

Impact of Germany's Recent Space Policy and Progress Towards a National Legislation

*Sandra Teichert**

Abstract

The impact of Germany's recent space policy and this nation's progress towards national legislation in regards to space activities will be examined and discussed in this paper. The topic of this paper is of great relevance as Germany is one of Europe's leading space faring nations. Not only is it the largest financial contributor to the European Space Agency as of 2012, but also cooperates internationally with other major spacefaring nations such as the United States of America, Russia, Japan and India, in regards to space activities. Furthermore, Germany is extensively involved in the European undertakings in space. For example, Germany takes part in the production of the Ariane-5 launcher, is greatly involved in the Galileo project, which deals with satellite navigation, and plays a major role in the 'Global Monitoring for Environment and Security' (GMES) initiative. This country's substantial expertise in space technology also plays a role in its relevance in the international field of space activities. The current administration of dealing with Germany's space activities will be examined within this paper along with its progress towards national legislation. In this regard, the administrative tasks of the German Aerospace Centre ('*Deutsches Zentrum für Luft- und Raumfahrt e.V.*' or 'DLR') are of relevance and will be explained, also taking into consideration the DLR's space activity management. Moreover, the 'Law Governing the Transfer of Responsibilities for Space Activities' of 1998 as well as the 'Act on Safeguarding Security Interests in Distribution of High Resolution Satellite Data' of 2007 will be examined in order to reveal what is currently being regulated and to anticipate the content which the future German legislation could additionally be composed of.

* Leuphana University Lueneburg, Germany, sandra.studium@gmail.com.

1 Introduction

More than 50 years have passed since the exploration of space began and space treaties were created to regulate these activities. Because of the rapid technological developments, many additional possibilities to explore and use space have been created. For example, space tourism will soon be possible, enabling private persons to fly to space. As of now, the international space treaties do not specifically protect these individuals since back when the space treaties were created, astronauts were the only people sent to space and hence were the only individuals protected by the regulations. It seems problematic that many space activities that are being pursued nowadays were not available back when the treaties were created and therefore are not specifically regulated. With the development of this broad range of space endeavours, new stakeholders have entered the space field. It is not just the military or governmental institutions that are active in space, rather, the market has shifted to the involvement of more and more private and commercial companies. It is consequently necessary to create laws to regulate these newly developed space activities and new stakeholders to ensure that States will be held responsible for their space activities and liability will be assumed in case that any damage is caused.

Germany's involvement in the space industry, both stemming from governmental institutions as well as from the private commercial sector, calls for a need to regulate these activities.

2 German Space Activities

The 1980s marked a time when Germany's space sector significantly flourished.¹ Nowadays, Germany proves to be a highly relevant State in the space sector as it is one of Europe's leading spacefaring nations. The German government provides an annual space budget of 1,2 billion Euros, the 6th highest government spending on aerospace activities worldwide.² Not only is it the largest contributor to the European Space Agency (ESA),³ but also cooperates

1 B Schmidt-Tedd, K-U Schrogl and W von Kries. 2002. *Grundzüge des Raumfahrtrechts – Rahmenbestimmungen und Anwendungsgebiete*. Munich: Beck, 48 et seqq.; J Reifahrt in: K-H Böckstiegel. 1991. *Handbuch des Weltraumrechts*. Cologne: Heymanns, 823 et seqq.

2 Federal Ministry of Economics and Technology (BMWi). 2010. *Making Germany's Space Sector Fit for the Future: The Space Strategy of the German Government*. Berlin: Public Relations / L2, 13 at 1.

3 PB de Selding. 2012. European Space Agency Members Approve Flat 2012 Budget, *Space News*, [online]. Available at: <http://advertise.spacenews.com/A8B71023-EF65-406B-8D9D-92742B9E80EA/FinalDownload/DownloadId-F3D390B-64B4AEF6107DD89ECF72D3015/A8B71023-EF65-406B-8D9D-92742B9E80EA/sn_pdfs/SPN_20120116_Jan_2012.PDF> (last accessed: 02.10.2012).

internationally with other major space faring nations such as the United States of America, Russia, India and Japan, in regards to space activities.⁴

Germany is furthermore a member of EUMETSAT,⁵ which, like ESA, is an intergovernmental organisation. EUMETSAT, as well as the European Space Agency's European Space Operations Centre, are both located in Darmstadt, Germany.⁶ Additionally, a further ESA site, the European Astronaut Centre, is situated in Cologne, Germany.⁷

Germany's relevance in the space sector also becomes clear when the number of jobs of its space industry and the revenue generated in 2011 are examined. The German Aerospace Industries Association ('*Bundesverband der Deutschen Luft- und Raum- fahrtindustrie e.V.*' or BDLI) published in 2011 that approximately 7500 people worked in the space field in Germany, generating about 2.2 billion Euro in this year. Even in times of financial crises, the German space industry managed to increase its sales by 3.7% (compared to 2.1 billion Euro in 2010), accounting for 8.4% of total German industry sales. The employment in the German space sector grew by 12.2% (employing 6700 people in 2010).⁸ Germany's involvement in space activities can be divided into four categories:

- involvement in ESA projects,
- governmental space activities
- public-private-partnerships (PPPs) and
- private German space activities.

