

## No Countries for Old Technology Assessment?

Sketching the Efforts and Opportunities to Establish Parliamentary TA in Spain and Portugal

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**If the question is whether there is a parliamentary technology assessment (PTA) unit in Portugal or Spain, the clear answer is that there is still no such unit at the central state level at the present time, neither in Portugal nor in Spain. The question then has to be modified addressing previous and current efforts to establish PTA and the current framework conditions and opportunities. Practices of PTA are framed here as a democratic innovation in the context of changes in representative democracies. Against this backdrop, the efforts and opportunities to establish PTA in Spain and Portugal are studied. By sketching these developments and outlining the opportunities in these countries, our aim is to contribute to the debate about the likelihood of a new wave of PTA in Europe (Hennen/Nierling 2014).**

### 1 Introduction: Parliamentary Technology Assessment as a Democratic Innovation

Attempts at identifying parliamentary TA units and TA activities in various countries presume a prior understanding of what TA and, more specifically, what PTA is.<sup>1</sup> Essentially, TA has to be approached as an analytic or scientific *and* a democratic practice (van Est/Brom 2012). As the former, it is concerned with dynamic and complex sociotechnical issues from the perspective of political relevance. It incorporates knowledge from the sciences and also nonscientific knowledge, and employs methods from the social sciences to acquire this knowledge. As a democratic practice, it contributes “to the formation of public and political opinion on societal aspects of science and technology” (Bütschi et al. 2004, p. 14). It is worth highlighting the two addressees: the political system *and* the public sphere.

Since TA studies are publicly available, they can be scrutinized and criticized by everyone, for instance by political parties, civil society organizations, entrepreneurs, and scientific communities.

In order to consider the viability and desirability of TA in various countries with their specific social, political, economic, and cultural settings, TA should be introduced as a *democratic innovation*. We elaborate this assumption a little bit further because it offers a new perspective for looking at the opportunities for PTA in Portugal and Spain. This concept allows for TA to be, first, situated historically in the broader context of the current transformations of Western representative democracies and, second, to be analyzed by employing concepts stemming from innovation studies, such as opportunity structures, political entrepreneurs, innovation networks, and failed innovations.

In the last decades many Western democracies “have experimented, tested, and implemented innovations with the aim of enhancing the working and quality of democracy as well as increasing citizens’ political awareness and understanding of political matters” (Merkel 2008, online). Scholars of the transformation of democracy have come up with different concepts for designating the new forms that have emerged: “contestatory democracy” (Pettit 1999), “advocacy democracy” (Dalton et al. 2003), “responsive democracy” (Teorell 2006), and “monitory democracy” (Keane 2009a; Keane 2009b).

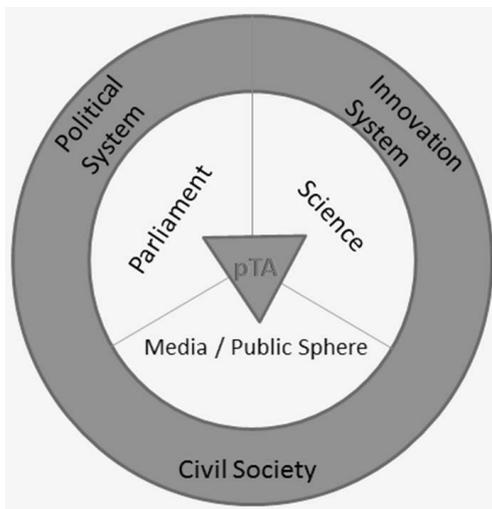
They all contain elaborations of the basic idea that political control in democratic societies and thus “the whole architecture of self-government” (Keane 2009b, online) is changing. Self-government, as Scharpf (1997, p. 19) has pointed out, is about collectively binding decision making (input legitimacy) *and* effective state control (output legitimacy). Keane, stressing the control aspect, explains the concept of “monitory democracy” as an emerging historical form of democracy “in which power-monitoring and power-controlling devices have begun to extend sideways and downwards through the whole political order” (Keane 2009a, online).

It has to be added that the new power-scrutinizing mechanisms, and PTA as a case in point, are closely related to the public sphere. The public

sphere today has to be understood as a communication space to which the media and the general public contribute, as does parliament.<sup>2</sup> The public sphere represents the context in which problems that must be solved (= policy relevant problems) are discovered, and the public has the legitimate expectation that these problems are dealt with in a rational and accountable way by the government and that the appropriateness and effectiveness of the measures taken is watched over by parliament and public sphere. PTA (like parliament) is located within this loop of the public perception and articulation of problems and their political processing. TA can serve as a scrutinizing mechanism supporting parliament's function of controlling government and can contribute to the formation of public opinion and political will.

The changes in representative democracies that have taken place during the past few decades constitute the appropriate broader perspective for observing and understanding the emergence of PTA. If we acknowledge that PTA serves the identification and articulation of technology-related societal problems *and* the parliamentary control of government policies, its potential role in a monitory democracy becomes clear. TA, independent of its many varieties of implementation, can be understood as a democratic innovation involving parliamentarians, scientists, and the public sphere. In figure 1, we graphically depict the narrower and wider context of PTA.

**Fig. 1: PTA in Context**



Source: Diagram by the authors

A look at the narrower and broader context is necessary to reveal the opportunity structures and the barriers to establishing PTA as a democratic innovation. The outer circle comprises the more general framework conditions and the dynamics at the level of the political system, at the level of civil society, and in the science and innovation system. The more specific inner circle points to the most relevant interfaces and relations of PTA.

