



Challenges Faced in Implementing Inter-Regional Cooperation in Mebidangro

Hatta Ridho

Universitas Sumatera Utara, Medan, Indonesia
hattaridho@usu.ac.id

Abstract. Medingbaro National Strategic Area is uneasily formed by joined efforts in the areas of Medan, Binjai, Deli Serdang, and Karo. The focus of this study is on the various obstacles faced when creating this area. A qualitative approach applying a comprehensive literature evaluation was done to collect important related facts and information. Sectoral egos of the local governments, uncoordinated legislation, and a deficiency of initiators and facilitators were three identified critical issues, hampering the coordination. As Mebidangro region is prepared to be a national economic growth hub, active participation from the government and community is very important.

Keywords: Implementing, Inter-regional Cooperation, Mebidangro.

1 Introduction

Building inter-regional cooperation is not easy; one of the impeding factors of collaboration is huge regional egos. In addition, disjoined rules hinder the collaboration [1]. More initiators and facilitators, as well as better bureaucratic attitudes, can make the inter-regional collaboration move in a better direction [2]. Some limiting collaboration factors, like organizational, technological, and institutional obstacles must be eliminated [3].

In spite of the framework of the Unitary State of the Republic of Indonesia [4], interregional collaboration still becomes an essential approach for strengthening regional interests and connections. In order to facilitate this, forums along the lines of the Association of All Indonesian Provincial Governments (APPSI) and the Cooperation Agency of the All-Indonesian Regional House of Representatives (BKDSI) have been initiated. Nevertheless, taxes, levies, and both official and unofficial gifts have the ability to impede the government's ability to work across borders. Furthermore, flaws in implementing inter-regional cooperation can result in the poor performance of these institutions [5].

The Mebidangro National Strategic Area includes the regions of Medan, Binjai, Deli Serdang, and Karo. To ensure smooth development, it is imperative in order to enhance regional cooperation within this area [6]. Spatial management is indispensable for the implementation of inter-regional cooperation agreements in the Mebidangro region, as emphasized by the Ministry of Home Affairs Directorate

© The Author(s) 2025

I. D. A. Nurhaeni et al. (eds.), *Proceedings of the 1st Joint International Conference on Social and Political Sciences: Challenges and Opportunities in the Future (JICSPS 2023)*, Advances in Social Science, Education and Humanities Research 884, https://doi.org/10.2991/978-2-38476-350-4_15

General of Bina Adwil [7]. Increased urban activity has been sparked within the Mebidangro area, specifically due to its identification as a national-scale economic growth center [8]. Sumatra's island will see the Mebidangro region's commercial sector evolve into a center for trade and industry.

The difficulties encountered in inter-regional collaboration in the Mebidangro region: First, there are regional disparities in infrastructure provision, investment, and population distribution. Second, there are financial issues in the Mebidangro region. Third, there will be urbanization, transportation congestion, and environmental degradation. Fourth, a lack of viable modes of transportation, as well as the necessity for intergovernmental collaboration in managing regional settlements to minimize negative externalities, are both issues that must be addressed. The need to discover and fine-tune agreements and collaboration in transportation, waste management, road access, and environmental control. To ensure the effectiveness of inter-regional cooperation in the Mebidangro region, all parties involved must work together to overcome these hurdles. As a result, the goal of this research is to elaborate on the difficulties encountered in implementing inter-regional cooperation in the Mebidangro national strategic area.

2 Literature Review

Research has previously explored numerous aspects of interregional collaboration, such as energy sources, CO₂ emissions, innovation, sustainable development, and health research systems. Highlighting the benefits of such cooperation, numerous analyses emphasize its role in reducing CO₂ abatement costs and improving economic, social, and environmental security [9]. Other research has looked at the patterns and mechanisms of the evolution of traditional and renewable energy sources, the impact of structural heterogeneity on innovation cooperation, and the design of African country-based regional networks for health research system cooperation [10]. According to prior studies, interregional collaboration can be an effective strategy to address regional concerns and promote sustainable development.

