Evaluation of the Hungarian Technology Foresight Programme (TEP)

Report of an International Panel

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Evaluation of TEP

1 Introduction

This document is the final report from PREST, University of Manchester with the support of an international evaluation panel (see Annex 1) invited by the Research and Development Division of the Ministry of Education to evaluate TEP – the Hungarian Technology Foresight Programme. The terms of reference of the evaluation were:

i) To answer the question as to what extent TEP has achieved its objectives; and
ii) To help orient decision-making on future foresight activities in Hungary.

The approach taken by the panel was as follows:

- The evaluation panel designed a questionnaire that was distributed to participants in TEP and produced 62 responses, two thirds of whom were panellists or members of the Steering Group, with the rest being experts or government officials (see Annex 3).
- Twenty two senior stakeholders in the exercise were interviewed by the evaluation panel, in two cases more than once (see Annex 2)
- A substantial amount of the documentation, including panel reports, was translated into English and read by the Panel.

We would like to record our thanks to the Hungarian Foresight Secretariat for their excellent efforts in supporting our work through provision of material and arranging meetings. Our thanks also go to the participants in TEP and its users for the valuable contribution they made to this evaluation by sharing their views and knowledge with us.

2 Key findings

2.1 Management and methodology

Overall it may be concluded that TEP was efficiently and intelligently managed.. On the positive side this was the first experience of a full-scale national foresight programme in a transition economy A careful pre-foresight stage examined in detail foreign experiences, participants were trained in what they had to do and a well-staffed TEP office appears to have worked harmoniously and produced all of the deliverables that it was expected to. The combination of a talented young manager and an experienced Chairman from an industrial background formed an excellent basis for the central team. At the same time TEP introduced innovative features by international standards, notably the use of macro-scenarios. **Some questions may be raised about aspects of the design.** The design features of TEP that reduced its potential and actual impact were beyond the control of its managers and Steering Group and were not a consequence of methodological choice or implementation. Rather, as we shall explain, they concerned the setting in which the programme was

placed. . It is hard to see what else could have been done or how it could have been done differently.

In general survey respondents were positive about all the main features of the methodology employed. Macro-visions (90%), Workshops (84%) and Panels (83% were overwhelmingly rated useful or very useful. A substantial majority of interviewees singled out the **macro-scenarios** as a particular success of TEP. They have continued to be used (see below). Those most enthused by them described them as both professionally and methodologically excellent with a clear structure that could be used for making decisions and identifying key points. The most critical comment received was that while they were made up from useful elements, in aggregate they were too extremist or utopian conceptually. However, the consensus is that this was an innovative and useful approach.

The **Delphi survey** attracted some criticism but was still regarded as at least useful by 70% of respondents. The main negative aspects of the Delphi were its length and complexity. The experience was typical in that pressure from the panels led to a larger number of topics being included than advised, with negative consequences in terms of the time taken to complete a form, and hence the response rate. On the positive side the Delphi acted as a discipline for the panels. The process of formulating topics and statements gave them a structure to work in and helped panels to confront issues such as the balance between technological and social issues. There seems to be a consensus that the panels could have made more use of the data which was generally underexploited, both for reasons of timing and because of the lack of expertise available for sophisticated analysis.
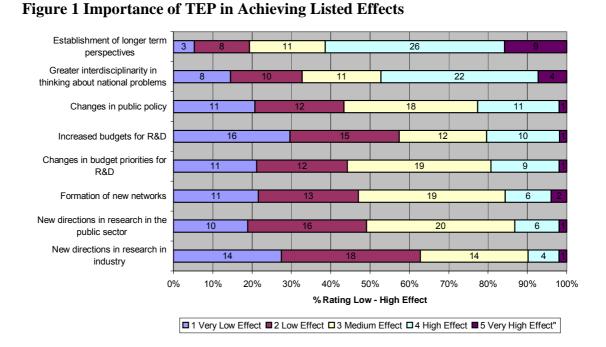
Participation in panels appears to be broadly-based but some questions may be raised as to how active the participation by **industry** really was. One explanation we heard was that TEP took place at a time when industry in Hungary was not accustomed to change or to communicating its perspective. By contrast academic researchers were in a better position to drive through their opinions and interests. The view was also expressed that industry had become involved in dialogue after the transition but then became disillusioned at the lack of follow-up actions in response to the recommendations. Another factor may have been the fairly macro/policy level emphasis of TEP which may have been at too general a level for some industrial interests who would have preferred an exercise focused solely on technology priorities.

