



**European University Association (EUA)  
Institutional Evaluation Programme**

**TECHNICAL UNIVERSITY OF KOSICE**

***EUA EVALUATION REPORT***

***June 2006***

## **Contents**

<b>1. Foreword</b>	3
<b>2. Introduction</b>	4
<b>3. Constraints and Institutional Norms</b>	6
3.1 Profile of the University	6
3.2 Autonomy	7
3.3 Mission, vision, strategic plan	8
3.4 Quality Assurance	9
3.5 Governance and organisation	12
3.6 Finances	14
<b>4. Capacity for Institutional Change</b>	16
4.1 Teaching and learning; Study programmes, Student Care	16
4.2 Research	19
4.3 Internationalization, Bologna Process	22
4.4 The University and the Region	23
<b>5. Envoi</b>	24

## **1. Foreword**

The EUA Institutional Evaluation Programme was launched thirteen years ago with the aim of preparing universities to meet the emerging needs for external accountability by an increased capacity for both strategic thinking and internal quality culture. To date more than 120 universities from 36 countries have participated in this programme and some have subsequently asked for follow-up visits to monitor progress made. While the evaluation is focused on the institution as a whole a university may select an additional focus.

By reviewing institutions in different countries EUA hopes to disseminate examples of good European but also international practice, to validate common concepts of strategic thinking, and to elaborate shared ideas on quality that will help member universities to reorient their strategic development while strengthening a quality culture in Europe. During the review the university is helped to examine how it defines its medium and long term aims, to look at the external and internal constraints shaping its development, to discuss strategies that will enhance its quality while taking account of these constraints.

The goal of the review is to offer to the university an external diagnostic by university leaders who have experience of different higher education systems in Europe. This diagnostic considers the quality issues and the main actors in the university's daily decision-making process. EUA does not wish to provide the university with a blueprint for its development; rather the review process is consultative and should be seen as a tool to help institutional leaders as they prepare for change

The evaluation of the Technical University of Kosice is part of a systemic evaluation of Slovak universities commissioned by the Slovak Ministry of Education, jointly with the Slovak Rectors' Conference. According to the terms of reference the evaluation is taking place in the wider context of the Government's strategy of meeting Lisbon targets, the successful implementation of Bologna reforms and the need to increase the attractiveness and transparency of the university sector for the public.

In the case of each higher education institution EUA will evaluate and report on its institutional decision - making and strategic planning, internal quality processes, research capacity and progress in implementing Bologna reforms. It will examine in each institution the following areas:

Organisation and structures for carrying out the main missions of higher education institutions;

Effectiveness of internal quality processes and their relevance in decision-making and strategic planning;

Perceived gaps in the internal mechanisms, processes, and frameworks with recommendations for enhancing them.

The Technical University of Kosice is the first of the 23 Slovak universities to be evaluated and has requested a focus on Research Leadership and Management, with a secondary special interest in Internationalisation.

The EUA Review Team for the Technical University of Kosice consisted of Professor Alojz Kralj, former Rector, University of Ljubljana, Slovenia (Chair)  
Professor Gerhard Ackerman, former President, Technische Fachhochschule Berlin, Germany  
Professor Hans Peter Jensen, former Rector, Technical University of Denmark, Denmark  
Professor Don McQuillan, former Chief Executive, Irish Universities Quality Board, Ireland (Secretary).

## **2. Introduction**

The Review process consisted of several phases. The University first produced a Self-Evaluation Report (SER) prepared by the Self-Evaluation Steering Committee. The Committee consisted of thirteen members and was chaired by vice-rector Professor Anton Cizmar. Membership consisted of teachers and students, university and faculty leaders and administrative managers, the Bursar, as well as the general manager of SLOVALCO and the head of the department of regional development of the Kosice self-governing region. Under the general direction of Rector Professor Juraj Sinay the university organised the self-evaluation process with the involvement and the co-operation of a large part of the academic community.

The report arrived in good time, and was a useful source of information for the Review Team who very much welcomed the fact that the SER was posted on the TUKE Website. It included a clear and frank SWOT analysis that should prove to be a help in the preparation of the university's 2006-2010 strategic plan. Unfortunately, the SER gave no indication as to how the SWOT might be translated into a viable and realistic strategic plan. The team felt that the SER reflected the fact that it had been prepared on the basis of self-evaluation reports prepared by each of the nine faculties. These nine reports were presented as annexes to the SER and essential university information was often difficult to trace. It seems to the team that this, in turn, reflects the perception that TUKE is and operates as a loose confederation of nine faculties, indeed of nine 'mini universities', and therefore it is perhaps not surprising that the SER did not present a coherent picture of the university as a whole, was often repetitious and lacking in evidence-based analysis.

The Preliminary Visit took place on 8-10 March 2006. This enabled the Team to become acquainted with the University, with initial discussions centred in the areas of

- Autonomy
- Strategic Planning
- Research
- Students, Teaching and Learning
- Quality Processes
- Organisation and Governance
- Internationalisation
- Resources
- Capacity for Change

as well as identification of areas for more detailed questioning during the Main Visit.

Subsequently the Team requested and received further information and documentation in several areas including: funding flows at all levels, salary structure, publication lists with emphasis on publications in refereed international journals, samples of student questionnaires, list of organisational units in each faculty, list of laboratories per department, information on extra remuneration for research and other activities, the TUKE conception of a research university, the law concerning the establishment of research universities, the ARRA report on Slovak universities entitled “Assessment of Public Universities and their Faculties”, the document “Competitiveness Strategy for the Slovak Republic until 2010 – National Lisbon Strategy”.

The Team is highly appreciative of the efficient work done in the preparation and translation of the requested documents. They were ready in good time for the main visit.

The Main Visit took place on 14-17 May 2006. During the two visits the review Team met with the rector, the self-evaluation steering committee, vice-rectors, deans, vice-deans and administrators of all faculties, staff and students of all faculties including PhD students, heads of departments, senior members of the central office staff, directors of support units including the library and centre for computer and information services, staff from a number of support units, representatives from the Academic Senate both staff and students, and representatives of external stakeholders. Members of the Team visited eight of the nine faculties and toured the main locations of the universities.

