



Post Issuance Monitoring System Environmental Approval of Risky Activities to Achieve Sustainable Development

Tri Mulyani^{1, a)}, Dewi Tuti Muryati^{2, b)} and Dharu Triasih^{3, c)}

¹²³*Faculty of Law, Universitas Semarang, Indonesia*

^{a)} *trimulyani@usm.ac.id*, ^{b)} *dewituti@usm.ac.id*, ^{c)} *dharu.triasih@usm.ac.id*

Abstract. Every human being has the right to live in a healthy, clean and healthy environment. The state guarantees this right in the state constitution. The government seeks to protect environmental sustainability from risky business activities by issuing environmental approvals. Starting from this, the purpose of this study is to determine and analyze the post-issuance supervision system for environmental approvals for risky business activities in Semarang Regency to realize sustainable development. The research method used in this study is sociological juridical, with descriptive analysis specifications. The data used are primary data and supported by secondary data with qualitative data analysis methods. The results of the study indicate that the post-issuance supervision system for environmental approval of risky business activities in Semarang Regency to realize sustainable development carried out by the Environmental Supervisory Officer, consists of 2 systems, namely: First, direct supervision, carried out by visiting the business location and/or activities regularly or incidentally. and Second, indirect supervision, carried out by reviewing report data from the person in charge of the business and/or activities, data from the environmental information system. From the results of supervision, if a serious threat is found from the business activity, the supervisory officer can stop it by installing a sign and/or line, to prevent greater and wider impacts and losses.

Keywords: Post Issuance, System Environmental, Risky Activities, Sustainable Development

1 Introduction

The environment is a place to live for all creatures created by God. The living environment is a unity of space with all objects, forces, conditions and living creatures, including humans and their behavior, which influence the continuity of life and welfare of humans and other living creatures (Article 1 Number 1 of Law Number 6 of 2023 concerning Stipulation of Government Regulations in Lieu of Laws -Law of the Republic of Indonesia Number 2 of 2022 concerning Job Creation Becomes a Law hereinafter referred to as the Job Creation Law of 2023). The government and all elements of society have been given the mandate of the Indonesian Constitution to protect and manage the environment in the implementation of sustainable development, so that the Indonesian environment remains a resource and life support for the Indonesian people and other living creatures [1].

As a follow-up to the government in protecting and managing the environment, based on Article 33 of the 1945 Constitution of the Republic of Indonesia, the Job Creation Law of 2023 was issued [2]. The policies that have been issued by the government aim to realize one of them, namely improving the investment ecosystem and accelerating national strategic projects [3]. The government's goal is very positive for the welfare of all Indonesian people. Therefore, the government has adopted a policy to implement risk-based licensing, based on determining the level of risk and business scale ranking of business activities, which is obtained based on an assessment of the level of danger and the potential for harm to aspects of health, safety, environment and/or resource utilization and management [4].

The hazard level assessment is carried out by taking into account the type of business activity, business activity criteria, location of business activity, resource limitations and/or volatility risk [5]. Based on the assessment of the level of danger, as well as the potential for danger to occur, the risk level and business scale ranking of business activities are determined to be, Business Licensing for Low, Medium and High Risk Business Activities. This policy is the government's effort to protect and manage the environment, namely systematic and integrated efforts carried out to preserve environmental functions and prevent environmental pollution and/or damage which includes planning, utilization, control, maintenance, supervision and law enforcement. (Article 1 Number 2 of the 2023 Job Creation Law).

One of the government policies in the context of protecting and managing the environment requires that risky business activities obtain environmental approval [6]. Provisions regarding environmental approval are regulated more technically in Government Regulation of the Republic of Indonesia Number 22 of 2022 concerning the Implementation of Environmental Protection and Management (hereinafter referred to as PP Number 22 of 2022). Environmental approval is a decision on environmental suitability or a statement of environmental management capability that has received approval from the central government or regional government (Article 1 Number 4 of Government Regulation Number 22 of 2022).

