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## Expanding the TA Landscape – Lessons from Seven European Countries

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**Abstract:** *This chapter explores socio-political opportunities for and barriers to introducing TA as a support for science and technology (S&T) policy making in seven of the new European member states. Based on interviews with national S&T actors and document studies, the study shows that any attempt to promote and establish TA has to take account of the situations in the countries explored, which differ in many respects from the situation during the 1980–90s when a first wave of TA institutionalization took place at national parliaments in Europe. Elements of ‘civic epistemologies’ such as a lively public debate on S&T policies are missing in some of the countries explored, and S&T policy making is busy modernizing the R&D system in order to keep up with global competition.*

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Technology assessment as a means of policy advice is widely established in many Western European countries, whereas in Southern Europe and especially in the new European member states in Central and Eastern Europe, TA structures are often inexistent altogether. The PACITA project, by organizing explorations of existing barriers and opportunities for setting up TA in seven European countries, succeeded in starting up debates about TA among relevant actors and revealed a set of boundary conditions for introducing TA in the national R&I policy-making systems.

The societal situation in the countries explored is different in crucial respects from that of Western Europe during the 1970–80s where (parliamentary) TA institutions were first set up. Thus, not only are elements like a lively public debate on S&T policies missing in some of the countries but also S&T policy makers are busy modernizing the R&I system in order to keep up with global competition.

Our explorations were organized in an ‘action research’-like manner – that is, at the same time gathering knowledge about national preconditions for TA while actively intervening by facilitating high-level TA debates or triggering initiatives among relevant national actors. The exploration activities revealed that despite existing barriers, there is a role to play for TA by adapting to and offering support with regard to the existing deficiencies and problems of S&T policy making. Concerns about problems of S&T policy making often result in an explicit demand for ‘knowledge-based policy making’ in the context of which the concept of TA is welcome as a means to underpin decisions with best available knowledge in an unbiased manner. TA can significantly contribute to ongoing activities of modernizing the R&I system by strategically planning the R&I landscape, evaluating R&I capacities, or supporting the identification of socially sound and robust country-specific innovation pathways. Exactly due to often poorly developed democratic and transparent decision-making structures, TA could find a role as an independent and unbiased player able to induce communication among relevant actors on ‘democratic’ structures in S&T policy.

To further promote TA, one viable pathway would be continued collaboration – for example, through starting TA projects together with experienced TA countries but also through a continuation of national activities started by the PACITA intervention, such as training practitioners, doing pilot project(s), identifying the specific goals of doing national TA and finding reliable partners in politics but also in other societal spheres (science, industry and civil society).

## Background

Since the 1970s, 'technology assessment (TA)' has been introduced in many Western industrialized countries. Its scientific origins lie in systems analysis and forecasting, but its scope has developed much further – conceptually as well as methodologically (Grunwald, 2009). In those Western European countries that have institutional platforms for TA, the practice of TA is clearly oriented towards policy making, and parliaments are seen as the main client of TA. Motivated by a lack of reliable knowledge and scientific expertise, in many Western countries parliaments have built up dedicated expert units in order to have the capacity to control governments' decisions in S&T policy making. The main impulse for TA in Europe came from the establishment in 1973 of the OTA at the US congress, which mainly carried out expert analysis. After a period of searching for viable European pathways, a range of organizations was founded within European member states from the 1980s and onwards. In contrast to the OTA, some of these organizations focused in part on the involvement of stakeholders and the wider public. (See also the introduction to this volume). Although TA by now is established in many European countries, in other parts of Europe, especially in Southern, Central and Eastern Europe, there are no institutional settings of TA, and also the concept of TA is not used or is even unknown.