According to Hennen/Nierling (2014, p. 3), in the 1970s and 1980s there was obviously a favorable opportunity structure, which eventually led to the institutionalization of PTA in *some* of the wealthier and highly industrialized European countries – referred to often as the first wave of PTA. Getting a bit more specific, but still at the level of constructing an ideal type of opportunity structure, Hennen/Nierling indicate the requirements at different levels: a highly developed and differentiated system of research and development (R&D) with a strong and visible commitment from the government and a strong parliament establishing corresponding parliamentary structures, e.g., a standing committee on science and technology. Further, parliament has to become aware that it needs independent support from the best available scientific knowledge to fulfil its function, and the science sector needs to be engaged in problem-oriented research (systems analysis, risk assessment, STS, ethics etc.) and prepared to provide policy advice in the form of technology assessment. Last but not least, other matters regarded as an element of the opportunity structure are a public sphere with an interest in S&T issues and a demand by citizens, civil society organizations, and social movements to have a say in decision-making processes in science and technology (cf. Hennen/Nierling 2014, p. 3). Analyzing the cases of Spain and Portugal we will bear this in mind.

## 2 Case Study: Spain

### 2.1 Social and Economic Background

After a traumatic civil war (1936–1939) followed by almost 40 years of dictatorship with long-lasting effects on the political culture, Spain's transition to democracy in the second half of the seventies took place within a few years. In

November 1975 Franco died, and in December 1978 the new constitution came into effect. This speedy and relatively smooth transition has been admired by many observers.<sup>3</sup> The social and economic perspectives were bright, the expectations high, and the catching up process of the Spanish research and innovation system was further strengthened by Spain's membership in the European Community in 1986.

The economic crisis has been palpable since 2008, hitting Spain hard and revealing profound weaknesses in its innovation system. The Spanish government is addressing these challenges by adopting a new Law for Science, Technology and Innovation in 2011, which was followed by a Spanish Strategy for Science, Technology and Innovation (2013–2020) and the Spanish State Plan for Scientific and Technical Research and Innovation (2013–2016), adopted in February 2013 (cf. Fernández-Zubieta 2014, pp. 12–17).<sup>4</sup> The structural deficits of the Spanish research and innovation system have been the subject of many studies, which have also included recommendations regarding how to change the old model (see for details, instead of others, ERAC 2014; Fernández-Zubieta 2014; Cotec 2013; OECD 2014). One significant indicator showing the profoundness of the crisis in a nutshell is the unemployment rate of young persons (under 25), which was at 53.7 % in August 2014, the highest rate of the 28 EU members (Eurostat 2014).

The crisis Spain is experiencing is also a political crisis. Political disaffection is directed primarily at the two major political parties (PP and PSOE), which dominate Spanish politics. They are accused of being corrupt and incompetent (cf. Feenstra/Keane 2014, online). As both parties are corrupt, the bone of contention is which party is more corrupt than the other (Nohlen 2012, p. 156). Various authors also confirm that these parties tend to perpetuate the long-standing dichotomous narrative of the “two Spains”, which both employ in political conflicts to attribute guilt or responsibility and to explain why reconciliation or sociopolitical integration is not possible in Spain (Juliá 2004; Kühn 2012). The observation that the media often position themselves close to the positions of political parties adds to this picture (Nohlen 2012, p. 149).

In general terms, the political system is assessed as being insufficiently sensitive to social demands (cf. Jiménez 2011, p. 63) and as divorced from civil society (Oñate 2013, p. 49). The distance of citizens from formal politics is confirmed by empirical research about Spain's political culture. Research used to find a rather low level of interest in politics among the population in general and a low level of political participation of various forms compared to other European countries, but a very high level of collective forms of participation like the signing of mass petitions, strikes, and especially demonstrations (Torcal et. al 2006, pp. 16 et seqq.; Gómez/Palacios 2012, p. 506; Font/Méndez 2008, pp. 546 et seqq.). Demonstrations increased after 1986, and increased even further after 2000 (Jiménez 2011). This pattern of participation reached a new level with the citizen movement known as the 15-M movement (referring to May 2011, when massive social protests started in the streets).

Feenstra/Keane (2014) have analyzed this movement as a push towards “monitory democracy” and taken stock of the changes brought about so far by this movement in terms of power-scrutinizing mechanisms. They mention, for instance, the formation of “anti-party” political parties (e.g., Podemos), making use of legislative citizen initiatives, the creation of independent newspapers and electronic media fostering investigative journalism, and internet platforms scrutinizing parliamentary work. Oñate compares the 15-M movement to the protest movements in other European countries in the sixties and seventies. He holds that this movement may change politics in Spain, bringing about more responsiveness, accountability, and transparency of politics and more channels of participation for citizens.

The parliament in Spain is relatively weak for two main reasons. On the one hand, party discipline of MPs is very strong, and on the other hand, the power of the prime minister is so strong that scholars of political systems tend to classify Spain as a semi-presidential democracy (Friedel 2010). This state of affairs is a legacy of the transition, which for good reasons aimed to prevent institutional instability and political fragmentation, and therefore favored strong parties, easy obtainable parliamentary majorities, and strong

governments. The general framework of relations between government and parliament followed an orientation emphasizing security instead of liveliness (Guerrero 2005, p. 12). The list of necessary political reforms is long, including the proposal to extend the parliamentary advisory structure since the parliament should not depend entirely on information provided by government and be able to receive expertise from professionals from different disciplines (ibid., p. 18).

## 2.2 TA Initiatives in the Context of R&D Policies

The efforts to establish TA in Spain at the level of the general parliament have not been thoroughly studied. The history of these intentions and attempts, however, is important as it constitutes one element of the current opportunity structure. There are some indications that there have been repeated efforts from 1989 to the present day.