Every business and/or activity that impacts the environment is required to have an Environmental Impact Analysis (AMDAL); Environmental Management Efforts and Environmental Monitoring Efforts (UKL-UPL); or Statement of Environmental Management Capability (SPPL) (Article 4 of Government Regulation Number 22 of 2021). In determining whether the business plan and/or activity has a significant impact on the environment or not, the 2023 Job Creation Law uses the level of business risk used to determine the type of business permit that business actors must have. Procedures and procedures:

First, Environmental Impact Analysis (AMDAL). An Amdal is mandatory for every business plan and/or activity that has a significant impact on the environment, for example those on a large scale, on an AMDAL mandatory scale, or those located bordering protected forests. Amdal is a study of the significant impacts on the environment of a planned business and/or activity, to be used as a prerequisite for decision making regarding the implementation of a business and/or activity and is contained in a Business Licensing, or approval from the Central or Regional Government (Article 1 Number 5 of the Regulations

Government Number 22 of 2021). The Amdal is prepared by the person in charge of the business at the planning stage, who can appoint an expert who has a competency certificate. The preparation of an Amdal begins with providing data and information about the results of the screening of the AMDAL authority, a description of the business plan, an initial environmental assessment and the results of announcements and public consultations. The EIA consists of a terms of reference form, reliable and RKL and RPL. The preparation of mandals goes through several stages, namely: 1). Implementation of community involvement in business plans; 2). Filling out, submitting, examining and publishing minutes of agreement on the terms of reference form; 3). Reliable preparation and submission, RKL-RPL; and 4). Reliable assessment, RKL-RPL (Article 27 Government Regulation Number 22 of 2021).

Second, Environmental Management Efforts and Environmental Monitoring Efforts (UKL-UPL). The UKL-UPL form is filled in by the person in charge of the business, starting with providing data and information about the business description and technical approval (fulfillment of waste water quality standards, emissions, B3 waste management and analysis of traffic impacts), and attached with the SPPL (Article 57 Government Regulation Number 22 of 2021). UKL-UPL is a series of environmental management and monitoring processes outlined in standard form to be used as a prerequisite for decision making and included in business permits or approval from the Central or Regional Government (Article 1 point 6 of Government Regulation Number 22 of 2021). The person in charge of the business submits a request for inspection of the UKL-UPL form to the official in accordance with their authority (Minister/Governor/Regent/Mayor), through an electronically integrated business licensing system. Inspections are carried out on administrative and substantive completeness, which is the basis for issuing UKL-UPL.

Third, Statement of Capability for Environmental Management and Monitoring (SPPL). SPPL is a statement of the capability of the person responsible for the business and/or activity to carry out environmental management and monitoring of the environmental impacts of the business and/or activities beyond those required by Amdal or UKL-UPL (Article 1 Number 9 of Government Regulation Number 22 of 2021). SPPL for businesses carried out by business actors is integrated into the NIB which is carried out through an electronically integrated business licensing system. The basis for issuing the SPPL is the recommendation from the UKL UPL substance examination results.

Based on the procedures and procedures regarding the mechanism for issuing environmental approvals mentioned above, which are relatively easy compared to previous regulations, environmental approvals are integrated into business permits. This regulation places the government as regulator and facilitator, and places ease and acceleration of environmental approvals facilitated by the government, without reducing the essence of environmental protection and management [7].

The impact of the ease and acceleration of environmental approvals facilitated by the government was a 10-fold increase in applications from before, from 108 applications to 1,127 applications for Environmental Approval at the Ministry of Environment and Forestry [8]. Conditions like this require special supervision from the government so that environmental sustainability can be maintained, as a result of the efforts carried out by business actors/ entrepreneurs. Based on the results of an interview with Mr. Surahman,

AMKL as the Sub Coordinator for Environmental Development and Supervision of Semarang Regency, when conducting a pre-survey at the Semarang Regency Environmental Service, showed that in 2022 there were 19 business actors/entrepreneurs who were sanctioned for committing violations in the field of environmental licensing [9]. Therefore, it is necessary to carry out supervision so that post-issuance of environmental approval, risky business activities comply with the essence of environmental protection and management. Supervision, according to Sondang P Siagian, is a process of observing the implementation of all organizational activities to ensure that all work being carried out runs according to a predetermined plan [10].