In one study, the challenges of interregional cooperation in enhancing welfare and alleviating poverty in Indonesia were examined and discussed [11]. Another study focused on regional collaboration in Indonesia's East Java Province and proposed an interregional cooperation paradigm. The study discovered that due to sectoral ego, the implementation of the agreement to cooperate between districts in East Java Province has yet to be particularly successful [12]. Another study [13] presents an overview of interregional cooperation for essential public services in the Ajatappareng Region of Indonesia based on the achievement of three categories of services supplied by the public service in South Sulawesi. According to one study, power, water, HDI, and the COVID-19 pandemic all played a significant role in the flow of foreign direct investment into Indonesia during the COVID-19 pandemic [14].

Studies have shown that the Mebidangro urban area significantly influences regional development by enhancing human development, improving environmental quality, fostering economic growth, and reducing income disparity [15]. Analyzing people's

perceptions of the Trans Mebidang bus's service quality was the focus of a distinct study [16]. Further findings have indicated that aligning the metropolis with the Mebidangro development concept has the ability to enhance economic activity and improve the quality of life for the community [17]. Moreover, previous research outlines the waste management coordination system in the Mebidangro integrated region, highlighting its imperative role in maintaining environmental harmony [18].

3 Method

This study employs a qualitative approach, especially on literature review. This study depends mainly on literary sources to gather essential information and data, commonly known as a literature study [19]. Data obtained from academic papers, books, and internet media were then examined, reduced, visualized, and inferred to gain comprehensive and pertinent [20].

4 Results and Discussion

4.1. Mebidangro Regional Development Initiative

Ministry of National Development Planning (Bappenas) and the Ministry of Home Affairs initiated the formation of Mebidangro Region. They want to maximize the growth of infrastructure and economic development by building infrastructure connectivity. This idea is in accordance with Indonesia's national development agendas, like the National Medium-Term Development Plan (RPJMN). Consequently, the government tried to develop close geographical regions, like Medan, Binjai, Deli Serdang, and Karo, by integrating the development. The region's economic ties also become another reason for the government to make this decision.

There are some national regulations that highlight the importance of strategic areas to boost national growth and development. Presidential regulation No. 62 of 2011 on National Spatial Plan (*Rencana Tata Ruang Wilayah Nasional / RTRWN*) becomes the framework for spatial planning and enhancing infrastructure. In addition to Government regulation No. 26 of 2008 on National Spatial Plan (*Rencana Tata Ruang Wilayah Nasional / RTRWN*), Presidential regulation No. 62 of 2011 provides the guidelines for spatial coordination across regions.

To start the development, the local governments of Medan, Binjai, Deli Serdang, and Karo coordinated to create a regional development plan for those areas. It was done to make sure that the regional plan was in line with the national plan. In addition, the regional plan was made to explore the regional strength as well as the challenges the local governments would face to improve the infrastructures, especially on the transportation systems. They also thought about other sectors that would build the economic factors, like tourism, trade, and agriculture. Mebidangro is planned to be the hub of these areas, which is expected to be the development enhancer in Sumatra.

There is an agency called Mebidangri Metropolitan Area Management. It was founded by the Indonesian government to do the following responsibilities: coordinating the development projects, administering the resources they have, and facilitating effective collaboration among the regions. The government set up a policy that guides inter-regional cooperation, comprising spatial planning, economic development, and infrastructure investment. In addition, the local government also tried to explore the local needs and aspirations to make sure that the plans were seriously needed by the community. It was done by having public consultations, including the stakeholders of the area. The Mebidangro region is expected to boost the potential of the region, drive economic growth, eliminate disparities, and enhance life quality.

To support the collaboration of different regions, the regional government prepared legal frameworks and agreements. The government of North Sumatra province released Provincial regulation no, 6 of 2012 on development plans. Furthermore, the government of Mebidangro regions had signed a Memorandum of Understanding (MoU) as the framework for transportation, economic development, and environmental management. In fact, each region already has its own regulations; Medan has policies on urban development, Binjai has regulations on economic cooperation, Deli Serdang has laws on infrastructure development, and Karo has guidelines on agricultural development. The existing comprehensive regulations are then used to facilitate the collaboration of Mebidangro region to develop their area. The regions also paid attention to the national priorities and made sure that each region's superiority promoted the development of all involved regions. Moreover, the agency also held forums inviting stakeholders of the regions to gain ideas on the stakeholders' need, challenges, and opportunities [21]. All activities were held under established legal agreements and policies between the stakeholders and the regional government to achieve common objectives and to promote the Mebidangro sustainable growth.