Involvement in ESA and European Union Projects

Germany is extensively involved in European undertakings in space. When it comes to its contribution to ESA projects, Germany takes part in the production of the Ariane-5 launcher⁹ and is greatly involved in the Galileo project,

4 Bundesregierung Deutschland. *Raumfahrtstrategie der Bundesregierung – Für eine zukunftsfähige deutsche Raumfahrt*. Unterrichtung durch die Bundesregierung. Drucksache 17/4140 of Dec. 1, 2010. Berlin: Bundestag, 2. [online]. Available at: <<http://dipbt.bundestag.de/dip21/btd/17/041/1704140.pdf>> (last accessed: 02.10.2012); R Brüderle. 2010. *Innovationsmotor Raumfahrt – Die Raumfahrtstrategie der Bundesregierung*. DLR Newsletter Countdown 14 at 5 et seqq. [online]. Available at: <www.dlr.de/rd/Portaldata/28/Resources/dokumente/Publikationen/Countdown/Countdown14_hires.pdf> (last accessed: 02.10.2012).

5 For a list of EUMETSAT's member states, see: <www.eumetsat.int/Home/Main/AboutEUMETSAT/WhoWeAre/MemberandCooperatingStates/index.htm> (last accessed: 02.10.2012).

6 See: <www.esa.int/SPECIALS/ESOC/SEM62CW4QWD_0.html> (last accessed: 02.10.2012).

7 See: <www.esa.int/esaHS/ESAJIE0VMOC_astronauts_0.html> (last accessed: 02.10.2012).

8 BDLI. 2011. *The German Aerospace Industry 2011*. Available at: <www.bdli.de/en/images/key%20figures%202011.pdf> (last accessed: 02.10.2012).

9 For further information, see: <www.arianespace.com/launch-services-ariane5/industrial-team.asp> (last accessed: 02.10.2012).

which deals with satellite navigation and the control centre of Galileo being located in Oberpfaffenhofen, Germany.¹⁰ Additionally, Germany plays a leading role in the 'Global Monitoring for Environment and Security' (GMES) initiative.¹¹ Germany also plays a role in the production of the ESA's GOCE satellite which will provide oceanography and geophysics data.¹²

Governmental Space Activities

German governmental space activities are carried out by the German Aerospace Centre ('Deutsches Zentrum für Luft- und Raumfahrt e.V.' or 'DLR'). Although it conducts its own research activities, the DLR also acts as the German space agency and as such, plans and implements the German space programme on behalf of the German federal government. To give an example, a current mission is the satellite SATCOMBw mission, a communication system of the German Armed Forces.¹³

PPPs

Germany is furthermore involved in Public Private Partnerships. For example, the German TerraSAR-X remote sensing satellite qualifies as a joint venture that is carried out under a public private partnership between the German Aerospace Centre and EADS Astrium.¹⁴

Private Activities

This country's substantial expertise in space technology¹⁵ also plays a role for its importance in the international field of space activities. For example, the geospatial information activities of the German company RapidEye, a public limited company ('*Aktiengesellschaft*'), can be categorised as being German private space activities.¹⁶

3 Initial Steps Towards German Space Legislation

This involvement has led to the adoption of a German space policy in 2010 in addition to the previous legislation in this legal sector, in particular the 'Law

10 For further information, see: <www.esa.int/esaCP/SEMT498A9HE_Germany_0.html> (last accessed: 02.10.2012).

11 For further information, see: N Rohner, K-U Schrogl, S Cheli. 2007. Making GMES Better Known: Challenges and Opportunities, *Space Policy* 23 at 195 et seqq.

12 For further information, see: <www.esa.int/SPECIALS/GOCE/index.html> (last accessed: 02.10.2012).

13 For further information, see: <www.dlr.de/rb/en/desktopdefault.aspx/tabid-6813/11188_read-6308/> (last accessed: 02.10.2012).