The meetings were always helpful, friendly and frank. Throughout the University the goodwill and strong commitment were always in evidence. It was clear that the process of self-evaluation had been extensive because it was usually not necessary to explain our presence, and the goals of the evaluation, since they were well known in advance.

On the final day of the Main Visit the Team presented the oral report indicating the principal conclusions and recommendations to an audience that included University and Faculty leaders as well as students. This written report is a full exposition of these conclusions and recommendations.

We would like to acknowledge warmly the co-operation and hospitality we received throughout the two visits. We thank the Rector Professor Juraj Sinay, who signed the invitation letter to EUA, the vice-rectors and deans, who actively supported us during our two visits, and all the staff and students, as well as stakeholders from outside the university, for their helpful contribution to our open discussions.

We wish especially to thank Professor Anton Cizmar and Katarina Valentova for their efficiency in organizing the documentation, liaising with the review team and maintaining our daily schedule, no easy task in a large multi-faculty university. We trust that our joint efforts will together provide a sound springboard for the University as it moves into the next phase of its evolution.

### **3. Constraints and Institutional Norms**

#### **3.1 Profile of the University**

The Technical University of Kosice was established in 1952. In the intervening years TUKE has become an important provider of higher education in the East Slovakia region. In addition to a small Faculty of Arts (FA) the university offers a wide range of technical disciplines in eight faculties:

- Faculty of Mining, Ecology, Management and Geotechnology (FMEMG)
- Faculty of Metallurgy (FM)
- Faculty of Mechanical Engineering (FME)
- Faculty of Electrical Engineering and Informatics
- Faculty of Civil Engineering (FCE)
- Faculty of Economics (FE)
- Faculty of Manufacturing Technologies in Presov (FMT)
- Faculty of Aviation (FAv).

In addition TUKE has several university-wide departments, namely Languages, Social Sciences, Physical Education, and Engineering Pedagogy.

The university is located in Kosice, the most important city in eastern Slovakia. It is of note that this region has one third the GDP per capita of western Slovakia. TUKE is the second largest technical university in Slovakia. It is a national university with strong regional focus and responsibilities, utilising mostly national norms and values but with a clear aim of adopting EU and international norms and values so as to be comparable and competitive.

The main campus is in the northern part of the city and houses the Rectorate and the departments of seven faculties. The Faculty of Aviation is in the suburbs and the Faculty of Manufacturing Technologies is based in the town of Presov, 30 km from Kosice. A new Library Services Centre is under construction at a cost of Euro 5 million and will be completed in 2007. The buildings visited, which included the student halls of residence, are in good condition. The Team commends the on-going work of the university in refurbishing and further developing its infrastructure.

TUKE joined the Bologna process with the introduction of the first bachelor study programmes in 1993, nine years before this became mandatory in the Slovak Republic. All faculties have now adopted the three level model of higher education (as of September 2005), ECTS has been implemented and the Diploma Supplement is available to students. At present there are 14,479 students, with a projected increase to about 16,000 in the near future. The student to staff ratio is 15.85 to 1, which, though well above the standard 10 to 1 for Slovakia claimed in the SER, is nevertheless impressive by general European standards and gives scope for effective overall enhancement in the area of teaching and learning. This is particularly important given the very high drop out rate in some faculties during the first two years. According to the SER the graduates of TUKE are able to find employment in their professional field without major difficulties, although some students contradicted this. Graduates also find good jobs in the Czech Republic and other European countries. The official statistics show that unemployment after graduation is 3% as opposed to the national unemployment rate of 16.9%.

Each faculty offers a PhD programme but the number of students is small. The university has ambitions to develop its research but the SER is candid in its assessment of the present situation: 'The drawback however lies in the concentration of these projects within a certain group of staff and their uneven distribution within the university, which is the result of insufficient efforts (or abilities) on the part of some staff members to get involved and develop international challenging scientific as well as scientific-technical projects'.

According to the SER "co-operation with small and medium-sized companies remains problematic", and this is the subject of much criticism. On the national level TUKE has contracts of co-operation with more than 20 prominent Slovak companies as well as contracts of co-operation with Kosice Self-Governing Region, Kosice regional authority, etc. Of importance is the establishment of TECHNICOM, a Scientific and Technical Park, to support business development and technology transfer.

### **3.2 Autonomy**

The activity of the university is based on the Higher Education Act of 2002. It appears that the university enjoys a measure of autonomy comparable to that enjoyed by many institutions in Western Europe. Indeed it has autonomy in several key areas, such as:

- organising its internal structure
- appointing teachers and other personnel
- enrolling students in accordance with the national system
- managing finances and resources within the university
- organising international and national cooperation and exchanges, research initiatives and activities
- generating income from research and other activities.

Study programmes are subject to accreditation by the Accreditation Commission of the Slovak Republic. The final decision on whether to grant accreditation is made by the Ministry of Education. While this system of accreditation is common in parts of Europe it is by no means the norm internationally. Although it meets to a limited extent the need for the university to be accountable to society for the quality of its study programmes, it is a very limited instrument. We shall discuss this further in the section on quality assurance.

EUA supports strong university autonomy. The modern university finds itself in a rapidly changing environment and facing challenges that are by now well known: increased competition for scarce resources, massification of education, economic globalisation with the resulting demands from government and society for more and better trained graduates especially in the sciences, the need to establish improved research capabilities for assisting/underpinning national competitiveness. Autonomy is a necessary prerequisite for speedily responding to these challenges.

On the other hand it is well recognised in European universities that university autonomy is bound up with accountability to society, and that accountability brings with it the responsibility to drive the required change and improvement. Thus

universities must use their autonomy and independence for positive strategic development and involvement with society according to its expectations and needs.

The Team urges TUKE to keep these ideas in mind when considering its strategic plan and the recommendations for improvement contained in this report.

### **3.3 Mission, vision, strategic plan**

The SER lays out the mission of the university on pages 7-8. There is much that is good in the formulation and much that is perfectly appropriate to the work of TUKE. For example the aim “to become a research-led university established in the common European research and educational areas”, and the aim to “adopt the system of quality control management compatible with the systems being prepared in EU countries” are clear and to the point. The same can be said for the aim “to complete the implementation of the three level higher education at all faculties”. On the other hand there is little in the mission to distinguish TUKE from many other institutions. Granted that part of the mission is dictated by the statute, nevertheless there is a blandness and imprecision pervading the statement that fails to inspire.