4.2. Challenges in Implementing Development in the Mebidangro Region

Environmental degradation has emerged as a major challenge due to Mebidangro's development. Road congestion also poses a significant issue, especially in Medan City. The development of integrated infrastructure is hampered by limited access to alternative financing, land, water, and energy resources. This complexity is further compounded when urban development programs require integration among numerous stakeholders. The challenge of urban infrastructure development is basically the ability of the involved parties to have coordination.

Spatial management highly influences Mebidangro's growth, which has a direct impact on national authority, defense, security, economy, and society. The Mebidangro region, which includes Medan, Binjai, Deli Serdang, and Karo, faces numerous challenges in developing initiatives. They have limited resources, including land, water, energy, and finance. The rapid urban population increase, particularly in metropolitan areas in the nature of Mebidangro, makes the construction of integrated

infrastructure complicated. Furthermore, integrating urban development programs among stakeholders causes another obstacle.

To take care of these challenges and enhance regional institutional management, the government set up the Mebidangro Metropolitan Area Management Agency. Promoting urban mobility using public transport becomes the focus in Mebidangro. The regions need to have strong collaboration between local governments and stakeholders to achieve the goal of effective collaboration [22]. In addition, community participation is also essential for the development of the Mebidangro region. The community has a chance to provide insights and feedback on the development plans and strategies. They actively discuss the waste and flood management in the area. In addition, they also pay attention to education, health, and social welfare

4.3. Leading Sectors in the Mebidangro Region

Improving key sectors, like agriculture, food processing trade, and tourism, in Mebidangro regions cannot be done by only one region; each region must cooperate with the other. These industries should play their roles in moving the economic wheels and growth, which is required to develop the infrastructure, attract investors, and improve human resources; this can be done when the region has comprehensive coordination. Collaborative coordination between regions in Mebidangro cultivates a more advantageous business climate and enhances job opportunities.

Doing collaborative regional works on the key sectors in Mebidangro needs some essential activities. Doing comprehensive research to know the potential and the challenges the governments might face will be the very basic thing to do. In addition, the research also needs to reveal each region's strengths and weaknesses and reveal which areas need more attention and capital allocation. Furthermore, it is essential to establish hierarchies and promote interactions across regions to ensure coordinated sectoral growth, avoid redundant efforts, and facilitate effective resource distribution. Capital investment needs to be attracted and focus more on the development of the infrastructure and the human resources in the pinned areas.

The next step that needs to be done is to make sure that the Mebidangro regional spatial plan is aligned with the government plan. The synchronized document will be the reference of the regions to develop their area. Furthermore, it is essential to promote intergovernmental collaboration in administering the regional settlements to mitigate adverse factors, ensuring that sectoral growth does not produce a negative impact on the environment and populations. By doing so, regions can improve the primary sectors in the Mebidangro area and foster economic growth.

There are some advantageous impacts when the collaborations between regions in Mebidangro industries improve. It is clear that the strong relationship between regions will boost the area's economic growth, infrastructure, and investment. At the same time, it will boost human resources in the area by providing job opportunities and income for the people in the area. This improves coordination and efficiency in

sectoral growth, and elevates the region's competitiveness in both national and international markets. Furthermore, environmental sustainability in the region will be stronger. The collaboration between regions will help them to achieve shared goals in economic growth and sustainable development, which will have a positive effect on the local communities as there will be more job opportunities and a better quality of life.

4.4. Sectoral Ego and Unequal Understanding in the Mebidangro Region

The process of policy making in Indonesia is highly influenced by the regional egos in the key sectors. This can hinder essential inter-agency coordination required for effective policies. Therefore, it is essential to have comprehensive coordination between regions in Mebidangro to maintain the coherence and clarity of policy. Nonetheless, sectoral egos frequently result in power struggles, disputes, and distrust, which can hinder institutional collaboration [23]. Furthermore, inter-organizational can be obstructed if the sectoral egos exist. Therefore, it is important to promote collaboration across groups is essential for effecting change in public services [24].

