

Access and Benefit-Sharing in the MENA Region

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9.1 INTRODUCTION

This chapter examines the legal and institutional framework on access and benefit-sharing (ABS) in the Middle East and North Africa (MENA) region. It explores the drivers and dimensions of ABS risks in the MENA region, gaps in existing legal frameworks on ABS in the region, and innovative approaches for addressing such gaps.

The MENA region is rich in diverse species of plant and animal genetic resources.¹ Drought resistant medicinal plants such as *amaranth* are found in large quantities in several MENA countries.² Other medicinal species, for example, *Silybum marianum*, *Artemisia herba alba*, or *Ricinus communis* are used extensively across the region and are widely accepted as the foundation of European herbal medicine.³ In Iraq's Sulaymaniyah province alone, the medicinal use of several plant species, such as *Adiantum capillus-veneris*, *Borago officinalis*, *Thymus vulgaris*, and *Ziziphus jujuba* are well documented as regional herbal remedies.⁴ The wide variety of

¹ Damilola Olawuyi, *Environmental Law in Arab States* (Oxford University Press 2022) 245–274.

² Anuradha et al., “Genetic Resources and Breeding Approaches for Improvement of Amaranth (*Amaranthus* spp.) and Quinoa (*Chenopodium quinoa*)” (2023) 10 *Frontiers in Nutrition* <https://doi.org/10.3389/fnut.2023.1129723>.

³ H. Azaizeh, S. Fulder, K. Khalil, and O. Said, “Ethnobotanical Knowledge of Local Arab Practitioners in the Middle Eastern Region” (2003) 74 *Fitoterapia* 98 [https://doi.org/10.1016/S0367-326X\(02\)00285-X](https://doi.org/10.1016/S0367-326X(02)00285-X) accessed October 1, 2023.

⁴ H. M. Ahmed, “Ethnopharmacobotanical Study on the Medicinal Plants Used by Herbalists in Sulaymaniyah Province, Kurdistan, Iraq” (2016) 12 *Journal of Ethnobiology and Ethnomedicine* 8 <https://doi.org/10.1186/s13002-016-0081-3> accessed October 1, 2023. For an excellent and comprehensive table of medicinal species from across the MENA region in Iran, Iraq, Egypt, Sudan, and Turkey, see A. S. Dehyab, M. F. A. Bakar, M. K. Al Omar, and S. F. Sabran, “A Review of Medicinal Plant of Middle East and North Africa (MENA) Region as Source in Tuberculosis Drug Discovery” (2020) 27 *Saudi Journal of Biological Sciences* 2457, Table 1 <https://doi.org/10.1016/j.sjbs.2020.07.007> accessed October 1, 2023. For a comprehensive survey of medicinal herbs in the Gulf, including Qatar, Oman, Saudi Arabia, and Yemen, see: A. M. Abu-Odeh and W. H. Talib, “Middle East Medicinal Plants in the Treatment of Diabetes: A Review” (2021) 26 *Molecules* 742 <https://doi.org/10.3390/molecules26030742> accessed October 1, 2023.

species may be surprising to some; although the MENA region is perceived to be covered in desert, the region is actually very rich in biodiversity, with abundant and unique fauna and flora, both in its terrestrial and marine environments.

However, the MENA region faces a host of issues such as the loss of biodiversity, water scarcity, the lack of arable land, air and water pollution, climate change, and the endangerment of rare plants and animal species.⁵ Furthermore, with years of political instability and armed conflict that have affected the MENA region over the last few decades, a rapidly growing population, and sprawling urban growth, the ability of the region to withstand and respond to environmental shocks will need to be bolstered.⁶ More specifically, there is a need for comprehensive regulation on ABS to protect, conserve, and ensure the sustainable management and use of the diverse genetic resources found in the MENA region. The Aichi targets outlined for the United Nations Decade on Biodiversity 2011–2020, the Convention on Biological Diversity (CBD), and the Sustainable Development Goals (SDGs) all recognize the need to address legal barriers to equitable and responsible ABS.

ABS is a principle aimed at ensuring the equitable sharing of benefits arising out of the utilization of genetic resources and associated traditional knowledge.⁷ This concept is particularly significant in the context of biodiversity conservation and sustainable use of natural resources. The main objectives of ABS are to prevent biopiracy (unauthorized and uncompensated commercial use of biological resources), encourage conservation, and support the sustainable development of communities that conserve and maintain these resources.⁸

Despite the growing recognition of the importance of ABS in the MENA region, an examination of the legal and institutional barriers that limit access to the rich genetic resources in the region is yet to receive exhaustive examination in the literature. This chapter fills this gap. This chapter contains five sections, this introduction being the first. After briefly discussing the importance of genetic resources and the need for ABS within the context of limitations of the MENA region, Section 9.2 examines the international legal framework and procedures on equitable ABS, discussing the five primary legal requirements of ABS under the treaties.⁹ Section 9.3 examines the status of implementation in the MENA region to determine the extent

⁵ I. Abumoghli, “Environmental Outlook for the West Asia Region” in H. Pouran and H. Hakimian (eds), *Environmental Challenges in the MENA Region: The Long Road from Conflict to Cooperation* (Gingko 2019) 10–30; M. K. Tolba and N. W. Saab (eds), *Arab Environment: Future Challenges: 2008 Report of the Arab Forum for Environment and Development* (AFED 2008).

⁶ Olawuyi (n 1) 4.

⁷ Convention on Biological Diversity Secretariat, “Access and Benefit-Sharing: Uses of Genetic Resources in Traditional Knowledge” The Bonn Guidelines National Implementation (Secretariat of the Convention on Biological Diversity 2010) www.cbd.int/abs/infokit/brochure-en.pdf accessed November 1, 2023.

⁸ Ibid.

⁹ Convention on Biological Diversity, “Aichi Biodiversity Targets” www.cbd.int/sp/targets/ accessed September 30, 2023.

to which MENA countries meet the elements outlined in Section 9.2, focusing on the latest trends and developments in specific case studies. Section 9.4 then provides recommendations on how to address each of the legal and institutional problems. Section 9.5 is the concluding section.

9.2 INTERNATIONAL LEGAL FRAMEWORK AND PROCEDURES ON EQUITABLE ABS

Derived from diverse sources such as plants, animals, and micro-organisms, genetic resources have a broad spectrum of applications, from basic scientific research to commercial ventures. Various entities, such as research bodies, universities, and corporations spanning pharmaceuticals to cosmetics, harness these genetic resources. This global access to genetic resources for a range of purposes not only propels economic growth but also underscores the inherent value of biodiversity and the essence of ecosystem services.¹⁰

9.2.1 *Historical Evolution and Essence of Benefit-Sharing*

Benefit-sharing¹¹ focuses on a partnership-centric approach to distributing economic, socio-cultural, and environmental advantages associated with biological resources.¹² Rooted in human rights law, the idea has evolved with a special emphasis on sustainable development, tying it to core principles such as equity, solidarity, development assistance, and sovereignty over natural resources. Historically, the principle of Permanent Sovereignty over Natural Resources (PSNR) encapsulated the early manifestations of benefit-sharing.¹³ The 1962 United Nations General Assembly Resolution on PSNR underscored the judicious management of resources, conservation, and prevention of wasteful exploitation. Subsequent global debates, such as the New International Economic Order, brought the concept of benefit-sharing to the fore in the context of sustainable development.¹⁴

¹⁰ Ibid. (nos 44, 46, and 47). See also: Centre of Excellence for Biodiversity Law (CEBLAW).