14 For further information, see: <www.dlr.de/rb/en/desktopdefault.aspx/tabid-6813/11188_read-6308/> (last accessed: 02.10.2012).

15 For example, see: <www.hightech-strategie.de/en/209.php> (last accessed: 02.10.2012).

16 For further information, see: <www.rapideye.com/> (last accessed: 02.10.2012).

Governing the Transfer of Responsibilities for Space Activities' of 1998¹⁷ and the 'Act on Safeguarding Security Interests in Distribution of High Resolution Satellite Data' of 2007.¹⁸ Since the early 2000s there has been an on-going process in drafting a German Space Act.¹⁹ With the publication of the Space Strategy (hereinafter also referred to as the space policy) of the German federal government in 2010, the government's goal to pass a German Space Act was recently put into focus.²⁰

Law Governing the Transfer of Responsibilities for Space Activities

On the 22nd of August 1998, the 'Law Governing the Transfer of Responsibilities for Space Activities' was passed to permit the German Aerospace Agency to exercise authority over administrative tasks in regards to German space activities.²¹ The preparation of the German Space Strategy, the implementation of German space projects and programmes through awarding grants and contracts as well as the representation of German interests in space activities in general, at a European and on an international level are encompassed in the DLR's administrative tasks. The DLR's central responsibility to manage the German space programmes on a national and international level is realised by its space activity management through the German Space Agency's Space Administration.²² In this regard, the DLR's Space Administration acts on behalf of the German government by designing and implementing the aforementioned German Space Strategy. Through the passing of the Law Governing the Transfer of Responsibilities for Space Activities, the DLR was given the task of implementing the government's goals set forth in the 2001 German Space Programme.²³ The DLR accomplished this task in cooperation with other ministries with the recent passing of the 2010 German Space Strategy. Within this Strategy, the

17 Also known as: 'Gesetz zur Übertragung von Verwaltungsaufgaben auf dem Gebiet der Raumfahrt' or 'Raumfahrtaufgabenübertragungsgesetz' or 'RAÜG,' hereinafter referred to as 'Law Governing the Transfer of Responsibilities for Space Activities,' available [online]. at: <www.gesetze-im-internet.de/ra_g/BJNR010140990.html> (last accessed: 02.10.2012).

18 Also known as: 'Gesetz zum Schutz vor Gefährdung der Sicherheit der Bundesrepublik Deutschland durch das Verbreiten von hochwertigen Erdfernerkundungsdaten' or 'Satellitendatensicherheitsgesetz' or 'SatDSiG,' hereinafter referred to as 'Satellite Data Security Act,' [online]. Available at: <www.gesetze-im-internet.de/satdsig/index.html> (last accessed: 02.10.2012).

19 LJ Smith. 2012. Legislating for Outer Space: The Example of Germany: Considerations on a National Space Law, in: *German Journal of Air and Space Law* or 'Zeitschrift für Luft- und Weltraumrecht'. 61 Jg. 1. Cologne: Heymanns, 62.

20 *Supra* note 2.

21 Section 1 of the Law Governing the Transfer of Responsibilities for Space Activities.

22 Section 2 of the Law Governing the Transfer of Responsibilities for Space Activities.

23 Federal Ministry of Education and Research (BMBF). 2001 'Deutsches Raumfahrtprogramm.' Bonn: BMBF PUBLIK, 5. ' [online]. Available at: <www.dlr.de/dlr/Portal-data/1/Resources/documents/drp.pdf> (last accessed: 02.10.2012).

following German space activities are integrated on a national and European level: DLR's space research and development programme, Germany's contributions to the European Space Agency (ESA) along with its involvement in the European Organisation for the Exploitation of Meteorological Satellites (EU-METSAT). The German Space Administration of the DLR also supervises and draws up space and security research projects in accordance with the sixth and seventh research framework programme of the European Union (EU).²⁴

Satellite Data Security Act

The German previously mentioned remote sensing satellite TerraSAR-X was launched into orbit on June 15th, 2007. In order to prevent an endangerment of Germany's foreign policy and national security interests through the distribution of this satellite's data,²⁵ the German parliament passed the 'Act on Safeguarding Security Interests in Distribution of High Resolution Satellite Data' in November 2007. Within this act, German authorities are permitted to restrict the proliferation of high-resolution satellite imagery in cases where this imagery could endanger Germany's security or that of its allies. Additionally, an overall regulatory framework for the commercial and educational distribution of satellite imagery is provided in the Satellite Data Security Act.