In synchrony with the first wave of TA in Europe, a new “Law of Science” was adopted in Spain in 1986, which is regarded as providing the institutional structure offering various possibilities for implementing TA. To establish TA at parliament was just one option at that time. Luis Sanz, one of the most distinguished scholars of research policy, held that the Advisory Council of Science and Technology (CACT) was the “institution with the greatest chance of performing an independent technology assessment role” (Sanz/Goicolea 1987, p. 16). Following the Law of Science, this body should become the effective link between the scientific community, social agents, and policy makers in order to achieve R&D policies appropriate to the different interests and needs of society. Another realistic option would have been ANEP, the National Agency for Evaluation and Foresight (Agencia Nacional de Evaluación y Prospectiva) serving the Interministerial Commission for Science and Technology – provided it would have been sufficiently independent (Sanz 1989, pp. 167 et seqq.).

The protagonist of the first parliamentary initiative was Miguel Ángel Quintanilla, who was a senator at that time and the president of the Mixed Committee of Congress and Senate on Science and Technology, which had been estab-

lished based on the “Law of Science” mentioned above. He proposed to create an Office of Scientific Advice (Oficina de Asesoramiento Científico). But the proposal foundered as it could not be substantiated within the legislative period before the elections of October 1989. The contributions to an international seminar on the institutionalization of TA in Spain, which was organized by the Senate (Quintanilla 1989) and took place before the elections in 1989, suggests that there was no strict dividing line between those who were in favor of a parliamentary TA unit and those who preferred advisory bodies related to the executive power. The joint ambition of the participants was to introduce TA in the political system.<sup>5</sup> Against this Spanish background, Sanz has always pointed out the enormous importance of the institutional setting when reflecting the right place for TA in the political system (Cruz/Sanz 2005). It also appears that in Spain the idea of TA was more focused on the evaluation of R&D policy than elsewhere (cf. Sanz 1995; Fernández 2011).

Looking at foresight (competing with or complementing TA) as an element of the opportunity structure for TA in Spain at that time, we see the Observatory of Industrial Technology Foresight (Observatorio de Prospectiva Tecnológica Industrial, OPTI), which was created in 1997 by the Ministry of Science and Technology with the aim of carrying out foresight studies and technology watch with a focus on technological trends and the needs of Spanish industry (Böhle 2003). Subsequently, the Observatory of Sustainability in Spain (OSE) and a Unit of Analysis and Foresight were created, the former in 2005 and related to the Ministry of Environment and the latter in 2006 by the then Ministry of Agriculture, Fisheries and Food (EEA 2011, p. 7). But overall, as the EEA remarked when taking stock of Foresight in Spain, foresight is “far from influencing policymaking” and has not been “institutionalized as a tool for policymaking” (EEA 2011, p. 16). In other words, the practice of foresight in Spain cannot be seen as compensating the lack of TA.

Turning back to TA proper, a further attempt to establish TA took place in 2003/2004. Following Varela (2004) who was a member of the Committee on Science and Technology of the Senate between 2000 and 2004, a motion was approved

by this Committee asking the government to give its opinion on the establishment of an Office of Scientific Advice. The government responded positively in October of the same year and even declared its disposition to cooperate with the legislative power to support the establishment of such an office, and further envisaged that this body should become a member of the EPTA Network. Other options, elaborated by Sanz, as how to embed the TA function in the institutional structure were also available at that time. Yet within this legislative period nothing was decided and nothing happened before the elections of March 2004.

In the period 2004–2008 such an office was proposed once again, this time from within the Committee of Education and Science of Congress, namely by Mercedes Cabrera (social scientist), who became minister of education and science in 2006 (CSIC 2008, p. 45).

In 2008, after the elections in March, we see that TA is still a topic. In a seminar in May (Encuentro Nacional de Política Científica y Tecnológica), comparable to the one in 1988, bringing together experts from science and politics, the conclusion was that a greater involvement of parliament in the national R&D system would be important and that to this end a body advising parliament in matters of science and technology was proposed. The résumé of the rapporteur also pointed out the caveats containing the many prerequisites which would have to be fulfilled in order to make such a body work effectively and reminding everyone of the earlier failed initiatives (CSIC 2008, p. 10, see also p. 24, p. 45).

Today, the Law of Science, Technology and Innovation (2011) envisages “the introduction of mechanisms of social assessment of science, technology and innovation into the Spanish Science and Technology system in order to assess the interactions between technological development and society...” (cf. Revuelta 2011, p. 25). The task of promoting such a mechanism was given to the Advisory Council for Science, Technology and Innovation. Furthermore, the scientific community was also still promoting the idea of establishing a TA unit to advise the parliament. In December, 2012, the Confederation of Spanish Scientific Societies (COSCE), representing more

than 40,000 scientists suggested itself as suited to advise parliament (Andradas 2012, p. 19).

While there is no story to tell about a parliamentary TA unit at the central state level, there is one success story at the level of the autonomous communities of Spain, namely CAPCIT, the Advisory Board of the Parliament of Catalonia for Science and Technology (Consell Assessor del Parlament sobre Ciència i Tecnologia), which was established in 2008 (O’Reilly et al. 2012). Previously, in 1999, the Catalan government had created CACIT, an Advisory Commission on Science and Technology, for its purposes. In 2003 the Parliament urged the government to formally link CACIT to the Catalan Parliament. In 2008 “an offer of scientific and technological advice was made to the Catalan parliament by the Catalan scientific community” (O’Reilly et al. 2012, p. 47), and in November 2008 CAPCIT – now with a “P” for parliament – was formally established. In 2009 it became member of EPTA.

