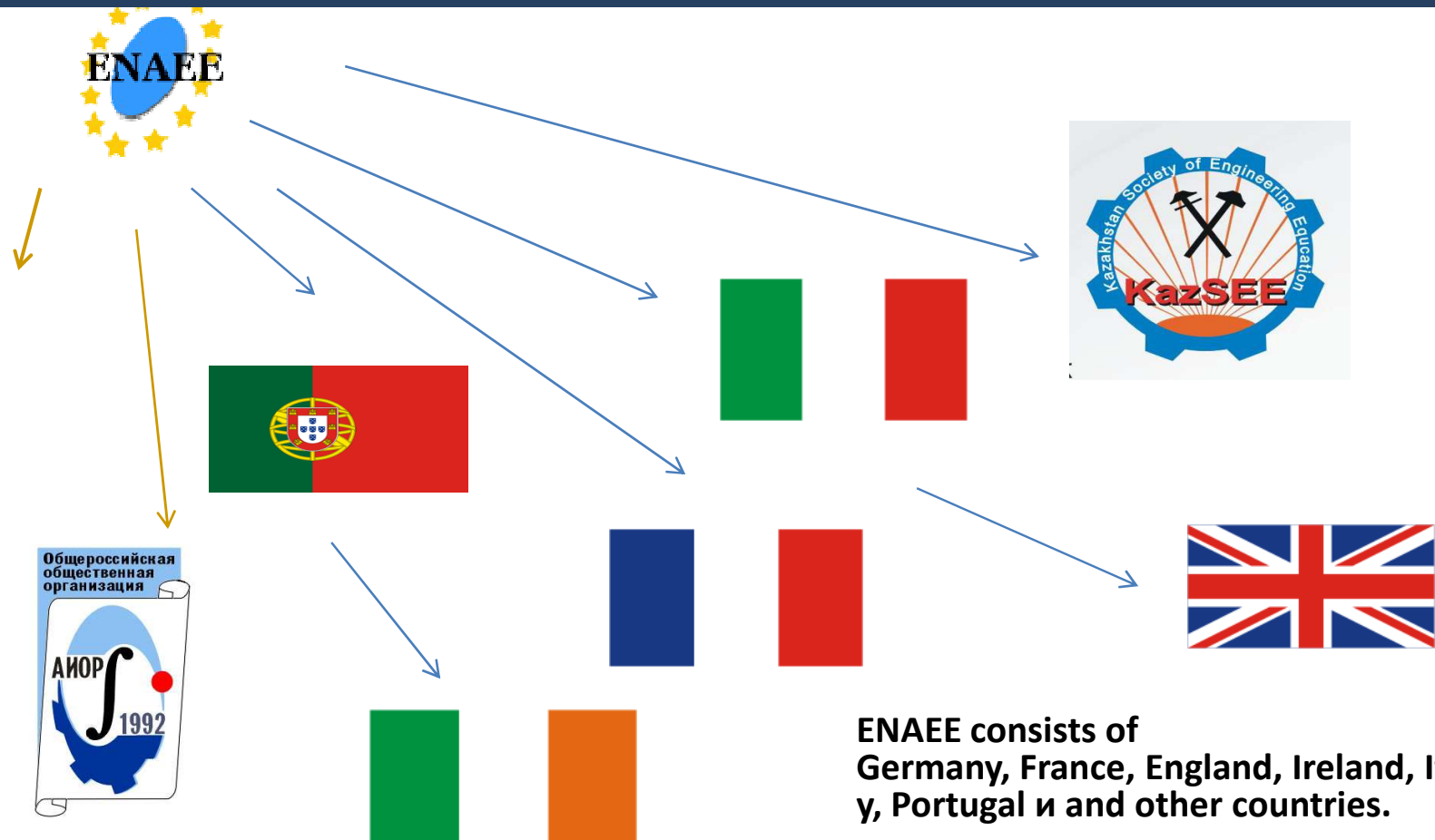




# International Trends in Higher and Engineering Education



## European Network for Accreditation of Engineering Education (ENAAEE)





## International Trends in Higher and Engineering Education



## Perspectives



## National System of Engineering Qualifications

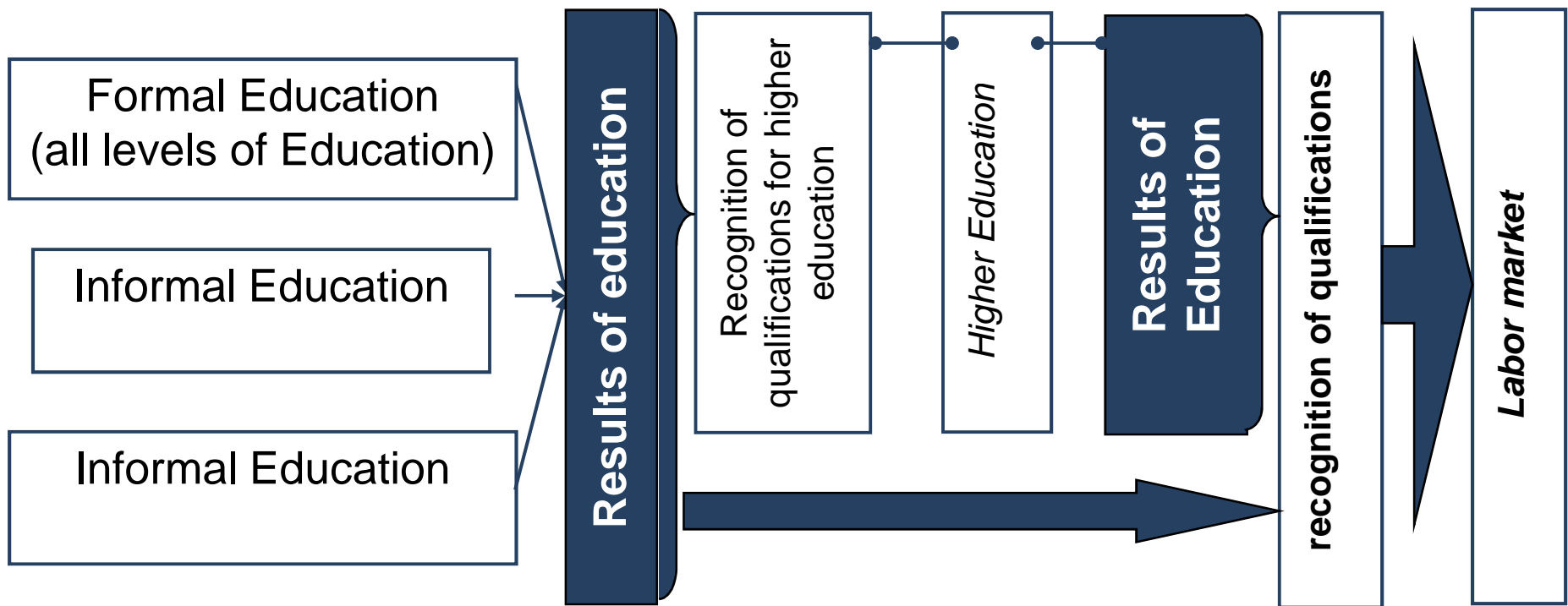
- In 2013 KazSEE was entered to the European Federation of National Engineering Communities (FEANI).
- This is facilitate to the registration of specialists in the field of engineering and technology, accredited standards-based Euro-Ace, in FEANI Register.



# International Trends in Higher and Engineering Education



## RESULTS OF LEARNING, EDUCATION WITHIN LIVE



Value for the learning outcomes and recognition of qualifications in the context of interaction of the education market and the labor market



# Strategy «Kazakhstan-2050» new political course of the established state



- **From the Address of the President of the Republic of Kazakhstan**

## *Priorities of the Higher Education Development of the Republic of Kazakhstan*

... development of modern engineering education and technical specialties with assignment of international certificates

... active participation in large-scale international research projects



***THANK YOU FOR ATTENTION!***

***THANK YOU FOR COOPERATION!***