The aforementioned TerraSAR-X satellite partially includes United States' technology. Therefore, the use of the satellite prompts Germany to comply with the security interests of the United States of America. The German Satellite Data Security Act has also been passed to protect these interests through the requirement that distributors as well as users of satellite imagery need to screen the obtained or requested data for security aspects. In cases of doubt, the users and distributors need to ask for permission from the German authorities.²⁶

Other Relevant German Laws

Other German laws, such as the German Aviation Code, could be used by analogy to handle issues regarding, for instance, the registration matters or the licensing of launch services. Furthermore, the German Telecommunications Act applies to satellite telecommunications.²⁷ Still, these two laws do not clearly regulate these matters for all of the German space activities in a general manner.

24 See: DLR Space Administration. [online]. Available at: <www.dlr.de/rd/en/desktopdefault.aspx/tabid-2099/3053_read-4706/> (last accessed: 02.10.2012).

25 Bundestag-Drucksache 16/4763 at 1.

26 E Wins-Seemann. 2008. Das Satellitendatensicherheitsgesetz aus industrieller Sicht- Angemessener Rahmen für die kommerzielle Nutzung von weltraumgestützten Fernerkundungssystemen? *German Journal of Air and Space Law or Zeitschrift für Luft- und Weltraumrecht*. 57 Jg. 1. Cologne: Heymanns, 55-66.

27 For further details, see: S Hobe and J Neumann. Regulation of Space Activities in Germany. In: R Jakhu. 2010. *National Regulation of Space Activities*. New York: Springer, 132 et seqq.

4 The Need for Additional Legislation

However, the abovementioned existing German legislation in the space area is unable to meet the legal challenges, which the involvement of Germany and its private sector in national and international space activities poses. Back when the space treaties were drafted, only the governments of states conducted space activities. However, based on the above description of Germany's space activities, it is clear that other players are nowadays taking part in space activities. Especially Germany's private space activities need to be controlled and regulated by the state through means of national legislation to ensure that these activities are carried out in accordance with the provisions set forth in the space treaties to which Germany is party. However, when it comes to bilateral activities of Germany, it is also important that the state that Germany, or its private sector, cooperates with has national space legislation in place to ensure reliability of the conduct of these space activities.

Germany is party to the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies [(adopted by the General Assembly in its resolution 2222 (XXI)] opened for signature on 27 January 1967, entered into force on 10 October 1967 (101 ratifications and 26 signatures, hereinafter also referred to as the Outer Space Treaty or OST), to the Agreement on the Rescue of Astronauts and the Return of Objects Launched into Outer Space [adopted by the General Assembly in its resolution 2345 (XXII)], opened for signature on 22 April 1968, entered into force on 03 December 1968 (91 ratifications and 24 signatures, hereinafter also referred to as the Rescue Agreement or ARRA) to the Convention on International Liability for Damage Caused by Space Objects [adopted by the General Assembly in its resolution 2777 (XXVI)], opened for signature on 29 March 1972, entered into force on 01 September 1972 (88 ratifications and 23 signatures, hereinafter also referred to as the Liability Convention or LIAB) as well as to the Convention on Registration of Objects Launched into Outer Space [adopted by the General Assembly in its resolution 3255 (XXIX)], opened for signature on 14 January 1975, entered into force on 15 September 1976 (56 ratifications and 4 signatures, hereinafter also referred to as the Registration Convention or REG).²⁸ However, this only poses obligations to the State but not to its citizens or private space sector. These treaties are not considered to be general rules of international law according to Art. 25 of the German Constitution.²⁹ If this were the case, these treaties would otherwise be directly applicable within Germany. Therefore, extensive German National Space Legislation is necessary. This Legislation should be drafted in accordance with the German space policy and especially taking into consideration the involvement of the German commercial private sector in space activities.

28 For the status of International Agreements relating to Activities in Outer Space, see: <www.oosa.unvienna.org/oosa/en/SpaceLaw/treatystatus/index.html> (last accessed: 02.10.2012).

29 Art. 25 of the German Constitution, [online]. Available at: <www.gesetze-im-internet.de/gg/art_25.html> (last accessed: 02.10.2012).