A further problem area, which remains an issue for the future, is that the **high degree of foreign ownership of larger firms** means that technology strategy is not set in Hungary and therefore there is not an obvious base to connect to foresight activity. On the other hand SMEs, in Hungary, as elsewhere, are preoccupied with short-term issues and above all with survival and hence find it difficult to find either the time or the capacity for foresight, however much they need it. This has been a problem for foresight in most countries and no easy solution is available.

Several interviewees expressed the view that more **young people** should have been involved because it was "their future" but this view was also qualified by the experience that young people were not necessarily interested in strategic thinking.

According to the survey, panelists were generally satisfied with **communication** between themselves and with the **sequence and timing** of activities. However, more detailed evidence indicates that there would have been benefits had the macro-scenarios been available earlier to guide the panels. A significant minority (38%) were dissatisfied with the **quality of information** available to participants. The programme managers saw this problem as being mainly focused on cross-cutting issues. Workshops were held for leaders and panel secretaries to identify common points. Successes in this include the significant role of education, environment and social background identified by the health panel.

Some broader design features could be questioned – for example the lack of a panel on finance but we understand that efforts made to formulate one failed because of lack of interest from the sector.

2.2 Impact and effects

Figure 1 Importance of TEP in Achieving Listed Effects

	1 Very Low Effect	2 Low Effect	3 Medium Effect	4 High Effect	5 Very High Effect"
Establishment of longer term perspectives	3	8	11	26	9
Greater interdisciplinarity in thinking about national problems	8	10	11	22	4
Changes in public policy	11	12	18	11	1
Increased budgets for R&D	16	15	12	10	1
Changes in budget priorities for R&D	11	12	19	9	1
Formation of new networks	11	13	19	6	2
New directions in research in the public sector	10	16	20	6	1
New directions in research in industry	14	18	14	4	1

% Rating Low - High Effect

Cultural change

Survey respondents were asked about how important TEP was in achieving different types of effects (Figure 1). **It may be seen that the most important effects were mainly in the area of cultural change – in establishing longer-term perspectives and introducing greater interdisciplinarity.** Questionnaire respondents were quite negative about the effects achieved in terms of the original objectives, particularly in influencing the research directions of industry or the public sector. Qualitative comments from the questionnaire were on similar lines, with the main emphasis being a welcome introduction of longer-term thinking during a period when the country was dominated by a short-term agenda (partly because of economic difficulties but also as a reaction against long-term planning of a previous era).

Changes in Public Policy

The effects on public policy appear to have been much greater but were missed by initial analyses because they took much longer than expected to materialize – as one interviewee who was a policy user put it "a slow and non-linear process". In keeping with the above points about cultural change, our interviews indicated the following effects:

> "Results were used in the Prime Minister's Office when policies were being made – an effect visible at the time of the last elections"
>
> "Many statements in the current transport policy on the Ministry's website echo passages from TEP"
>
> "Exact sentences from TEP are readable in the Ministry of Health's revolutionary national programme to improve health status"
>
> "All three of the alternative visions in the Health report have seen some movement in terms of implementation"
>
> "A new Act embodies the recommendations of the IT, Telecommunications and Media panel"
>
> "Recommendations from the Natural and Built Environment panel did not create many changes but there were some specific ones of which the most important has been the introduction of new environment taxes on emissions and energy"
>
> "The Ministry of Environment and Hungarian Academy of Sciences have launched joint projects to elaborate an adaptation policy for climate change in Hungary"
>
> "The Second Environment Programme recently adopted by Parliament contains scenarios based on TEP"
>
> "New facts, considerations and methods indirectly influenced the thinking of the Ministry of Economics"

Policy effects were not achieved in all areas – the Ministry of Agriculture discussed the results of that panel but did not use its proposals. There was some sense of a lack of any strategic debate in this sensitive area. The Manufacturing and Business Processes panel was also felt to have had very modest impacts.