¹¹ Using the definition found in Morgera, who conceptualizes benefit sharing as “the concerted and dialogic process aimed at building partnerships in identifying and allocating economic, socio-cultural and environmental benefits among state and non-state actors, with an emphasis on the vulnerable.” See E. Morgera, “The Need for an International Legal Concept of Fair and Equitable Benefit-Sharing” (2016) 27 *European Journal of International Law* 2, 353.

¹² J. Cabrera, J. Medaglia, and F. Perron-Welch, “Rules and Practices of International Law on Benefit-Sharing for Sustainable Development” in Volker Mauerhofer, Daniela Rupo, and Lara Tarquinio (eds), *Sustainability and Law: General and Specific Aspects* (Springer 2020).

¹³ N. J. Schrijver, “Natural Resources, Permanent Sovereignty Over” in R. Wolfrum (ed), *Max Planck Encyclopedia of Public International Law* (Oxford University Press 2012).

¹⁴ United Nations General Assembly (UNGA), “Declaration on the Establishment of a New International Economic Order” (May 1, 1974) UNGA Res 3201 (S-VI).

9.2.2 *Specific Instruments and Protocols*

A plurality of international instruments aim to protect and advance equitable ABS. First, the UN SDGs act as a coherent and inclusive framework for coordinated economic, social, and environmental initiatives to promote the inclusive, harmonized, and equitable implementation of sustainable development goals across all spheres. Similarly, UN declarations, resolutions, and other mechanisms on ABS, although nonbinding, provide supportive international, regional, and local networks in which collective efforts can be framed and mutually implemented. Second, clear and comprehensive targets, such as the Aichi Targets, provide a set of goals against which nations can innovate national action plans and strategies specific to their local and regional biodiversity and social fabric. Lastly, the Post-2020 Framework takes the Agenda for Sustainable Development forward to 2030 and 2050 with new, mandated transparency, enforcement, and accountability mechanisms.

Third, and most important, are legally binding treaties, such as the CBD,¹⁵ with its Cartagena¹⁶ and Nagoya¹⁷ Protocols, the Convention on International Trade in Endangered Species of Wild Fauna and Flora,¹⁸ the Convention on Migratory Species (CMS),¹⁹ and the Ramsar Convention on Wetlands (Ramsar),²⁰ the Biodiversity Indicators Partnership,²¹ the Protect Planet Initiative (Protect Planet),²² which provide international legal frameworks on biodiversity and nature conservation, including ABS. The Nagoya Protocol on Access and Benefit Sharing of Genetic Resources (Nagoya Protocol),²³ in particular, is an essential component of the Global Biodiversity Framework, providing a mechanism to ensure the fair and equitable sharing of benefits arising from the utilization of genetic resources.

¹⁵ United Nations Convention on Biological Diversity (1992) www.cbd.int/doc/legal/cbd-en.pdf accessed September 30, 2023.

¹⁶ Convention on Biological Diversity, “The Cartagena Protocol on Biosafety” <https://bch.cbd.int/protocol> accessed September 30, 2023.

¹⁷ Convention on Biological Diversity, “The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization (ABS) to the Convention on Biological Diversity” www.cbd.int/abs/ accessed September 30, 2023 (hereafter Nagoya Protocol).

¹⁸ Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) <https://cites.org/eng> accessed September 30, 2023.

¹⁹ United Nations, Convention on Migratory Species (CMS), also known as the “Bonn Convention” (2020). www.cms.int/en/legalinstrument/cms accessed September 30, 2023.

²⁰ Ramsar Convention on Wetlands (Ramsar) (1971) www.ramsar.org/ accessed September 30, 2023.

²¹ Biodiversity Indicators Partnership (2006) www.bipindicators.net accessed September 30, 2023.

²² United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) “Protected Planet” (2000) www.unep-wcmc.org/en/protected-planet accessed September 30, 2023; see also Protected Planet www.protectedplanet.net/en accessed September 30, 2023; and the International Union for Conservation of Nature (IUCN) www.iucn.org/ accessed September 30, 2023.

²³ Adopted on October 29, 2010 and enforced on October 12, 2014. Convention on Biological Diversity, “The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization (ABS) to the Convention on Biological Diversity” www.cbd.int/abs/ accessed September 30, 2023.

Its purpose is to solidify a clear legal pathway for one of the CBD's three goals: the equitable sharing of benefits from the utilization of genetic resources.²⁴ Initially, genetic resources were universally accessed, based on the "common heritage of mankind" principle.²⁵ This unrestricted access saw a shift with the advent of intellectual property rights and proprietary claims on genetic resource derivatives. In 1992, the CBD framed a legal structure, acknowledging countries' sovereignty over these resources; this framework mandated that access to these resources would be determined by national laws, with potential provisions for benefit-sharing.²⁶ However, unauthorized access continued, urging the international community to create sharper regulations, leading to the Nagoya Protocol's inception during the 7th Conference of the Parties to the CBD in 2004.²⁷

The Nagoya Protocol is fundamentally anchored in three tenets: access, benefit-sharing, and compliance, collectively termed the "ABC of ABS." The dialogue surrounding the Nagoya Protocol saw developing countries emphasizing benefit-sharing and stringent compliance, while their developed counterparts prioritized uniform access. The debate also revolved around the governance of ABS, with developed nations advocating for private agreements and developing nations leaning toward biopiracy prevention.²⁸

9.2.2.1 Nagoya Protocol Analysis

The Nagoya Protocol's essence lies in its mandate that any value, be it commercial or otherwise, derived from the use of genetic resources – like organisms or DNA – by one nation from another, ought to be shared with the country of origin. For instance, if pharmaceutical enterprises extract products from natural origins or indigenous knowledge from local communities in developing countries, the Protocol stipulates equitable compensation or benefit-sharing from these resources.²⁹

²⁴ Convention on Biological Diversity, "About the Nagoya Protocol" www.cbd.int/abs/about/default.shtml/ accessed September 30, 2023.

²⁵ Chelsea Bowling, Elizabeth Pierson, and Stephanie Ratté, "The Common Concern of Humankind: A Potential Framework for a New International Legally Binding Instrument on the Conservation and Sustainable Use of Marine Biological Diversity in the High Seas" (United Nations 2016) www.un.org/depts/los/biodiversity/prepcom_files/BowlingPiersonandRatte_Common_Concern.pdf accessed September 17, 2023.

