

## **Access and Benefit Sharing of Genetic Resources and Associated Traditional Knowledge: Options and Challenges for Bangladesh**

### **Abstract:**

Before the adoption of Convention on Biological Diversity, there was no mechanism to regulate access to genetic resources and associated traditional knowledge, and anyone could have utilized them for free. The CBD has provided every state with sovereign rights over biodiversity situated particularly within its territory and also on the process how such resources can be utilized. A central part of the scheme is that parties must provide a fair share of benefits with the country of origin in return for utilizing genetic resources. This process of accessing and utilizing genetic resources is called 'Access and Benefit Sharing' (ABS) regime. In 2017, Bangladesh has enacted the Bangladesh Biological Diversity Act to regulate ABS mechanism. Section 30 of the Act provides that 'Access and Benefit Sharing' (ABS) agreement should be based on mutually agreed terms (MAT) and prior informed consent (PIC). Bangladesh, being rich in biodiversity, can reap benefits from ABS regime as a large number of people are dependent on biodiversity for everyday living and sustenance. Bangladesh will face enormous obstacles to develop ABS legislation and put it into practice. Urbanization and industrialization are causing gradual loss of traditional knowledge. Considering that it becomes vital for Bangladesh to document traditional knowledge and create a database for that purpose. A transparent, equitable administrative framework within the country has become necessary to provide clarity and certainty to the users for the purpose of utilization. Moreover, people should be made aware of the significance and economic value of ABS scheme. If effective contract and surveillance systems can be secured to regulate ABS regime, Bangladesh will achieve national food and medical security while preserving biodiversity and improving the lives of local and indigenous peoples.

### **Introduction**

Prior to the adoption of Convention on Biological Diversity (CBD),<sup>1</sup> it was regarded that anyone can have access to genetic resources and associated traditional knowledge for free and utilize such resources attending to their own needs.<sup>2</sup> There was no international mechanism making it mandatory for the parties to share benefits with the party providing genetic resources for utilization of and development of new products from such resources.<sup>3</sup> Individuals and organizations utilized genetic resources and associated traditional knowledge and then monopolized the benefits.<sup>4</sup> This had created complexities and prevented the countries of origin from engaging into benefit-sharing scheme for the use of genetic resources and associated

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<sup>1</sup> The Convention on Biological Diversity (adopted on 5 June 1992, entered into force 29 December 1993) 1760 UNTS 79 (The CBD).

<sup>2</sup> Krishna Prasad Oli, Tara Devi Dhakal, *Access and Benefit Sharing from Genetic Resources and Associated Traditional Knowledge* (International Centre for Integrated Mountain Development 2009) 19

<sup>3</sup> Ryo Kohsaka, 'The Negotiating History of the Nagoya Protocol on ABS: Perspective from Japan' (2012) 9 *Journal of Japanese IP Academic Society* 55, 56

<sup>4</sup> Achim Seiler and Graham Dutfield, 'Regulating Access and Benefit Sharing: Basic Issues, Legal Instruments, Policy Proposals' (German Federal Agency for Nature Conservation, 2001)

<<https://www.bfn.de/fileadmin/MDB/documents/access.pdf>>. Accessed 25 June 2017

traditional knowledge.<sup>5</sup> But, due to the increased applicability of intellectual property rights and private ownerships of products of genetic resources, things have changed over the time and under the UN CBD, sovereign rights of states over these resources were established.<sup>6</sup> The increased use and monopoly of genetic resources have made resource-providing countries aware and take steps to regulate the access to genetic resources and associated traditional knowledge and share benefits in a fair and equitable way.<sup>7</sup>

### **Access and Benefit Sharing (ABS) under International Legal Regimes**

The Convention on Biological Diversity (CBD) defines ABS as the sharing of benefits arising from the utilization of genetic resources in a fair and equitable way.<sup>8</sup> Article 15 of the Convention is being implemented now with the entry into force of the Protocol in October 2014.<sup>9</sup> It has given individual states sovereign rights over biodiversity within the territory of the particular country and also on the patterns of utilizing such resources.<sup>10</sup> It is the principal international instrument providing a comprehensive framework for the conservation of biodiversity and its sustainable use.<sup>11</sup> Moreover, the Nagoya Protocol<sup>12</sup> purports to develop the legal ABS framework laid down by the CBD.<sup>13</sup> This Protocol provides a framework about how users can get access to genetic resources and associated traditional knowledge.<sup>14</sup> It also stipulates parties to the Protocol to ensure that users under their jurisdiction respect the domestic legislation and requirements of the Parties from where the resources or knowledge have been acquired.<sup>15</sup>