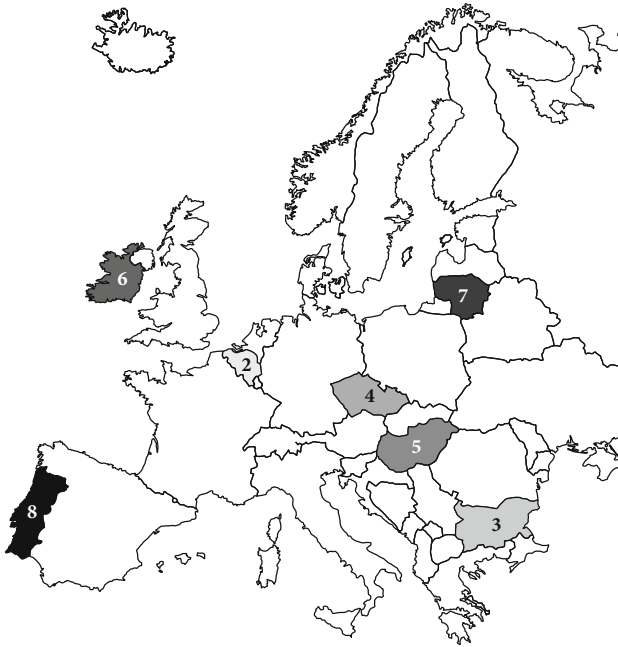
One aim of the PACITA project was to explore opportunity structures as well as barriers for TA in countries of Europe without TA infrastructures. To this end, an exploration was carried out in seven European countries (Belgium/Wallonia, Bulgaria, the Czech Republic, Hungary, Ireland, Lithuania and Portugal) to ascertain current needs as well as institutional preconditions for introducing TA in national processes of S&T policy making.<sup>1</sup> The countries explored have very different histories, and in each country debates on TA have very different starting points. In Central and Eastern Europe, TA is established neither in academia nor in policy making. Looking back on the history of Central and Eastern European countries, the differences in Western Europe are obvious. In the planned economy system, the ruling socialist (communist) parties had by far the most significant influence on policy making and in the R&D sector. At best, the Academies of Sciences have been involved in the decision-making process to a modest extent. This involvement was a common feature, although we cannot say that there was a uniform S&T system across these countries. Rather, there were divergent institutional

systems, especially from the 1980s when cooperation with Western countries became more regular than before enabling relatively open Central and Eastern European countries to introduce new measures – for example, a grant system in research, a dialogue within the scientific community on S&T policy questions and so on. After the transition, the R&D sector and also the Academies of Sciences started to decline due to downsizing of R&D funding and employment. That was followed by a phase of stabilization since the mid 1990s and then by recovery of the R&D sector by the end of the 1990s and early 2000s. As concerns structural changes in the R&D system, a gradual increase in the shares of universities and the business sector can be regarded as the most positive tendency in many Central and Eastern European countries. These stronger R&D actors seem to have a growing role in S&T policy making. However, civil society is only very slightly represented in S&T policy making. On the one hand, this lacking involvement is due to the traditionally peripheral role of the civil society in Eastern Europe, and on the other hand, it is due to the fact that in this region most citizens are more familiar with non-democratic (or ‘less democratic’) governance systems than with democratic ones.

In the Western European countries of the sample, there are already experiences with ‘TA-like activities’: In Portugal there has already been some debate on TA in the national parliament as well as in the academic community. While Ireland has a well-developed system of S&T policy advice and consultation, infrastructures explicitly dedicated to TA do not exist. In the Belgian region of Wallonia, there have been debates on parliamentary TA that have been ongoing for many years; however, no institutional setting of TA has resulted so far.

The national studies were conducted from February 2012 to March 2013, and they focused on national political and institutional contexts, existing capacities (actors, organizations and networks), demands and interests in TA-related activities and barriers and opportunities in national/regional contexts. Research methods comprised document analysis, interviews and discussion rounds with relevant actors and stakeholders. The explorations were done jointly by a twin team of researchers from respective national PACITA partners and from an experienced TA partner organization.

It is important to note that the explorations in the countries were conducted from the perspective of different organizations, ranging from Academies of Sciences (Czech Republic and Hungary) to research centres at universities (Ireland, Portugal and Wallonia) and to non-governmental



		Population 2011 Mio.	Year of EU entry	Democrat. system since	GDP p.C. 2011 Euro	GERD/ GDP % 2010	Private R&D % 2011	Public R&D % 2010	GBAORD 2010 Euro
1	EU 27	18,61 (tot. 503,7)	-	-	25.100	2,0	61,53	37,51	3.275
2	BE	11,0	1952	1830/1980 (regions)	33.600	1,99	66,3	32,7	2.153
3	BG	7,5	2007	1989	4.8000	0,6	50,0	48,9	96
4	CZ	10,5	2004	1989	14.7000	1,56	62,0	37,4	873
5	HU	10,0	2004	1989	10.100	1,16	59,9	38,4	467
6	IE	4,5	1973	1937	34.900	1,79	68,13	31,9	934*
7	LT	3,24	2004	1990	9.5000	0,79	29,22	70,93	47
8	PT	10,64	1986	1974	16.100	1,59	45,5	44,13	1.763

**FIGURE 2.1** Overview over core economic and R&D data

Note: \* 2007; GERD (Gross Expenditure on Research and Development), GDP and GBAORD (Government Budget Appropriations or Outlays for Research and Development).

