



# Constitutionality Of the General Election System According to the 1945 Constitution Of The Republic Of Indonesia

Yudhistira Yovi Audito,<sup>1</sup> Ribka De Ezra Situmeang,<sup>1</sup> Valensia Lie<sup>1</sup>, Hananto  
Widodo<sup>1</sup>, Elisabeth Septin Puspoayu<sup>1\*</sup> Intan Lovisonya<sup>1</sup>

<sup>1</sup> Law Department, Universitas Negeri Surabaya, Surabaya, Indonesia

elisabethpuspoayu@unesa.ac.id

**Abstract.** General elections are one of the indicators of democracy in a country. Several factors make general elections in a country considered democratic. One of the factors is the general election system. The Constitution of the Republic of Indonesia does not implicitly stipulate the adopted legislative general election system. Constitutionally, the general election system for the House of Representatives regulated in the Constitution of the Republic of Indonesia is proportional. Theoretically, a proportional system has two variants, namely a closed proportional system and an open proportional system. Many considerations emerged from the two systems, some experts say that the open proportional system is more democratic, but some experts say that the closed proportional system is more effective. Some experts also say that the general election system is an open legal policy from legislators. Unlike the general election for the Regional Representative Council using a multi-represented district system, where each district will be represented by four representative members. Participants in the election for the Regional Representative Council are individuals, and the goal is for the Regional Representative Council to have independence in making decisions.

**Keywords:** Constitutionality, Electoral System, Democracy

## 1 INTRODUCTION

The general election (election) is one of the consequences of the adoption of a democratic system in the Indonesian state administration, as stated in Article 1 paragraph (2) of the Constitution of the Republic of Indonesia "Sovereignty is in the hands of the people and implemented according to the Constitution". In this article, the state has implicitly given supreme sovereignty to the people as long as it does not conflict with the state constitution. Elections can be said to be one of the

implementations of this idea because they can be a mouthpiece for channeling people's aspirations and a form of upholding the pillars of democracy. Article 22E paragraph (2) "General elections held to elect members of the People's Legislative Council, the Regional Representatives Council, the president and vice president and the Regional People's Representative Council." Elections are defined as people's media to elect parties who are considered to represent their interests at the level of executive level 1 and the state legislature. Throughout the history of constitutionalism in Indonesia, elections have been held 12 times, first in 1955 and the last in 2019[1].

In its development, elections often experience changes in determining the implementation system, especially at the legislative level. In the election system for members of the People's Representative Council (DPR), as well as the Level I and Level II Regional People's Legislative Councils (DPRD), wherein the 1955 to 1997 elections the elections used a closed proportional system, where this system only allowed the people to vote for political parties contesting elections [2]. The determination of the people who will fill the DPR and DPRD seats as a whole is determined by political parties following the total percentage of people's votes in one election. However, with the end of the New Order era, this changed in the 2004 general election, because in that year's election, the DPR and DPRD members used an open proportional system. Unlike the previous system, the open proportional system allows the people to directly vote for individual legislative candidates (Caleg). Unlike the system for electing members of the DPR and its derivative bodies, the adoption of the system for election members of the Regional Representatives Council (DPD) in elections has never changed since the implementation of the election for members of the DPD for the first time in the 2004 elections. The multi-represented district system has always been the most used in the selection. This system is a system where the election, local people will elect several candidates participating in the election for DPD members to represent the interests of their constituency in the national legislation order. In the state structure in Indonesia, each region has four DPD representatives.

The election system by the two legislative chambers is flexible following state decisions in its implementation as long as it does not conflict with the 1945 Constitution of the Republic of Indonesia. This is because the state constitution does not contain articles that specifically regulate this matter [3]. Therefore, the use of the existing system will be based on the provisions in the laws and regulations under it. Under the provisions of Article 22E paragraph (6), which reads "Further provisions regarding general elections shall be regulated by law." In the state constitution, matters that are specifically regulated concerning elections are only limited to the context of the principles used, provisions for participants who can take part in each election, and election organizers who are given authority. Every provision in the constitution is general in nature for the entire implementation of elections within the scope of the General Election. However, if you look further, there are also differences in the context of the participants who can take part in the elections in each legislative chamber. In the election of members of the DPR and its derivative bodies, regulations regarding participants who can take part in the election are limited in Article 22E paragraph (3) of the 1945 UUDNRI which reads "Contestants in the general election to elect members of the People's Legislative Assembly and members of the Regional People's