In relation to post-issuance supervision of environmental approval based on Government Regulation Number 22 of 2021, it is carried out by the Minister, Governor, Regent or Mayor in accordance with their respective authorities. In this research, the focus is on Semarang Regency so that the authority for supervision is the Regent of Semarang, who in its implementation can appoint an Environmental Supervisory Officer who is a functional official. The authority includes: carrying out monitoring, asking for information, making copies of documents and/or making necessary notes, entering certain places, taking photographs, making audio-visual recordings, taking samples, inspecting equipment, inspecting installations and/or means of transportation, and/or stop certain violations. When exercising this authority, the Supervisor can coordinate with Civil Servant investigators (Article 493-495 of Government Regulation Number 22 of 2021). When carrying out supervision, officials of course use previously determined monitoring methods, so that they can carry out their duties well, in order to maintain sustainable environmental sustainability.

2 Method

The approach method used in this research is juridical sociological, which is research in the form of empirical studies to find theories about the process of occurrence and about the process of operation of law in society. This means that the type of non-doctrinal legal research is a type of research that does not only look at the juridical aspects, but also looks at the practices that occur in the field or empirical (sociological) aspects [11]. This type of research is used because the object of this research is post-issuance supervision of environmental approvals for risky business activities in Semarang Regency. The specification of the research is descriptive analytical, with the aim of obtaining an overview of the object under study. The data used is primary data and supported by secondary data, and then analysed by qualitative analysis method. Qualitative analysis in this case is an effort made by working with data, organising data, sorting it into manageable units, synthesising it, looking for and finding patterns, finding what is important and what is learned, and deciding what can be told to others [12]. After the analysis is carried out, conclusions will be drawn from general matters to specific matters related to the problem being discussed.

3 Result And Discussion

3.1 Regulation of Post-issuance Supervision of Environmental Approval for Business Activities

In the implementation of a business activity, especially risky business activities, whether low-risk, medium-risk, or high-risk, will inevitably cause negative impacts, in terms of environmental pollution and environmental damage [13]. Therefore, supervision is an urgency in guarding environmental protection and management. The obedience of the person in charge of the business and/or activity related to awareness of preserving the environment must be continuously monitored. Supervision is an important matter to ensure that an activity and/or business carried out by the person in charge of the business and/or activity is in accordance with the stipulated laws and regulations, namely Government Regulation Number 22 of 2021.

According to Nurmayani, supervision is a very important activity so that the work and tasks assigned to the implementing apparatus are carried out in accordance with the established plan [14]. Similarly conveyed by Sondang P Siagian, supervision is a process of observation of the implementation of all organisational activities to ensure that all work being carried out is in accordance with a predetermined plan [15]. Furthermore, Saiful Anwar said that supervision or control of the actions of government officials is needed so that the implementation of predetermined tasks can achieve goals and avoid deviations [16]. Supervision in Article 1 Point 98 of Government Regulation Number 22 of 2021 is mentioned as an activity carried out directly or indirectly by environmental supervisory officials to find out and/or determine the level of compliance of the person in charge of business and/or activities with the provisions stipulated in business licensing or government approval as well as legislation in the field of environmental protection and management.

The post-issuance supervision of environmental approvals referred to in this study is the activity of supervising the post-issuance of environmental approvals issued by environmental supervisory officials in Semarang Regency, to determine and/or determine the level of compliance of the person in charge of the business and/or activity with the provisions stipulated in the business licence or government approval as well as legislation in the field of environmental protection and management. Environmental approval is a decision on environmental feasibility or a statement of environmental management capability that has been approved by the central government or regional government (Article 1 Point 4 of Government Regulation Number 22 of 2021). By looking at the definition of environmental approval in the article above, it can be seen that normatively environmental approval can be issued by the central government and local governments.

Based on the description above, it can be seen that there are 2 (two) products of environmental approval issuance, namely the issuance product of the central government and the issuance product of the local government, then in this study will take 1 (one) focus of supervision studies, namely product supervision after the issuance of environmental approval issued by the Semarang Regency Regional government. Based

on data from the Semarang Regency Environmental Agency's Environmental Development and Supervision Division, in 2022 there were 94 (ninety-four) businesses and/or activities with Environmental Permits, and PPLH Permits issued by the Semarang Regency Government. of the 94 businesses and/or activities for which Environmental Permits and PPLH Permits are issued by the Semarang Regency Government, it is automatically the obligation of the Semarang Regency Government, in this case the Regent, to supervise after the issuance of environmental approvals in order to ensure that the businesses and/or activities carried out by those responsible for these businesses and/or activities continue to preserve the environment and ensure that there is no environmental pollution and environmental damage, as referred to in Article 492 Paragraph (1) of Government Regulation Number 22 of 2021.