Under the Convention on Biological Diversity, state parties are entitled to lay out the framework to regulate access to their genetic resources for purposes which are environmentally sound. It has also been guaranteed that no state can impose restrictions contrary to the objectives of the CBD.<sup>16</sup> Bonn Guidelines<sup>17</sup> which has been adopted in 2002 by COP 6 were made to facilitate the

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<sup>5</sup> Ibid

<sup>6</sup> Hasrat Arjjumend, 'Analysis of India's ABS Regime in Context of Indigenous People and Local Communities' (2015)

4 International Journal of Applied Research and Studies 1, 2

<sup>7</sup> Carrizosa, Santiago and others, 'Accessing Biodiversity and Sharing the Benefits: Lessons from Implementation of the Convention on Biological Diversity' (IUCN 2004) 4

<sup>8</sup> The CBD, art 2 and 15.7.

<sup>9</sup> V. Vijay, V. Lavanya and B. Pisupati, 'Peer review on the Implementation of the Nagoya Protocol and its Impact over Certain Aspects of BioTrade: Challenges on the Implementation of Biotrade and Access and Benefit Sharing' (UNCTAD, 2015) < <http://unctad.org/meetings/en/Contribution/ditc-ted-19112015-PeerReviewNagoya-fledge-ind-unep.pdf> > accessed 3 July 2017

<sup>10</sup> Elisa Morgera, Elsa Tsioumani and Matthias Buck, 'Unraveling the Nagoya Protocol: A Commentary on the Nagoya Protocol on Access and Benefit-sharing to the Convention on Biological Diversity' (Martinus Nijhoff, 2014) 214

<sup>11</sup> Young Tomme, 'Contracting for ABS: The Legal and Scientific Implications of Bioprospecting Contracts' (IUCN 2009) 3

<sup>12</sup> The 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 (adopted on 29 October 2010 in Nagoya and entered into force on 12 October 2014) (The Nagoya Protocol)

<sup>13</sup> The Nagoya Protocol, art 4

<sup>14</sup> Thomas Greiber and others, 'An Explanatory Guide to the Nagoya Protocol on Access and Benefit-sharing' (IUCN 2012) 50

<sup>15</sup> The Nagoya Protocol, art 15

<sup>16</sup> The CBD, art 15(2)

implementation of the ABS regime.<sup>18</sup> The Bonn Guidelines purport to provide assistance to various stakeholders like parties, governments, etc. in formulating overall access and benefit sharing strategies.<sup>19</sup> Legislative, administrative, and policy measures on access and benefit sharing are also provided by these guidelines.<sup>20</sup>

### **Key components of Access and Benefit Sharing (ABS)**

The CBD aims to create a comprehensive international regime for the sustainable management of biological resources.<sup>21</sup> Access to genetic resources, benefit sharing and bioprospecting, are the key components of ABS regimes.<sup>22</sup> These aspects of ABS regime should be prioritized and included in the respective regional and national ABS legislations.<sup>23</sup> All these features of ABS legal frameworks can accelerate cooperation and trust between the parties involved in the process of bioprospecting.<sup>24</sup> The CBD has provided for the state parties to incorporate these components into national ABS legislation after ratifying the convention. The components which are central to the implementation of an ABS regime include:

- 1) **Prior informed consent** (PIC) for having the access to biological resources,<sup>25</sup>
- 2) **Benefit sharing from access** to and use of genetic resources and associated traditional knowledge,<sup>26</sup> and
- 3) **Mutually agreed terms** (MAT) for access and use of biological resources and traditional knowledge.<sup>27</sup>

### **Importance of ABS in the Context of Bangladesh**

Bangladesh is rich in biodiversity and many people here are dependent on biodiversity for their everyday living and sustenance.<sup>28</sup> More than 60 million people are earning a living from aquatic

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<sup>17</sup> Secretariat of the Convention on Biological Diversity, 'Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization' (2002)

<<https://goo.gl/oJCMVc>> accessed 18 June 2017 (Bonn Guidelines)

<sup>18</sup> Bonn Guidelines, para 7

<sup>19</sup> Krishna Prasad Oli, Tara Devi Dhakal, 'Access and Benefit Sharing from Genetic Resources and Associated Traditional Knowledge' (International Centre for Integrated Mountain Development 2009) 19

<sup>20</sup> Ibid.