Administrative Competence for German Space Activities

The German space undertakings, as described above, fall within the competences of different levels of various ministries. As early as 1986, the Ministry for Research and Technology considered whether or not German national space legislation was in need, especially since Sweden had already passed a national space law and the UK parliament was in discussion of passing a space law bill. However, German space activities were only conducted by the government at that time. This led the ministry to conclude that there was no current need for legislation.³⁰

By 1999, German involvement in space activities had increased: a university and private company had launched small satellites with little or no support or supervision by the government; a company called Eurockot had also been founded, offering launch services through means of a German-Russian joint venture.³¹ These launch services were not conducted from German territory. Nevertheless, Germany was in the position of procuring the launch and therefore qualified as being the Launching State, establishing Germany to be held liable in case damages occur under the provisions of the Liability Convention.³² These events gave rise for the Federal Ministry of Education and Research (BMBF) to once again examine whether German space legislation was now needed. For this purpose, the ministry set up a small project group at the DLR. This project group came to the conclusion that a draft for German space legislation should indeed be created.³³

Nowadays, the Federal Ministry of Economics and Technology ('*Bundesministerium für Wirtschaft und Technologie*' or 'BMWiT') generally has the competence over Germany's national space activities. The BMWiT pursues Germany's interests for these undertakings on a national and international level,³⁴ an example of which is the drafting of the German Space Strategy.³⁵ These interests are followed in accordance within the guidelines of the policy laid out by the German Chancellor.³⁶ The German Space Strategy was additionally initiated by

30 K-F Nagel. 2002. *Current Plans for National Space Laws-Germany*, in: Report of the 'Project 2001' Working Group on Privatisation in: Böckstiegel, K.-H. 2002. *Project 2001' – Legal Framework for the Commercial Use of Outer Space*. Cologne: Heymanns, E. Recommendations Part III, No. 7 at 566.

31 *Ibid* at 567-568.

32 For further information on the concept of the Launching State, see: A Kerrest and LJ Smith. Art. VII. In: S Hobe, B Schmidt-Tedd and K-U Schrogl. 2009. *Cologne Commentary on Space Law*. Vol. I. Cologne: Heymanns, 136-139.

33 *Ibid supra* note 31.

34 S Hobe and J Neumann in: R Jakhu. 2010. *National Regulation of Space Activities*. New York: Springer, 128.

35 This draft was created in cooperation with other federal ministries, which are also involved in space activities, and through consultation with scientific and business institutions.

36 See: Art. 65 of the German Constitution, [online]. Available at: <www.bundestag.de/dokumente/rechtsgrundlagen/grundgesetz/index.html> (last accessed: 02.10.2012).

the German Aerospace Industries Association (*'Bundesverband der Deutschen Luft- und Raum-fahrtindustrie e.V.'* or BDLI).³⁷

However, Germany's space activities fall under the executive authority of various ministries. As mentioned above, the DLR has legally attained central responsibility to manage the German space programmes on a national and international level, exercising authority over administrative tasks for German space activities by also working to create the German Space Strategy. The DLR's previously mentioned Space Administration primarily works together with the BMWiT to accomplish its tasks.³⁸ The BMWiT also contributes financially to these causes, providing e.g. 240 million Euros in 2010.³⁹

Legislative Competence for German Space Activities

The competence of the German Parliament to pass a national space law is not prevented by EU law.⁴⁰ Although the EU has a competence to legislate space activities under Art. 4 (3) TFEU,⁴¹ this does not restrict the sovereignty of the Member States of the EU to pass national legislation for their space activities. Moreover, the legislative competence within Germany is not considered to be in the hands of the 16 federal States of Germany. Rather, it lies with the German national parliament (the *'Bundestag'*). Despite the lack of a specifically assigned competence under the German constitution (*'Grundgesetz'*),⁴² it would be necessary for Germany to centrally regulate its space activities on a national level, rather than by each federal State of Germany.⁴³

Process of Drafting German Space Legislation

Since Germany has a continental legal system based on statutory law, space legislation could not be effectively developed by the German jurisdiction (as is done in case law), but a codified law would be needed to regulate Germany's space activities.⁴⁴ Although an all-encompassing German space act has not been passed yet, there have been developments in Germany's past in the area of national space legislation in form of the legal works discussed above as

37 See: The German Aerospace Industry 2011 at 3, [online]. Available at: <www.bdli.de/en/images/key%20figures%202011.pdf> (last accessed: 02.10.2012).

38 *Ibid* note 24.

39 *Supra* note 4 at 5.

40 *Supra* note 19 at 63.

41 See: Art. 4 of the Treaty on the Functioning of the European Union, [online]. Available at: <<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2010:083:0047:0200:en:PDF>> (last accessed: 02.10.2012).

42 *Supra* note 1 at 49-59.

43 *Supra* note 19 at 63.

44 For a detailed description of Germany's law-making process, see: S Hobe and J Neumann in: R Jakhu. 2010. *National Regulation of Space Activities*. New York: Springer, 123-126.

well as the creation of an actual draft of the future all-encompassing national space law.