Representative Council are political parties.” In this article, it can be seen that based on the constitution, the election of members of the DPR and its derivative bodies can only be participated in by political parties as participants. The interpretation of the meaning of political parties in the context of the system currently used is a general definition. In its definition, political parties are not only interpreted as bodies. However, it is also interpreted in the realm of people who fill the organs of a political party. Furthermore, in the election of members of the DPD. Participants who can take part in the election are limited to the provisions in Article 22E paragraph (4) of the 1945 UUDNRI which reads "Contestants in the general election to elect members of the Regional Representatives Council are individuals." Based on the affirmation of this article, it can be seen that individual participants can only participate in the election for DPD members. Thus DPD election participants cannot originate and/or register under the name of a political party organization. In the current system, interpretations related to individuals are loaded in the context of people with independence.

In preparation for the 2024 Election, there was an upheaval in determining the electoral system to be adopted at the legislative level of the Election. First, turmoil arose because there was an assumption that the current system, especially in the election of members of the DPR and its derivative bodies, the arrangements for which were emphasized in Law Number 7 of 2017 concerning General Elections, was contrary to the state constitution. As a result, there was a request for judicial review to the Constitutional Court (MK) in Case Number 114/PUU-XX/2022 [4]. This was done by the applicant because he felt that the electoral system used in the current election for the DPR and its derivative bodies was not under the provisions regarding the regulation of election participants whose arrangements have been explained in the constitution. By using an open proportional system, the existing election participants are not only limited to political parties but can also be joined by individuals. Because voters are not only limited to choosing a party logo but can also vote for individuals directly. Furthermore, turmoil also emerged in the election system for DPD members in the General Election. This is based on the initial assumption that the DPD cannot stand alone in the election competition. With this assumption, an argument was born to change and re-determine the election implementation system at this level.

With each of these upheavals, then in fact which system in the context of selecting members of the DPR and its derivative bodies as well as members of the DPD is appropriate according to the constitutional provisions currently in effect in Indonesia? Based on the elements contained in the 1945 UUDNRI, is there harmony between the election system at the legislative level currently used in Indonesia and the current constitution? Given the existence of the principle of *lex superior derogate legi inferiori*, means that any legislation that has a lower hierarchy cannot conflict with laws that have a higher hierarchy. Furthermore, is the electoral system used in legislative-level elections in Indonesia appropriate? Based on the Indonesian government system and its effectiveness. In this article, the author wants to find out about these things by basing them on the legal elements currently in force in Indonesia and the results of previous research that have been verified. This is done to be able to provide general considerations to readers and specifically to policy stakeholders in determining the electoral system at the 2024 legislative election level. This is because the existing

system cannot be implemented if there is an elemental conflict with the state constitution. In addition, the determination of the existing system must also consider other matters related to its implementation in general.

## **2 Methodology**

This study uses normative legal research. The primary legal material from this research is the laws and regulations related to this research. secondary legal materials used are books and journals related to the material of this research

## **3 Result & Discussion**

### **3.1 Open Proportional Electoral System in the Election of Members of the DPR, Level I DPRD, Level II DPRD**

Article 1 point 2 of the Law of the Republic of Indonesia Number 27 of 2009 concerning the People's Consultative Assembly, the People's Representative Council, the Regional Representative Council, and the Regional People's Representative Council which reads "The People's Representative Council, hereinafter abbreviated as the DPR, is the People's Representative Council as referred to in the Law -The 1945 Constitution of the Republic of Indonesia." DPR is defined as a representative institution of the people whose objective is to channel the aspirations or voice of the general public. While the DPRD level I and DPRD level II are extensions of the DPR at the regional level of authority. However, keep in mind that each existing agency is not related to a power relationship. So that in the election of members in the legislature, the statement of the attitude held, so that the existing interests are not influenced by the agencies in the hierarchy of power. In short, each agency is only bound through a hierarchy of powers, but each existing agency remains independent in practice carrying out the obligations and authorities granted by related laws and regulations. The functions of the DPR in general are stated in Article 20A paragraph 1 of the 1945 UUDNRI which reads "The House of Representatives has legislative functions, budgetary functions, and supervisory functions." The legislative function is a function in which the DPR in this context can function as a statutory forming body. Furthermore, the budget function is a function in which the DPR can be used as a drafter of the state and regional budgets. Finally, the oversight function is defined as the function of the DPR to oversee the running of the government and the enforcement of laws and regulations by the executive branch. Thus, it is not surprising that the DPR is one of the state institutions that is considered very powerful both at the national and regional levels.