<sup>21</sup> Young, Tomme, 'Contracting for ABS: The Legal and Scientific Implications of Bioprospecting Contracts' (IUCN 2009) 3

<sup>22</sup> Krishna Prasad Oli, Tara Devi Dhakal, 'Access and Benefit Sharing from Genetic Resources and Associated Traditional Knowledge' (International Centre for Integrated Mountain Development 2009) 19

<sup>23</sup> Ibid.

<sup>24</sup> Ibid.

<sup>25</sup> The CBD, art 15(5); Bangladesh Biological Diversity Act 2017 s 30(1)

<sup>26</sup> The CBD, art 15(7); Bangladesh Biological Diversity Act 2017 s 30(1)

<sup>27</sup> The CBD, art 15(4); Bangladesh Biological Diversity Act 2017 s 30(1)

<sup>28</sup> Ministry of Environment and Forests, 'Fourth National Report to the Convention on Biological Diversity: Biodiversity National Assessment and Programme of Action 2020 (Government of the People's Republic of Bangladesh January 2010) [https://www.law.ox.ac.uk/sites/files/oxlaw/oscola\\_4th\\_edn\\_hart\\_2012.pdf](https://www.law.ox.ac.uk/sites/files/oxlaw/oscola_4th_edn_hart_2012.pdf) accessed 26 June 2017

resources.<sup>29</sup> Close to one million people are making a living from fishing and another 11 million do part time fishing in the country for their livelihood.<sup>30</sup> Since time immemorial, people have depended on biological and genetic resources and traditional knowledge and will continue to do so.<sup>31</sup> From generation to generation, they have passed the traditional knowledge.<sup>32</sup> Biological resources and traditional knowledge associated with it are an importance means of survival for these people. They not only did earn their livelihood but they also preserved ecological security by maintaining these resources.<sup>33</sup> Being a lower middle income country, Bangladesh can get benefitted from ABS mechanism significantly e.g. transferring genetic resources in return for economic and technological gains for alleviating poverty. This mechanism will act as a catalyst for redistribution of benefits as well. It will regulate use of biological resources and associated knowledge properly and ensure rights among the parties.

### **Challenges for Bangladesh to Implement ABS Mechanism**

Being a signatory in 1992, Bangladesh finally ratified the CBD in 1994.<sup>34</sup> In 2004, National Biodiversity Strategy and Action Plan was prepared and National Biodiversity Strategy and Action Plan of Bangladesh 2016-2021 has also been published in pursuance of the commitment of Bangladesh towards the international obligations.<sup>35</sup> Moreover, Bangladesh has become signatory to the Nagoya Protocol in 2010 to implement the objectives of CBD:<sup>36</sup> ensuring the fair and equitable sharing of benefits from use of genetic resources and thereby, contributing to sustainable use and conservation of biodiversity. Recently, Bangladesh has enacted Bangladesh Biological Diversity Act 2017.<sup>37</sup> Bangladesh will have to go a long way to implement ABS mechanism as no rules, regulations are made and no actions taken for that purpose. Bangladesh

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<sup>29</sup> Md. Kamrul Hasan Arif, 'Access to genetic resources and benefit sharing' *The Daily Star* (Dhaka, 26 May 2015) <<http://www.thedailystar.net/law-our-rights/access-genetic-resources-and-benefit-sharing-87280>> .accessed 19 June 2017

<sup>30</sup> Ibid.

<sup>31</sup> Ministry of Environment and Forests, 'Fourth National Report to the Convention on Biological Diversity: Biodiversity National Assessment and Programme of Action 2020 (Government of the People's Republic of Bangladesh January 2010) <[https://www.law.ox.ac.uk/sites/files/oxlaw/oscola\\_4th\\_edn\\_hart\\_2012.pdf](https://www.law.ox.ac.uk/sites/files/oxlaw/oscola_4th_edn_hart_2012.pdf)> accessed 26 June 2017

<sup>32</sup> Ministry of Environment and Forests, 'National Biodiversity Strategy and Action Plan of Bangladesh 2016-2021' Government of the People's Republic of Bangladesh < <https://www.cbd.int/doc/world/bd/bd-nbsap-v2-en.pdf> > accessed 25 June 2017

<sup>33</sup> Ibid

<sup>34</sup> Department of Environment, 'Fifth National Report to the Convention on Biological Diversity' (Government of the People's Republic of Bangladesh, 2015) <<https://www.cbd.int/doc/world/bd/bd-nr-05-en.pdf>> accessed 22 June 2017

<sup>35</sup> Ministry of Environment and Forests, 'National Biodiversity Strategy and Action Plan of Bangladesh 2016-2021' Government of the People's Republic of Bangladesh <<https://www.cbd.int/doc/world/bd/bd-nbsap-v2-en.pdf>> accessed 25 June 2017