The team recommends that the university look again in a critical and analytic way at where it wants to go in the years ahead, how it envisions its future in the regional, national and international contexts. We suggest that a task force be established to formulate an ambitious vision for TUKE with a corresponding mission statement and appropriate aims and objectives. The task force should take into account the experience and wisdom gained through the total EUA evaluation process. For this purpose it would be useful to examine the approach taken by other universities in formulating their vision and mission. It may also be helpful to note that the vision adopted in the twenties by Stanford when it was a very small and unknown institution was “to become the Harvard of the west”. It is important that the TUKE vision and mission gain wide university, community and regional support if they are to be successfully realized.

Following on this, the team suggests that the university develop a strategic plan, grounded in the vision and mission statements, designed to carry through the aims and objectives. We feel that the present long-term plan is not really a plan at all, but rather a list of desirable outcomes with no indication of how or when they may be achieved.

A Steering Committee responsible for the preparation of the plan should be established. A comprehensive and detailed SWOT analysis, a frank listing of the university’s strengths and weaknesses, together with the opportunities and threats confronting it in the medium to long term, provides a solid basis for the work. The SWOT analysis carried out for the SER, re-examined in the light of the above comments, would be a good point of departure.

Strategic planning has been described as ‘the continuous and collective exercise of foresight in the integrated process of taking informed decisions affecting the future’. It is essential that the university understand what is involved in the preparation of a strategic plan. A strategic plan is not a wish list, a mere collection of desirable outcomes with no thought given as to how these outcomes can be achieved. On the



contrary, the process of developing an effective strategic plan is complex and intensive. We suggest three basic questions to keep in mind:

Where is the university positioned now? Where does the university want to go? How does the university get there?

The first question will have been answered to a great extent in the preparatory work done on the vision, mission, and SWOT analysis. However it is important to emphasize that planning is a continuous process. Thus the plan itself, and the SWOT on which it is based, must be updated on an ongoing basis. This requires solid data to support conclusions and to position the university to meet new developments. The team recommends that TUKE establish a central unit for timely, efficient and cost-effective collection of data on all its activities. Such a database will serve the university and its various units well at no extra cost.

The second question addresses the vision and mission of the university, its aims, objectives and priorities combined with the SWOT analysis. A sense of ownership of the strategic plan throughout the university is essential to the success of the process. We suggest a bottom-up approach to start. In the first instance each of the nine faculties might prepare an agreed plan based on contributions from the individual departments. These plans could then be confronted with the university's vision and aims, and harmonised by the steering committee to produce an overarching strategic plan for the whole university. The plan should be discussed widely, and then finalised and approved by the competent governance bodies.

The third question asks for details on how the university will achieve its stated objectives. This is a complex and difficult task involving as it does repeated top-down and bottom-up debate within the university. Inevitably there will be competing agendas, and tension between the various elements of the university. No university finds it easy to arrive at the type of institution-wide consensus that is required if such a process is to have an effective and fruitful outcome. University and faculty leaders will play a vital role in bringing doubters along and in creating the conviction that the task is worth the effort.

Good organisation and agreed procedures are essential. The objectives should be prioritised, and each objective should be stated in a clear and unambiguous way. An action plan for the successful achievement of each objective should be established, responsibility for completion assigned, and allocation of required resources agreed. Each objective should have a time frame for completion and precise indicators of success should be set down beforehand.

While no one should be under any illusion regarding the difficulties inherent in the above process, experience elsewhere indicates that the University that carries through this task successfully, and mobilises its staff behind the effort, improves its overall performance, and by focusing on agreed goals makes better use of scarce resources, operates more efficiently, and is better positioned to face competition.

### **3.4 Quality Assurance**

The team discussed quality assurance with university staff and students in light of the information given in the SER. The Accreditation Commission conducts external reviews of study programmes for the purpose of accreditation. As we understand the

process the result of the review is a report that delivers a simple yes or no verdict on whether the programme achieves agreed minimal standards, and may include suggestions for improvement.

In addition the Quality Board of the university was established “in order to provide compatibility of the systems of governance of the University as a whole and of all the organisational units in the corporate organisational structure and processes, in compliance with the international standards EN ISO 9001 : 2000”. In our discussions it was agreed that the ISO process, focusing as it does on the university’s bureaucratic organisational arrangements, did not constitute a quality process in the sense of the Bologna Process.

The students evaluate teachers and courses via questionnaires but according to students we met this process appears to be sporadic with little or no follow-up or measurable effect on university, department or faculty performance. A further external measure of quality is provided by regular meetings between the university leadership and managers of leading industrial companies, where the knowledge and skills required of TUKE graduates in the labour markets are discussed. The information obtained may contribute to the creation of new study programmes. The Team commends this excellent practice.

The quality of higher education has emerged as a key element in the establishment of the European Higher Education Area, and in supporting national progress and competitiveness. Thus quality assurance is one of the main action items of the Bologna Process. In the Berlin and Bergen Communiqués the European Ministers of Higher Education committed themselves to supporting further development of quality assurance at institutional, national and European level, and stressed the need to develop mutually shared criteria and methodologies on quality assurance

They also stressed that the primary responsibility for quality assurance in higher education lies with each institution itself and this provides the basis for real accountability of the academic system within the national quality framework. They agreed that the national quality assurance systems should include evaluation of programmes or institutions that would involve internal assessment, external review, participation of students and the publication of results.

EUA proposes a coherent QA policy for Europe, based on the belief that institutional autonomy creates and requires responsibility, that universities are responsible for developing internal quality cultures and that progress at European level involving all stakeholders is a necessary next step. With the active contribution of students, universities must monitor and evaluate all their activities, including study programmes, research productivity, innovativeness, competitiveness, management, funding systems and services.

The procedures must promote academic and organisational quality, respect institutional autonomy, develop internal quality cultures, be cost effective, minimise bureaucracy and cost, and avoid over regulation. External quality assurance procedures should focus on checking, through institutional audit, that internal monitoring AND QA PROCESSES have been SUCCESSFUL AND effectively done.