DPR members based on the constitution will be elected through elections in determining the filling. This is clearly stated in Article 19 Paragraph 1 of the 1945 UUDNRI which reads "Members of the People's Representative Council are elected through general elections." In the development of the implementation of the election for members of the DPR, from the beginning to its final implementation. The selection

of members of the DPR in general elections has undergone several changes in the electoral system used as the implementation mechanism. Broadly speaking, 2 DPR member election systems have been used in Indonesia throughout its history. The system is a closed proportional system and an open proportional system. The two systems are based on the same root, namely the proportional system. This system is defined as an election formula where the method of transferring voter votes to seats in parliament follows the proportion of voter votes given by the party considered to represent them. Thus the determination of the election for members of the DPR will be adjusted according to the number of representatives with the percentage of votes obtained. The percentage of existing representation will directly affect the strength of members within the organization to channel the aspirations they believe in. Furthermore, from the mid-2004 election to the 2019 election, as the election system at the level of the DPR and its derivative bodies, a change was made to the electoral system using an open proportional system. Where this system is defined as a nomination mechanism by political parties participating in elections by submitting a list of candidates arranged alphabetically or arranged by lottery, it is called an open system because it is the voters through voting and vote counting that will determine which of the candidates will be elected [2]. The open list system usually asks voters to cast their votes for the candidates and/or political parties participating in the election. In the context of its implementation in Indonesia, the adoption of the existing system is carried out by sorting the election participants based on the lottery numbers given during the registration period. Furthermore, in the implementation mechanism, election participants will be selected by voters by voting for the party or candidate name that is considered to represent their aspirations. With this in mind, the election system for members of the DPR and its derivative bodies allows the people to vote for parties or candidates participating in elections at the level of the DPR and its derivative bodies. The implementation of an open proportional system in the context of its adoption in Indonesia has undergone several modifications in its additional implementation mechanism. In the 2004 election, the use of the existing open proportional system was based on serial numbers. In the additional implementation mechanism, there is the use of serial number advantages and the use of a percentage threshold of 30% in determining the candidates who are elected to become members of the DPR. In the election, the use of serial numbers are used as an additional advantage for candidates who get low serial numbers. However, on the other hand, with the use of this additional system, candidates who get large serial numbers will be disadvantaged. This is because, for candidates who get a large serial number, the consequences for getting a win are 30% greater than for candidates with small serial numbers. Thus, the implementation with the addition of existing mechanisms is considered to make the election conducted unfair [5]. Knowing this, the addition of the system was used in the next election. Namely the 2009 Election which was then considered suitable and its use was adopted until the 2019 Election. In this Election, there were no additional regulatory mechanisms, and additions that were previously added to the previous Election have been removed. So, the use of the existing electoral system is only based on the number of votes that choose it. In brief, the development of the use of the DPR member election system and its derivative bodies in the election will be presented by the writer Tabel 1.

Table 1.

<i>Open-closed proportional period of general elections 1955-2019</i> [1]	
1955-1999	closed proportional
2004	Limited open proportional (by serial number)
2009-2019	Open proportional (based on a majority vote)