<sup>36</sup> Md. Kamrul Hasan Arif, 'Access to genetic resources and benefit sharing' *The Daily Star* (Dhaka, 26 May 2015) <<http://www.thedailystar.net/law-our-rights/access-genetic-resources-and-benefit-sharing-87280>> .accessed 19 June 2017

<sup>37</sup> < [http://bdlaws.minlaw.gov.bd/bangla\\_pdf\\_part.php?id=1203](http://bdlaws.minlaw.gov.bd/bangla_pdf_part.php?id=1203)> accessed 3 July 2017

has been presented with challenges, like other countries, to develop ABS legislation and put it into practice.

### **A) Documentation of Local Knowledge and Database Creation**

Over the passage of time various social, economic and political factors are causing gradual erosion and loss of traditional and indigenous knowledge from native habitats.<sup>38</sup> Modernization and urbanization have also a great extent of influence over the lives of local people and indigenous communities resulting into gradual loss of their unique culture and heritage.<sup>39</sup> Considering that, it becomes vital for Bangladesh to take two different sets of actions to address the problems that traditional knowledge is currently facing.<sup>40</sup> Firstly, actions must be taken to prevent erosion and loss of traditional knowledge. Secondly, ensuring protection of local and indigenous people's rights over traditional knowledge. To benefit the traditional knowledge holders and to improve their lives, it is important to manage and exploit traditional knowledge in a sustainable manner.<sup>41</sup> For an effective approach to stop biopiracy and ensure sustainable use of natural resources and proper conservation of biological diversity, documentation of traditional knowledge has become a necessity for Bangladesh. And to the tune of the necessity, government of Bangladesh has made decided to document traditional knowledge by 2021.<sup>42</sup>

### **B) Three fundamentals of ABS: Access, Benefit-sharing, and Compliance**

For users of biological resources and associated traditional knowledge, it is very important that state parties have a transparent, equitable and administrative framework within the country; so that users can secure legal clarity and certainty for the purpose of utilization.<sup>43</sup> Moreover, the Nagoya Protocol obliged the parties to take measures concerning benefits from genetic resources, as well as subsequent applications of such resources and their commercialization, so that the benefits are being shared with the provider country.<sup>44</sup> Developing and implementing relevant laws can be complicated due to diverse interests and lack of harmonization with existing legislation. Bangladesh has not ratified the Nagoya Protocol yet. Moreover, it is also very crucial to understand that neither the provider nor the user State alone can take proper measures to ensure an effective ABS regime.<sup>45</sup> Generally, provider countries cannot enforce ABS legislation into user countries. The enforcement of ABS measures in user countries is very costly and which

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<sup>38</sup> WIPO, 'Practical Workshop on Intellectual Property and Genetic Resources, Traditional Knowledge and Traditional Cultural Expressions/Folklore' (Namibia, August 2015) <<https://goo.gl/cZJ6iM>> accessed 8 June 2017

<sup>39</sup> Ibid

<sup>40</sup> WIPO, Intellectual Property and Genetic Resources, Traditional Knowledge and Traditional Cultural Expressions (2015) <<https://goo.gl/mRwrEG>> accessed 23 June 2017

<sup>41</sup> Ibid

<sup>42</sup> Ministry of Environment and Forests, 'National Biodiversity Strategy and Action Plan of Bangladesh 2016-2021' Government of the People's Republic of Bangladesh <<https://www.cbd.int/doc/world/bd/bd-nbsap-v2-en.pdf>> accessed 25 June 2017

<sup>43</sup> The Nagoya Protocol, art 3

<sup>44</sup> The Nagoya Protocol, art 5

<sup>45</sup> Thomas Greiber and others, An Explanatory Guide to the Nagoya Protocol on Access and Benefit-sharing (IUCN 2012) 17

makes it almost impossible to carry out such enforcement.<sup>46</sup> This ABS mechanism is a very new concept to Bangladesh. It has become necessary for Bangladesh to ratify the Nagoya Protocol. It will be hard to implement an appropriate national legal framework to regulate the issues of access, benefit-sharing, and compliance.