Most highly rated recommendations

The questionnaire sought to identify specific impacts by asking respondents to identify the three most important of the Steering Group's 22 recommendations (the Steering Group decided not to prioritise its recommendations and indeed not to duplicate those well-catered for in panel reports – for example in Transport). **The most highly rated recommendations were generally also the broadest. Most support was given to the recommendation for the government to expand the 'Programme for a Healthy Hungary'.** Some respondents argued that to a significant extent this recommendation has been acted upon. The next most popular recommendation was the first and most generic – in short that Hungary should embark on a path of knowledge-intensive development but giving due attention to issues of social cohesion and sustainability. Finally, the third most important recommendation concerned lifelong learning and education.

Indirect impacts

At the time of this evaluation Panel's Interim Report our principal impression was that the recommendations of TEP were in general either not implemented or implemented in a fairly indirect manner. However, more careful analysis indicates **an impact both on the climate of thought in many policy areas and a series of indirect but significant effects on policy in several domains. It seems that TEP created a reservoir of knowledge that entered the policy system in a non-linear fashion**, either through personal networks of participants or simply by having cogent text available when policies were being drafted. A note of caution needs to be sounded on causality – TEP reflected as well as initiated the policy discourse in Hungary. However, the specificity of the impacts suggests that it at least crystallized and almost certainly extended significantly thinking on many issues.

The reasons for lack of direct implementation lie, we believe in the implementation environment in which the programme was situated. Its origins within the OMFB may initially have given it a welcome degree of freedom but with the radical change in nature of that organization and a change of government, there was no natural channel, nor an obvious champion in government able to act upon the results. Even if OMFB had been unchanged, it was itself at a distance from some of the political decisions implied in the recommendations. Yet, as we have already noted, the recommendations of TEP were principally formulated at a policy level rather than with individual firms in mind. The argument is not about the exposure of TEP findings to government – reports were discussed by Parliamentary committees and meetings were held with relevant departments of the Prime Minister's office in the presence of government officials responsible for strategic planning in several ministries. **The problem was more one of lack of ownership of the results and hence commitment to acting upon them. As it turned out TEP had no clear client base that felt its questions were being answered, a situation made worse by the discontinuity resulting from political change.**

Interviewees endorsed the above position but many also stressed that the added value of TEP came from being able to take a holistic view of sectors which a purely sectoral exercise could not have achieved. While greater engagement by some ministries would have been beneficial, reporting to them directly could have constrained thinking and lost the benefit of multidisciplinarity within panels and learning generated through interaction between them.

3 Options for future foresight activities

On the basis of our analysis of TEP and from the evidence we have heard about the demand for new foresight activity in Hungary we make the following conclusions and recommendations:

TEP has formed a base of foresight capability and expertise in Hungary which is a resource available for future exploitation. This community of expertise has also made clear that foresight is an activity quite separate from the forecasting tradition of planned economies. **An important lesson is that long-term strategic thinking is also necessary in a market economy.**

In addition to any national effects, TEP has also provided the country with an international profile in the field at a time of EU accession and opened up several opportunities for international collaboration.

The main forward looking decisions can be summed up in two questions:

1) Does Hungary need new foresight activities?
2) If yes, what orientation and form should these take.