Source: ERA watch ([http://europa.eu/about-eu/countries/index\\_en.htm](http://europa.eu/about-eu/countries/index_en.htm)) and Eurostat 2010.

organizations (Bulgaria and Lithuania).<sup>2</sup> The processes thus had different preconditions in all seven countries. However, the practical aspirations of the project – to spark national discussions on the potential benefits of TA – were successful in all countries insofar as relevant actors were included in the learning process and debates and came to reflect on possible roles for TA in the national policy-making landscape.

The rest of this chapter presents the results of these national exploration processes in a cross-national perspective. The presentation is based on national country reports (for more details, see Hennen and Nierling, 2012).

## Societal premises for the setup of TA institutions

Comparing situations across time and space can help to bring attention to those features of the current situation which serve to enable or hinder institutional entrepreneurship. The following comparison between the situation in which Western European countries originally set up TA institutions with the situation today in other European states aims to serve precisely that purpose.

While our comparison of different national settings partly draws on previous analysis of national TA practices (e.g. Delvenne, 2011, Enzing et al., 2012, Ganzevles and van Est, 2012, Vig and Paschen, 2000), the national explorations in the PACITA project had a very practical intent: initiating a debate on TA or even potentially implementing TA in new national contexts. For this purpose, the most important background information is the societal situation in the 1970s and 1980s which led to the establishment of a number TA institutions in the US and in Europe. This is the historical situation to which we compare the current situation in the countries that we studied.

We consider the following societal features of Western Europe in the 1970–80s to be relevant reference points for current discussions on institutionalizing TA capacities:

- 1 *Highly developed and differentiated R&I systems existed, which had strong backing from governments aiming to strengthen the international competitiveness of their national economies.*
- 2 This was reflected in the setup of research ministries, the growing public funding for R&I and the increasing importance of R&I in parliamentary standing committees.

- 3 *A strong and critical interest of the public towards S&T issues was prevalent.*
- 4 Not only was this critique articulated on the general level, but also citizens' initiatives on different political levels (local-national) fought for participation in planning decisions as well as S&T politics because they were considered to interfere with citizen's rights.
- 5 *Interdisciplinary, problem-oriented science gained influence in several academic fields.*
- 6 The term 'sustainable development' served as a key term for this kind of 'new' research.
- 7 This development in academia also led to academic support for 'TA-like "hybrid science" and policy-oriented research' (Hennen and Nierling, 2014b).

Within this societal situation arose a strong demand by policy makers for reliable knowledge on scientific and technological developments, as well as for methods to cope with public concerns.

In some countries, these demands led to the establishment of institutions which supported national parliaments with non-partisan scientific advice. In other countries, they led to institutions organizing and raising public debate. Thus, TA bodies were institutionalized in different ways each relating to national parliaments and governments (again, see also Chapter 1).

Against this background, the results of the comparative study will be presented below with the aim of showing differences and similarities among the countries with regard to the reference points identified above. First, the current R&I landscape and national R&I performance including ongoing strategies of modernizing and restructuring the R&I systems as well as problems and deficits of the current systems will be described. Second, the levels and central features of political and public debate on S&T will be highlighted. Finally, already existing structures of TA-like research and/or policy advice will be presented.

## **National R&I landscapes: R&I performance, modernizing strategies and deficits of the current system**

### *R&I performance*

In all the countries that we analysed, R&I topics are generally high on the political agenda, reflecting the importance of R&I for economic

development and its relevance for catching up with increased global competition. However, the broader S&T policies are developed in a difficult situation. On the one hand, in most of the countries involved, the economic situation is difficult. With the exception of Ireland and Wallonia, all national economies are lagging behind the EU28 average development in terms of their gross domestic product (GDP). Furthermore, due in part to their relatively weak economic performance, the expenditures and investments in R&I of these countries are (in some cases significantly) below the European average. For the Central and Eastern European countries, this is undoubtedly due to the fact that their economic modernization is a disappointingly slow and conflicting process, involving political and social tensions. Thus, economic growth in these countries seems to be rather fragile, economic forecasts. The people in these countries are disappointed by this development because people had expected fast-paced improvements in their quality of life. Instead, citizens still experience many constraints in different fields: political (democracy-deficit), social (poverty, problems in health care, education, housing and so on) and human-economic factors (high proportion of unskilled workers, lack of job prospects and permanent gap between the developed and backward regions). However, some countries, such as the Czech Republic and Hungary, have already achieved considerable progress in increasing their share of private R&I investment. Both Portugal and Ireland are in a process of restructuring their economies from a model dominated by agricultural structures to a modern knowledge-based economy – and Ireland has been extremely successful in this respect in the last two decades. However, precisely because they were in the middle of a complex and expensive process of restructuring, the financial crisis struck these countries hard and the strain on public budgets led to a decrease in R&I expenditures. Belgium (Wallonia) is the only studied country that can be regarded as being in a position similar to the average European capitalist economies, especially because Wallonia is undergoing a shift from traditional industrial structures to an S&T-based economy and invests heavily in research clusters in order to manage this transition.