### **C) Institutional Arrangements and Lack of Capacity**

Apart from a fitting legislative framework, an appropriate institutional framework is also essential.<sup>47</sup> It will be difficult for Bangladesh to set up an effective institutional arrangements that would support the operationalization of ABS scheme. At the national level of many countries that have adopted ABS regimes, it has been found that unclear, overlapping, or simply non-existent institutional competencies is a great challenge for implementing ABS effectively.<sup>48</sup> If Bangladesh wants to get benefitted from this scheme, it will have to make sure that there is a competent institution to operationalize this mechanism properly. Another difficulty relates to the lack of capacity on all sides to deal with the complexities of ABS. For effective ABS implementation, technical expertise on issues e.g. negotiation of ABS agreements, intellectual property rights, biodiversity conservation, biotechnology, national and international law, social and cultural issues is of necessity.<sup>49</sup> But such interdisciplinary expertise has been limited in Bangladesh.

### **D) Differentiating between Commercial and Non-commercial Research**

Non-commercial researchers are important players in the ABS system. An important part of access to genetic resources is carried out for non-commercial research that serves the goals of the CBD.<sup>50</sup> It is difficult to differentiate between the research of commercial and non-commercial purposes due to the fact that both of these researches are characterized by the intention of the research undertaken and not by the form.<sup>51</sup> Both research types can use the same methods and facilities and be pursued by the same researchers.<sup>52</sup> It is most likely that non-commercial research can lead to applied research, development of product and further uses of genetic resources.<sup>53</sup> Provider countries are afraid that they would lose the economic benefits of their resources if non-commercial label may flow into the commercial value chain.<sup>54</sup> Consequently, Bangladesh will be faced with the challenge of recognizing the particular needs of non-commercial research. It is important that necessary supports for non-commercial research must be provided for the development of ABS mechanism.

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<sup>46</sup> Ibid

<sup>47</sup> Ibid

<sup>48</sup> The Access and Benefit-sharing Clearing-house < <https://goo.gl/NCwNsj> > accessed 6 July 2017

<sup>49</sup> Thomas Greiber and others, *An Explanatory Guide to the Nagoya Protocol on Access and Benefit-sharing* (IUCN 2012) 17

<sup>50</sup> Sylvia I. Martinez and Susette Biber-Klemm, 'Good Reasons why the ABS Protocol should Include Simple Access Procedures for Non-Commercial Public Good Research on biodiversity' (IISD, 10 September 2010)

<<http://enb.iisd.org/email/mea-l/guestarticle99a.html>> accessed 5 July 2017

<sup>51</sup> Susette Biber-Klemm, Sylvia I. Martinez and Anne Jacob, 'Access to Genetic Resources and Sharing of Benefits for Non-Commercial Research' (Swiss Academy of Science 2010) < <https://www.cbd.int/abs/doc/model-clauses/noncommresearch-abs-agreement.pdf> > accessed 1 July 2017

<sup>52</sup> Ibid.

<sup>53</sup> Thomas Greiber and others, *An Explanatory Guide to the Nagoya Protocol on Access and Benefit-sharing* (IUCN 2012) 17

<sup>54</sup> Ibid

### **E) Genetic Resources in regard to Transboundary Situations**

Implementing ABS mechanism in respect of transboundary situation can become as a matter of great challenge.<sup>55</sup> Often genetic resources and associated traditional knowledge are available in more than one country.<sup>56</sup> And in many cases, same traditional knowledge is held by different local communities which might even be located in different countries.<sup>57</sup> With a very few exceptions, knowledge available on plant breeding, medicinal practices and use of animal parts is common in Himalayan countries.<sup>58</sup> The Nagoya Protocol<sup>59</sup> provides that when same genetic resources are found within the territory of more than one Party, those Parties shall endeavor to cooperate with a view to implementing this Protocol. It often appears that a bilateral ABS approach somehow unjust as it gives a single provider State/ILC the right to receive all of the benefits.<sup>60</sup> It will be difficult for Bangladesh to negotiate with other countries and gets its deserving benefits. Furthermore, the bilateral ABS approach might be considered problematical to address such transboundary situations, as it can cause the parties including Bangladesh to compete sharing the same genetic resources and associated traditional knowledge and weakening the position in negotiation of MAT.<sup>61</sup>

### **F) Climate Change: Threat to Preservation and Sustainable Use of Biological Resources**

Climate change is the phenomenon that causes earth to become warmer.<sup>62</sup> Bangladesh is vulnerable to climate change effects and is already facing challenges to cope up with the negative impacts of increased temperature of earth's atmosphere.<sup>63</sup> It is very probable that availability of biological resources will be affected by the by drastic changes of climate in the coming years.<sup>64</sup> Moreover, the deforestation is happening at the rate of 3% annually.<sup>65</sup> Still, knowledge about the possible impacts of climate change on the biodiversity is incomplete and deficient.<sup>66</sup> So, it is quite not certain how it will impact access and benefit sharing from