For EUA, as for the Ministers of Education, the key elements in a QA process are:

- self-assessment by the unit being evaluated
- review and site visit by peers including external peers
- publication of the peer review report
- effective follow-up on recommendations for improvement
- minimal bureaucracy
- quality improvement
- involvement of students and other stakeholders
- evaluation at regular intervals.

We refer to:

‘Standards and Guidelines for Quality Assurance in the European Higher Education Area’ (ENQA Report).

Given that the Slovak Republic is a signatory to the Berlin and Bergen Communiqués, and that TUKE is a member of EUA, we suggest that the university establish an internal QA system based on the above principles. This should be a central component of the university’s strategic plan.

To ensure coherence and harmonisation across the university the team recommends that the guidelines and operational procedures for this important work should be agreed at university level and a Central unit established to organise and oversee the details of the procedures. Models are available in several countries.

In addition to this comprehensive quality assurance process the team urges the university to organise at once a systematic, transparent and routine procedure for the evaluation by students of teachers and courses. Feedback to students on the results of these evaluations should be timely, and follow-up procedures agreed. It is crucial that this process should be formative and directed at improving the quality of teaching and learning. This can lead to a continuing dialogue between teachers and students, an important element in developing a climate where real improvement can take place. In this connection we note that the SER points out that “student-teacher communication is insufficient and is still a weakness”. This process can be reinforced by obtaining feedback from graduates of the university and the opinion of employees on their performance and skills. Staff development is closely related to the points considered here and we will return to this topic when we consider Teaching and Learning.

Other procedures affect the quality of performance in a university. These include the appointment of new staff, the quality and number of the incoming students and the related issue of their formation and motivation. The staff to student ratio in the university is relatively low by standards elsewhere. With proper attention to staff development this has the potential to ease the required transition from a teaching to a learning culture in line with modern educational trends.

The SER refers to a problem with incoming students that is also evident in many parts of Europe, namely their poor preparation and lack of interest in mathematics and physics. This has become a threat to the university’s admission policy by reducing requirements for incoming students in some study courses. The team suggests that the university make common cause with the other Slovak technical and scientific universities and faculties to address this important issue. An immediate step that the

university can take is to provide tutoring and bridging courses to assist first year students.

The drop-out rate among first and second year students is worryingly high in many faculties, Economics being an exception. Several reasons were offered to explain this: the poor secondary preparation in mathematics and physics noted above, the inherent difficulty of engineering studies, the 'parking' phenomenon whereby some students enter the university for reasons unrelated to the completion of a study course, perhaps even for a relaxing year. A point worth noting in this context is that given the population trends in the Slovak Republic it is likely that competition for the best students is likely to become a factor, and in that scenario the university with an outstanding reputation for its quality processes may well have an advantage.

The team met with many students over the two visits and was impressed by their energy, enthusiasm for their studies and generally good command of the English language. They all agreed that they were glad they had decided to study at TUKE and were also happy with the IT arrangements in the university - slow but good they agreed.

The procedures for appointing professors appear to be quite open and transparent and totally in the hands of the university. It is essential that this important element of autonomy is maintained and that procedures are scrupulously applied. However we were told there is a problem in attracting first class candidates for positions because of the uncompetitive salary structure and the relative remoteness of Kosice. This in turn has led to inbreeding in some faculties with the consequent loss of the infusion of new ideas from the outside. A related problem is the loss of staff to industry where salaries are considerably higher.

Another important issue is the age distribution of the academic staff, with many professors and associate professors over fifty. While this is an obvious threat to the future pedagogical and research development of the university it presents at the same time an opportunity to direct the future development of the university by the infusion of new blood.

These are serious quality issues for TUKE, bearing as they do on the future development of the university and on the formation of the young men and women on whom the future of the country so vitally depends. They are of course related to the level of financing provided by the government and we shall take up this matter in the section on finance.

### **3.5 Governance and organisation**

By law the academic self-government bodies of TUKE are the Academic Senate, the Rector, the Scientific Board and the Disciplinary Commission. The senior financial officer is the Bursar. There is also a Board of Trustees. The Rector manages the university and is accountable to the Academic Senate as well as to the Minister. This organization is reflected in each of the nine faculties, where the Dean is the manager. The Academic Senate is the highest body of the academic administration of the University. It is composed of 26 elected members, 10 of whom are students, with each faculty having equal representation. The rector, vice-rectors, deans, vice-deans

and bursar may not be members of the Senate by law. Other bodies include the University Management Board composed of the Rector, vice-Rectors, Bursar and Chairman of the Academic Senate, and the Rector's Advisory Board composed of the faculty Deans, vice Rectors and some others.

It is clear that the university has a solid democratic basis and that it is proud of this. Decisions are reached through a process of wide consultation leading to consensus. However given the number and variety of official and unofficial groups contributing to the decision-making process the Team asks if TUKE is able to respond adequately, and rapidly enough, to the challenges facing the modern university that we outlined above: increased competition for scarce resources, massification of education, economic globalisation with the resulting demands from government and society for more and better trained graduates especially in the sciences, the need to establish improved research capabilities for assisting/underpinning national competitiveness. The drive for consensus in such an extensive consultative procedure may lead to delayed decisions and compromises that are ultimately inimical to the best interests of the university. The Team feels that by exploiting the opportunities left open in the Higher Education Act the university can accelerate its decision-making procedures in order to face the challenges posed by a globalised society and economy while at the same time retaining its valued sense of solidarity.

The role and functions of the Academic Senate are extensive by law. For example the Senate:

- Appoints the rector
- Approves the budget presented by the Rector and supervises the use of the finances of the university
- Approves the long term strategy of the university
- Approves the annual report on the activities and economic management of the university presented by the Rector
- Submits an annual report on its activity to the academic community of the university.

Thus, grounded in the high level of autonomy vested in the university by Slovak society, the Academic Senate has wide-ranging powers in the academic, financial, strategic and management affairs of the university. The team believes that this situation would be seen as quite unusual in some countries, including the United States, where the academic community has control of academic affairs while the overall responsibility for the conduct of the university lies in a body similar to TUKE's Board of Trustees, but one with wider representation and appropriate powers and responsibilities. In such a system it is felt that autonomy is balanced by public and transparent accountability to the society that maintains the institution. It also avoids a clash of interests and makes full use of the expertise of the members of both bodies to best advantage.