For us the answer to the first question is closely tied to the second. **There is no doubt that government decisions in domains affected by science and technology require a strategic outlook.** The alternative would be to respond in a disorganized manner to short-term issues, or else to adopt a laissez-faire position that in effect would perpetuate existing structures and distributions of resources. **However, the principal lesson from TEP is that foresight needs a clear and consistent client base or, put another way, a well-mapped route to implementation from the beginning.**

This leads to the second question. In our judgement, **the time is not yet ripe to repeat a broad-based sectorally organized foresight programme in the style of TEP.** There is no evidence of substantial change in the implementation environment and at the very least a significant preparatory effort would be needed to get several ministries ready to "adopt" panels and to receive their outputs. Furthermore we suspect that not enough time has elapsed for the results of such an exercise to be clearly differentiated from TEP. Many of the reports recommendations and analyses continue to be valid. However, there is a widespread view that a holistic exercise of the nature of TEP should be carried out again in due course (perhaps after a ten-year interval from the original) and that the structure should be sufficiently similar to allow some comparability between the visions generated.

Key Technologies Programme

On the other hand our survey and interviews showed **significant support for a foresight activity in the style of a "key technologies" programme**. The aims of this would be much more limited – in effect to provide a priority list for funding areas to the newly formed Technology and Innovation Fund. This would meet our criterion of a clear defined client need. Several countries have embarked upon this route with varied degrees of success. The UK is shortly to adopt a similar approach in its

innovation policy. This type of exercise could also provide more interest for industrial participation. Some specific characteristics of such a programme are discussed below. The nature of such a programme in the present Hungarian situation needs careful thought. There is little value in simply emulating the process of critical technologies activities in countries with a large industrial and technological base. **For Hungary a critical technology must also be one based upon the potential for skills and knowledge in the country as a basis for attracting inward technological investment by foreign-owned firms.**

There is also a need to make these technologies relevant for the second and third tier sub-contractors to large firms, often coming from the SME sector. Hence, the technology strategies of the multinationals who are the primary customers or system integrators need to be factored into the exercise as a means of keeping in touch with global trends. From this basis, opportunities for innovative new products and services could be signaled to the SME sector. This "dual-economy" strategy can also create the conditions for **skills transfer as locals working for foreign-owned firms move to a local SME or set up their own company.**

It is also important that such a programme, while more technologically oriented than TEP, does not lose sight of the economic and social drivers that determine the relevance of a technological choice. Issues such as the implications of EU membership were not extensively discussed during TEP but are clearly of importance now. The roles of regulation and public acceptance of technology are also significant.

One criticism we heard of TEP is that it sometimes struggled to keep pace with the changes in society and the economy that were happening around it. In sectors such as ICT and biotechnology the rapid pace of change is also characteristic of the technology. **In consequence the critical technologies exercise needs to be agile in its design, delivering results quickly without compromising quality and with implementation being prepared in parallel.**

A distinctive Hungarian element to the exercise may come from building upon the TEP visions to engage the demand for innovation within Hungary to support initiatives in the health, education and transport sectors, for example. Coordination with government and industry activities in these sectors will provide a valuable market input to the selection of priorities and a platform for implementation strategies.

The role of NKTH at the centre of government provides better conditions than were available for TEP but **it is essential that commitment to a new exercise is gained from the Prime Ministers Office and relevant ministries and thereby also from the private sector. Commitment also means the engagement of key policy-makers in the exercise.**

Targeted foresight exercises in cross-cutting domains

The second area in which new foresight could be applied is more similar to TEP in that it engages policy and structural issues. **There appears to be a demand for a series of more targeted foresight exercises in particular cross-cutting domains – for example the future of higher education in Hungary, or the use of foresight to**

articulate strategies for the use of Structural Funds in the development of Hungary's newly emergent regions and their innovation strategies[1]. These are only examples of thematic foresight but for each case selected a client in government would be needed (our survey respondents were almost unanimous in seeing the financing of foresight activity as a government responsibility). Hungary is well-placed to exploit its foresight capabilities in this more targeted and distributed way – which is also consistent with the trend in foresight activities in several other countries.