The above-mentioned draft that was drawn up by the DLR working group in the early 2000s, has only served as an internal discussion paper between the BMBF and DLR. It has been revealed, however that it consists of two main parts: the first part deals with provisions that ensure Germany's fulfilment of obligations stemming from the OST and REG, while the second part contains the regulation of liability.⁴⁵

To give a more detailed insight, the first part regulates that there is an obligation for non-governmental space activities to request authorisation by the German government, also outlining the conditions under which this authorisation shall be granted. Furthermore, the registration of space objects is required, also creating the necessity of holders of an authorisation to transfer the relevant information to the register. The second part on liability establishes absolute liability for damage stemming from the launch of or by a space object itself. In this regard, the operator involved in these space activities is obliged to acquire insurance for the risks that come along with these activities. This part also establishes that the German government can have recourse when it has been found to be liable under the LIAB.⁴⁶

5 Impact of German Space Legislation

The impact of the existing space legislation can be seen in the protection of individual rights, an example for this being the passing of the existing Satellite Data Protection Act. Another impact has been the centralisation of the administrative functions at the DLR through the previously mentioned Law Governing the Transfer of Responsibilities for Space Activities. This should increase the efficiency of German space administration of the DLR by creating synergies, generating a globally more competitive administrative system but also a more clearly arranged system when it comes to the administrative competences for space activities within Germany.

The proposed national German Space Act should have an impact by enabling Germany to furthermore use its chance to become an even more attractive international partner in space activities. It will also create a supportive setting to make full use of future developments in the space sector. Even though there would likewise be an impact in an increase of bureaucracy of the authorisation and registration process through this new space act, this is necessary to make Germany a more attractive market for commercial space activities by providing transparency and legal certainty, especially with respect to liability issues.

45 *Supra* note 30 at 568.

46 *Ibid.*

6 German Space Policy

Especially due to its extensive involvement in space activities, Germany is realising the importance of its role in the space sector, which also becomes clear when reading its 2010 space policy.

The emergence of a federal German space policy (or Space Strategy) dates back to 1955.⁴⁷ However, the focus of this paper lays on the current involvement of Germany in the space sector and in accordance hereto its most recent publication of the government's space policy.

The 2010 space policy, titled "Making Germany's space sector fit for the future," aims to adapt to a so-called paradigm change, meaning the changed framework conditions in a political and societal sense.⁴⁸ It also stresses the importance of space activities in that they should be seen as a key technology for the future success and international relevance of Germany.⁴⁹ The 2010 German Space Strategy was drafted in cooperation with the aforementioned involved ministries to guarantee an optimal use of public funds.⁵⁰

The reasons for the adoption of the new Space Strategy and according replacement of the 2001 German Space Programme⁵¹ were four new challenges: firstly, the previously mentioned paradigm change; secondly, the ever growing dependency on space applications; thirdly, the new international and European context in regards to international competition in space activities; and lastly, the recent modification of the United States' space policy, initiated under Obama's presidency.⁵²

These challenges are also addressed in the five chapters, which make up the 2010 German Space Strategy. The Introduction of the strategy sets the stage for the German Space Strategy. The second chapter then deals with space as a key to solve global challenges, while the third chapter provides guidelines of the German Federal Government's space policy. The fourth chapter goes on to address fields of action to implement the space policy's title goal of "making Germany fit for the future". The last chapter summarises the strategy.⁵³

When it comes to the previously categorised German space activities, the 2010 Space Strategy proposes the following: "The objective is to develop in a

47 For further information, see: N Reinke. 2007. *The History of German Space Policy: Ideas, Influences and Interdependence, 1923-2002*. Beauchesne, 47 et seqq.

48 N-L Remuß. 2011. The New German Space Strategy – Space as a Key Driver for Innovation Improving People's Living Conditions on Earth, in: *German Journal of Air and Space Law* or 'Zeitschrift für Luft- und Weltraumrecht'. 60 Jg. 2. Cologne: Heymanns, 231.

49 *Supra* note 4 at 6.

50 *Ibid* note 48.

51 For further information, see: BMWi. 2001. *Deutsches Raumfahrtprogramm*.

52 *Supra* note 4 at 2.