Furthermore, it can be explained that the Regent can delegate supervisory authority to officials/technical agencies responsible for environmental protection and management. What is meant in this research is the Semarang Regency Environmental Agency. Furthermore, in conducting supervision, the Regent may appoint Environmental Supervisory Officers who are functional officials whose implementation is adjusted based on applicable laws and regulations governing the functional position of environmental supervisors (Article 494 Paragraphs (1) and (2) in conjunction with Article 496 Paragraph (1) of Government Regulation Number 22 of 2021).

The Environmental Supervisory Officer under the Sub Division of Environmental Development and Supervision of the Semarang Regency Environmental Agency, when conducting post-issuance supervision of environmental approvals, has the authority to conduct: a) Monitoring; b) Make copies of documents and/or make necessary notes; c) Entering certain places; d) Taking pictures; e) Making audio-visual recordings; f) Taking samples; g) Inspecting equipment; g) Inspecting installations and/or means of transport; and/or; h) Stopping certain violations. When exercising its authority, the Supervisor also coordinates with Civil Servant investigators (Article 492-495 of Government Regulation Number 22 of 2021).

3.2 Object of Supervision Post Issuance of Environmental Approval

According to Sugiyono, the object of research is anything in any form that is determined by the researcher to be studied so that information about it is obtained, then conclusions are drawn [17]. It can be seen that the object of this research that has been determined by the researcher to be studied is post-issuance monitoring of environmental approvals. Environmental approval is a decision on environmental suitability or a statement of environmental management capability that has received approval from the central government or regional government (Article 1 Number 4 of government regulation Number 22 of 2021). By paying close attention to the definition of environmental approval in the article above, it can be seen that normative environmental approval can be issued by the central government or regional government.

Based on the description above, it can be seen that there are 2 (two) environmental approval publishing products, namely publishing products from the central government and publishing products from regional governments, so this research will take 1 (one) focus of

supervision studies, namely post-issuance product supervision. environmental approval issued by the Semarang Regency Regional government. Based on data from the Semarang Regency Environmental Service for Environmental Development and Supervision, it is recorded that in 2022 there will be 94 businesses and/or activities with Environmental Permits and PPLH Permits issued by the Semarang Regency Government. Of the 94 businesses and/or activities that have Environmental Permits and PPLH Permits issued by the Semarang Regency Government, it is automatically the obligation of the Semarang Regency Regional Government to carry out supervision after the issuance of the environmental approval so that the activities carried out continue to preserve the environment and ensure that no environmental damage/pollution occurs.

3.3 Post Issuance Monitoring System Environmental Approval of Risky Activities To Achieve Sustainable Development

Considering that Semarang Regency is an area that is included in the industrial area category, as explained previously there are 94 (ninety four) Environmental Permits and PPLH Permits issued by the Semarang Regency Government, an adequate monitoring method or system is needed to maintain environmental sustainability. live and ensure that the implementation and management of the environment after the issuance of environmental approval is safe and no environmental damage or pollution occurs. The monitoring system for environmental management business activities after the issuance of environmental approvals carried out by Environmental Supervisory Officers to maintain environmental sustainability based on Article 496 of Government Regulation Number 22 of 2021, namely direct monitoring system; and/or indirect monitoring system. For the Semarang Regency area, the monitoring system after the issuance of environmental approvals to maintain environmental sustainability uses both monitoring systems, namely both direct and indirect monitoring systems. The implementation can be described as follows [18].

First, Direct Supervision. The direct monitoring system carried out by the Semarang Regency Regional Environmental Supervisory Officer regarding the compliance of the person in charge of the business and/or activity after the issuance of environmental approval, is carried out in 2 (two) ways: First, visiting the location of the business and/or activity regularly; and Second, incidental. Visit business locations and/or activities regularly which are carried out in accordance with planning every year based on business permits or government approval related to environmental approvals and/or other information. Regular supervision is carried out with the stages of monitoring planning, implementation and evaluation. Supervision planning is carried out in stages: a) Inventory and identification of business permits, and government approvals related to environmental approvals and/or other information; and b) Determining business priorities and/or activities supervised by direct supervision.