### *Modernizing strategies*

Generally, building up the economy sets the main frame for R&I policy making. All the countries that were explored have set up national innovation strategies to modernize the R&I system, attract private investments



and improve competitiveness. The key targets listed in governmental R&I programmes and strategies can also be read as a list of the typical deficiencies of R&I governance, infrastructures and strategies.

In most of the countries that were explored, a set of institutions exists, which give advice to the political sphere (policy makers and government) on a regular basis, be they specialized expert committees connected to ministries, specific funding programmes or national science policy councils. National R&I councils mainly represent Academies of Sciences, industry, universities, public administration and the non-profit sector. They have been established to coordinate reform strategies and to advise the government. In the case of the Czech Republic, the Council for Research, Development and Innovation has almost taken over the role played by a ministry and is more or less designed to centralize the system of R&I and even to take over micromanagement tasks (Pokorný et al., 2012: 69). Because research councils mainly represent academia, industry and public administration, they can be regarded as an element of academic self-administration and expert policy advice. The involvement of industry is meant to establish closer relations between public and private research bodies in order to improve innovation performance. Advice is mainly addressed to the government and rarely to the national parliament.

It is apparent that strategic advice with regard to the future development of research and innovation strategies given by these institutions is motivated by national efforts to improve the competitiveness of the national economy ('economy first'). Compared to these activities, policy advice with regard to future (controversial) technological or scientific development is of minor relevance. This is in line with the fact that foresight methods are frequently applied by governmental agencies to assess the economic strategic planning (for instance, the recently published 'National Research Infrastructure Survey and Roadmap' in Hungary), whereas TA as a means of policy advice is almost unknown in many countries.

### *Problems and deficits of current R&I governance systems*

The country studies reveal a plethora of activities to modernize R&I structures as well as R&I governance systems. The problem is often not a lack of institutional reforms and new agencies but rather a lack of functionality and efficacy. Interviews and workshops revealed scepticism with regard to the effectiveness of newly established systems and strategies by actors from academia and policy making, as well as industry and civil society.

In general, the effectiveness of strategies seems to be compromised by discontinuity and a lack of focus mainly because of quickly changing political agendas driven by short-term tactics and by quickly shifting political power. Discontinuity in setting up reforms is reported as being explicitly a main weakness of R&I policies for Hungary, Bulgaria and Lithuania, due to shifting parliamentary majorities or a general lack of coordination strategies. Thus, innovation strategies are often perceived as 'activism' since they apparently result in constant reorganization of strategic planning. For example, each government in Hungary initiated a reorganization of the policy making and advice structure in R&I at least once in their four-year term (Mosoni-Fried et al., 2012: 113).

### **Deficiencies in existing advisory systems**

A lack of transparency in decision-making processes, and thus of public trust in and legitimacy of policy making, is reported in all countries. A strong need to improve the current situation of national policy advice is expressed in the Bulgarian and Portuguese reports with regard to the legitimacy and transparency of political decisions, as well as setting up missing communication channels between science, politics and the public. In most of the countries that were studied – for instance, Bulgaria – S&T expertise is typically provided internally by governmental staff at the respective ministries. On rare occasions, external expertise is asked for on an ad hoc basis, and even in these cases, the process remains opaque to the wider public (Kozarev, 2012: 42). Although a number of institutions often provide policy advice (for example, a formal advisory body of the government or other national councils) and although an occasional demand for scientific advice from the political sphere exists (for instance the government or parliamentary commissions), there seems to be no institutionalized or 'routinized' ways for constant policy advice. Rather, communication channels among scientists, policy makers and other potential knowledge providers are characterized as 'fragile and dependent on the continuous will of interacting between specific stakeholders' (Almeida, 2012: 235).

Even if processes are formally transparent, with relevant documents for decisions being publicly available and consultation with experts taking place, many interview partners experienced a lack of accountability. It appears that administrations act without taking the arguments

of consultations (be they expert or public) into account. A certain level of distrust in governmental performance on the part of academics or other experts appears to be significant in many of the countries that were explored. In Central and Eastern European countries, this may be related to a great extent to the conflicting character of the ongoing and long-lasting political transition period from a non-democratic system to a democratic one. In Ireland, the reported lack of transparency and public involvement in R&I policy making may rather be rooted in a lack of cooperative traditions and the remaining authoritarian political culture clashing with the country's rather new and fast emergence as an R&I economy. Thus, apparently, the highly developed Irish system of advisory bodies and agencies has not yet opened up to the wider public and remains a closed deliberative circle of the executive branches of government and related expert communities.