The historic development of the university has created a situation where great independence is given to the faculties, with a corresponding diminution of power at the centre. Faculties are strong with much power devolved to them both by law and the university statute. This 'fortress faculty' phenomenon is not new nor is it restricted to this university. Nevertheless the team feels that in the present climate of change and renewal, and with the challenges presented by Slovakia's entry into the EU, it is

important that the centre of gravity should move toward the Centre and that the academic community works more as a unit than seems to be case at present. There is plenty of leeway in the law and the statute for such a healthy development to take place.

There are too many departments and laboratories in the university, leading to a loss of focus, the creation of barriers to co-operation and interdisciplinary work, and hindering the creation of critical mass in research groups. The number of departments and laboratories should be reduced. On the other hand some important disciplines are fragmented across the faculties. These include mathematics, physics and IT to name three examples. There is a loss of synergies by this fragmentation and a serious loss of both teaching and research potential. It is perhaps of interest to note that great institutes of technology almost invariably have outstanding mathematics departments, for example the institutes of technology of Massachusetts and California. We recommend that AFAD consider amalgamating each of the disciplines of mathematics, physics and IT into a single department of the university.

There is a final point that the team wishes to make here. It seems to us, based on our experience in TUKE, that the Ministry is too close to the higher education institutions in Slovakia in terms of their day-to day processes. In the SER, and in our conversations with staff, reference was made time and time again to the Ministry and the law, and to the many changes in the law over the years.

Some countries have found that creating a statutory organization as a buffer between the Ministry and the institutions has had a beneficial effect on higher education. This organization receives the higher education budget from the Ministry and is then responsible for its distribution among the institutions. In this scenario the Ministry becomes the policy maker in higher education instead of the day-to-day paymaster and watchdog.

### **3.6 Finances**

In 2005 the allocation from the Ministry of Education to TUKE, according to the SER, amounted to 899,434,000 Slovak crowns (23,423,000 Euro). In 2006, according to the document 'Money Flows' supplied to the Team prior to the Main Visit, the allocation was 790,784,000 Slovak crowns (20,575,000 Euro). This represents a decrease of more than 12%. In recent years the investment in higher education in Slovakia, as a percentage of GDP, has been running between 0.6 and 0.8, and investment in R&D has shown a downward trend ( for example a decrease of 9.7% from 2003 to 2004). These figures are extremely discouraging to the higher education sector and place Slovakia among the lowest spenders on higher education among EU countries.

Some encouragement for the future can be gleaned from the National Lisbon Strategy document which states that "Slovakia must not only become a knowledge based economy, but also a knowledge based society". The team urges the university to act on this. We recommend that TUKE, working in concert with the other universities, the students, the Conference of Rectors and the business community, initiate a comprehensive campaign with the important goal of gradually achieving EU-level funding for universities and R&D in Slovakia.

The state allocation is based on a variety of student and research parameters. Approximately the same parameters decide the amounts distributed to the faculties with the final decision based on negotiations between the main players and “taking into account the principle of solidarity between the so-called older faculties and the developing faculties”. The faculties pay the salaries of staff and in general run their own financial affairs, each with its own finance office and banking account. The rules for distribution of funding to individual departments vary from faculty to faculty but in all cases are transparent (source: Amendment to Self-Evaluation Report). In 2005 the Centre received 11.9% of the state allocation for current expenditure and 5% for capital expenditure. There appear to be no fast-track funds earmarked for seed support of new initiatives.

Smaller amounts were obtained from student fees, other ministries, grants from national research agencies, a variety of research projects and entrepreneurial activities, as well as grants under the 5<sup>th</sup> and 6<sup>th</sup> EU framework programmes. In 2005 these sources accounted for 23.9% of the total budget. There are regulations on the overheads paid to the Centre by departments and faculties on monies earned from grants and projects.

The team feels that the present system whereby each faculty has a finance office and pays salaries is an inefficient use of scarce resources and is an outdated throwback to former structures when each faculty was independent. In the interests of efficiency, accountability, transparency and prudent use of resources we recommend that financial affairs be centred in the Bursar’s office.

The team received detailed information on the salary structure in TUKE. In addition to the basic salary staff members can obtain bonuses on the basis of a long list of criteria, criteria which we understand may vary from faculty to faculty. These criteria include: personal allowance, up to 100% of salary, for meritorious service; managerial allowance; award for high quality performance, and so on. It seems to the team that this is not a good system, is harmful to the solidarity sought by the institution, and can lead to serious friction between individual staff members. We recommend that the salary system be simplified and based on output, achievements and performance.

TUKE, like all universities today, is trying to generate and raise income from sources other than state budgets and student fees. The Team commends such initiatives and encourages the university to pursue this and other avenues. Extra funding from external sources faces stiff competition and we shall return to this in the section on research.

Of course problems arising from under-funding will not be solved only by income generation. It is also necessary to make optimal use of existing resources and to make every effort to seek ways of reducing expenditure and to increase the cost/benefit ratio. In this context the Team draws the university’s attention again to the duplication of effort across the nine faculties in areas of administration as well as in academic and research related activities.

It may be of interest to note ways in which many universities around the world have generated extra funding, however modest, through making use of their academic expertise and their good will in the community. Many universities have formed a

University Fund Raising Committee to seek funding in a systematic fashion. These committees are often highly successful in attracting money to the university, and especially in obtaining support for special projects. Here the good will already established by TUKE in the wider community could be important in attracting prominent people of influence to serve on such a committee. This activity will also help to strengthen the external image and awareness of the university.

The university is already involved in joint research projects, both local and international, and we recommend that this important activity be better tuned, continued and expanded. These activities are, of course, pedagogically and scientifically important in themselves, but can also be important sources of funding.

## **4. Capacity for Institutional Change**

### **4.1 Teaching and learning; Study programmes, Student Care**

Teaching and learning, and student care, should form a key element of the strategic plan. The plan should be clear on the goals to be achieved and the action plans necessary to realise the goals. This work should proceed in tandem with the speedy development of an overall quality assurance process, with the active co-operation of the students.