²⁶ Convention on Biological Diversity, "The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization (ABS) to the Convention on Biological Diversity" www.cbd.int/abs/ accessed September 17, 2023.

²⁷ Secretariat of the Convention on Biological Diversity, "Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization to the Convention on Biological Diversity: Text and Annex" (United Nations Environmental Programme 2011) www.cbd.int accessed September 17, 2023.

²⁸ Ibid.

²⁹ Ibid.

The Nagoya Protocol, in its current form, seems to lean favorably toward the users, predominantly biotech companies in developed nations, granting them broad access rights. In contrast, the providers, largely developing nations, navigate tighter controls. The Nagoya Protocol also curtails some of the CBD's more liberal clauses.³⁰ It is essential to ensure that the value of the Nagoya Protocol is assessed for developing countries: in particular, there must be a high degree of scrutiny over the provisions, observing their development during negotiations. Second, it is imperative to compare the Nagoya Protocol's stipulations within the original scope of the CBD. Third, the value must be ascertained to determine if the provisions align with the aspirations and apprehensions of developing countries. Lastly, it is crucial to strategize ways for developing countries to leverage the Nagoya Protocol's adaptability for their advantage.³¹

9.2.2.2 Key Legal Requirements of ABS under the Nagoya Protocol

Before accessing genetic resources, users must obtain prior informed consent (PIC) from the providing country. This ensures that countries have a say in how their resources are utilized and under what conditions. Second, it is important to agree upon the Mutually Agreed Terms (MAT). These are contractual agreements that determine the terms of use of genetic resources and the nature of benefits to be shared. They ensure that both provider and user parties are on the same page regarding expectations and obligations. Third, benefit-sharing assumes that the contracting parties must take legislative measures to ensure that benefits arising from the utilization of genetic resources are shared in a fair and equitable manner. This can be in the form of monetary or nonmonetary benefits. Fourth, the Nagoya Protocol recognizes the role of traditional knowledge, in particular that of indigenous and local communities (ILCs) in conserving biodiversity. When accessing genetic resources associated with traditional knowledge, users must obtain PIC or approval and involvement from the concerned ILCs. Lastly, countries must ensure that genetic resources utilized within their jurisdiction have been accessed in line with the PIC and that MAT have been established, as required by another contracting party, to ensure compliance with the Nagoya Protocol.³²

The Nagoya Protocol, with its core ABS principles, serves as a model for nations in establishing their domestic frameworks. By emphasizing mutual agreements, transparency, and benefit-sharing, it seeks to foster a global environment wherein genetic resources are no longer just the subjects of conservation but also the sources of equitable development.

³⁰ Ibid.

³¹ Ibid.

³² Ibid.

9.2.3 Aichi Targets

In order to support the implementation of the CBD at the national level, the Strategic Plan of the CBD Secretariat came up with twenty ambitious, yet achievable, targets collectively known as the Aichi Targets.³³ Nations were called upon to

review, and as appropriate, update and revise their National Biodiversity Strategies and Action Plans (NBSAPs) in line with the Strategic Plan for Biodiversity 2011–2020; develop national targets, using the Strategic Plan and its Aichi Biodiversity Targets as a flexible framework, and integrate these national targets into the updated NBSAPs; take into account national priorities and capacities with a view of also contributing to the collective efforts to reach the global Aichi Biodiversity Targets; adopt the updated NBSAPs as a policy instrument; use the updated NBSAPs for the integration of biodiversity into national development, accounting and planning processes; and monitor and review implementation of the NBSAPs and national targets, using indicators.³⁴

In this manner, the CBD Secretariat aims to achieve its vision by 2050, in which “biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people.”³⁵ However, concerns among Global South countries relating to the limited economic benefits from bioprospecting projects could hinder the Aichi targets’ implementation.³⁶

9.2.4 Post-2020 Global Biodiversity Framework

Although the CBD strove to ensure that the Aichi Targets were ambitious, yet achievable, the need for an extended international global biodiversity framework arose in 2020, when a stocktaking of the 2011–2020 Strategic Plan of the CBD goals³⁷ revealed that none of the Aichi Targets had been entirely achieved by 2020.³⁸ Hence, in order to define targets and pathways for the conservation and sustainable use of

³³ Convention on Biological Diversity, “Strategic Plan for Biodiversity 2011–2020 and the Aichi Targets: Living in Harmony with Nature” www.cbd.int/doc/strategic-plan/2011-2020/Aichi-Targets-EN.pdf accessed September 30, 2023.

³⁴ Ibid.

³⁵ Ibid.

³⁶ J. Cabrera Medaglia, “Access and Benefit-Sharing: North–South Challenges in Implementing the Convention on Biological Diversity and Its Nagoya Protocol” in S. Alam, S. Attapatu, C. G. Gonzales, and J. Razzaque (eds), *International Environmental Law and the Global South* (Cambridge University Press 2015) 192–213.

³⁷ Malte Timpte, Elisabeth Marquard, and Cornelia Paulsch, “Analysis of the Strategic Plan 2011–2020 of the Convention on Biological Biodiversity (CBD) and First Discussions of Resulting Recommendations for a Post-2020 CBD Framework” (Institute for Biodiversity – Network [IBN], October 2018) www.cbd.int/doc/strategic-plan/Post2020/postsbi/ibn.pdf accessed September 30, 2023.

³⁸ Secretariat of the Convention on Biological Diversity (2020) *Global Biodiversity Outlook 5*. www.cbd.int/gbo/gbo5/publication/gbo-5-en.pdf accessed September 30, 2023.

biodiversity for the next decade and beyond, the CBD Secretariat, on July 12, 2021, released the first official draft of a new Post-2020 Global Biodiversity Framework to guide actions worldwide through 2030 to preserve and protect nature and its essential services to people.³⁹ Then, on December 19, 2022, at the Conference of the Parties (COP) 15 in Montreal, Canada, the landmark Kunming-Montreal Global Biodiversity Framework (GBF) agreement was realized, providing for the protection of 30 percent of land area and 30 percent of marine environments under protection by 2030.⁴⁰ This is a significant improvement on the current 17 percent of land and 8 percent of marine areas being safeguarded as of February 2023.