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<sup>55</sup> Ibid

<sup>56</sup> Elisa Morgera, Elsa Tsioumani, Matthias Buck, 'Unraveling the Nagoya Protocol: A Commentary on the Nagoya Protocol on Access and Benefit-sharing to the Convention on Biological Diversity' (Martinus Nijhoff, 2014) 214

<sup>57</sup> M.S. Suneetha, Balakrishna Pisupati and Sanjay Kumar, 'Framework for Benefit Sharing Guidelines for India' (2009) 11 Asian Biotechnology and Development Review 55, 63

<sup>58</sup> Krishna Prasad Oli, 'Access and benefit sharing from biological resources and associated traditional knowledge in the HKH region - protecting community interests' (2009) 15 International Journal of Biodiversity and Conservation 115, 115

<sup>59</sup> The Nagoya Protocol, art 11

<sup>60</sup> Thomas Greiber and others, 'An Explanatory Guide to the Nagoya Protocol on Access and Benefit-sharing' (IUCN 2012) 17

<sup>61</sup> Ibid

<sup>62</sup> Yusuf HKM, Dasgupta S, Khan MAH, 'Climate Change: An emerging threat to agriculture and food security in Bangladesh. FAO Dhaka' (International Symposium on Climate Change and Food Security in South Asia, Dhaka, August 2008)

<sup>63</sup> Mohammed Solaiman Haider 'Biodiversity Conservation: Challenges and Opportunities' *The Daily Star* (Dhaka, 24 February 2010) <<http://archive.thedailystar.net/suppliments/2010/02/ds19/segment2/opportunity.html>> accessed 15 June 2017

<sup>64</sup> Ibid.

<sup>65</sup> Ibid.

<sup>66</sup> Céline Bellard and others, 'Impacts of climate change on the future of biodiversity' (2012) 15 Ecology Letters 365, 370

biological resources. Changes of temperature and Rainfall have already an effect on crop production in different parts of the country and there is a great decrease of arable land in the country.<sup>67</sup> The Salinity intrusion in the coastal area is hampering rice production in coastal land.<sup>68</sup> The Sundarbans, rich in various kinds of flora and fauna and famous for some unique plants such as rare Sundari, Gewa, Passur, is directly affected by salinity.<sup>69</sup> Recently, the International Union for Conservation of Nature and Natural Resources (IUCN) has updated the Red List where it was unveiled that there are 390 threatened animal species in Bangladesh.<sup>70</sup> Among them 56 are critically endangered, 181 are endangered, 153 being vulnerable and 31 are found to be regionally extinct.<sup>71</sup> Bangladesh has a large portion of GDP from agro biodiversity. If sources of biodiversity get narrowed down, so will the traditional knowledge associated with it. Therefore the legal mechanism related to access and benefit sharing may not function or will take a reverse gear. Under such situation great consideration has to be given on the evolving ABS regime in the context of climate change.

#### **G) Synthetic Biology: Less Dependence on Traditional Knowledge, Practices and Innovations**

Designing and creating new biological parts is regarded as synthetic biology.<sup>72</sup> It also includes redesigning existing biological parts for various useful purposes.<sup>73</sup> Today, the world has seen an increased use and applications of synthetic biological products which has the potential of creating a new biological system.<sup>74</sup> Its impacts would cause a massive change in land management and loss of sustainable livelihoods due to reason that natural products will be produced for market by synthetic biology techniques.<sup>75</sup> It poses enormous threat on biodiversity and food security of smallholder farmers, forest-dwellers, livestock-keepers and fishing

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<sup>67</sup> A.K.M. Rezaul Karim, 'Climate Change & its Impacts on Bangladesh' (NCDO, 1 April 2012) <<https://www.ncdo.nl/artikel/climate-change-its-impacts-bangladesh>> accessed 8 June 2017

<sup>68</sup> *Deepti Sarkar* 'Salinity Intrusion: Threat to Food Security, Health and Biodiversity' *The Daily Sun* (Dhaka, 1 March 2017) <<http://www.daily-sun.com/printversion/details/208989/Salinity-Intrusion:-Threat-to-Food-Security-Health-and-Biodiversity>> accessed 9 June 2017

<sup>69</sup> OECD, 'Development and Climate Change in Bangladesh: Focus on Coastal Flooding and the Sundarbans'(2003) COM/ENV/EPOC/DCD/DAC(2003)3/FINAL

<sup>70</sup> *Sirazoom Munira*, 'Biodiversity and climate change' *The Daily Star* (Dhaka, 22 February 2017) <<http://www.thedailystar.net/environment-and-climate-action/biodiversity-and-climate-change-1367119>> accessed 18 June 2017