There appear to be underlying issues that need to be addressed. The drop-out rate is unusually high in many faculties. The possible reasons for this have been noted previously. While the university has begun to initiate measures to alleviate the situation the Team feels that there is no sense of urgency among the faculties involved. The university admitted these students in the first place and so has a responsibility and duty of pastoral care to them. Apart from the human aspects of this problem there is a waste of very scarce resources.

In our meetings with students there was reference to lectures that were ex-cathedra with no student class participation, old-fashioned material in lectures, no required reading and a dependence on notes. Many students spoke about courses that they believe are too theoretical. The SER points out that 'quite a number of teachers have still not understood to change the teaching patterns of bachelors in accordance with the Bologna process'.

As we noted in the section on quality assurance there is no systematic attempt to elicit student opinion by means of questionnaires, and when questionnaires are used there is often no feed-back and no corrective action taking place. Thus students find it difficult to have their views heard and discussed.

Of course these issues are not unique to TUKE but they suggest that the university would be well served by a re-assessment of its approach to the whole area of teaching and learning. There is a need to adopt a new mindset, now common in many universities, with a move from a teaching oriented system of instruction to an emphasis on student learning. We propose that the university proceed with the implementation of this important initiative. The good student to teacher ratio should help to facilitate the process.



Formal lectures should be reduced and augmented by well organized and supervised self-study and group-study assignments, by tutorials, workshops and an increase in project work. Of immediate importance is the introduction of a formal system of student questionnaires for the assessment of courses and teachers, with timely feedback to students of actions taken. The process should be supportive and formative and lead to a continuing dialogue between teachers and students. As we noted earlier, it should never be used to apportion blame for perceived weaknesses. It is an important element in developing a climate where improvements can take place. This will also have a long-term positive effect on the process as a whole since students will become convinced that their views are being taken into account.

Staff development is central to the points considered here. We stress that it is of the utmost importance that training in teaching and modern presentation should be available to the teaching staff. This is particularly true of teachers who have been working in the non-university sector and come to teaching later in their careers. The new emphasis on learning will highlight the necessity to provide guidance to staff members in new methodologies, in modern methods of communication, and in mutually beneficial interaction with students. The introduction of an effective sabbatical system for staff, allied with an exchange programme with foreign scholars, will be helpful here and provide useful benchmarking on international practice.

These initiatives will require a structured approach, good organisation, and systematic funding. We recommend that the university establish a special unit with responsibility for staff development and training, as well as various support services in relation to new and experimental ways of teaching/learning.

Modularisation of courses, with a sufficient range of elective subjects, is a development that can have a profound effect in many areas of university life and is indispensable in the effective implementation of many of the Bologna reforms. We urge the university to take full advantage of this course structure since it will smoothe the way for many of the developments planned by the university.

At postgraduate level it will simplify the structuring and organisation of interdisciplinary studies for both the students and the university, and may point the way to new combinations of subjects for interdisciplinary and multidisciplinary work. At undergraduate level it opens up the possibility of a more effective use of resources by identifying or indeed creating courses that could be regarded as basic or core courses for all or many students in different faculties. This of course relates to the creation of university departments of mathematics, physics, etc. In this context the Team congratulates the university on the establishment of a single department of languages.

The process of examining closely the desired outcomes of programmes and courses, followed by a breakdown into coherent modules, is a fruitful exercise in itself and by its very nature contributes to a review of curricula. A clear and concise description of the content of each module, with a statement noting the required prerequisite modules, is a necessary element of the process.

Modularisation will also play an important role in making the high standards and quality of TUKE's teaching activities transparent to its students and indeed to the

public at large. We suggest that each faculty student handbook should include a description of the content of each module taught in each semester in each course, properly organised and with prerequisite modules clearly indicated. The handbook should contain an explanation of the overall aims, learning outcomes and purpose of the courses on offer, benchmarks for student learning and achievements each year, clear guidelines on written and project work, principles on marking and feedback to students. Many universities now include a set of Student Rights and Responsibilities in their handbooks, and examples of these are easily found on the Internet.

These ideas are not new to TUKE but we suggest that a systematic and coherent approach should be organized by setting up a Curriculum Committee to oversee the work. This approach has been used in other countries to very good effect.

The university has introduced several of the innovations recommended in the Bologna process. ECTS and the new 3-5 degree structures are now firmly established. The SER admits that “the bachelor study programmes appear to be problematic with respect to graduates’ employability and requirements they need to meet, due to the lack of experience in practice and theory at TUKE. Similar problems have been encountered in the bachelor’s degree elsewhere where it appears that the new degree was simply reshaped to fit the first three years of the old five-year course. This can lead to graduates with strong theoretical knowledge but unequipped with the applied training and skills expected of them in the labour market. We understand that the ECTS system is working well, certainly for the students bringing credits back from a study period abroad. However TUKE students, like students in many countries, complained about the high cost of living abroad.

We commend the university on the creation of the Institute of Life-Long Education and the General Interest Study of the Third Age. A related important activity is distance learning. Joint action with other universities might be a good way to initiate this activity and we encourage the university to further develop its ideas in this direction. This can be seen as part of a worldwide focus on the role of universities in the creation of what is being called a ‘learning society’.

The team was impressed by the university’s provision of student support services such as the Access Centre for disabled students, the Centre for drug prevention and counselling, the student information and consultancy Centre, as well as the students’ television, art and sports clubs.

The SER observes that there is a lack of interest among students in the affairs of the university, and in our discussions with students of every faculty we found this to be the case. It was a surprise to find that there was no student union, and students had never heard of ESIB, the international association of national unions of students. Whatever the reasons for this it is a serious matter and TUKE should not ignore it. ESIB is an important player in European higher education and students of TUKE could learn much from it. The ongoing involvement of students, through ESIB, in the development of the Bologna Process is destined to increase over the coming years and Slovak students should be contributors to this work. We recommend that the university take the initiative and commence discussions with the students with the view to establishing an independent student union which will in time become a member of ESIB.