“... CAPCIT focuses on TA and the relationship between the Catalan Parliament and science conducted in Catalonia” (Domínguez 2012, p. 132). CAPCIT is a mixed body currently composed of 20 members, 10 each representing MPs and the main scientific and technical institutions of Catalonia. All the political parties are represented in this group, to which two members of the Presiding Board and the President of the Parliament – who is also the president of this mixed body – belong. The secretary of CAPCIT is one of the lawyers employed by parliament. In legal terms, CAPCIT is similar in nature to the intergroups of the Catalan Parliament (cf. Domínguez 2012, p. 133).

Domínguez clarifies that he does not regard CAPCIT as an instance of the “office model” of PTA, which it has often been considered in international comparisons (e.g., Hennen/Ladikas 2009, pp. 44 et seqq.; Enzing et al. 2012, p. 13). In his view, CAPCIT follows the parliamentary committee model. Following the PACITA modelling of parliamentary TA organizations, which overcomes the unfruitful distinction of office vs. committee model, the Catalan case corresponds to Model 2 “shared parliament – science involvement” (Ganzevles/van Est 2012, p. 198, p. 216; see also Ganzevles et al. in this volume). The par-

liamentary TA organizations in Germany and the UK and of the European Parliament fall into the same category. CAPCIT does not directly provide TA. The scientific and technical institutions represented in CAPCIT are usually commissioned to produce reports and to provide advice.

One peculiarity of CAPCIT is that there is no designated staff. Staff working for parliament has to do the administrative work (O'Reilly et al. 2012, p. 51). It also has no budget of its own and therefore depends on existing parliament resources for support (ibid, p. 48). The studies are paid by the institutions performing them. It is also noteworthy that the studies completed do not have to correspond to predefined standards and are not made available to the public by parliament. The research organizations, however, may consider publishing them on their own. The production of TA studies – an average of less than one finished study per year – is obviously not the strength of this TA institution. The impact and the role of CAPCIT in politics and the level of awareness among MPs is regarded as rather limited (ibid., pp. 49 et seqq.). This could be said of other TA bodies too. The relevant point is to see that CAPCIT represents a unique institutional form of an interface between the heads of science organizations of a region and the regional parliament. The following description of CAPCIT by its secretary is telling:

“CAPCIT itself is a forum that can be seen as a way to bring together the political and scientific worlds. Equally important as the information and scientific reports it provides is the opportunity for MPs and scientists to meet and thus to personally and directly present their ideas and visions. CAPCIT can foster mutual trust between scientific and technical institutions and the Parliament of Catalonia” (Domínguez 2012, p. 134).

### 2.3 Current Opportunity Structure

Regarding the opportunity structure for TA in Spain, we hold, as a hypothesis to test, that Spain has all it takes to institutionalize TA – even if it today seems hard to find catalyzing TA evangelists and entrepreneurs who could turn mere contingency into opportunity, and even if the economic crisis, a lack of societal awareness and

the political will of the relevant actors make it unlikely to happen soon.

Considering the political sphere, we find that there have been advisory bodies in the field of science, technology, and innovation policy continuously since 1986, which have allowed the scientific community to provide advice which may have included TA too. Gómez et al. (2014, p. 455) even wonder about the poor state of TA in Spain given the many potential actors who could have assumed this task. It is not far-fetched to think that what happened in Catalonia – i.e., the transformation of a governmental advisory body into a body (also) serving parliament – could have happened at the central state level, too.

A difference might be that the parliament in Catalonia is somewhat stronger, that the scientific sector in Catalonia is more influential, and that the idea to implement this democratic innovation even earlier than the central state – including the prospect of EPTA membership – was appealing. European encouragement could be the key to creating the necessary momentum for the institutionalization of TA at the central state level. Think for instance of the involvement of Spanish MEPs, a broader integration strategy of EPTA, a role for the JRC with its Institute for Prospective Technological Studies (IPTS) in Seville, and the participation of more Spanish research institutes in Horizon 2020 projects, e.g., on RRI (responsible research and innovation).

Looking at civil society and the public sphere, it is undisputed that there is an absence of a strong environmental and antinuclear movement and a low level of demand articulated by the public for it to participate in technology policy decisions (López et al. 1998). The concerns of the Spanish population today are, as the MAFS country report points out, “in order of importance: unemployment, crisis, politicians, immigration, housing, terrorism, insecurity, social problems, education, environment/pollution and health. That is, Spanish citizens do not directly consider science itself as a cause for concern or debate” (Revuelta 2011, p. 9).

This notwithstanding, Spanish citizens have raised their voices and become active with respect to very concrete issues and projects “clearly following the ‘not-in-my-backyard’ syndrome”

(Todt 1999, p. 212). Furthermore, the impression that there are no and have not been any political conflicts at all about technology would be wrong. GMO, stem cell research, and the phasing out of nuclear power plants as well as health issues such as the effects of electromagnetic fields are issues that arouse public debate and mobilize energy (Revuelta 2011, pp. 11–15). Taking regional issues into account, further causes of citizen involvement include items such as the urban development of Barcelona, eucalyptus plantations in Asturias, and water management in Catalonia (Gómez et al. 2014, p. 459).

Recent changes in civil society and the political system in the direction of “monitory democracy” resulting from demands for responsiveness and accountability could mean a change provided that the new political parties and other organizations of civil society find that TA is a democratic innovation and a scrutinizing mechanism in line with their own intentions and ideas. To be fair, the signals we receive from this direction are, however, still rather weak.