### **Public debate on S&T**

Complaints about a low level of political as well as public debate on S&T issues are widespread in interviews and workshops. Generally, a 'systematic integration' of S&T issues in a societal discourse that includes all relevant groups (politicians, scientists and society) seems to be missing. Conflicting factors very well known from Western democracies, such as long-term S&T issues versus short-term political agendas, may have an even stronger influence in countries where democratic structures and cultures are still in transition. Other factors mentioned are clearly connected to the communist heritage in Eastern and Central European countries, such as a 'lack of a debate culture and debate traditions' (Kozarev, 2012: 37) (Bulgaria), or a general scepticism with regard to public debate rooted in the national political culture (Lithuania). Platforms for controversial debate on S&T issues (also in parliament) are missing, and the lack of transparency in decision-making structures – mentioned above – clearly leads to a restriction of debate to a closed circle of experts. The conditions for public debate on S&T are more favourable in Ireland and Wallonia. In Ireland, the interest of politicians in citizen participation has grown remarkably in recent years (O'Reilly and Adam, 2012: 159) due to current technological conflicts at the local and regional levels. In the ongoing political discussion about setting up a TA institution in Wallonia, public involvement is a central topic for those policy makers who are involved.

It adds to the notion of a lack of public debate that public interest in S&T issues is reported to be low in most of the countries. The latter notion is sometimes coupled with a well-known prejudice against laypeople who are regarded by policy makers as being 'emotional and incompetent' (Mosoni-Fried et al., 2012: 126). The notion of a relatively low interest in S&T is supported by European survey data (TNS Opinion & Social, 2010, 2013): the citizens of the countries that were analysed here are less interested in S&T issues than is the average European: they less often read articles on science in newspapers, in magazines or on the Internet, with only Belgium and Ireland being above the European average (TNS Opinion & Social, 2005: 23, 2013: 6). Moreover, for a broad majority of respondents from the countries that we studied, the involvement of experts (scientists, engineers and politicians) is regarded as the most appropriate way to make political decisions in S&T.

The reported 'lack of debate' is to some extent modified by the fact that the country studies outline a broad range of contested S&T issues, such as genetically modified organisms (GMOs), energy policy, waste management and food safety. Specific implications of technologies such as information and communication technologies (ICTs) or ethical concerns in controversial fields such as assisted reproduction were also debated within national contexts. Furthermore, locally or regionally embedded large-scale technological projects such as a dam or an oil pipeline became a subject of national debate. With regard to the development of citizen participation, it should be noted that there are different historical contexts in Western Europe as opposed to the post-communist countries (see Hennen and Nierling, 2014b).

### **Existing structures of TA-related research and policy advice**

The scientific landscape in all post-communist countries in our sample is still very much influenced by the prominent role of the national Academies of Sciences. Although none of the academies were active in the field of TA prior to the PACITA interventions, at least in the Czech Republic and in Hungary, there are traditions of problem-oriented and interdisciplinary research, as well as of applying methodologies relevant to TA (foresight, future scenarios, indicators for sustainable development and more) at the national academies and universities. Since 1998, Hungary has had a strong foresight tradition (Mosoni-Fried et al., 2012: 116), and the work of the academy has taken up current societal topics in

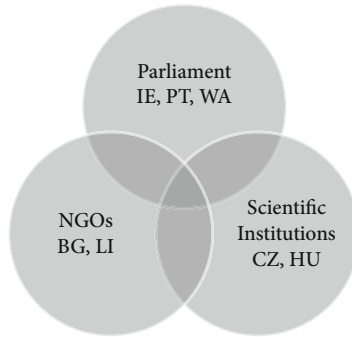


FIGURE 2.2 Possible pathways towards TA

the Hungarian context, such as waste management, food safety, climate change and the red sludge catastrophe in 2010. In the Czech Republic, some institutions already have more concrete experience with TA and TA-like activities, such as the participation of the Czech Academy of Sciences in EU-funded projects on TA, the establishment of the Czech Council on Health Technology Assessment at the Ministry of Health, as well as the Czech participation in various European foresight activities.