We would like to suggest that student care can extend to the life of the students beyond graduation. The University should consider a systematic process for tracking its graduates and creating a database on what they do, where they go, their opinion on teaching and courses, and so on. This would be mutually beneficial since it would maintain the link between the graduates and the university and at the same time provide valuable information for curricular reform and care of undergraduates. A University Alumni Association already exists and this should be developed further and strengthened. It will maintain and fortify contact with graduates and strengthen the good will in the community toward the University. This process of maintaining effective close contact with graduates embeds the University further in the community, and in turn will be helpful to new graduates in finding employment.

The Team is aware that TUKE graduates have little difficulty in finding employment at the moment, but nevertheless it may be of interest to note that many universities have set up a 'Careers and Appointments' Office. This would be an extension of the university's successful Career Counselling Centre. The remit of such an office usually includes the following: establishing contact between students and industry for the exchange of information on posts available and graduates qualified to take up the posts, helping students to prepare for interviews, inviting employers to speak to groups of senior students on employer expectations, arranging interviews, and building up a data base on its activities. This is another effective way to embed the University in the working life of the community and maintain contact with graduates and employers. In addition it will help in arranging and organising the internship programme.

#### **4.2 Research**

The university hopes to become an important contributor to international research activity at the highest level. At the moment however research activity is quite restricted and involves only a small percentage of the staff. The SER is frank about the situation. The SER also highlights the insufficient infrastructure equipment for research and the lack of funding for R&D. The Team emphasises again the urgent need to increase significantly Slovak investment in R&D and higher education.

Research is funded from the state budget, and by projects supported by the Ministry, the State programme of R&D, APVV (R&D Assistance Agency), VEGA (Slovak Grant Agency for Science), KEGA (Slovak Cultural and Education Agency). Some R&D projects were also funded by private companies such as Volkswagen, Siemens, Skoda Auto Mlada Boleslav, etc. and by the 5<sup>th</sup> and 6<sup>th</sup> EU framework programmes. The 6<sup>th</sup> framework programme brought in 2,700,000 Euro. The team notes that, in the 7<sup>th</sup> framework programme, Slovak institutions will have to compete on an equal footing with the rest of Europe,

There appears to be very little attempt to organise research on a coherent basis, be it in departments, faculties or across the university in interdisciplinary work. The SER states that 'there is no legislative restriction related to creating or closing down research laboratories. The only restraint that exists is the staff's attitude and their lack of willingness (the result of former legislation) to create big research teams for developing challenging research and scientific projects. Preference is given to

subjective and personal ambitions of staff, thus smaller, less extensive projects within the departments of the faculties.'

It is obvious that research performance and organisation must be improved significantly if research in TUKE is to achieve the status that is needed to compete in the present research climate, and to underpin the quality and competitiveness of doctoral studies, particularly in the international arena. Research is essential for building the reputation of TUKE but, due to limited resources, priorities must be selected and agreed upon. Membership of the European Union is presenting new and possibly lucrative research funding opportunities, but success will depend on meeting high performance standards.

The university's strategic plan must address research priorities and research organisation in a realistic way. The research strategy should be specific to the institution rather than a generic one, formulated by the top management in consultation with the faculties and groups of departments and well accepted by them. It is crucial that the faculties should internalise such planning, assume ownership and implement it. Otherwise it is doomed to remain a show-piece document. Several iterations may be needed to reach a final document, and this ought to be generated fairly quickly to avoid the impression that it is an everlasting exercise. Long term hopes and short term needs are to be reconciled. As we said before, action plans, including timing, resources, actors, ways to overcome difficulties, performance indicators should complement these strategies.

Central to these developments is the creation of research teams with critical mass. This implies in particular that the large number of laboratories must be reduced in order to accommodate the new activities. Only in this way can the university compete on a sustained basis for international and EU research funds, something it must do if it is to be regarded as a top research university and be in a position to contribute to regional and national development.

Several steps can be taken to improve the research profile of the university, and to drive research activity and applications for foreign grants:

- Re-examine research norms and values to bring them into line with European good practice, as outlined by ESF and NSF
- Use commonly accepted international research and development performance indicators
- Benchmark against selected leading universities to develop good practice
- Establish a Research Support Office. This office could create a research data base and support staff in compiling first class research proposals
- Provide adequate seed and reward money from the University budget to start and support promising research initiatives and outstanding achievements
- Join on a wider basis with other university research initiatives for larger EU grants.

To drive and harmonise the research effort some universities establish a small research management team at the Centre, headed by a vice-rector for research, to build expertise over time. The responsibilities of this team might include:

- establishing an environment conducive to research and providing back-up
- guiding academic units /members to develop strategies, institutional priorities

- negotiating and approve grants/contracts
- acting as industrial liaison
- arranging for intellectual property rights
- assisting knowledge transfer
- managing donations and fundraising
- running the financial management of awards
- allocating internal funds
- commercializing / disseminate research findings
- providing for ethical clearance
- appraising research performance

It is the opinion of the team that all staff members need to gain new perspectives by spending time in a foreign university. We therefore recommend that TUKE establish an effective sabbatical year system and other mechanisms to allow staff to spend time abroad. This is especially important for staff who have been hired by the university immediately on graduation. In many countries colleagues facilitate this process by taking over the teaching duties of the person going abroad. This system works well when courses have been properly modularised.

Balancing a staff member's time between research and teaching is a perennial problem in all research universities. At the moment it appears to the team that there may be a certain amount of over-teaching in the university, partially due to the large number of entirely separated study programmes with resulting duplication of courses. The change to modular courses as well as a move to a more learning, as opposed to a teaching, environment will certainly contribute to achieving the needed balance. In this context the university should take action on what the SER describes as 'the private business activities of the staff'.

The number of PhD students at TUKE is small. The university has a total of 308 PhD students, with 114 full time doctoral places for the year 2006. As the work to increase the quantity and quality of research output goes ahead this must be matched by an increase in the number of PhD students. Care must be taken however to ensure that the accepted European criteria for PhD mentorship, as outlined by EUA and ENQA, are observed.

In the context of international competition for research funding we suggest that the university should seek to strengthen international acceptance of its PhD graduates. The following measures might assist in achieving this goal:

- Joint PhD programmes supported by the EU
- Use of external co-referees and evaluators
- Publication of results, especially of PhD research achievements, in international refereed journals,
- Systematically stimulated and rewarded attendance at international conferences.