With regard to the science system, we find a well-developed, although scattered landscape of research associated to TA (STS, innovation studies, policy studies, foresight, health technology assessment etc.). Interdisciplinary problem-oriented research, STS studies (cf. Gómez et al. 2014, pp. 458 et seqq.), research policy studies, and innovation studies are well established with roots that can be traced back to the 1980s. An early example was the report by a group with Manuel Castells for the Office of the Prime Minister on new technologies (cf. Sanz/Goicolea 1987, p. 19). Cuevas/López (2009) give an account of the research institutes established since the 1980s performing STS studies. In the 1990s, postgraduate studies related to STS were established in various universities, and “science, technology and society” has even become an elective school subject in high school since 1990 (ibid, p. 43). There are also some examples where STS was involved in tackling controversial public policy issues (see the examples in Gómez et al. 2014, p. 459). Nevertheless, the conclusions of the analysis by Cuevas/López (2009, pp. 46 et seqq.) will still be valid. They state that STS research in Spain is not yet sufficiently embedded in society and that its po-

tential remains unleveraged. Challenges remain in the field of the public understanding of science, participation by civil society, and orientation for political decisions (cf. also Revuelta 2011).

What seems to be missing is a common focus on TA and the ambition to provide advice to policy-makers and to the public. Maybe the STS community with its international reputation, the Spanish Council for Scientific Research (CSIC) with the Institute of Innovation and Knowledge Management (INGENIO, a joint Institute of CSIC and the Polytechnic University of Valencia) and the Institute of Public Goods and Policies (IPP, the former Comparative Politics and Policy Unit) could become protagonists. Alternatively, associations (like COSCE, see above), academies (e.g., the Spanish Royal Academy of Sciences), or foundations such as FEYCIT (Spanish Foundation for Science and Technology) could assume this task.

A more comprehensive picture of the state of policy advice on science and technology matters in Spain would have to include an analysis of those advisory bodies already in place that fulfill TA functions such as the Spanish Bioethics Committee, the Spanish Committee on the Ethics of Research, or the Subcommittee (154/7) of the Spanish Congress studying social networks (Subcomisión de Estudio sobre las Redes Sociales).

### 3 Case Study: Portugal

#### 3.1 Economic and Political Background

Portugal experienced social, political, and economic changes during the twentieth century similar to those in Spain. Portuguese society suffered a long period of dictatorship under Salazar and Caetano, who maintained a political system comparable to the Franco regime. The colonial war since 1961, the obstacles to entering the Common Market (although belonging to NATO), censorship, strong emigration, and the absence of investments in its infrastructure and education system characterized the imbalanced social system and led to increased social tension and political unrest. Against this background, pro-democratic movements emerged and got stronger, eventually leading to the fall of the regime (carnation revolution) in April 1974. The new

democratic regime freed political prisoners, re-introduced the freedom of speech and of political organization, and started a process of introducing democratic elections and establishing a new constitution. This transition process went through the election for the constitutional parliament (April 1975) and for the legislative parliament (April 1976). These two elections in the two consecutive years after the April 1974 *coup d'état*, enabled the establishment of a balanced executive-parliament relationship (cf. Leston-Bandeira 1999; Leston-Bandeira 2004; Freire et al. 2002). In parallel, the large national research institutes were reorganized, as was the university system.

Portugal became full member (together with Spain) of the European Economic Community – EEC – in 1986. From 1976 until this event, negotiations with the EC had taken place, the investment on science and technology (S&T) increased, and a renewal of the industrial infrastructure and support services was brought about. New programs targeting technological innovation stimulated the modernization of the country and eased the European integration. The S&T expenditures in relation to the GDP, however, were only 0.34 % in 1980 and 0.4 % in 1984, and most was spent in the public sector.

### 3.2 TA Initiatives in the Context of Changing R&D Policies

First initiatives related to scientific advice for science policy took place as early as the 1960s. To support the national budget services in preparing the economic plan, a special office had been established to carry out assessment studies and economic foresight studies.<sup>6</sup> The most important innovation was probably the creation of the National Board of Scientific and Technological Research (JNICT) in 1967. The mission of this board was to plan, coordinate, and promote science and technology research and to advise the government on national science policy.

More profound interest in TA came up in the late 1980s within JNICT, which had meanwhile assumed new tasks targeting the development of the national science and technology system and sponsoring in particular large national laboratories. In the new democratic framework, JNICT

also fomented the creation of a large scientific community and supported the emergence of research centers in new technology fields (computer sciences, astronomy, biotechnology, social sciences), trying to achieve targets the OECD had defined for Portugal.

Even then, there was already a TA-related community performing innovation studies. That community had emerged within the research fields of technological innovation and economic development. A national program (cofinanced by the EC's structural funds) to support innovation in the economic productive structures, e.g., industry, telecommunications, and logistics, made possible the research and publication of many studies on several cases, sectors, and regions.<sup>7</sup> The research community of innovation studies was mainly an academic one.<sup>8</sup> Internationalization of research in this area opened a space for members of this community to get in contact with TA experts from other countries. The seminal paper by João Caraça and Fernando Gonçalves entitled "Towards Technology Assessment in Portugal" was presented at a conference on Technology Assessment – An opportunity for Europe organized by the European Commission (EC) in Amsterdam in 1987. There, these authors stated that in Portugal "TA types of activities have been carried out largely through the public sector" (Gonçalves/Caraça 1987, p. 8). And by "public sector" the authors mean large institutes in fields like health, environmental and industrial engineering and public agencies. These authors have also been very relevant for the STS community in Portugal and supported the linkage between the universities and the national innovation system. In the early 1990s, João Caraça and António Moniz became the national members of the program committee of the 4th Framework Programme of the EC, when social sciences projects were organized in the TSER program (Targeted Socio-Economic Research).