Implementation of supervision, including supervision preparation activities, compliance checks and follow-up on supervision results. And for monitoring evaluation, it is carried out to measure the level of success between planning and implementation of supervision and to provide feedback on improvements to supervision of business permits and

government approvals related to environmental approvals. In connection with the previous description, the Semarang Regency Environmental Service for Environmental Development and Supervision in 2022 has issued 94 (ninety four) Environmental Permits, and PPLH Permits issued by the Semarang Regency Government, therefore post-issuance monitoring is still carried out to ensure whether or not a violation occurred after the issuance of the environmental approval. The Environmental Service regularly supervises businesses that have obtained UKL UPL permits from Semarang Regency by determining a schedule for implementation.

Incidental supervision, carried out by the Semarang Regency Regional Environmental Supervisory Officer regarding the compliance of the person responsible for the business and/or activity after the issuance of environmental approval, is carried out if the following criteria are met: a) There are indications of repeated violations and indications of detected violations; b) There are complaints from the public regarding alleged environmental pollution and/or environmental damage; and/or c) There are reports from area managers regarding violations of RKL-RPL implementation by business actors in the area. In connection with the above, in 2022 there will be 43 (forty three) public complaints regarding the implementation and management of businesses carried out by business actors within the jurisdiction of Semarang Regency. Based on complaints, supervisory officials immediately checked the location to confirm complaints submitted by the public.

Second, Indirect Supervision. Indirect supervision of the compliance of the person in charge of business and/or activities after the issuance of environmental approval is carried out by the Regional Environmental Supervisory Officer of Semarang Regency based on a review of report data reported by the person in charge of the UKL UPL or Environmental Information System, every year based on business permits or government approval related environmental approvals and/or other information. The reporting period in 1 (one) year is divided into 2 (two) semesters, namely the January-July and July-December periods. In each semester's report, the person responsible for business and/or activities after the issuance of environmental approval is required to attach a company identity (company profile), list of permits, production aspects, UKL UPL matrix, and a description of environmental management along with an attachment of environmental quality testing laboratory test results. If there are irregularities in the reporting, a location check will be carried out to match the report sent with the real situation and conditions in the field.

The results of the supervision carried out by the Environmental Supervisory Officer are stated in the supervision report (containing facts and findings) and the supervision results report (stating the compliance status of the business and/activity). In the event that the conclusions of the monitoring report are declared disobedient, the Environmental Monitoring Officer provides recommendations for follow-up law enforcement actions including administrative, civil and/or criminal matters to the regent. In the event that as a result of indirect monitoring of reporting data through the environmental information system automatically, continuously and on the network, violations are found, the Environmental Monitoring Officer provides recommendations for follow-up law enforcement to the regent.

4 Conclusion

The post-issuance supervision system for environmental approval of risky business activities in Semarang Regency to realize sustainable development carried out by the Environmental Supervisory Officer, consists of 2 systems, namely: First, direct supervision, carried out by visiting the business location and/or activities regularly or incidentally. and Second, indirect supervision, carried out by reviewing report data from the person in charge of the business and/or activities, data from the environmental information system. From the results of supervision, if a serious threat is found from the business activity, the supervisory officer can stop it by installing a sign and/or line, to prevent greater and wider impacts and losses.

5 Acknowledgments

This research was funded by the University of Semarang through an Internal Competitive Research Grant for The 2023 period which is managed by the Institute for Research and Community Service at the University of Semarang.