53 *Ibid* at 1.

systematic manner the competences that give rise to business models for services. By focusing on private enterprise and commercialisation, Earth observation activities in particular will be given a sustained boost, while established technologies will be supported from outside R&D budgets. Governmental demand, too, will be met, where appropriate, through commercial/ private enterprise business models. Public-private partnerships (PPPs) and new models for funding and operating space-based infrastructures must be promoted. From an industry perspective, PPP models are a strategic measure particularly suited to the development of new markets.”⁵⁴

In regards to a national legal framework, the 2010 Space Strategy aims to make use of the increasing opportunities in space and ensure Germany's future as a respectable player in the space sector. To achieve these goals, Germany's government has come up with 6 areas to primarily focus on. One of these is the establishment of a unified legal framework for Germany.⁵⁵

Especially to encourage private investment in the space industry, to provide incentives for the scientific and industrial development as well as to promote the occurrence of private enterprise business models, the German federal government is in the process of drawing up a German space act. In this space act, a clear regulatory framework is laid out, particularly for commercial and private space activities. This way, Germany will act on its obligations to approve and supervise its space activities, as established in the space treaties to which Germany is a party.⁵⁶ Moreover, Germany will take action to persuade the EU to ensure a fair competitive space field by creating rules to encourage harmonisation in national space legislation at EU level.⁵⁷

7 Impact of Germany's Space Policy

The public announcement of the new German space policy has increased the confidence of investors and scientific institutions as it is seen as a clear confession of Germany's intention to additionally support its space activities in the future. Moreover, it has encouraged the further pursuit of Germany's involvement in European projects such as Galileo and GMES as well as its involvement in the European institutional launches of e.g. Arianespace, in accordance with the already existing European Space Policy.⁵⁸

⁵⁴ *Supra* note 2 at 17.

⁵⁵ *Supra* note 20 at 13.

⁵⁶ *Ibid.*

⁵⁷ *Supra* note 20 at 28.

⁵⁸ K-U Schroggl and C Venet. *The Impact of the European Space Policy on Space Commerce*, in: LJ Smith and I Baumann. 2011. *Contracting for Space*. London: Ashgate, 9 et seqq.

These European projects have supported the creation of trade technology and jobs, especially with regards to industry production and manufacturing, operations and services as well as space related products such as observation, navigation and positioning services for individuals; this created a so-called downstream-activities market.⁵⁹

In order to increase innovation, the European satellite navigation competition was started in 2004 by the Free State of Bavaria in Germany, awarding various prizes to the best competitors.⁶⁰ Through the support of future space activities and innovations, the German space policy also supports competitions like these to ensure that the best space proposals and projects will be realised in the future. This way, Germany can further ensure its place as a respectable competitor in the international space market. Additionally, the competition and distribution of prizes also creates awareness within the society regarding aerospace issues. Lastly, the aforementioned positive economical effect for the German aerospace industry of an increase in revenue by 3.7% from 2010 to 2011 can be seen as proof that the German space policy is supporting German space activities in the right manner. The increase in employment in the aerospace sector of 12.2% in 2011 compared to 2010 obviously supports this argument as well.

8 Outlook

In summary, Germany's government's process of drafting national space legislation in conjunction with its existing Law Governing the Transfer of Responsibilities for Space Activities of 1998 and the Satellite Data Security Act of 2007 will set a legal framework for its activities in the commercial and private space sector.

To fulfil the obligations of the international space treaties that Germany is party to, the future German space legislation should include: an authorization process, especially an obligation for non-governmental institutions, that is to say, for the private commercial space sector. This should include space activities conducted within Germany as well as activities conducted outside of Germany by German citizens or corporations.⁶¹

Furthermore, the registration of German space objects into a publicly accessible German register should be regulated. In this regard, the issue of the transfer of ownership of space objects should also be addressed.

Of course, it is especially of importance to distinguish the State liability from the non-governmental-entity-liability. Although it would be in the German space industry's interest not to regulate this as the State would have to compensate fully in case of the occurrence of damages, it is obviously of due relevance for the State to limit its liability. In this regard, the concept of strict liability, as

59 *Ibid*, 19-20.

60 *Ibid*, 18.

61 *Supra* note 19 at 66-67.

regulated in the LIAB, will also help victims to claim damages without having the burden of proof of fault, protecting the nationals of a State when this concept is implemented in national legislation.⁶²

To ensure that the private German companies are actually able to fulfil their obligations to pay for damages caused by their space activities, it should also be regulated that these activities need to be insured. Otherwise, Germany could not fulfil its obligation as a State to compensate in case of collateral damages to third parties.⁶³

In order to also ensure the adherence, especially of the non-governmental entities to these regulations, the non-fulfilment of the obligations to apply for Germany's authorization of the space activities, the registration of space objects as well as the insurance of space activities should be penalized financially and in extreme cases criminally.