The decade from 1990 to 2000 was characterized by a rapid development of S&T infrastructures and the transfer of innovations from advanced research to the industrial and ICT sectors. On the EU level, Portuguese experts and social scientists were involved in that period in different EC DG XII initiatives on innovation and technology assessment, e.g., European Tech-

nology Assessment Network (ETAN), the MONITOR program, with subprograms like Forecasting and Assessment in Science and Technology (FAST), Strategic Analysis in Science and Technology (SAST), and Support of the Evaluation Activities of R&D Programmes (SPEAR). These initiatives were directly related to TA and were led by Jacques Delors. By then, Delors was President of the European Commission and had established a “Cellule de Prospective” which provided policy advice on innovation and foresight topics, and contributed to the design of research programs (cf. Endo 1994; Ross 1993). As the authors of the ERAWATCH report on Portugal underline, “the Portuguese research and development (R&D) situation changed rapidly in the second half of the 2000-2009 decade, with the GERD/GDP ratio peaking at a historical high of 1.64% in 2009” (Godinho/Simões 2014, online). The economic crisis from 2008 onwards put an end to the positive innovation system development. Despite the changes in the S&T system, R&D governance is still marked by a high degree of centralization, through fund allocation and political coordination. “The formal structures for hearing the main stakeholders have not been used often” (Godinho/Simões 2014, online). A slight change is the fact that the private sector invested significantly more on R&D in recent years (cf. Boavida/Moniz 2012).

It is also important to underline that there was one mixed commission at parliament involving experts and representatives of the public who debated the incineration technology issue (Matiás 2008). This was probably the most important and therefore paradigmatic case in the late 1990s of such a mixed commission at parliament. Although unique in terms of parliamentary debate, it contributed to the awareness of risk issues and the need of independent scientific advice. In fact, risk, health, and environment issues have since then become an “emerging theme, both echoed and driven by the media, [which] reflects social concerns about decision making on matters of urban and rural land development, public health safeguards and environmental protection” (Alves 2011, p. 11). The mere involvement of experts, however, was not enough to fulfill the task of TA, as the Portuguese MASIS report suggests when

it underlines that “visible differences between different scientists create a public perception of uncertainty and controversy, although these are intrinsic to science and scientific advice. This has particularly happened in the case of health issues (the recent H1N1 pandemic threat), environmental risks (the co-incineration government policy) and the management of land development (the implication of government decision on where to build the Lisbon airport or the third bridge over the Tagus)” (Alves 2011, p. 11).

In their report for ERAWATCH, the authors made the following statements: “a general criticism made of policy design and implementation in Portugal in recent years is the insufficient involvement of stakeholders in such processes. Formal mechanisms for participatory involvement have not been set up or have had a limited practical role. Furthermore, the lack of a sound public opinion basis and of stakeholder consultation significantly hinders the accumulation of consistency in learning and policy. Research policy is no exception to this state of affairs.” (Godinho/Simões 2014, online)

Furthermore, the lack of relations between the national S&T system and economic structures is a marked weakness of the Portuguese innovation system (Henriques 2013, p. 270; Laranja 2012, p. 660). The academic side, regarding itself as the primary source of innovation (e.g., academia, national laboratories, larger research institutes) does not see its duty of innovation transfer, and the industrial side, with almost no tradition of joint projects, is presuming that academics are developing technologies not suited to their needs and the demands of the national economy (Moniz 2012a, p. 185). As a matter of fact, there is almost no dialogue. But there is also a weak relation between these structures (S&T and industry) and the policy governance. The Portuguese PACITA country report mentions that “the relatively limited interaction among different ministries results in science policy being potentially inward-looking rather than aimed at supporting the overall advance of the society, both in terms of innovation and relative to broader issues” (Almeida 2013, p. 8).

#### 4 Current Opportunities and Steps Towards the Institutionalization of TA

##### *The PhD program on “Technology Assessment”*

There is a very small STS community in Portugal, but a very large one on innovation studies (mostly economists). The *PhD program on Technology Assessment* is providing competence in both fields. It is the only one that offers a degree in TA. This program was proposed by the Universidade Nova de Lisboa (UNL) and started in 2009/2010, aiming to prepare highly skilled researchers and decision-making consultants who will be involved in the policy processes for technology options, which are expected to become critical in the short and medium term. The proposal was made by social scientists at the Faculty of Sciences and Technology of that university (UNL), but natural scientists and engineers were also associated (Moniz 2012b). A recent study on TA education in Portugal mentioned that “one can say that in Portugal, TA is still without critical mass of researchers, although its political importance is growing very fast and the expectations towards TA seem clearly expressed” (Moniz/Grunwald 2009, p. 20). The TA community is already involved in the reconstruction of the national innovation system (NIS), and it is prepared to advise on policy making. Most researchers are already involved in the larger R&D centers and laboratories (CES, CIES, CESNOVA, INSA, ITQB), participate in several national and international research projects, and have been involved in policy advice studies provided by those centers to several ministries in the field of innovation and science policies.

There are around 20 research projects under development, and the first group of theses on TA was presented for public discussion in the frame of the PhD program on TA at Universidade Nova de Lisboa (UNL) in 2011. Until 2009 (when the PhD program started) there were still few researchers in this field. Five years later one can already talk about a “critical mass” of TA researchers. Almost 40 candidates were enrolled in this advanced level of studies. The knowledge fields in the program cover topics from health TA studies, towards mobility and transport, brain-com-

puter interfaces, innovation and STS, and cloud computing (Baumann 2013; Boavida 2011; Maia 2011, Velloso 2012).

##### *The National TA network GrEAT*

The *national TA network GrEAT* was launched by the group of experts connected with the PhD program on TA. This group established regular contacts with other STS experts in Portugal and with the parliament. The scientific events of the PhD program were also disseminated through this network, and the topics discussed there were not exclusive to the academic sphere. In fact, there are several problem-oriented research projects ongoing. This interdisciplinary “research community” is offering its advice through GrEAT and demanding a TA-type interface between parliament and science.