The GBF was not intended to be used only under the CBD and associated protocols but also under other biodiversity-related conventions, the Rio Conventions, other multilateral environmental agreements, other international processes and instruments, and the broader international community.⁴¹ The criteria have also been put forward in the so-called SMART concept of targets which the CBD defines as specific, measurable, ambitious, realistic, and time-bound.⁴²

Subsequent decisions coming out of COP15 were the proposed interim budget for the program of work of the CBD, including the Cartagena Protocol and the Nagoya Protocol, and mechanisms for planning, monitoring, reporting and review, resource mobilization, capacity building and development, technical and scientific cooperation, and digital sequence information on genetic resources.⁴³ The GBF includes four goals and twenty-three targets to be achieved by 2030, with four long-term goals for 2050 related to the 2050 Vision for Biodiversity, listed under three main categories: reducing threats to biodiversity, meeting people's needs through sustainable use and benefit-sharing, and tools and solutions for implementation and mainstreaming.⁴⁴ Yet another significance of the Post-2020 Framework is that it mandates that transnational companies and financial institutions monitor, assess, and transparently disclose risks and impacts on biodiversity through their operations,

³⁹ United Nations Environment Programme (UNEP), "1st Draft of the Post-2020 Global Biodiversity Framework" (July 12, 2021) www.unep.org/resources/publication/1st-draft-post-2020-global-biodiversity-framework accessed September 30, 2023.

⁴⁰ United Nations Environment Programme (UNEP), "COP15 Ends with Landmark Biodiversity Agreement" (December 20, 2022) www.unep.org/news-and-stories/story/cop15-ends-landmark-biodiversity-agreement accessed September 30, 2023.

⁴¹ Convention on Biological Diversity, "First Draft of the Post-2020 Global Biodiversity Framework" CBD/WG2020/3/3 (July 5, 2021) 2 www.cbd.int/doc/c/abb5/591f/2e46096d3f0330b08ce87a45/wg2020-03-03-en.pdf accessed September 30, 2023.

⁴² Convention on Biological Diversity, "The Post-2020 Biodiversity Framework: Targets, Indicators and Measurability Implications at Global and National Level" CBD/SBSTTA/23/INF/3 and CBD/SBSTTA/23/2/Add.4 (November 13, 2019) 6 www.cbd.int/doc/c/0590/6ddd/ab6b9375338ff831dcf5541d/sbstta-23-inf-03-en.pdf accessed September 30, 2023.

⁴³ Convention on Biological Diversity, "COP 15 Decisions" www.cbd.int/meetings/COP-15 accessed September 30, 2023.

⁴⁴ Convention on Biological Diversity, "Final Text of Kunming-Montreal Global Biodiversity Framework" (December 22, 2022) <https://prod.drupal.www.infra.cbd.int/sites/default/files/2022-12/221222-CBD-PressRelease-COP15-Final.pdf> accessed September 30, 2023.

portfolios, and supply and value chains.⁴⁵ This enforcement mechanism was seen as critical to the ability to achieve the objectives of the CBD.

In summary, a plurality of global partnerships exist which form the backbone of efforts to enhance ABS and safeguard biodiversity. First, the SDGs act as a coherent and inclusive framework for coordinated economic, social, and environmental initiatives to promote the inclusive, harmonized, and equitable implementation of sustainable development goals across all spheres. Second, legally binding conventions and treaties, such as the CBD, with its Cartagena and Nagoya Protocols, Convention on International Trade in Endangered Species of Wild Fauna and Flora, CMS, and Ramsar, provide mechanisms which allow for the enforcement of mutually agreed upon rules and regulations in international law. Third, partnerships, initiatives, declarations, resolutions, and other mechanisms, although nonbinding, provide supportive international, regional, and local networks in which collective efforts can be framed and mutually implemented. Fourth, clear and comprehensive targets, such as the Aichi Targets, provide a set of goals against which nations can innovate national action plans and strategies specific to their local and regional biodiversity and social fabric. Lastly, the Post-2020 Framework takes the agenda forward to 2030 and 2050 with new, mandated transparency, enforcement, and accountability mechanisms.

9.3 STATUS OF THE IMPLEMENTATION OF REGIONAL EFFORTS ON ABS

In the context of ABS, there is a discernible global trend toward the development and strengthening of legislative frameworks. Countries around the world are increasingly recognizing the imperative of formulating comprehensive and robust laws and policies to govern access to genetic resources and ensure equitable sharing of benefits derived from their utilization. Similarly, the MENA region is steadily fostering a commitment to biodiversity conservation, aligning its strategies and actions with the goals of the Nagoya Protocol. However, the integration and navigation of multifaceted biodiversity legislations and protocols remain a challenging venture, highlighting a crucial need for more refined and region-specific strategies in order to bridge existing gaps and fortify the implementation of conservation initiatives.

9.3.1 *Lack of Clear and Comprehensive Biodiversity Laws Including ABS and Digital Sequencing*

While there is a growing awareness on biodiversity and nature conservation across the MENA region, clear and comprehensive regulatory frameworks on ABS will

⁴⁵ Ibid.

need to be elaborated across the region. For example, in Qatar, Kuwait,⁴⁶ and the United Arab Emirates (UAE),⁴⁷ the growing commitment to ABS is observed through national reports and the implementation of various legislative and administrative measures designed to uphold the principles of the Protocol. Various laws and legislative frameworks have been enacted to regulate and control biodiversity and endorse conservation measures, resonating with the ethos of the Nagoya Protocol.⁴⁸ These countries have manifested their committed stance toward biodiversity conservation and the principles of the Nagoya Protocol.

Despite the progress and efforts, however, challenges such as a significant lack of awareness on ABS, lack of statistical data on ABS,⁴⁹ and compliance concerns linger,⁵⁰ highlighting a continuing need for advancing awareness, fine-tuning legal frameworks, and fortifying implementation measures.⁵¹

Similarly, despite the growing global consensus and global shift toward the recognition and inclusion of digital sequence information (DSI) in ABS frameworks,

⁴⁶ See Convention on Biological Diversity, Access and Benefit-Sharing Clearing-House, “Interim National Reports on the Implementation of the Nagoya Protocol” ABSCH-NR-QA-239041-2 (last updated: December 25, 2017) <https://absch.cbd.int/en/database/ABSCH-NR-QA-239041-2> accessed September 11, 2024 (hereafter ABS Clearing House Report: Qatar); Convention on Biological Diversity, Access and Benefit Sharing Clearing House, “Interim National Report on the Implementation of the Nagoya Protocol” ABSCH-NR-KW-238942-1 (last updated: December 3, 2017) <https://absch.cbd.int/en/database/NR/ABSCH-NR-KW-238942-1> accessed September 17, 2023.

⁴⁷ Convention on Biological Diversity (CBD), Access and Benefit-Sharing Clearing-House (ABSCH), “Interim National Reports on the Implementation of the Nagoya Protocol (NR)” (United Arab Emirates) <https://absch.cbd.int/en/database/ABSCH-NR-AE-259627-1> accessed September 11, 2024 (hereafter ABS Clearing House Report: UAE); United Arab Emirates, Ministry of Climate Change and Environment, “UAE Issues Federal Decrees Supporting Convention on Biological Diversity Protocols” (September 24, 2014) www.moccae.gov.ae/en/media-center/news/24/9/2014/uae-issues-federal-decrees-supporting-convention-on-biological-diversity-protocols.aspx#page=1 accessed September 17, 2023 (hereafter the “UAE MoCCAE decrees on protocols”).