<sup>71</sup> Ibid

<sup>72</sup> Krishna Prasad Oli, 'Access and benefit sharing from biological resources and associated traditional knowledge in the HKH region - protecting community interests' (2009) 15 *International Journal of Biodiversity and Conservation* 115, 117

<sup>73</sup> Ibid

<sup>74</sup> Ibid

<sup>75</sup> The International Civil Society Working Group on Synthetic Biology, 'Synthetic Biology and the CBD Five key decisions for COP 13 & COP-MOP 8' (BOELL) <[https://www.boell.de/sites/default/files/2016-11-icswgsb\\_synbio\\_brief\\_cop13\\_.pdf](https://www.boell.de/sites/default/files/2016-11-icswgsb_synbio_brief_cop13_.pdf)> accessed 4 June 2017

communities who depend on biodiversity for their livelihood.<sup>76</sup> New bio-based substitutes for plant-based tropical commodities such as vanillin, rubber (isoprene), stevia, etc, among others are being actively developed.<sup>77</sup> Moreover, excessive dependency on genetically modified plant and animal varieties will lead to loss of traditional knowledge, practices and innovation. What is more perilous is that there is no comprehensive regulatory mechanism for synthetic biology at the national or international level.<sup>78</sup> Because of this access and benefit sharing may limit the current and future activities of many stake holders in Bangladesh. Science and technology will be used in generating biodiversity.<sup>79</sup> Bangladesh being rich on natural biological resources and traditional knowledge will not be deservingly benefitted.

### **The Way Forward: Bangladesh Biological Diversity Act 2017 and Beyond**

Bangladesh is a country with enormous potential in producing medicines and food as it has a large repository of diversified biological resources in terms of plant and animal species and traditional knowledge.<sup>80</sup> If only such untapped resources can be properly utilized using effective contract and surveillance systems, this country will get substantial benefits in terms of national food and medical security, while continuing to preserve biodiversity and improve the lives of local and indigenous peoples. It is very clear that little work has been done and much is yet to be done in implementing the ABS provisions of the CBD and the Nagoya Protocol. Bangladesh will need to decide what has to be done in regard to these issues, and take the all the steps required to effectively operationalize section 30 of the Bangladesh Biological Diversity Act 2017. It is very pivotal to furnish necessary financial and institutional resources to build capacity to implement section 30 under the CBD and the Nagoya Protocol. More actors e.g. various state agencies, research institutions, companies and NGOs are undoubtedly needed. Research on the existent traditional knowledge, formulating ABS mechanism, guidelines, best practices and standards must be done, and initiatives to capacity development will need to be taken soon as possible.<sup>81</sup> Moreover, Bangladesh is under a clear obligation to develop user compliance measures. An effective ABS regime will need to have the capability to set incentives for the conservation and sustainable use of biodiversity; facilitate access to genetic material; and enhance fair and equitable benefit-sharing by preventing the misappropriation and unapproved use of genetic

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<sup>76</sup> The International Civil Society Working Group on Synthetic Biology, 'Potential Impacts of Synthetic Biology on the Biodiversity' (Econexus, October 2011) <<http://www.econexus.info/publication/potential-impacts-synthetic-biology-biodiversity>> accessed 5 July 2017

<sup>77</sup> Secretariat of the Convention on Biological Diversity, 'Synthetic biology' (Technical Series No. 82, Montreal, 2015) < <https://www.cbd.int/ts/cbd-ts-82-en.pdf>> accessed 24 June 2017

<sup>78</sup> The International Civil Society Working Group on Synthetic Biology, 'Potential Impacts of Synthetic Biology on the Biodiversity' (Econexus, October 2011) <<http://www.econexus.info/publication/potential-impacts-synthetic-biology-biodiversity>> accessed 5 July 2017

<sup>79</sup> Krishna Prasad Oli, 'Access and benefit sharing from biological resources and associated traditional knowledge in the HKH region - protecting community interests' (2009) 15 *International Journal of Biodiversity and Conservation* 115, 117

<sup>80</sup> Ministry of Environment and Forests, 'Fourth National Report to the Convention on Biological Diversity: Biodiversity National Assessment and Programme of Action 2020 (Government of the People's Republic of Bangladesh January 2010) <[https://www.law.ox.ac.uk/sites/files/oxlaw/oscola\\_4th\\_edn\\_hart\\_2012.pdf](https://www.law.ox.ac.uk/sites/files/oxlaw/oscola_4th_edn_hart_2012.pdf)> accessed 26 June 2017

<sup>81</sup> WIPO, 'Practical Workshop on Intellectual Property and Genetic Resources, Traditional Knowledge and Traditional Cultural Expressions/Folklore' (Namibia, August 2015) <<https://goo.gl/cZJ6iM>> accessed 8 June 2017

resources. The operationalization of the section 30 of the Biological Diversity Act will be a great challenge for Bangladesh and all state parties under the CBD will need to work together to ensure that it meets the hopes and expectations of all involved.