The significant problem in the Mebidangro region is the inadequate recognition of the necessity for inter-sectoral collaboration. Several factors cause improper recognition. There is a predominance of isolated viewpoints, with each sector or regional government functioning according to unique priorities, objectives, and performance criteria. This division frequently makes stakeholders unable to see the interconnectedness of infrastructure projects and the need for integrated planning. When one region focuses more on transportation and has no good coordination with nearby regions on tourism development, fragmented projects and lost potential for synergy may arise.

Effective and regular discussion and information exchange between sectors and regions need to be done to have better communication. Inadequate coordination between sectors and regions causes misunderstandings and disputes and causes more problems in waste management and flood control, which need more collaborative efforts [18]. The mystery is further worsened by insufficient cross-sector training and awareness. This will cause the potential stakeholders to be resistant to collaboration. This lack of coordination may cause local governments to overlook the possibilities for integrated tourist and infrastructure development to enhance regional economic growth, which causes disjointed planning efforts.

It is undeniable that the profound influence of previous disputes and mistrust on collaborative efforts. Previous disputes or perceived injustices can result in diminished trust and hesitation to collaborate. Therefore, it is essential to eliminate siloed thinking, enhance communication, and foster a culture of trust and collaboration among stakeholders to identify these difficulties. The residual effects of historical wars and distrust of sectoral egos obstruct the establishment of a cohesive strategy for regional development.

The belief of each sector about its paramount importance in infrastructure development frequently results in impasses, indicative of sectoral ego. Furthermore, there is a lack of acknowledgment of the significance of inter-sectoral collaboration in infrastructure projects. The limitations are particularly evident in the tourism-centric projects of Panguruan Waterfront City and Tele Samosir, showing the difficulties within the Mebidangro metropolitan region [25]. The inability to collaborate in the areas in the Mebidangro area also hampers the process of waste management and flood control, which become obstacles for the regions to move in a better direction [18]. Having horizontal integration through the alignment of planning documents at the same governmental level within a cohesive framework is really important to overcome these difficulties.

Similar issues governmental coordination, infrastructure development, and community engagement do not happen only in Mebidangro; this condition also appears in other regions of Indonesia. Although Jabodetabek has a stronger governance framework and much stronger financial channels, bad urban planning and infrastructure still become a problem to grow. Bangka Belitung, which has a smaller size and simpler administrative structure, still also faces sectoral divisions and governance challenges with a lower degree of complexity [26]. In conclusion, although Mebidangro faces similar problems to Jabodetabek and Bangka Belitung, the scale and complexity of these issues vary, which consequently needs different strategies in accordance with each region's conditions, especially on the challenges in governance, infrastructure, finance, and community participation.

Sectoral ego and mistrust can have a bad impact on inter-regional collaboration. It is a result of poor governance, instability, and a lack of progress toward agreed goals. There are solutions to overcome these obstacles. By having open communication, transparency, and willingness, the governments can compromise with the negative factors. There is a need to explore old complaints or misunderstandings to avoid the same mistakes in the future. To reduce sectoral egos, governments need to find similar interests and use the findings to create a plan or strategy to achieve the common goal [27]. All related parties need to be able to see beyond their personal or regional interests. They need to be able to collaborate with other regions and fulfill the stakeholders' demands. In addition, they need to carry out transparent and inclusive policies. Providing stakeholders with relevant training and resources will improve their trust to the regions and better cooperation. This can involve conflict resolution, communication, and negotiating training.

5 Conclusion

The sectoral ego that becomes a barrier to cooperation is one of the difficulties faced in inter-regional cooperation in the Mebidangro Region. Uncoordinated regulations are another obstacle to inter-regional cooperation. The absence of initiators, facilitators, administrative barriers, and hostile attitudes hamper inter-regional cooperation. Technical barriers in organizing collaboration often hamper interregional cooperation. In addition, several institutional barriers to interregional cooperation

need to be removed. However, in Indonesia, interregional cooperation continues to be a strategy to foster relationships and advance the interests of one region over another.

The Mebidangro National Strategic Area comprises inter-regional cooperation, namely Medan, Binjai, Deli Serdang, and Karo. However, cooperation in this area must be enhanced for development to proceed unimpeded. To encourage the implementation of inter-regional cooperation agreements, the Directorate General of Bina Adwil of the Ministry of Home Affairs also emphasizes the importance of spatial management in the Mebidangro region. Increased urban development is especially encouraged in this region thanks to the designation of the Mebidangro region as a national economic growth center. Trade and industrial centers in the Sumatra Island region will develop in the trade sector of the Mebidangro region. To encourage the success of cooperation in Mebidangro, the role of government and community participation in developing the Mebidangro region is required.