Within the registration and authorization process, Germany will be able to define what activities qualify as being space activities. These processes could also ensure the fulfilment of international technical standards by the private sector, therefore increasing security and providing legal certainty and transparency for its national space activities. Moreover, the protection of intellectual property could be ensured.⁶⁴

However, the German government has not published a draft or passed national legislation as of yet. There has been a recent indication that plans to do so are again under way. The German Ministry of Foreign Affairs has stated on its website that since 2010, a German space law is being created to regulate authorisation and liability issues.⁶⁵

References

1. LJ Smith. 2012. Legislating for Outer Space: The Example of Germany: Considerations on a National Space Law, in: *German Journal of Air and Space Law* or '*Zeitschrift für Luft- und Weltraumrecht*'. 61 Jg. 1. Cologne: Heymanns.
2. Federal Ministry of Education and Research (BMBF). 2001 '*Deutsches Raumfahrtprogramm*.' Bonn: BMBF PUBLIK, 5.' [online]. Available at: <www.dlr.de/dlr/Portaldata/1/Resources/documents/drp.pdf> (last accessed: 02.10.2012).
3. Federal Ministry of Economics and Technology (BMWV). 2010. *Making Germany's Space Sector Fit for the Future: The Space Strategy of the German Government*. Berlin: Public Relations / L2.
4. Bundestag-Drucksache. 16/4763 at 1.

62 *Ibid.*

63 *Supra* note 19 at 68.

64 *Supra* note 19 at 70.

65 See: <www.auswaertiges-amt.de/DE/Aussenpolitik/InternatRecht/Einzelfragen/Weltraumrecht/Uebersicht_node.html> (last accessed: 02.10.2012).

5. E Wins-Seemann. 2008. Das Satellitendatensicherheitsgesetz aus industrieller Sicht-Angemessener Rahmen für die kommerzielle Nutzung von weltraumgestützten Fernerkundungssystemen? *German Journal of Air and Space Law or Zeitschrift für Luft- und Weltraumrecht*. 57 Jg. 1. Cologne: Heymanns.
6. B Schmidt-Tedd, K-U Schrogl and W von Kries. 2002. *Grundzüge des Raumfahrtrechts – Rahmenbestimmungen und Anwendungsgebiete*. Munich: Beck.
7. J Reifahrt in: K-H Böckstiegel. 1991. *Handbuch des Weltraumrechts*. Cologne: Heymanns.
8. PB de Selding. 2012. European Space Agency Members Approve Flat 2012 Budget, *Space News*, [online]. Available at: <http://advertise.spacenews.com/A8B71023-EF65-406B-8D9D-92742B9E80EA/FinalDownload/DownloadId-F3D390B64B4AEF6107DD89ECF72D3015/A8B71023-EF65-406B-8D9D-92742B9E80EA/sn_pdfs/SPN_20120116_Jan_2012.PDF> (last accessed: 02.10.2012).
9. Bundesregierung Deutschland. *Raumfahrtstrategie der Bundesregierung – Für eine zukunftsfähige deutsche Raumfahrt*. Unterrichtung durch die Bundesregierung. Drucksache 17/4140 of Dec. 1, 2010. Berlin: Bundestag, [online]. Available at: <<http://dipbt.bundestag.de/dip21/btd/17/041/1704140.pdf>> (last accessed: 02.10.2012).
10. R Brüderle. 2010. *Innovationsmotor Raumfahrt – Die Raumfahrtstrategie der Bundesregierung*. DLR Newsletter Countdown 14 at 5 et seqq. [online]. Available at: <www.dlr.de/rd/Portaldata/28/Resources/dokumente/Publikationen/Countdown/Countdown14_hires.pdf> (last accessed: 02.10.2012).
11. BDLI. 2011. *The German Aerospace Industry 2011*. [online]. Available at: <www.bdlidlr.de/en/images/key%20figures%202011.pdf> (last accessed: 02.10.2012).
12. K-F Nagel. 2002. *Current Plans for National Space Laws-Germany*, in: Report of the ‘Project 2001’ Working Group on Privatisation in: Böckstiegel, K.-H. 2002. ‘Project 2001’ – *Legal Framework for the Commercial Use of Outer Space*. Cologne: Heymanns.
13. S Hobe and J Neumann in: R Jakhu. 2010. *National Regulation of Space Activities*. New York: Springer.
14. N-L Remuß. 2011. The New German Space Strategy – Space as a Key Driver for Innovation Improving People’s Living Conditions on Earth, in: *German Journal of Air and Space Law or ‘Zeitschrift für Luft- und Weltraumrecht’*. 60 Jg. 2. Cologne: Heymanns.
15. K-U Schrogl and C Venet. *The Impact of the European Space Policy on Space Commerce*, in: LJ Smith and I Baumann. 2011. *Contracting for Space*. London: Ashgate.