Parliament is playing a strong role in public life, although it remains weak when dealing with S&T issues. There is a lack of S&T competence among the MPs, and this goes together with little interest in these matters. The younger generation of MPs seems to be more engaged and interested. Attempts have been made by parliamentary entrepreneurs from different party groups to support TA since 2010. These people, who include J. Ribeiro e Castro, Gabriela Canavilhas, António J. Seguro, Rui P. Duarte, Luis Fazenda, Isilda Aguincha, and Rita Rato, also strive for PTA. In recent years parliament has approved the intention to establish a TA unit.<sup>9</sup> The Parliamentary Committee on Education, Science, and Culture (CECC) is the one that has been in charge of the organization of a possible TA unit at parliament since 2012.

This committee was contacted by the Portuguese PACITA partner Mara Almeida, and in April 2012 she presented a report where such a unit was proposed (Audição Parlamentar N° 47-CECC-XII). On February 6, 2012, the committee approved the report and nominated a rapporteur for parliamentary technology assessment (Rui Santos). The national TA network GrEAT was not involved in this activity. By July 12, 2012, the management board of parliament determined that such unit would not receive financial support from the parliament itself for two

possible reasons: because of a lack of financial resources in the context of austerity or because there were no precedents for the type of unit proposed within the organizational structure of parliament. This blocked the process at least temporarily. Meanwhile GrEAT became involved, aiming to help breaking the deadlock.

The first contacts of GrEAT with different party groups at parliament started in early 2010 (in January with meetings with MPs and European TA experts). Later, several MPs representing the spectrum of political parties in parliament also took part in conferences organized together with the PhD program on TA or participated in initiatives of the PACITA project in Portugal. Although these activities were running in parallel, some sort of synergy was missing between the national TA network and the PACITA project. The most support was received from ITAS, which hosted several PhD students and sent experts to participate in the PhD program events. Since 2010 GrEAT has established four permanent working groups<sup>10</sup> and published the results of several research projects. The most important deliverable of GrEAT has been the *Tópicos* leaflets presenting research results envisaging communication with the wider public. Ten *Tópicos*<sup>11</sup> have been published so far and sent to parliament and other governance institutions.

In 2013 GrEAT was accepted as an EPTA observer institution. In its current work, this national TA network is taking part in the organization of public events that are part of the PhD program on TA, is providing information about OTA, EPTA, and STOA studies,<sup>12</sup> and has proposed the creation of a virtual library on TA at parliament, which could be managed by parliament's Technical Information unit under collaboration with GrEAT.

Furthermore it supports the preparation of options regarding how to establish a parliamentary TA unit in Portugal. During 2014, a series of hearings was held on the organization of a TA unit and PTA functions in general, organized by the above-mentioned parliamentary committee – CECC.<sup>13</sup> Several proposals are currently (December 2014) under discussion in parliament. Moreover, GrEAT is working to overcome the

hurdles at parliament that blocked the emergence of a TA unit.

Besides the involvement of GrEAT at the level of the national parliament, contacts have been made with the Azorean Regional Parliament that may lead to further advice on PTA in the regional parliament. Issues on energy and sustainability are of major interest in the autonomous region.

In conclusion, TA activities in Portugal are grounded in international cooperation and in expanding scientific expertise through the PhD program at the UNL (in cooperation with ITAS-KIT). The PACITA project organized two national workshops in Portugal (2012), the second parliamentary debate on “*Strengthening Technology Assessment for Policy-Making*” (April 7–8, 2014) in the Portuguese Parliament, the first PACITA practitioners meeting on “*Selecting the theme*” (September 19–21, 2012 in Lisbon), and a policy hearing involving the Future Panel on Public Health Genomics (Lisbon, January 18, 2014). Both streams of activities increased the opportunities for establishing parliamentary TA in Portugal.

## 5 Conclusion: Two Countries Ready for Good Old TA

The institutional structure of the science, technology and innovation policy field offers different potential “docking stations” for TA in Spain as well as in Portugal. At present, one promising option in Spain is to attach TA capacities to the Advisory Council for Science, Technology and Innovation. This way, TA could serve Parliament and the Executive – or in other terms: all parties. In Portugal the option to attach TA capacities to the Parliamentary Committee on Education, Science and Culture currently appears as the most promising one.

The case of the successful institutionalization of TA at the Catalan regional Parliament in 2008 has shown the importance of the scientific community being committed to TA and building up pressure on the parliamentary system. At the national level, the intention and offer of COSCE to deliver TA to the Parliament has not reached its aim. It needs to be emphasized that TA is not the voice of science, but a type of

scientific analysis taking into account multiple perspectives, unintended side effects, and systemic effects of sociotechnical dynamics able to come up eventually with sound options for politics. Maybe a common effort of those scientific communities in Spain that are particularly relevant to delivering TA (e.g., innovation studies, STS studies, policy and governance studies, sustainability research) would be worth another try. In the case of Portugal, we see the GrEAT network as an attempt of the members of the relevant scientific communities to demonstrate that there are TA capacities on which to rely when institutionalizing PTA.

In Spain there were several failed attempts to establish TA at the central state level before the most developed region in economic terms, Catalonia, took the lead. In Portugal the current activities at the national parliament have raised awareness of the potential of TA at the regional parliaments in the Azores and Madeira (in particular the Azores). If the institutionalization at the central state level does not succeed, it may well be that we will see TA at the regional level first. However, the significance of the Azores and Madeira for the Portuguese innovation system is limited.