At present, if we examine the use of an open proportional system in the election of members of the DPR, it can be based on the provisions in Article 168 paragraph (2) of Law Number 7 of 2017 concerning General Elections which contains "Elections to elect members of the DPR, Provincial DPRD and Regency DPRD/city implemented with an open proportional system. In this article, this idea is legitimized properly through the affirmation of the article. However, in 2022 there is a request for a review of Law Number 7 of 2017 concerning material General Elections to the Constitutional Court in Case Number 114/PUU-XX/2022. This is based on the applicant's assumption that there has been a conflict in the elements in that article with what has been regulated in the 1945 UUDNRI. This assumption arises because there is a regulation in Article 22E Paragraph 3, which in that article also clearly stipulates that participants in the election of members of the DPR and its subsidiary bodies are political parties. With this in mind, the applicant feels that there is an inconsistency between the country's constitution and the system adopted in the election. When reflecting on the definition of a political party according to Iclasul Amal, a political party is defined as a group that nominates candidates for public office to be elected by the people so they can control or influence various government actions [7]. With this definition, the use of an open proportional system in the election of members of the DPR and its derivative bodies is still possible and does not make the law being petitioned for review unconstitutional. This is because, from the existing definition, political parties can allow the nomination of individuals. With the record that the person continues to advance by being affiliated with and supported by a political party. In this case, political parties can provide other options directly to voters by proposing candidates who will fill parliament and represent the aspirations of the people, as well as party ideology. These reasons are relevant, this is reinforced through the Constitutional Court's decision on the request for judicial review. In this decision, the Constitutional Court expressly stated that Law Number 7 of 2017 concerning General Elections was not declared unconstitutional so the use of the electoral system adopted did not change until the 2024 Election. Thus, it can be believed that the use of an open proportional electoral system follows the constitution and can be used in the implementation of the next election.

In the same context, an open proportional system as a system for selecting members of the DPR is also considered to be more compatible with the government system adopted by Indonesia. This is because the use of an open proportional system that is currently used is considered to be more democratic. It can be proven by voting that voters can directly give to candidates who are considered to be able to represent their aspirations directly without the presence of political parties. In addition, the victory over a candidate as an election participant is also determined based on the number of

valid votes that enter the candidate's ballot bag and is no longer influenced by the order of serial numbers obtained by each person and other percentages that can affect the election directly or indirectly. However, behind these advantages, the current election system for members of the DPR and its derivative bodies also creates other problems in the implementation of the existing elections. Such as greater political costs, the occurrence of illegal contestation, to the disqualification of the candidates participating in the election. This can happen, because in an open proportional system, funding for political costs in nomination can be borne by individuals and political parties only as a vehicle for carrying the candidate. In addition, with the opening of free political contestation, as a consequence, the value of electability becomes very important. This can directly affect the quality of candidates who register and are registered by political parties. Because the existing political parties will tend to target electability by ignoring the quality of candidates. With this in mind, there are still several things that become a problem when using this election system when compared to the closed proportional system that was previously used. To make it easier for the reader to know the advantages and disadvantages of an open proportional election system, the author will present this through the means Table 2.

**Table 2.**

<i>Open Proportional</i> [1]	
Advantages	disadvantages
The strong legitimacy of the candidate is closer to the voter	High political costs, systematic collusive corruption
Remove nepotism	Political contestation became wild and liberal
Strong legitimacy	There is no standard qualification for candidacy
Strengthen the representation system in the DPR	Political parties lack ideas, and decarbonization occurs

Furthermore, as a comparison, the author will also present the advantages and disadvantages of a closed proportional election system through means Table 3.

**Table 3.**

<i>Closed Proportional</i> [1]	
Advantages	disadvantages
Suppress money politics and political corruption	Rely on oligarchy and nepotism
Political parties as the power of ideas	There is no relationship between the candidate and the voters
Strengthen the responsibility of political parties	Candidates are less aspirational
Easily assess the performance of political parties	Political education is reduced

With the things that have been described above and by looking at the suitability of the open proportional system in positive law in Indonesia, so the authors feel that the

use of an open proportional system in the election of members of the DPR and its derivative bodies in the current election is still appropriate for re-use in the implementation of the next election. This was done bearing in mind that there were no conflicting elements contained in the statutory regulations governing the system with the current constitution. In addition, the adoption of the existing system is considered to be following a democratic government system [8]. Even in the context of the electoral system used in the election of members of the DPR and its derivative bodies, this system is considered to have a higher level of democracy. Even with notes on its use, it must be re-completed through additional settings. This was done as a form of repressive effort to address the shortcomings of an open proportional election system.