References

1. H. Warsono, "Regionalisasi Dan Manajemen Kerjasama Antar Daerah (Studi Kasus Dinamika Kerjasama Antar Daerah Yang Berdekatan di Jawa Tengah).," Universitas Gadjah Mada, 2009.
2. A. Ma'ruf, "Identifikasi Masalah Kerjasama Antar Beberapa Pemerintah Daerah Dalam Bidang Pembangunan Ekonomi," *J. Ekon. Stud. Pembang.*, vol. 7, no. 1, pp. 109–121, 2006, [Online]. Available: <https://journal.umy.ac.id/index.php/esp/article/view/3265>
3. T. Mutiarawati and S. Sudarmo, "Collaborative governance dalam penanganan rob di Kelurahan Bandengan Kota Pekalongan," *J. Mhs. Wacana Publik*, vol. 1, no. 1, pp. 82–98, 2021, [Online]. Available: <https://doi.org/10.20961/wp.v1i1.50892>
4. I. H. J. Ridwan and S. H. Achmad Sodik, *Hukum Tata Ruang: dalam konsep kebijakan otonomi daerah*. Nuansa Cendekia, 2023.
5. B. T. Harsanto, S. Rosyadi, and S. Simin, "Format Kelembagaan Kerjasama Antar Daerah untuk Pembangunan Ekonomi Kawasan Berkelanjutan.," *Mimb. J. Sos. dan Pembang.*, vol. 31, no. 1, pp. 211–220, 2015.
6. Pu.go.id, "Kerjasama Antar Daerah Di Mebidangro Perlu Ditingkatkan," Pu.go.id. [Online]. Available: <https://pu.go.id/berita/kerjasama-antar-daerah-di-mebidangro-perlu-ditingkatkan>
7. Ditjenbinaadwil.kemendagri.go.id., "Ditjen Bina Adwil: Pentingnya Pengelolaan Tata Ruang di Kawasan Metropolitan Mebidangro.," Ditjenbinaadwil.kemendagri.go.id. [Online]. Available: <https://ditjenbinaadwil.kemendagri.go.id/berita/detail/ditjen-bina-adwil--pentingnya-pengelolaan-tata-ruang-di-kawasan-metropolitan-mebidangro>
8. A. V. Mardianta, B. Kombaitan, H. Purboyo, and D. Hudalah, "Perkembangan Kawasan Permukiman di Kawasan Mebidang," *J. Koridor*, vol. 8, no. 2, pp. 118–125, 2017.
9. C. Liang, Y. Wang, J. Zuo, T. Wang, M. Shan, and Y. Sun, *Promoting inter-regional cooperation to reduce CO2 abatement cost in China*. Sustainable Production and Consumption, 2023.
10. B. Shang, T. Jiang, and Z. Bao, "A Study on Inter-Regional Cooperation Patterns