Maintaining and strengthening foresight capabilities

The final element to assure the future contribution of foresight to Hungary's economic prosperity and social well-being is the **need to maintain and develop capabilities in foresight and related approaches to systematic analysis of policy and strategy**. A cadre of experienced and expert people was built through TEP but this benefit is already fading and requires active reinforcement. **The establishment of one or more research centres with a remit to engage the national and regional communities of policymakers in foresight, technology assessment and evaluation methods is a sound way to proceed.** Applied research on key trends, methodological development, training and a forum for policy discussion are all valuable functions that could emerge. They could keep in touch with international methodological advances such as increased use of online tools for networking, consultation and dissemination. The centre(s) could also engage in systematic cooperation and sharing of information and resources with EU partners, particularly but not exclusively those in Central Europe. A revitalized TEP Office would provide a natural interface to these centres of expertise.

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[1] The preparation of the Hungarian language FOREN Guide to Regional Foresight will assist these developments.

Annex 1 The International Evaluation Panel

Professor Luke Georghiou, Executive Director PREST (Policy Research in Engineering, Science and Technology), Manchester Business School, University of Manchester, United Kingdom (Chairman)

Ms Helena Acheson, Division Manager, Competitiveness and Innovation, Forfás, Republic of Ireland

Dr Jennifer Cassingena Harper, Director, Policy Unit, Malta Council for Science and Technology, Malta

Dr Guenter Clar, Director Regional Strategies, SEZ (Steinbeis-Europa-Zentrum), Germany

Dr Karel Klusacek, Director, Technology Centre, Academy of Sciences, Czech Republic

Annex 2 List of Interviewees

NAME	JOB TITLE	AFFILIATION
dr. Zoltán **Bokor**	Assistant **Secretary of the Transport Panel**	Budapest University of Technology and Economics, Department of Transport Economics
Dr. László **Csernenszky**	Head of Department **Member of the Steering Group**	Ministry of Economic Affairs and Transport
Dr. Miklós **Füle**	Associate Professor **Secretary of the Protection and Development of the Natural and Built Environment Panel**	Technical University of Budapest Department of Environmental Economics and Technical Law
Dr. András **Giday**	Former Head of Department Counsultant	Prime Minister Office Political State Secretariat Governmental Center for Strategic Analyses Hungarian Chamber of Commerce and Industry
Dr. Attila **Havas**	Senior research Fellow **Former Programme Director of TEP**	Institute of Economics
Dr. József **Imre**	Deputy Head of Department	National Office for Research and Technology
Dr. Gábor **Kovács**	Director **Secretary of the Health and Life Sciences Panel**	Info-PHARM Ltd.
Mr. Ferenc **Kováts**	Former Chairman of the Steering Group	Hungarian Technology Foresight Programme
Dr. Norbert **Kroó**	Secretary General	Secretary General of the HAS[*]
Dr. István **Láng**	**Member of the Steering Group**	Science Policy Advisor to the President of the HAS, Vice-chairman of the Hungarian National Council on the Environment
Dr. Tivadar **Lippényi**	Head of Department	Strategic Analysis and Planning Department Innovation Department

	From 1st March 2004 Vice President	National Office for Research and Technology
Dr. István **Marton**	Head of Department	Ministry of Agricultural and Rural Development Department for Education Research and Development
Dr. Csaba **Nemes**	Head of Department Strategic Planning senior civil servant	Ministry of Environment and Water
Mr. Lajos **Nyiri**	expert	Zinnia Group
Dr. Győző **Petrányi**	Former Director **Chair of the Health and Life Sciences Panel**	National Institute of Haematology and Immunology
Dr. András **Siegler**	Vice President	National Office for Research and Technology
Dr. György **Surján**	Head of Department	National Institute and Library for Health Information (Medinfo)
Dr. Katalin **Szabó**	University Professor **Member of the Steering Group**	Budapest University of Economic Sciences and Public Administration
Dr. György **Takács**	Former President **Secretary of the Information Technology, Telecommunications and Media Panel**	Communications Authority Hungary
Dr. Pál **Tamás**	Director **Member of the Steering Group**	Institute for Sociology of the HAS[*]
Dr. Katalin **Tánczos**	Head of Department, Professor **Chair of the Transport Panel**	Budapest University of Technology and Economics, Department of Transport Economics