⁴⁸ See for example Qatar’s Draft Law on International Trading in all Kinds of Endangered Species and Their Products. In Qatar, substantial national initiatives such as the Katara Biodiversity Genomes Programme and the “Qatar Genetic Resources and Benefit-Sharing Interim National Report 2017” (Qatar GRBS Report), illustrate extensive efforts in promoting genomic biodiversity studies, prioritizing the preservation of significant species, and implementing comprehensive strategies for the fair and equitable sharing of benefits derived from genetic resources. The collaborations with local and international entities, such as the United Nations Environment Programme (UNEP), and the alignment with Qatar National Vision 2030, underscore the nation’s commitment to fostering environmental sustainability and addressing the challenges in biodiversity laws and ABS awareness. The UAE has several biodiversity laws: Federal Decree No. (77) of 2014 (Cartagena Protocol), Federal Decree No. (75) of 2014 (Nagoya–Kuala Lumpur Supplementary Protocol), and Federal Decree No. (76) of 2014 (Nagoya Protocol); however, there are numerous procedural delays and complexities in providing evidence of PIC and establishing MAT. Nevertheless, the UAE’s Federal Law No. 8 of 2021 emphasizes accessing genetic resources and promotes equitable sharing. Kuwait recently ratified the Nagoya Protocol, and has designated a national focal point as per Article 13 of the Nagoya Protocol, but has not yet established a comprehensive ABS framework. Kuwait acknowledges an urgent need for trained national capacity to apply ABS legislation.

⁴⁹ Ibid.

⁵⁰ Ibid.

⁵¹ Nagoya Protocol (n 17); ABS Clearing House Report: Qatar (n 46).

progress on DSI remain slow across the region.⁵² The evolution of new technologies that enable the development of products based solely on digital molecular information, known as DSI, has raised hot and controversial debates on the regulation of ABS resulting from such digital utilization.⁵³ Countries worldwide are realizing the pivotal role DSI plays in both commercial and noncommercial spheres and are thus adapting their legal and regulatory frameworks accordingly.⁵⁴ In light of this, MENA countries might benefit from addressing DSI in their ABS frameworks, both in terms of access to DSI and benefit-sharing obligations arising from its use. Addressing DSI comprehensively can help streamline national efforts and potentially fortify the realization of biodiversity goals, aligning with international trends and ensuring robustness in the region's biodiversity conservation strategies.

As the global conversation pivots toward the significance of DSI in the realm of ABS, the MENA region stands at an opportune juncture to integrate DSI considerations into its regional strategy. A cohesive regional approach addressing DSI can foster unified standards for access, utilization, and benefit-sharing of genetic sequence data, thereby promoting both the conservation and sustainable use of the region's rich biodiversity.⁵⁵ By proactively incorporating DSI provisions into regional ABS strategy, MENA countries can position themselves at the forefront of ABS negotiations, benefiting from international collaborations and research, and reducing disparities in the treatment of DSI across the region.⁵⁶

9.3.2 *The Need for a Regional Strategy on ABS*

The countries in the MENA region have collaborated with institutions such as the Secretariat of the CBD and the UNEP to develop ABS strategies aligning with the objectives of the Nagoya Protocol.⁵⁷ The CBD and UNEP often provide technical support, guidance, and resources to assist nations in crafting their ABS frameworks

⁵² M. Bagley, E. Karger, M. Ruiz Muller, F. Perron-Welch, and S. Thambisetty et al., "Fact-Finding Study on How Domestic Measures Address Benefit-Sharing Arising from Commercial and Non-commercial Use of Digital Sequence Information on Genetic Resources and Address the Use of Digital Sequence Information on Genetic Resources for Research and Development" CBD/DSI/AHTEG/2020/1/5 (January 20, 2020).

⁵³ Convention on Biological Diversity, "Digital Sequence Information on Genetic Resources" CBD/COP/DEC/15/9 (December 19, 2022) www.cbd.int/doc/decisions/cop-15/cop-15-dec-09-en.pdf accessed January 27, 2024; see also Convention on Biological Diversity, "Digital Sequence Information on Genetic Resources: What Has Been Done on Digital Sequence Information on Genetic Resources" (December 12, 2023) www.cbd.int/dsi-gr/whatdone.shtml accessed January 27, 2024.

⁵⁴ *Ibid.*

⁵⁵ Bagley et al. (n 52).

⁵⁶ *Ibid.*

⁵⁷ Qatar News Agency, "MME Signs Agreement with UNEP to Establish Biodiversity Database in Qatar" (September 13, 2021) www.qna.org.qa/en/News-Area/News/2021-09/13/0049-mme-signs-agreement-with-unep-to-establish-biodiversity-database-in-qatar accessed September 17, 2023.

and in enhancing the capacities of relevant stakeholders.⁵⁸ These international entities play a crucial role in fostering dialogue, sharing best practices, and enabling cooperation among countries in the region to address common challenges related to ABS and biodiversity conservation. Engagement usually involves capacity-building workshops and consultations focused on enhancing the understanding of ABS principles and developing national ABS frameworks.⁵⁹ However, there remains the marked absence of a cohesive regional strategy on ABS.

There is a need for a clear and comprehensive regional strategy on ABS by regional bodies such as the League of Arab States (LAS), Gulf Cooperation Council (GCC), and the Organization for Islamic Cooperation. Such a consolidated regional approach is what would be required to move forward in a robust manner. In addition to the broader international agreements outlined in Section 9.2.2, countries in the MENA region participate in various regional organizations pertaining to environmental protection such as the GCC Standardization Organization,⁶⁰ and partnerships, such as between UNEP and the GCC, in projects for greater transparency and accessibility of data on the environment,⁶¹ or even associations such as the Arab Forum for Environment and Development (AFED).⁶² Nevertheless, there has not been widespread or prominent documentation of regional organizations in the MENA region collaboratively working on Nagoya Protocol's ABS mechanisms in a significant manner. While several countries in the region have shown interest in the Nagoya Protocol and have taken steps individually, cohesive regional efforts or initiatives spearheaded by organizations such as the GCC, LAS, or the Organization of Islamic Cooperation (OIC) have not been distinctly highlighted in publicly available records.

A regional approach would indeed provide many significant benefits through the various institutions. First, with respect to the GCC, the collective could initiate and facilitate cross-border collaborations on biotechnology research among member countries. For instance, joint research programs on plant genetic resources can be established to promote the conservation and sustainable use of biodiversity. The GCC could also work toward developing unified guidelines and protocols for ABS to ensure harmonized practices among member states. This could include common procedures for obtaining PIC and establishing MAT.

⁵⁸ United Nations "Convention on Biological Diversity" (1992) www.cbd.int/doc/legal/cbd-en.pdf accessed November 1, 2023.