In Lithuania and Bulgaria, the science academies currently seem to have a less influential role and also less experience with interdisciplinary and problem-oriented research. In Lithuania, the roles of the Academy of Sciences and of the research council seem to be more formal. Policy advice is provided to the parliament as well as to ministries. However, for the academy, it is more important to take up the mission to promote science and scientific literacy in the wider public (Leichteris and Stumbryte, 2012: 195). In Bulgaria, the Academy of Sciences currently faces major internal restructuring combined with severe problems in scientific knowledge production, which led to the low public reputation of scientists and also to an erosion of trust in scientific institutions in recent years (Kozarev, 2012: 43).

In contrast to the Central and Eastern European countries, in Ireland and Wallonia there are quite a few scientists active in TA-like approaches, such as problem-oriented applied research in the fields of science in society, STS studies, or environmental studies – including a set of PhD programmes, as well as a range of research institutes working in this field. Similarly in Portugal, the most active institutions in fields related to TA are academic ones. Portugal thus has an international PhD program in the field of social sciences and technologies that focuses

specifically on TA, and there are two TA-related stakeholder networks (GrEAT<sup>3</sup> and Bioscience) which seem to imply a strong academic focus on TA in Portugal (Almeida, 2012: 235f, Moniz and Grunwald, 2009).

In contrast to Bulgaria and Portugal – where improved organizational procedures are requested – or to the Czech Republic, Hungary and Lithuania – where policy advice mainly aims at strategic planning of science, technology and innovation – policy advice dedicated to the assessment of certain (controversial) technologies is already established in Ireland and Wallonia. In the Walloon region, a wide range of governmental advisory bodies are active with regard to S&T in different fields for ‘technology guidance’ or in the field of environmental assessment. However, the level of cooperation between the different entities appears to be quite low, and their focus is quite specialized. For Ireland, it is reported that since the mid 2000s, S&T policies have increasingly been questioned, which also implies an increased interest in ‘strategic intelligence tools’, including TA and foresight (O’Reilly and Adam, 2012: 160). More recently, the wish for public involvement was renewed during public upheavals due to the protests against shale gas exploitation in 2012. In this context, policy makers started initiatives to enforce public involvement to learn about the motivation of local protests and citizens’ demands (O’Reilly and Adam, 2012: 160).

The deficit in terms of societal involvement in R&I policy making is aptly reflected in the fact that the role of parliaments in R&I policy making is reported to be quite low in most of the countries that we explored. In most of the countries, the focus of parliamentary committees that are in charge of R&I policy making is mainly on higher education. Parliaments are also reported not to have the resources to support their debates with the necessary knowledge on R&I issues. In most cases, parliamentary committees only occasionally organize hearings to improve the knowledge base for debates. Connected with the weak role of the parliaments is apparently also a lack of permanent structures at the interface between science, society and policy making, as reported for Portugal (Almeida, 2012: 230). It is difficult to draw conclusions from the country studies regarding the reasons for the low involvement of parliaments. Explanations given in interviews, such as MPs’ lacking a personal background in S&T, appear to be inadequate. Instead, we might speculate that the low level of public engagement in R&I issues, combined with the general consensus in which R&I is seen as the best guarantee for national economic development, together have the effect

of preventing interest in a thorough deliberation on risks and benefits from arising. This lack of interest might then in turn explain the lack of parliamentary debates.

## Ways forward: Possibility structures for TA

For the Central and Eastern European countries, it can be stated – albeit with a few notable exceptions, such as the Czech Republic (see above) – that the concept of TA was widely unknown before the PACITA project introduced it. An aim of our exploration was to first make the relevant actors aware of the idea behind the concept of TA and its practical workings as a tool of policy advice in order to encourage them to reflect and discuss the possible relevance of the concept in their national academic and policy making setting as a second step. This was done with quite some success at the national workshops that were organized as part of the exploratory research. The discussion of the TA concept and its societal outcomes and benefits was continued in the course of the PACITA project, namely by a parliamentary hearing on a European Future Panel on Public Health Genomics as well as by a stakeholder process on urgent questions of the Ageing Society (see Chapter 6 and Chapter 7). Whereas the topics provoked different responses dependent on national political agendas, the format of public dialogue raised intense interest in participatory TA methods in all countries, which resulted, for example, in broad media coverage of the TA events in Hungary and in a stronger commitment of the Hungarian Academy of Sciences to the idea of TA.

### Possible institutional models

When it comes to policy options, especially with regard to the further development of a TA infrastructure, the country studies propose different paths which are categorized in the following sections.