### **Bioprospecting and Poverty Reduction**

Bioprospecting is the process of exploring, extracting, screening and trading new products using biological diversity as source.<sup>82</sup> Before CBD came into operation, no organizations who were engaged in bioprospecting were under an obligation to compensate countries for using biological resources from that country of origin.<sup>83</sup> ABS mechanism can provide access to and use of biological resources, and associated traditional knowledge.<sup>84</sup> It will also ensure fair and equitable sharing of benefits among the parties and as such, can act as a means of reducing poverty. ABS in the Bangladesh is of much necessity owing to the rich biodiversity in the region and the potential for using these resources for poverty reduction. Bangladesh has over 550 medicinal plants of which 300 are commonly used in the preparation of traditional medicines around the country; the market for traditional and herbal products is worth around Tk3.3bn annually.<sup>85</sup> Implementation of the ABS regime will also encourage the sustainable utilisation of genetic resources; as they become economically important, the economic value attached to them will encourage sustainable use to ensure that they remain available in the future. Once the local and indigenous communities understand that the genetic resource will bring economic gains, they will be encouraged to conserve the resources.<sup>86</sup>

### **Conclusion**

Although development and enforcement of ABS policy and law should be given special attention to and consideration for the conservation of biological diversity<sup>87</sup> and getting benefits from it, in Bangladesh, this has not received enough consideration and priority as the country is currently more focused on poverty reduction and infrastructure development.<sup>88</sup> Even if appropriate, effective, and proportionate legislative, administrative, or policy measures are in place, agreement with the government and indigenous communities within the specific time and

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<sup>82</sup> Juan B 'Bioprospecting and Drug Development: Parameters for a Rational Search and Validation of Biodiversity' (2017) 9 J Microb Biochem Technol 128, 128

<sup>83</sup> Anthony Artuso 'Bioprospecting, Benefit Sharing, and Biotechnological Capacity Building' (2002) 30 World Development 1355, 1355

<sup>84</sup> The CBD, art 15(7)

<sup>85</sup> *Tribune Online Report 'Bangladesh can tap \$3tn global medicinal plants market'* Dhaka Tribune (Dhaka, 6 July 2013) <<http://archive.dhakatribune.com/commerce/2013/jul/06/bangladesh-can-tap-3tn-global-medicinal-plants-market#sthash.iKeBMsNq.dpuf>> accessed 8 June 2017

<sup>86</sup> Secretariat of the Convention on Biological Diversity, 'Introduction to access and benefit-sharing' (CBD, 2011) <<https://www.cbd.int/abs/infokit/revise/web/all-files-en.pdf>> accessed 10 July 2017

<sup>87</sup> Bonn Guidelines, para 11(a)

<sup>88</sup> Dr. Shamsul Alam, 'A Journey from Lower to Higher Middle Income Country through an Inclusive Growth Strategy ensuring SDGs' (Planning Commission, Government of the Peoples' Republic of Bangladesh, 2015) <<https://goo.gl/gBFHzc>> accessed 10 July 2017

providing a fair share of financial resources are major obstacles for ABS mechanism.<sup>89</sup> Hilly areas in northeastern and southeastern part of Bangladesh are rich in biological resources but devoid of proper communication and with illiterate indigenous communities who do not know about ABS. Therefore, getting prior informed consent (PIC) and making mutually agreed terms (MAT) with the communities poses a major impediment.<sup>90</sup> Bangladesh is very inexperienced in ABS scheme. There are works to do on benefit sharing scheme, capacity building and development, compliance, monitoring and reporting, model contractual clauses, codes of conduct, guidelines, best practices and standards. The neighboring country India has become a pioneer in implementing ABS mechanism. Given the experiences India had in building framework and mechanism for ABS, Bangladesh can take those experiences and knowledge as a useful guidance in implementing ABS mechanism.

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<sup>89</sup> Krishna Prasad Oli, 'Access and benefit sharing from biological resources and associated traditional knowledge in the HKH region - protecting community interests' (2009) 15 *International Journal of Biodiversity and Conservation* 115, 117

<sup>90</sup> *Ibid*