- and Evolution Mechanism of Traditional and Renewable Energy Sources,” *Sustainability*, vol. 14, no. 23, p. 16022, 2022.
11. A. Primanto *et al.*, “Inter-Regional Cooperation In Improving Welfare And Resolving Poverty In Indonesia,” *Acad. Strateg. Manag. J.*, vol. 20, no. 2, pp. 1–11, 2021.
 12. A. J. Mahardhani, S. Suwitri, S. Zauhar, and H. Purnaweni, “Regional Cooperation in East Java Province, Indonesia: Selfishness and Necessity,” *1st Borobudur International Symposium on Humanities, Economics and Social Sciences (BIS-HESS 2019)*. Atlantis Press, pp. 1153–1158, 2020.
 13. H. Akib, A. Mukmin, L. Saefullah, A. S. Harahap, and R. R. Bare, “Snapshot of Inter-Regional Cooperation for Basic Public Services in the Ajatappareng Area, Indonesia,” in *3rd International Conference on Social Sciences (ICSS 2020)*, Atlantis Press, 2020, pp. 742–747.
 14. S. Budiono and J. T. Purba, “Factors of foreign direct investment flows to Indonesia in the era of COVID-19 pandemic,” *Heliyon*, vol. 9, no. 4, 2023.
 15. M. Taufiq and B. Kombaitan, “Urban Area Entities in Affecting Regional Development: A Case Study for Mebidangro,” *J. Wil. Dan Lingkungan*, vol. 7, no. 3, pp. 153–165, 2019, [Online]. Available: <https://doi.org/10.14710/jwl.7.3.153-165>
 16. Y. A. Lubis, A. D. Nasution, and A. Marissa, “The study of public perceptions on the quality service of Trans Mebidang Bus,” *IOP Conference Series: Earth and Environmental Science*, vol. 452, no. 1. IOP Publishing, 2020.
 17. A. D. Nasution, D. D. Harisdani, and P. P. Napitupulu, “The implementation of aerotropolis concept on new town planning and design in Mebidangro, Sumatera Utara,” *IOP Conference Series: Materials Science and Engineering*. IOP Publishing, p. 012293, 2017. [Online]. Available: <https://doi.org/10.1088/1757-899X/180/1/012293>
 18. H. Ridho, M. H. Thamrin, F. A. Nasution, and Y. I. Indainanto, “Disposition of waste management policy implementers through the regional cooperation scheme,” *Int. J. Sustain. Dev. Plan.*, vol. 18, no. 1, pp. 275–282, 2023, [Online]. Available: <https://doi.org/10.18280/ijstdp.180129>
 19. J. W. Creswell and C. N. Poth, *Qualitative Inquiry & Research Design Choosing Among Five Approaches*, Fourth. SAGE Publications, Inc., 2018.
 20. M. B. Miles and A. M. Huberman, “Drawing valid meaning from qualitative data: Toward a shared craft,” *Educ. Res.*, vol. 13, no. 5, pp. 20–30, 1984.
 21. A. S. Lubis, I. Fahreza, and N. F. Nasution, “Bridging the Digital Divide: Improving the Leadership Quality of Women Politicians through Digital Literacy,” *Wedy J. Multidiscip.*, vol. 1, no. 1, pp. 21–28, 2024, [Online]. Available: <https://jurnal.literasipublisher.co.id/index.php/wjm/article/view/31>
 22. Diskominfo.sumutprov.go.id, “Edy Rahmayadi: Tanpa Kerja Sama Yang Baik, Sump Mebidangro Tidak Akan Sukses,” [diskominfo.sumutprov.go.id](https://diskominfo.sumutprov.go.id/artikel-3976-edy-rahmayadi-tanpa-kerja-sama-yang-baik-sump-mebidangro-tidak-akan-sukses.html). [Online]. Available: <https://diskominfo.sumutprov.go.id/artikel-3976-edy-rahmayadi-tanpa-kerja-sama-yang-baik-sump-mebidangro-tidak-akan-sukses.html>
 23. Y. Nugroho, “Institutions, Outputs, and Outcomes,” *J. Southeast Asian Econ.*, vol. 38, no. 3, pp. 296–319, 2021.
 24. D. Ekowati, “Organisational Change In An Inter-Organisational Context: The Perspective Of Territoriality A study on the Office of Integrated Administration System (Satuan Administrasi Manunggal Satu Atap–SAMSAT),” University of York, 2015.
 25. Bpiw.pu.go.id., “BPIW Dukung Pengembangan Wilayah Metropolitan Mebidangro dan Destinasti Pariwisata Danau Toba,” [Bpiw.pu.go.id](https://bpiw.pu.go.id). [Online].

- Available: <https://bpiw.pu.go.id/article/detail/bpiw-dukung-pengembangan-wilayah-metropolitan-mebidangro-dan-destinasti-pariwisata-danau-toba>
26. M. Fauzan, D. Indiahono, and R. Ardhanariswari, “Problematics of Inter-Regional Cooperation in Indonesia,” *Sriwij. Law Reveiw*, vol. 8, no. 1, pp. 99–114, 2024.
 27. M. H. Thamrin, M. I. K. Saraan, and F. A. Nasution, “Capacity Building and Preparation of Village Regulations in Favor of the Community through Technical Guidance in Buluh Telang Village,” *Sovereignty J. Community Serv.*, vol. 1, no. 2, pp. 24–32, 2024, [Online]. Available: <https://jurnal.literasipublisher.co.id/index.php/sjcs/article/view/58>

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.