#### *Supporters of parliament (Ireland, Portugal and Wallonia)*

In Wallonia, Ireland and Portugal, members of parliament or of parliamentary committees expressed their interest in TA, thus parliament was selected as main addressee for TA activities in these countries. The process is furthest advanced in Wallonia where a parliamentary mandate for TA was given in 2008. Ireland and Portugal are at the beginning of

such a process, as both parliaments have expressed an interest in TA. In both countries, the parliaments have a rather weak political role. Whereas in Ireland TA is regarded as a possibility to strengthen the role of parliament (O'Reilly and Adam, 2012: 162), in Portugal the advantages of a TA unit in parliament is seen as a possibility to support the country's 'political, social and economic' development (Almeida, 2012: 237).

In all three countries, the explorations advise using existing institutions for future TA activities to draw on national academic expertise in S&T. Furthermore, a special interest is expressed for participatory aspects in a future TA unit, either to create the first, to improve national experience with methods of participation, or to include relevant stakeholders and the public in political decision making in S&T in the future.

### *The innovative explorers (Bulgaria and Lithuania)*

The national recommendations developed for Bulgaria and Lithuania present a new model for a national TA landscape: the network model. The model basically implies that a network of existing institutions collectively take on the task of delivering TA services coordinated by one organization perceived as legitimate by all involved. In both countries, there was very little prior experience with TA or TA-like activities. However, during the research activities, TA was identified as 'an unrecognized need' (Leichteris and Stumbryte, 2012: 200) by some of the relevant decision makers. The main function of such a network model is to raise awareness of S&T topics in the public and by decision makers in relevant political fields. Both countries consider it helpful to start with a pilot project (similar to the starting phase of some established TA institutions in the 1980s and 1990s; cf. Ganzevles and van Est, 2012) in order to 'prove' the national relevance and to increase the understanding of the TA concept and its 'products'. In Lithuania, this 'proof of concept' is currently set into practice by a group of institutions from academia, public administration and civil society with a range of policy briefs prepared for policy makers to 'showcase' the use of TA (see also Chapter 3).

### *The institutional traditionalists (Czech Republic and Hungary)*

The Czech Republic and Hungary make up a third group. In both countries, the Academies of Sciences are decisive players in the field of S&T policy. Furthermore, the national academies in both countries have been in contact with TA or TA-like activities (especially foresight and S&T



studies). Both evaluate the 'system barriers' (Pokorný et al., 2012: 80) in the current political context as being quite strong and are thus pessimistic about the future establishment of a TA unit. Barriers to be dealt with include a lack of options for national funding, a lack of trained personnel, but also a general lack of interest from the decision-making sector in S&T as well as the public. Interestingly, during the course of the PACITA project, triggered by accompanying activities such as practitioner meetings and participatory events, the academies in both countries got more and more convinced and thus interested in TA-like activities (see also Chapter 3).

## Future perspectives for national TA capacities across Europe

Looking back in history, it becomes clear that TA must be understood as a reaction to the failure of a 'technocratic' concept of the relationship between science and politics dominant in the 1950s and 1960s, which relied on scientific knowledge as a safe and sufficient ground for 'rational' policy making. Thus TA, as it were, has always been taking into account the inborn uncertainty and underdetermined character of scientific knowledge with regard to complex practical (political) problems as well as the indispensable need to take into account different (and often conflicting) values, normative claims and expectations held by societal groups. The transparency of the TA process and openness towards the public, involving a broad scope of interests and values have been essential features of the TA concept right from its start.

Our country studies give quite clear indications that the context for TA initiatives (not to speak of processes of institutionalization) is in many respects different from the conditions that were prevailing when the first wave of TA institutionalization took off. In most of the countries that we explored, the concern is not about the further development of an already strong R&I system as it was in Western Europe when TA was established. It is rather about building new structures or about fundamentally reorganizing existing structures in R&I. In Eastern and Central Europe, the R&I landscape is in transition (as it is for other reasons in Ireland and Portugal), and it is less about 'protecting' societal needs and values against the dynamics of S&T. Instead, what is in focus is instigating dynamics and exploring innovation paths to keep up with globalization

pressures and to generate economic growth. The social impact of S&T comes into perspective less in terms of environmental or health risks and ethical issues and more in terms of supporting societal welfare. Thus, TA is expected to provide support with strategic thinking on robust R&I structures, options for innovation policies and the evaluation of existing structures and practices. It is not by accident that whereas TA often is not very well known in the countries that we explored, 'foresight activities' have been widely promoted in some of them.