References

1. Helmi. Hukum Perizinan Lingkungan Hidup. Jakarta: Sinar Grafika. **2021**, 13.
2. Erni Triskurniawan, S. dan S. Pengantar Manajemen. Jakarta: Prenadamedia Group. **2005**, 89.
3. Mahardika, A. G. Implikasi Omnibus Law terhadap Hak Konstitusional Atas Lingkungan Hidup yang Sehat. *Jurnal Konstitusi*, 18, 1, **2021**, 195–218. doi: DOI: <https://doi.org/10.31078/jk1819>.
4. Amri, F. H. Al. Izin Lingkungan Dalam Kegiatan Usaha Pasca Penetapan Undang-Undang Nomor 11 Tahun 2020 Tentang Cipta Kerja. *Bina Hukum Lingkungan*. 6, 3, **2022**, 440–452. doi: 10.24970/bhl.v6i3.265.
5. Luhukay, R. S. Penghapusan Izin Lingkungan Kegiatan Usaha Dalam Undang Undang Omnibus Law Cipta Kerja,” *Jurnal Meta Yuridis*, 4, 1, **2021**, 100–122. doi: DOI: <https://doi.org/10.26877/m-y.v4i1.7827>.
6. Syahrudin, W. N. & E. Politik Hukum Rancangan Undang-Undang Cipta Kerja di Sektor Lingkungan Hidup dan Kehutanan (Suatu Telaah Kritis), *Jurnal Hukum & Pembangunan*, 51, 3, **2021**, 637–658. doi: <http://dx.doi.org/10.21143/jhp.vol151.no3.3127>.
7. Kharisma, A. S. S. dan D. B. Omnibus Law Dan Izin Lingkungan Dalam Konteks Pembangunan Berkelanjutan, *Jurnal Rechtsvinding: Media Pembinaan Hukum Nasional*, 9, 1, **2020**, 109–123. doi: DOI: <http://dx.doi.org/10.33331/rechtsvinding.v9i1>.
8. M Farid Fahmi, D. P. *Percepatan Proses Persetujuan Lingkungan, Ini Strategi KLHK*. **2023**. Tersedia pada: <https://bsilhk.menlhk.go.id>.

9. Surahman, A. S. K. P. and P. L. H. K. S. **2023**. Pelaku Usaha Atau Pengusaha yang dikenakan Sanksi Pelanggaran Pasca Penerbitan Persetujuan Lingkungan Di Kabupaten Semarang. Interview.
10. P.Siagian, S. Administrasi Pembangunan. Jakarta: Gunung Agung. **2000**, 92.
11. Soekanto, S. Pengantar Penelitian Hukum. Jakarta: UI Press. **2008**, 67.
12. Setiono. *Pemahaman Terhadap Metodologi Penelitian Hukum*. Surakarta: Program Studi Ilmu Hukum Pascasarjana Universitas Sebelas Maret. **2010**, 54.
13. Dewi Tuti Muryati, Dharu Triasih, Tri Mulyani. Implikasi Kebijakan Izin Lingkungan Terhadap Lingkungan Hidup Di Indonesia. *USM Law Review Magister Hukum Universitas Semarang*, 5, 2. **2022**. 693–707. doi: DOI: 10.26623/julr.v5i2.5773.
14. Tri Mulyani, Dewi Tuti Muryati, Dharu Triasih, Advento Jerenimo. Urgency Of Post-Issuance Supervision Of Environmental Approval For Risk Activities. *Justitia Jurnal Hukum*, 8, 2. **2024**, 100-118, DOI: <https://doi.org/10.30651/justitia.v8i2.22467>.
15. H. Effendi, D. Dinamika Persetujuan Lingkungan Dalam Perspektif Peraturan Pemerintah Nomor 22 Tahun 2021 dan Peraturan Turunannya, *Jurnal Pengelolaan Lingkungan Berkelanjutan*, 5, 3, **2021**, 759–787. doi: DOI: <https://doi.org/10.36813/jplb.5.3.759-787>.
16. Kornelius Benul, Abram Robert Aritonang, & S. S. Kebijakan Penghapusan Izin Lingkungan Dalam RUU Cipta Kerja dan Dampaknya Terhadap Pembangunan Berkelanjutan di Indonesia,” *Jurnal Hukum & Pembangunan*, 51, 1, **2021**, 42–56. doi: <http://dx.doi.org/1.21143/jhp.vol51.no1.30991>.
17. H. Effendi, D. Dinamika Persetujuan Lingkungan Dalam Perspektif Peraturan Pemerintah Nomor 22 Tahun 2021 dan Peraturan Turunannya,” *Jurnal Pengelolaan Lingkungan Berkelanjutan*, 5, 3, **2021**, 759–787. doi: DOI: <https://doi.org/10.36813/jplb.5.3.759-787>.
18. Tri Mulyani, Dewi Tuti Muryati, Dharu Triasih. Politics Of Environmental Permit Law In Sustainable Development Perspective. *Pena Justisia: Media Komunikasi Dan Kajian Hukum*, 23, 1. **2024**, 1-21.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