[*] Hungarian Academy of Sciences

Dr. László **Vermes**	Head of Department, Professor **Secretary of the Agriculture and Food Industry**	Faculty of Horticultural Science Department of Soil Science and Water Management

Annex 3 Questionnaire Results

The survey was sent to 178 people of whom 62 responded - a response rate of 35%. Two thirds of the respondents were panellists or members of the Steering Group with the rest being experts or government officials. Three-quarters (73%) of the respondents had spent at least ten days working on TEP. Respondents were almost all from the education, public research or government sectors.

Questionnaire for Participants in TEP

1. Please describe your main involvement in TEP:

	Number	%
SG member	8	13%
Member of Panel	33	53%
Member of Interministerial Committee	2	3%
R&D Division (OMFB)	4	6%
Expert	15	24%

And estimate how much time you put into the exercise

	Number	%
0-24 hours	2	3%
2-10 days	14	23%
11-30 days	16	26%
2-5 months	22	35%
6-12 months	4	6%
13-24 months	1	2%
25-30 months	1	2%
don't know	2	3%

2. What is your main sector of work *(Please tick one box)*?

	Number	%
Industry	4	6%
Commerce	0	0%
Public Research Institution	18	29%
Government or other public service	10	16%
Education	25	40%
Other : advising	3	5%
R&D small company	1	2%
hospital	1	2%

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3. Please indicate how important you considered the following objectives of TEP *(please rate the importance on a scale of 1-5 with 1 as low importance and 5 as very high importance)*:

	Low importance				High Importance
	1	*2*	*3*	*4*	*5*
Contributing to a national innovation strategy	2	2	5	22	29
	3%	3%	8%	37%	48%
Helping Hungarian firms improve their competitiveness	9	7	21	14	5
	16%	13%	38%	25%	9%
Strengthening informal relationships between research, business and government	5	5	16	22	11
	8%	8%	27%	37%	19%
Spreading cooperative and strategic thinking		3	10	22	26
	0%	5%	16%	36%	43%
Supporting integration into the European Union	3	6	17	23	9
	5%	10%	29%	40%	16%
Formulating recommendations for public policies	1	2	3	25	29
	2%	3%	5%	42%	48%

4. Please indicate your views on the usefulness of the following features of TEP's methodology

	Very useful	Useful	No impact	Slight hindrance	Major hindrance	Don't know
Macro-Visions	17	37	5			1
	28%	62%	8%	0%	0%	2%
Delphi survey	7	35	14		1	3
	12%	58%	23%	0%	2%	5%
Workshops	21	30	4	1	2	3
	34%	49%	7%	2%	3%	5%
Use of Panels	19	31	4	2		4
	32%	52%	7%	3%	0%	7%

5. Please indicate your opinion of the overall organisation of the TEP process in terms of the following:

a) Appropriateness of the methodologies for the objectives set

Good 13 (26%)   Suitable 37 (74%)   Poor 0 (0%)

b) Quality of information available to participants

Good 10 (18%)   Suitable 24 (44%)   Poor 21 (38%)

c) Communication between participants in different parts of the exercise

Good 11 (21%)   Suitable 28 (54%)   Poor 13 (25%)

d) Sequence and timing of activities

Good 12 (28%)   Suitable 28 (65%)   Poor 3 (7%)

e) Opportunity for participants to make a full contribution to the process

Good 13 (31%)   Suitable 22 (52%)   Poor 7 (17%)

6. Please indicate how important TEP was in achieving the following effects (please rate *the effect of TEP on a scale of 1-5 with 1 as low effect and 5 as very high effect)*:

	1	2	3	4	5
New directions in research in the public sector	10	16	20	6	1
	19%	30%	38%	11%	2%
New directions in research in industry	14	18	14	4	1
	27%	35%	27%	8%	2%
Increased budgets for R&D	16	15	12	10	1
	30%	28%	22%	19%	2%
Changes in budget priorities for R&D	11	12	19	9	1
	21%	23%	37%	17%	2%
Formation of new networks	11	13	19	6	2
	22%	25%	37%	12%	4%
Greater interdisciplinarity in thinking about national problems	8	10	11	22	4
	15%	18%	20%	40%	7%
Establishment of longer term perspectives	3	8	11	26	9
	5%	14%	19%	46%	16%
Changes in public policy	11	12	18	11	1
	21%	23%	34%	21%	2%

7. Please indicate what you think was the most important effect of TEP:

Long-term thinking, using scenarios in wide circle   10

8. The TEP Steering Group made 22 recommendations. Please indicate the three most important in your opinion

1. Programme for a Healthy Hungary (31 responses)
2. Hungary should embark on a path of knowledge-intensive development but giving due attention to issues of social cohesion and sustainability (30 responses)
3. Lifelong learning and education (23 responses)

9. How effectively were the results of TEP disseminated

Very effectively	1	2%
Effectively	16	28%
Moderately	30	52%
Poorly	10	17%
Very poorly	1	2%

10. How effectively were the recommendations of TEP implemented

Very effectively		0%
Effectively	6	10%
Moderately	28	47%
Poorly	15	25%
Very poorly	10	17%

11. What were the main factors affecting implementation?

Variety of qualitative answers provided and noted by panel

12. How far did TEP as a whole succeed in addressing each of its main objectives: *(please rate the success on a scale of 1-5 with 1 as low success and 5 as very high success)*:

	1	2	3	4	5	
Contributing to a national innovation strategy	5	9	19	19	3	55
	9%	16%	35%	35%	5%	100%
Helping Hungarian firms improve their competitiveness	12	19	18	2	1	52
	23%	37%	35%	4%	2%	100%
Strengthening informal relationships between research, business and government	5	11	17	17	5	55
	9%	20%	31%	31%	9%	100%
Spreading cooperative and strategic thinking	2	8	17	19	9	55
	4%	15%	31%	35%	16%	100%
Supporting integration into the European Union	6	15	16	14	4	55
	11%	27%	29%	25%	7%	100%
Formulating recommendations for public policies	3	4	17	24	8	56
	5%	7%	30%	43%	14%	100%

13. How would you rate TEP in terms of overall value for money? *(Please circle one description)*

Excellent value	Good Value	Neutral	Slight value	Poor value
6	15	29	5	0
11%	27%	53%	9%	0%

14. How would you have improved TEP in terms of structure or methodology?

Variety of qualitative answers provided and noted by panel

15. In what type of foresight activity, if any, should Hungary engage in future in terms of the following issues:

a) Purpose of exercise *(for example should the exercise still have a strong technological focus or should it be broader, should it be used to set spending priorities, to influence policy, to change culture etc)*:

The exercise should still have a strong technological focus	13
It should be broader	28
It should be used to set spending priorities	35
It should be used to influence policy	27
It should be used to change culture	11

b) Focus of activity *(for example should panels be sectoral, and if so the same as previously? or should they be based on particular problem areas or themes? Should the range be narrower or broader?)*

Panels should be sectoral	24
The same as previously	6
Panels should be based on particular problem areas or themes	28
The range should be narrower	8
The range should be broader	10

c) Methodology to be adopted *(should panels, scenarios, workshops, Delphi or other surveys be used?)*

Panels	37
Scenarios	29
Workshops	39
Delphi survey	24
Other surveys	10

d) Locus of responsibility *(should Government be responsible for initiating and funding a future exercise or should responsibility move wholly or partly to other groups?)*

Government should be responsible for initiating and funding a future exercise	45
Responsibility should move wholly or partly to other groups?	3
In common	8

16. Please add any other comments that you have about TEP or foresight activity more generally:

Variety of qualitative answers provided and noted by panel