⁵⁹ *Ibid.*

⁶⁰ GCC Standardization Organization (GSO) www.gso.org.sa/en/ accessed November 1, 2023.

⁶¹ Cooperation Council for the Arab States of the Gulf, Secretary General, "Air Quality and Monitoring and Data Management Guidebook for the States of the Gulf Cooperation Council" (UNEP West Asia Office and Secretariat General of the Gulf Cooperation Council, March 2022) https://issuu.com/zoienvironment/docs/air-quality-monitoring_en accessed November 1, 2023.

⁶² Arab Forum for Environment and Development (AFED) www.afedonline.org/en/home accessed November 1, 2023.

Second, the LAS could organize regional workshops and training sessions to enhance the understanding of ABS principles among member countries. This could focus on building legal expertise and raising awareness about the Nagoya Protocol. The LAS could also spearhead the creation of a regional database for genetic resources, aiding in the tracking and sharing of benefits derived from their utilization.

Third, the OIC could establish a fund to support research and development projects that align with ABS principles. This fund could also facilitate technical assistance to member countries in the MENA region for developing their national ABS frameworks. The OIC could also play a role in ensuring that traditional knowledge associated with genetic resources is acknowledged and protected, promoting benefit-sharing with ILCs.

Fourthly, the Mediterranean Action Plan (MAP), under UNEP, could promote initiatives aimed at the conservation of biodiversity in the Mediterranean region, ensuring that ABS principles are integrated into broader environmental protection efforts. The MAP can serve as a platform for dialogues among Mediterranean countries to discuss challenges and best practices related to ABS implementation.

Lastly, the Arab Maghreb Union (UMA),⁶³ for example, could lead efforts to develop regional conservation strategies that incorporate ABS principles, focusing on the preservation of genetic resources in the Maghreb region. The UMA could also facilitate collaborative projects among member states to explore and utilize genetic resources, ensuring fair and equitable benefit-sharing.

By actively involving regional bodies in the creation and implementation of ABS strategies, the MENA region can ensure a more cohesive and collaborative approach to biodiversity conservation and sustainable utilization of genetic resources.

9.3.3 *Lack of Institutional Coordination between Environmental Institutions*

Exploring further, the lack of institutional coordination between environmental institutions becomes evident in the context of implementing the Nagoya Protocol. The necessity for harmonized coordination between various environmental entities is exemplified by the challenges faced by the nations of the region, highlighting the imperative need for streamlined cooperation to enhance the effectiveness of ABS implementation.

Specific examples demonstrating the issues in institutional coordination are the irregularities in sharing data with the ABS Clearing-House and challenges associated with documenting practices and indigenous knowledge tied to genetic resources, as outlined under Article 14.2 of the Nagoya Protocol.⁶⁴ These issues may

⁶³ Arab Maghreb Union (UMA) <https://maghrebarabe.org/fr/> accessed November 1, 2023.

⁶⁴ Nagoya Protocol (n 17).

indicate some lack of coordination between the various institutions involved in implementing ABS legislation and strategies.

The emergence of DSI further complicates the institutional coordination landscape. The handling, sharing, and monitoring of genetic sequence data involve technical nuances that require specialized knowledge and capabilities.⁶⁵ Establishing clear lines of responsibility and communication between institutions becomes paramount, particularly when considering the potential commercial and noncommercial implications of DSI.⁶⁶ Institutions within the MENA region may need to bolster their technical capacities and foster interinstitutional collaborations to adeptly navigate the challenges and benefits presented by DSI in the broader context of ABS.⁶⁷

For example, from the information provided in the Interim National Report, updated in 2022, it appears that one of Qatar's greatest challenges could be associated with a marked absence of specific staff designated to administer functions directly related to the implementation of the Nagoya Protocol, as indicated in Item 63 of the ABSCH report, where it is mentioned that Qatar does not have specific staff for this purpose.⁶⁸ This lack of designated staff could possibly hinder effective the institutional coordination and execution of the Nagoya Protocol's provisions. Moreover, considering the responses in Items 61 and 62,⁶⁹ the absence of established mechanisms for budgetary allocations of funds and lack of financial resources made available for the purposes of implementing the Nagoya Protocol might also signify challenges in implementing transboundary cooperation as outlined in Article 11.1.⁷⁰ Without budgetary allocation and specific financial resources, the cooperation needed to manage genetic resources found in the territories of more than one party may be impacted. It may be significant to note that there is no additional information provided about any difficulties or challenges encountered for becoming a party to the Nagoya Protocol, as mentioned in Item 60.⁷¹

However, the presence of clear and specific challenges in institutional coordination and financial allocations might be hampering Qatar's ability to fully and robustly implement the Nagoya Protocol, making them critical areas of focus in advancing compliance with international agreements on biodiversity and ABS.

The UAE, under the Ministry of Climate Change and Environment, has distinctly demarcated roles and outlined mechanisms for benefit-sharing. Additionally, the challenges faced by the UAE in implementing the Nagoya Protocol can be consolidated into themes of institutional coordination, transboundary cooperation, capacity building, awareness-raising, and resource allocation. For instance, the

⁶⁵ Bagley et al. (n 52).

⁶⁶ Ibid.

⁶⁷ Ibid.

⁶⁸ ABS Clearing House Report: Qatar (n 46).

⁶⁹ Ibid.

⁷⁰ Nagoya Protocol (n 17).

⁷¹ ABS Clearing House Report: Qatar (n 46).

UAE has established roles and mechanisms for benefit-sharing, with checkpoints at the Federal Authority for Identity and Citizenship, Customs and Port Security,⁷² and collaborations with research centers. Despite this, there are irregularities in sharing data with the ABS Clearing-House,⁷³ pointing to potential gaps in institutional coordination.⁷⁴ Transboundary cooperation⁷⁵ is emphasized in Article 11 of the Nagoya Protocol,⁷⁶ but the specific mechanisms the UAE employs in this regard are not detailed. Furthermore, while the UAE has enacted laws such as Federal Law No. 8 of 2021,⁷⁷ to govern access to genetic resources, the specifics of transboundary cooperation mechanisms are unclear.⁷⁸ Capacity-building and awareness-raising measures are in place,⁷⁹ but continuous efforts may be necessary for effective implementation of the Nagoya Protocol.⁸⁰ Financially, the UAE relies on internal budgetary allocations without external support, potentially limiting resource availability. Lastly, the human resource constraint is evident as fewer than five staff members⁸¹ were assigned for administering functions related to the Nagoya Protocol as of 2022.⁸² These themes underscore the need for the UAE to strengthen various facets of its approach to fully realize the objectives of the Nagoya Protocol.

In conclusion, the primary challenges in implementing the Nagoya Protocol in the region seem to revolve around institutional coordination, transboundary cooperation, capacity building, awareness-raising, financial, and human resource aspects.