With the exception of Wallonia and Portugal, parliaments are not active in taking up TA as a means to strengthen their own role. In the beginning of the PACITA process, parliaments were often also not regarded by TA-interested actors as appropriate places for TA activities. This attitude has changed a bit in the course of the project. By now, all partners have increased the cooperation with national parliaments and established connections with national parliamentarians that support the vision of national TA capacities. Countries without established TA institutions have drawn the lesson from the practice of PTA countries as well as from the history of institutionalization of TA all over the world (Hennen and Nierling, 2015), namely that acceptance, acknowledgement and support of TA demand high quality TA activities, on the one hand, and distinguished individuals, mainly politicians who are interested in independent policy advice on technology issues, on the other. There are not too many potential political TA partners in the countries that we have explored so far, but already a few of them are able to do a lot.

Throughout our country studies, a lack of democratic structures in S&T policies is often perceived as well as a lack of communication and cooperation among relevant actors (academia, government, parliament and civil society organizations (CSOs)). TA then comes into perspective as a means of unbiased information of discourses (such as knowledge-based policy making or responsible innovation) or a platform to establish a democratic (public) S&T discourse (independent of reflections on its institutional setting).

In contrast with the conditions under which TA began, S&T is far less an issue of lively public discourse and activism. Whereas the present relatively low public engagement in S&T debates in Western Europe comes with an established system of professional and public authority bodies dealing with risk assessment and ethical issues, such structures are missing in the countries explored here (with the exception of Wallonia). For those examples of public controversies that were reported, it is on the

one hand often stated that they are characterized by a lack of platforms for constructive interchange of actors including CSOs and laypeople. TA is expected to play a role in this respect. On the other hand, ‘the public’ often comes into focus with complaints about a lack of interest in, and knowledge about, S&T issues. As much as this might be in line with a well-known attitude of scientific elites and the prevalence of the so-called deficit model of public understanding of science, this might also indicate a specific problem connected with a lack of trust in democratic structures and with a distance to the political process that goes beyond the usual disenchantment with politics. In all the countries that we explored, there is, to various degrees, a lack of tradition in public debates on S&T as well as a relative lack of structural channels or platforms for public debate (including media and CSOs). Thus, ‘stimulating public debate’ as a mission of TA may gain particular importance here.

On the practical political implications of these features of a – so to speak – new ‘TA habitat in the making’, we see the following challenges in terms of practical expectations that TA has to react to:

- ▶ *Ongoing, often not well-coordinated activities of governments to build up or restructure the R&I system*: In this respect, TA is often explicitly expected to contribute to strategic planning of the R&I landscape and the evaluation of R&I capacities.
- ▶ *Innovation policies to improve competitiveness in the context of globalization and crisis (‘economy first’)*: TA would have to position itself with respect to these activities by providing support for identifying socially sound and robust country-specific innovation pathways (‘constructive TA’) and contribute to lower costs of trial-and-error learning.
- ▶ *Poorly developed democratic and transparent decision-making structures*: TA could find a role here as an independent and unbiased player able to induce communication on ‘democratic’ structures in S&T policy among relevant actors.
- ▶ *The challenge of ‘involving the public’*: In this respect, the motives of democratizing policy making are often merged with ‘paternalistic’ motives of ‘educating the public’ (media and laypeople). The latter nevertheless may indicate a real problem of broad public unawareness regarding the democratic relevance of S&T politics and the extent to which TA’s mission of ‘stimulating public debate’ can adapt to that problem (without becoming ‘persuasive’).

- ▶ *In transparent decision making, lack of trust in democratic structures, lack of competences and bounded rationalities of relevant actors, lack of strategic long-term thinking:* All this results in an explicit demand for ‘knowledge-based policy making’ in the context of which the (not very well-known) concept of TA is welcome as a means to underpin decisions with the best available knowledge in an unbiased manner. Specific ideas about how to institutionally build it into the existing system are, however, missing, and it might well be that in terms of institutional solutions none of the models so far realized in Europe might be appropriate.

In general, TA has to be responsive to the given policy context and the expectations and demands expressed in the countries that we explored. However, ‘being responsive’ to national expectations should not imply giving up a certain (normative) core of TA as a concept. TA risks becoming an ‘empty signifier’ if its proponents seek to respond to any and all demands for ‘rational’ decision making and planning expressed by policy-making bodies and authorities. TA as a concept implies the role of a critical observer of R&I policy-making activities, which necessarily asks for some institutional independence in order to provide space for reflection beyond short-sighted political agendas and openness to a broad spectrum of perspectives being applied in assessment processes.

## Notes

- 1 For more details, see L. Hennen and L. Nierling (2012).
- 2 The evaluation is given from a specific organizational perspective and does not claim to fully reflect national debates or newly evolved initiatives.
- 3 Grupo de Estudos em Avaliação de Tecnologia (GrEAT) is a Portuguese network on TA (see <http://avaliacaotecnologia.wordpress.com/>).



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