It has to be further stressed that the European context has been of great importance for the institutionalization of PTA in European countries from the beginning. The introduction of democratic innovations often goes together with a close look at foreign experiences and best practices abroad. Exchanging ideas and learning from the experiences of others require common projects and community building. For national TA communities (in a broad sense) it is important to be involved in European research projects like ETAN, TAMI, EUROPTA, and PACITA and in international community building activities, namely EPTA. While CAPCIT is a member of EPTA, and GrEAT has the status of observer at EPTA, there is no institution or network representing the overall Spanish TA community. International projects and networks in this field in which Portugal and Spain participate are also important vehicles for raising both the attractiveness of TA research in these countries and the awareness of politicians for TA as an instance of democratic innovation.

The perspective of “monitory democracy” should allow politicians to see TA as a democratic innovation to support decision making, but also as a policy-scrutinizing mechanisms, able to increase accountability and responsiveness of the political system regarding its innovation and environmental policies. This might be particularly appealing in countries where civil society puts pressure on the political system to introduce innovations in terms of participation, accountability, and responsiveness. Comparing the protest movements which emerged during the economic crisis and the activities they have brought about, steps towards a monitory democracy are more apparent in Spain, although there are also social movements in Portugal demanding a change in innovation policy with regard to controversial technologies. A proper understanding of monitory democracy has to take into account that citizens’ demands for participation do not always have to be translated into a demand for direct participation in decision making. As explained above, political innovations putting forward transparency, accountability and control are an important aspect of a monitory democracy. “Good old TA” can fulfill its purpose in these circumstances as long as its results are open for public debate and as long as the resonance from the study results can be traced in political debates. Once this type of TA has been established and has proved worthwhile, the demand from civil society and politics will indicate how far new forms of participatory TA are additionally required.

## Notes

- 1) We agree with most of the conceptual framing of PTA as presented in Ganzevles/van Est (2012, pp. 18–27; pp. 184–220). A difference is, however, that we stress the importance of the public sphere and the embedding of TA and PTA in the context of changes in Western representative democracies, especially with regard to new scrutinizing mechanisms.
- 2) This view is confirmed by recent research about parliaments as communication space (cf. Schulz/Wirsching 2012, pp. 12–15; Patzelt 2012, p. 45).
- 3) Not to forget, however, the terrorism of the Basque ETA separatists and a failed coup d’état in 1981 led by Antonio Tejero – 23-F.

- 4) We won't go further into the criticism of the current government's policy in this field (inter alia: linear understanding of innovation processes, delays in the constitution of a Spanish Research Agency, funds not provided for "grand-challenge research", dismissal of scientific personnel, brain drain).
- 5) It is no exception that an innovation can be attached to one or the other institution depending on the forces in a political system. E-petitions in Great Britain for instance, again a democratic innovation, were introduced first as a service of the Scottish Parliament, and then at the state level as a service of the Prime minister (cf. Riehm et al. 2014).
- 6) GEBEI – Portuguese Office for Basic Studies on Industrial Economy, Ministry of Finance and Planning.
- 7) The PEDIP program to support innovation in industry mobilized a wide capacity for assessment studies and services oriented towards application of new and emergent technologies in the productive sector and support services, as new forms of consulting competence for technology evaluation. This governmental program had the financial support of the European structural funds and was started in 1988 (Council Regulation No 2053/88 of June 24, 1988). It lasted until 1996.
- 8) Mainly from the Institute for Economics and Management (Technical University of Lisbon), the Social Studies Centre (University of Coimbra), Faculty of Economics of University of Porto, Faculty of Sciences and Technology (University Nova Lisbon).
- 9) Resolution of the Portuguese parliament number 60/2009 of July 10, 2009.
- 10) WG 1 – Health Technology Assessment; WG 2 – Indicators of TA; WG 3 – Transport and Mobility; WG 4 – Foresight Analysis
- 11) <https://avaliacaotecnologia.wordpress.com/topicos/>
- 12) <https://avaliacaotecnologia.wordpress.com/publicacoes/publicacoes-do-great/#>
- 13) The hearing with representatives of the national TA network (Audição Parlamentar N° 162-CE-CC-XII) is available at <http://www.parlamento.pt/ActividadeParlamentar/Paginas/DetalheAudicao.aspx?BID=97045>. Besides the MP that belongs to the parliamentary committee – CECC, the present members include GrEAT (e.g., A. Moniz and L. Vasconcelos), J. Caraça (from the Gulbenkian Foundation), V.C. Simões (Portuguese report coordinator of ERAWatch), M. Almeida (Portuguese partner of PACITA project), and M. Heitor (former secretary of state of Science). All of these hearings are available at the parliament webpage.

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## Is There a Chance for TA?

Reflections on the Perspectives for TA  
in Eastern/Central Europe

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**Technology assessment has been widely unknown in many Central and Eastern European countries until now. This paper is a reflection about the possible roles and potential of TA in some of these countries (Bulgaria, The Czech Republic, Hungary, and Lithuania) based on discussions as well as the activities in the course of the PACITA project. The article views the current situation against the background of the historical heritage such as the Soviet Regime as well as compares the specific political culture and climate of these countries with those in some of the Western European countries in which technology assessment units were introduced in the 1970s and 1980s. So far, TA is only regarded as an unrecognized need by many in Eastern and Central Europe: often a lack of understanding of the TA concept by decision makers, the inflexibility of the current system, the danger of a politicization of such attempts, the concentration of decisions in the government rather than parliament as well as problems with financing and a lack of TA-trained human resources are named as reasons for this state of affairs. For the future, two perspectives are proposed: First to focus on the important role of the EU with regard to its financial power as well as the mutual learning occurring across national contexts. Second, a transition strategy for TA in these countries should be elaborated to support the national TA initiatives which have started in the meantime. Different roles for TA are proposed here which rely on national activities but also on an international TA network accompanying the future development of TA in these countries.**

### 1 Introduction

Technology assessment (TA) and parliamentary technology assessment (PTA) are still new concepts in most of the Central and Eastern Eu-