9.3.4 Resource Gaps

The critical resource gaps found in analyzing the reports from the case studies revolve around limited awareness and understanding of ABS protocols, inadequate information-sharing mechanisms, and insufficiencies in enforcement and compliance measures, which collectively impact the equitable sharing of benefits derived from genetic resources and impede international collaboration and transparency in biodiversity conservation.

The first critical gap is the lack of awareness and understanding of ABS protocols and procedures.⁸³ This deficiency likely hinders the implementation and compliance of ABS regulations and can lead to potential international conflicts and loss

⁷² Government of the United Arab Emirates, Federal Authority for Identity, Citizenship, Customs and Port Security <https://icp.gov.ae/en/> accessed October 1, 2023.

⁷³ See ABS Clearing House Report: UAE (n 47).

⁷⁴ *Ibid.*

⁷⁵ *Ibid.*

⁷⁶ Nagoya Protocol (n 17).

⁷⁷ United Arab Emirates, "Legislations" (n 48).

⁷⁸ ABS Clearing House Report: UAE (n 47).

⁷⁹ *Ibid.*

⁸⁰ *Ibid.*

⁸¹ See section 63 of the report.

⁸² *Ibid.*

⁸³ ABS Clearing House Report: Qatar (n 46).

of biodiversity. Raising awareness and fostering understanding of ABS protocols is fundamental to promoting responsible access to and utilization of genetic resources, thereby contributing to the conservation and sustainable use of biodiversity.

Second, the evident gap in information-sharing mechanisms is rather acute.⁸⁴ The unavailability of information to the ABS Clearing-House and the absence of provisions encouraging users and providers to share information on the implementation of ABS measures can jeopardize international cooperation and transparency. Improving information sharing is crucial for aligning with Article 14.2 of the Nagoya Protocol and fostering a collaborative environment that advances the mutual benefits and equitable sharing of genetic resources.⁸⁵

The consideration of DSI in ABS transactions may affect resource gaps. Addressing DSI necessitates bolstered information-sharing mechanisms to effectively handle, monitor, and share genetic sequence data.⁸⁶ As the global discourse shifts toward DSI integration into ABS frameworks, MENA countries should anticipate its intricacies and challenges.⁸⁷

Lastly, the apparent inadequacy in the enforcement of ABS compliance and the lack of cooperative measures in dealing with cases of alleged violations of ABS measures indicate a significant gap in compliance and enforcement.⁸⁸ Without robust enforcement mechanisms and international cooperation to address noncompliance, the objectives of the Nagoya Protocol may remain unrealized. Strengthening enforcement mechanisms and enhancing international collaboration are essential for addressing violations effectively and ensuring the fair and equitable sharing of benefits arising from genetic resources.

9.3.5 Capacity Gaps in the MENA Region

Capacity gaps in the MENA region are evident in several key areas of the implementation of the Nagoya Protocol, hindering the holistic adoption and execution of its principles related to the fair and equitable sharing of benefits arising from the utilization of genetic resources. These gaps manifest as limitations in engaging with indigenous and/or local communities, ambiguities in the adoption and application of model legal clauses and best practices, deficits in awareness and institutional support, unassessed effectiveness of legal frameworks, and potential constraints in resource allocation and international cooperation.⁸⁹

⁸⁴ Ibid.

⁸⁵ Nagoya Protocol (n 17).

⁸⁶ Bagley et al. (n 52).

⁸⁷ Ibid.

⁸⁸ ABS Clearing House Report: Qatar (n 46).

⁸⁹ See the Convention on Biological Diversity, Access and Benefit-Sharing Clearing House, for the countries in the region.

Incorporating DSI, which can underscore capacity gaps, into ABS frameworks in the region demands a deep understanding of genetic sequence data and its implications for benefit-sharing. The emergent nature of DSI necessitates specialized training and updated policy frameworks. Particularly, managing DSI from publicly accessible databases introduces challenges affecting benefit-sharing, emphasizing the need for the MENA region to enhance capacities in this area.⁹⁰

Qatar has shown its commitment to the Nagoya Protocol, emphasizing transboundary cooperation and the significance of genetic resources for environmental stability.⁹¹ However, several capacity gaps have emerged in the implementation process. The first is community engagement. Qatar faces some limitations in engaging at the local level during the Nagoya Protocol's implementation, as per Article 11. Second, while Qatar promotes model clauses, conduct codes, and best practices according to Articles 19 and 20,⁹² the extent of their adoption within the country remains unclear. Third, there is a notable deficit in awareness and capacity building for the Nagoya Protocol's objectives, underscored by the absence of dedicated staff for its administration and no clear strategy for awareness-raising.⁹³ Lastly, the absence of specified budgetary allocations for the Nagoya Protocol's enactment points to significant financial capacity gaps.

In comparison with other countries in the region, the UAE has implemented legislative measures such as Federal Law No. 8 of 2021,⁹⁴ although the enforcement or effectiveness in real-world scenarios remains to be seen. Second, while the UAE has made efforts to raise awareness, the impact of these efforts and the status of funds for capacity building remain somewhat unclear. Both Qatar and the UAE face challenges in fully implementing the Nagoya Protocol, stemming from gaps in community engagement, adherence to standards, awareness and capacity building, and financial and institutional limitations. These challenges underscore the need for a thorough evaluation and refinement of strategies for effective implementation of the Nagoya Protocol.

9.4 NAVIGATING THE ABS LANDSCAPE IN THE MENA REGION: RECOMMENDATIONS AND A PATH FORWARD

In addressing the challenges and gaps within the biodiversity and ABS frameworks, this section delves into several pivotal areas. First, it underscores the paramount need for clear and comprehensive laws governing biodiversity and ABS. Second, it then transitions to the importance of introducing regional biodiversity action plans paired with a cohesive ABS strategy. Subsequent subsections focus on bolstering

⁹⁰ Bagley et al. (n 52).

⁹¹ ABS Clearing House Report: Qatar (n 46).

⁹² Nagoya Protocol (n 17).

⁹³ ABS Clearing House Report: Qatar (n 46).

⁹⁴ United Arab Emirates, "Legislations" (n 48).

institutional coordination among environmental entities, ensuring adequate budgetary allocations to nurture ABS and biodiversity initiatives, and finally the pivotal role of universities in enhancing ABS capacity development through targeted academic courses.

9.4.1 *Enact Clear and Comprehensive Laws Governing Biodiversity and ABS*

The ABS landscape in the MENA region underscores a critical urgency: the establishment of clear and comprehensive laws on biodiversity and ABS. Kuwait's recent ratification of the Nagoya Protocol reveals the initial stages of its alignment with the protocol's mandates.⁹⁵ However, the absence of comprehensive frameworks in countries such as Saudi Arabia, Oman, Bahrain, and Yemen underscores the importance of establishing or enhancing their respective biodiversity and ABS legislative blueprints.⁹⁶ Addressing the evident gaps in the ABS framework, various countries have exhibited the significance of charting lucid, actionable pathways. For example, countries without defined strategic blueprints need to construct and regularly update their NBSAPs. This emphasis on policy clarity and periodic revision, aligned with standards such as the Nagoya Protocol, not only addresses changing biodiversity conditions but also ensures that nations remain compliant with evolving international standards. This evolution should ideally culminate in a cohesive ABS strategy, encompassing every facet from institutional coordination to public awareness.