### **3.2 Multi-Representation District Electoral System in Election of DPD Members in General Elections**

The DPD is also one of the state institutions whose members are determined through election means, following the stipulations in article 22C paragraph (1) of the 1945 UUDNRI which reads "Members of the Regional Representatives Council are elected from each province through general elections." In that article, it is also explained that DPD members will be elected by the people with the constituency boundaries of each province. In each province, 4 candidates will be elected as members of the DPD following the provisions of Article 252 Paragraph (1) of Law Number 17 of 2014 concerning the People's Consultative Assembly, the People's Representative Council, the Regional Representative Council, and the Regional People's Representative Council which reads "DPD members from each province are set at 4 (four) people." In carrying out the election of its members, the constitution in this case only strictly regulates the provisions for the participants in the election of members of the DPD with individual limitations. Meanwhile, other matters related to the context are rearranged through the laws and regulations below. The election for DPD members since the beginning of implementation until now uses the multi-represented district system as the implementation system, following the provisions of Article 168 Paragraph 3 of the Law of the Republic of Indonesia Number 7 of 2017 concerning General Elections which reads "Elections to elect DPD members are carried out with the district system multi-represented." The multi-represented district election system or what can be called also the single non-transferable vote (SNTV) is an election formula in which voters cast their votes for candidates according to their preferences based on party lists, namely choosing legislative candidates and then ranking them[2]

However, in its adoption in the election of DPD members in Indonesia. The election will be oriented towards the election of individuals, not political parties to elect members of an agency that is limited to the selected area (Dapil) and then as a result several people are elected to represent the Dapil. In its adoption, this electoral system is used by limiting the electoral districts in the province. So that the election participants who are elected from the Dapil will represent the aspirations and interests of the electorate province at the level of national legislation. The number of DPD members in each province is 4 people with a total of 136 members nationally from 34 electoral districts in the 2019 election year[9] .

When viewed from the point of view of legal positivism, we can carry out an analysis related to the multi-representative district election system by examining the legitimacy and accuracy of determining the system by looking at the current legislation in Indonesia. In the basic arrangements for the election of members of the DPD found in the 1945 UUDNRI, the arrangements for the election of members of the legislative chamber are limited to the participants in the election. Where explained straightforwardly in Article 22E Paragraph (4). With this in mind, the determination of the ideal electoral system from the point of view of legal positivism can be carried out freely as long as the system adopted can only be followed by individuals in the election of existing agency-filling members and then an invitation is made to confirm the determination of the implementing system.

The constitution is not clearly and in detail regulated about the implementing system for the election of DPD members. In national law, the implicit arrangement regarding the affirmation of the existing electoral system is only at the level of the law. This is stated in Article 168 Paragraph 3 of the Law of the Republic of Indonesia Number 7 of 2017 concerning General Elections. In that article, implicitly the determination of the representative district system is explained as the implementing system adopted in the election of DPD members. Thus based on the applicable laws and regulations, which are then examined through the perspective of legal positivism, the multi-represented district system is a system that has been appropriately used in its adoption in the election of DPD members and can be said to be constitutional. This is because the existing system does not contain elements of conflict in part or in whole with existing laws and regulations at the hierarchical level of laws and regulations in Indonesia and has been clearly defined through statutory provisions. Apart from being seen from this perspective, the accuracy of adopting a multi-representative district system in the election of DPD members can also be seen through its suitability and effectiveness in the implementation of government in Indonesia. In this context, the adoption of this electoral system has a consequence that the DPD must be independent considering that the provisions contained in the 1945 UUDNRI emphasize that participants in the election of members of the DPR are individuals. Individuals can be interpreted, not only as an individual unit but also as a whole and should be defined as independence. If you look at the Constitutional Court's decision regarding the definition of independent candidates in regional head elections, independent candidates are defined as individual candidates who can compete in the recruitment of regional heads and deputy regional heads through the election mechanism without using political parties as a medium of struggle. By looking at it, the definitional concept related to independence can also be used in the context of the election of DPD members. Independence means that it can be interpreted as a means of candidacy without going through a political party, bearing in mind the existing constitution. In it is regulated that participants in the election of DPD members are individuals, so it can be said that there is a correlation related to the concept of an electoral system that can be adopted in the implementation of the election of DPD members. Where the existing system must be able to contain and facilitate the implementation of ideas related to candidacy without political parties. It seems that the district system with many representatives has been able to contain this because in this system election participants can be directly elected by the Dapil people so the role of

political parties as mouthpieces for distributing votes is not needed in the context of this election. The things above are examined in-depth based on some of these points of view. It can be said that the adoption of a multi-representative district system as a system for implementing the election of council members in elections is appropriate and appropriate to implement. Thus, if there is a continuation in adopting this electoral system in the election of DPD members in the 2024 election, the authors think it can be done