Related to this is the issue of post-doctoral studies. According to the SER this is a category that does not exist at TUKE. The university aims to remedy this situation and the Team expects that this will be one of the action items in the strategic plan.

### **4.3 Internationalization, Bologna Process**

The university has partnership relations with many universities in Europe, including AGH in Krakow, BUGH Wuppertal, RWTH Aachen, University of Gent, TU Vienna, TU Budapest, Vaasa University Finland. There is collaboration with 26 universities within the Association of the Carpathian Region Universities founded by TUKE, as well as membership of the Danube Rectors' Conference and EUA.

The university has established the Office of European projects, and the Team commends this initiative. The head of the office is a delegate of Slovakia in the EU in the field of Information society technologies. Several staff members have participated in international scientific and technical projects funded by the 5<sup>th</sup> and 6<sup>th</sup> Framework Programmes, the Socrates, Erasmus and Leonardo da Vinci Programmes, etc.

In the Bologna Process three action items have been emphasised for the creation of the European Higher Education Area (EHEA). Quality assurance is the first of these and we have discussed the creation of a robust QA system in TUKE earlier in this report. The second is the adoption of a degree structure on two main cycles. The university is to be congratulated on having this system already in place. The third is the mobility of students and teachers.

In this regard the European Ministers of higher education state that 'mobility of students and academic and administrative staff is the basis for establishing a European Higher Education Area. Ministers emphasise its importance for academic and cultural as well as political, social and economic spheres, and agree to undertake the necessary steps to improve the quality and coverage of statistical data on student mobility'. In particular they stress the important role played by the European Credit Transfer System (ECTS) in facilitating student mobility and they appeal to institutions and employers to make full use of the Diploma Supplement. Again TUKE is quite advanced in these areas.

From the information provided by the SER and from our meetings with staff and students the Team feels that much has to be done to improve on the international mobility of staff and students. Under Socrates/Erasmus programmes in academic year 2005/2006, 36 teachers went out and 36 came in, while 75 students went out and 15 came in.

Several factors were suggested to explain the small number of students from abroad: the absence of a university-wide marketing strategy, the narrow range of study programmes in English, the need to approach international students individually, the impossibility of studying at different faculties at the same time, the limited number of academic staff capable of teaching in English. In addition there is the issue of the visibility and image of TUKE on the international scene.

The TUKE Foreign Office manages international affairs with a staff of six. Considering the good work done by the Office up to now under difficult circumstances and the experience acquired, the review team recommends a number of steps to give international relations the place they must occupy in the European and world context:

- Include in the university strategic plan an international university policy for the next five years with all university components (faculties, departments, research

centres), based on the work already done, on effective contacts, on scientific priorities, on geographic areas, etc.

- Allocate a fund to the Foreign Office to promote existing/new actions. Confirm the central role played by this Office in implementing the university international policy in cooperation with all university components
- Develop a systematic policy of information to the university community (on European programmes, networks, scholarships, ECTS, 7th Framework, Bologna process, Erasmus Mundus, etc)
- Define the strategy and targets to be reached concerning the increase of the mobility of students and teachers and also administrative staff; create more motivation utilising the experience of former Erasmus and Leonardo students; make sure that all PhD students spend a study period abroad; develop a sabbatical programme for TU teachers with foreign universities and systematic exchanges
- Provide more foreign language and skills training for staff, students and administration.
- Support the University's goal of providing high standard study programmes in the English language.
- Collect centrally all data at all levels on international actions in order to follow their evolution, their results. Use this monitoring (this log-book) to have a clear view of TUKE's presence in Europe and in the world.

#### **4.4 The University and the Region**

The SER states that 'in the field of regional development, technology transfer, co-operation with industry and development of business activities the aim of TUKE is to become a business-oriented university.' It has clearly made a good start in its efforts to achieve this aim.

The Institute of Regional and Communal Development has been established to support this objective. TUKE has signed contracts of co-operation with more than 20 prominent Slovak companies as well as with the Kosice self-governing region, Kosice regional authority, and the town of Kosice. As we noted already it conducts R&D projects funded by private companies, such as Volkswagen, Siemens, etc.

Support for technology transfer is provided by the Scientific and Technical Park, Technicom, which includes integrated laboratories, the Institute of Life-Long Learning, the TUKE Incubator and the Institute of Forensic Engineering. There are plans to erect a building in the scientific park and to secure a building permit on the TUKE campus. The university also responds to new trends in the development of Slovak industry, such as the automobile industry, technology of plastic processing, information technology, etc.

The Team applauds these varied initiatives undertaken by TUKE. We urge the university to continue to strengthen contact with companies in the region for mutual benefit. Special emphasis should be placed on creating conditions for knowledge transfer, on assisting young entrepreneurs starting new companies, and on promoting faster development of existing SMS companies. The SER notes that 'co-operation with small and medium-sized companies remains still problematic.' No reasons are offered to explain why this is the case and no plans are suggested that might improve relations. We urge the university to begin a dialogue with representatives of these

companies with a view to resolving this issue. Obviously it is in the best interests of both sides to do this.

As a concrete way to improve contact with regional companies and, at the same time, prepare students for the world of business we recommend that TUKE introduce modules on intellectual property protection, entrepreneurship and company start-up. These topics could also be offered to the wider public as life long learning programmes. Local businessmen and entrepreneurs could be invited to talk to the students and give them the benefit of their experience.

To give students practical experience of the real world of work and also cement relations further with local businesses we recommend that the university introduce a student placement system as part of the degree.

## **5. Envoi**

We wish to thank the University once again for its generous hospitality and for the excellent arrangements provided for the Review Team. It was a pleasure to be in Kosice to discuss with students and staff the future directions of the Technical University. At this time of profound and far-reaching change in higher education, the University is to be congratulated for its frank and open examination of its ability to meet the challenges and opportunities that lie ahead. In all our meetings we were struck by the strong determination to see the University achieve its full potential as an institution of high international standing. We hope that the University finds our comments and suggestions helpful, and we wish the University well for the next stage of its development.

30.06.2006