9.4.2 *Adopt Regional Biodiversity Action Plans and ABS Strategy*

While in many domains there has been tremendous progress, the MENA region continues to face challenges with the overall ABS framework. A clear, actionable pathway is crucial for these nations to enhance ABS mechanisms, and one of the first steps is revisiting their NBSAPs. Countries without a strategic roadmap must develop NBSAPs, incorporating ABS goals in line with the Nagoya Protocol. Those with NBSAPs need regular updates to keep up with evolving biodiversity conditions and international standards. For instance, Qatar, known for its consistent alignment with global standards such as the Aichi Biodiversity Targets, needs a rejuvenation of its Biodiversity Strategies established in 2004.⁹⁷ The UAE is another example, showcasing dedication through its Comprehensive Biodiversity Strategy (2014–2021)⁹⁸ and aligning with the broader objectives of the CBD.

⁹⁵ See list of Interim Reports (n 92).

⁹⁶ Ibid.

⁹⁷ State of Qatar, "National Biodiversity Strategy and Action Plan of 2004" (October 1, 2004) FAOLEX No LEX-FAOC181049 www.informea.org accessed October 1, 2023.

⁹⁸ UAE Biodiversity Strategy (n 58).

Yet a regional approach can be beneficial for the MENA nations, especially given the shared challenges and ecological similarities. While countries such as Qatar and the UAE have shown advancements in ABS mechanisms, there remains a need for a coordinated regional strategy. This is particularly salient for countries such as Saudi Arabia, Oman, Bahrain, and Yemen, which may benefit from regional insights and shared resources. A united regional initiative might provide mutual support, shared expertise, and collaborative projects that propel the entire region forward in biodiversity conservation and ABS alignment.

9.4.3 *Accelerate Institutional Coordination between Environment Institutions*

Central to enhancing the ABS framework is strengthening institutional frameworks and coordination. Countries should establish centralized ABS authorities or dedicated bodies for overseeing ABS processes. Enhanced inter-agency collaboration is paramount, ensuring a harmonized implementation of ABS mechanisms. This involves promoting communication, especially between bodies responsible for biodiversity conservation, research, trade, and indigenous rights. For instance, Qatar's alignment with Aichi Biodiversity Targets and various legislative measures underpins its commitment to fostering coordination between various national and international standards. The importance of this institutional collaboration is also evident in the UAE, with its federal decrees aligning with the CBD protocols and its active partnerships with universities, research centers, and international stakeholders, emphasizing the significance of collective and coordinated efforts.

Centralized coordination is crucial for the success of ABS processes. While countries such as Qatar and the UAE have made strides in fostering coordination, there is a need for enhanced collaboration across the region. Sharing best practices, pooling resources, and joint capacity-building initiatives can provide a solid foundation for these countries, especially those at the foundational stages of ABS implementation.

9.4.4 *Budgetary Allocations to Advance ABS and Biodiversity Programs*

Enhancing transparency and stakeholder engagement is pivotal. Establishing ABS information portals will offer centralized access to ABS regulations and data, fostering transparency. Periodic multistakeholder dialogues, involving governmental entities, businesses, and researchers, can be a platform to address ABS challenges and brainstorm solutions. Qatar, with its strong legislative framework and nineteen ratified biodiversity-related agreements, exemplifies robust budgetary allocation. Additionally, tangible conservation projects, such as mangrove planting and artificial coral reefs, underscore Qatar's commitment. The UAE's draft law initiative, targeting conservation and the sustainable use of plant genetic resources, further accentuates the importance of clear budgetary commitments.

However, securing dedicated funds for ABS and biodiversity projects is pivotal. Countries such as Qatar and the UAE have showcased budgetary commitments, but a unified regional financial strategy can amplify efforts. While some countries in the MENA region, such as Yemen and Oman, might face economic constraints, a collaborative approach involving wealthier nations can ensure that all members have access to the resources needed for ABS and biodiversity initiatives.

9.4.5 *Increased Capacity Development on ABS through University Courses*

Awareness and education are essential for a robust ABS framework. Countries should integrate ABS principles into educational curricula. This will instill respect and understanding for genetic resources in future generations. Public awareness campaigns, leveraging media and community outreach, can highlight the importance of ABS. Qatar, in particular, seeks to elevate biodiversity consciousness and promote grassroots-level conservation initiatives. Additionally, the rights of ILCs must be legally recognized, making them integral to ABS negotiations. Capacity building through workshops will enable ILCs to effectively partake in ABS discussions. The UAE's collaborations with educational institutions reflect the significance of capacity-building efforts in biodiversity conservation.

Effective and harmonious implementation of ABS mechanisms in the MENA region hinges upon robust institutional coordination. Countries, as showcased by Qatar's alignment with international biodiversity standards and the UAE's collaborative approaches, underscore the necessity for centralized authorities and inter-agency cooperation. By fostering these interconnections, nations not only streamline ABS processes but also ensure that biodiversity conservation efforts align seamlessly with international protocols and best practices. Such coordinated endeavors pave the way for a sustainable and equitable future in the realm of biodiversity conservation in the region.

9.5 CONCLUSION

In conclusion, the nexus between biodiversity and human civilizations is particularly evident in the varied landscapes of the MENA region. This intertwining relationship requires a meticulous approach to ABS, ensuring not just protection but the equitable distribution of the dividends derived from genetic resources. The region, despite many commendable advancements, faces challenges that can be addressed through internal introspection and global alignment. First, tapping into its own reservoir of traditional wisdom, heritage, and expertise to design ABS mechanisms that truly mirror the region's unique ecological and socio-cultural backdrop. Second, aligning these systems with international standards, making the region an active and influential participant in global discussions on conservation, research, and trade. With these dual approaches, the MENA region is poised to transition

from mere custodians of their vast genetic wealth to leaders who demonstrate the combination of conservation and sustainable progress. By placing equitable utilization and holistic development at the heart of their ABS strategies, MENA countries can navigate the multifaceted challenges of the twenty-first century.

A unified approach, encapsulating the revision of National Biodiversity Action Plans, strengthening bioethics, and galvanizing stakeholder collaboration, can pave the way forward. Drawing on the experiences of Qatar and the UAE, it is evident that a regionally adapted, collaborative approach can truly unlock the potential of MENA countries. By championing biodiversity conservation and ensuring equitable benefits, the MENA region can ensure that its invaluable genetic resources are a lasting legacy, thus ushering in a new era when the region emerges as a model of sustainable and inclusive progress in the ever-evolving twenty-first century.