## **4 Conclusion**

The determination of the electoral system at the legislative level in Indonesia in the implementation of the 2024 elections. It must be readjusted to the provisions contained in the constitution, bearing in mind that the 1945 UUDNRI is the highest legal basis in Indonesia. So that other regulations under it cannot contain content that is completely contrary to what has been confirmed in the 1945 Constitution of the Republic of Indonesia. Furthermore, only then can consideration be given to its use based on other things such as the system of government and its effectiveness. In the case of the election system for members of the DPR and its derivative bodies, it is necessary to admit that the system currently used does have drawbacks which until now have not been handled properly by the government. However, this open proportional system is a system that is considered appropriate to be used in the next election. This is because there is no conflicting elemental value between the implementation of the system and what has been regulated in the constitution. Furthermore, the implementation of this system has also been reaffirmed by the rejection of the application by the MK in Case Number 114/PUU-XX/2022.

On the other hand, in the context of the multi-representative district election system that has been adopted as the DPD member election system used to date. In this system, there is also no conflict of elemental values between the provisions in the constitution and the arrangements contained in other laws and regulations below it. In addition, the element of independence in the electoral system adopted in the election has also been fulfilled based on the indirect definition by the Constitutional Court. So, in general, the results of our research found that the application of each system used in elections at the legislative level in Indonesia is correct. In detail, the use of an open proportional system in the election of members of the DPR and its derivative bodies and the use of a multi-represented district system in the election of members of the DPD.

## **Acknowledgment.**

This significant research finding is part of a research process supported by non-tax revenues from the Faculty of Social Sciences and Law, State University of Surabaya.

## Authors' Contributions.

The author comprises three students and four supervisor who also contributed to writing the article. Article writing is separated into numerous stages of research and writing that are completed in 4 (four) months. The author investigates related themes based on observations made in the field over many months. The writer offers the ideas in this scientific article based on observable data.

## References

1. C. S. T. Kansil et al., "Analisis Sistem Pemilihan Umum Proporsional Tertutup di Indonesia," *J. Kewarganegaraan*, vol. 7, no. 1, pp. 880–888, 2023.
2. Eni, fenomena politik uang, tanggungjawab siapa", *bawaslu*, 2021. <https://tolitoli.bawaslu.go.id/fenomena-politik-uang-tanggung-jawab-siapa/> (accessed Sep. 25, 2023)
3. E. Noviawati, "PERKEMBANGAN POLITIK HUKUM PEMILIHAN UMUM DI INDONESIA," *J. Ilm. Galuh Justisi*, vol. 7, no. 1, pp. 75–86, Mar. 2019, doi: 10.25157/JIGJ.V7I1.2139.
4. Dzulhidayat, sistem pemilu 2024 tetap proporsional, *mahkamah konstitusi*, 2023. <https://www.mkri.id/index.php?page=web.Berita&id=19260&menu=2> (accessed Sep24, 2023)
5. "Sistem Pemilu Proporsional Terbuka Tidak Sesuai Konstitusi | Mahkamah Konstitusi Republik Indonesia." <https://www.mkri.id/index.php?page=web.Berita&id=19079&menu=2> (accessed Sep. 05, 2023).
6. N. M. Rahma, "Review Buku Sebuah Pembelajaran Untuk Pemilu yang Akan Datang," *J. Penelit. Polit.*, vol. 19, no. 1, pp. 67–72, 2022, [Online]. Available: <https://ejournal.politik.lipi.go.id/>.
7. D. S. Lindawati, "Strategi Partai Politik dalam Menghadapi Pemilu 2014," *Politica*, vol. 4, no. 2, pp. 287–312, 2014.
8. "Pengalaman Pahit Penerapan Sistem Pemilu Proporsional Tertutup | Mahkamah Konstitusi Republik Indonesia." <https://www.mkri.id/index.php?page=web.Berita&id=19156&menu=2> (accessed Sep. 05, 2023).
9. "Portal DPD | Dewan Perwakilan Daerah Republik Indonesia." <https://www.dpd.go.id/anggota/anggota> (accessed Aug. 09, 2023).

**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.

