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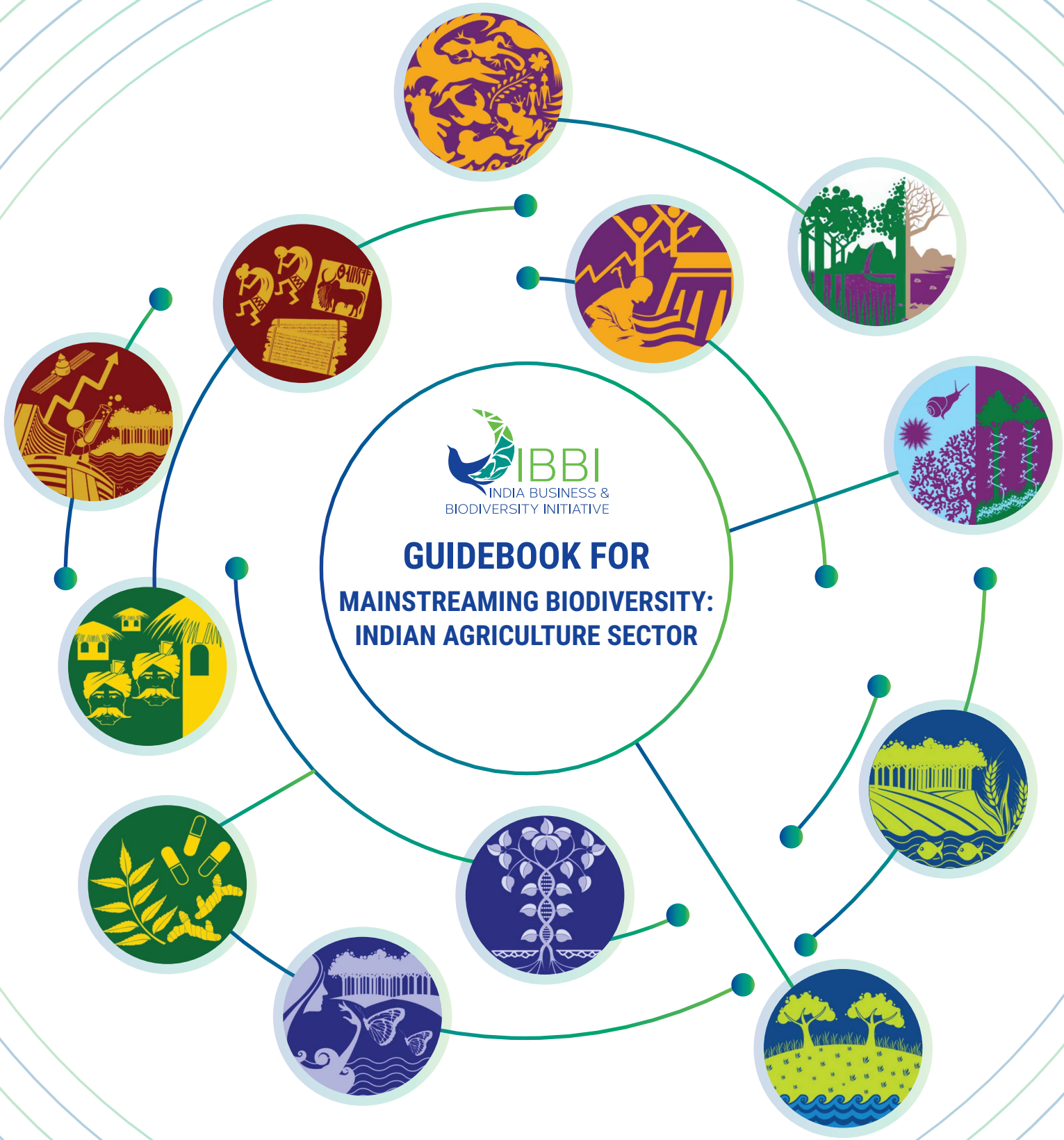

IBBI
INDIA BUSINESS & BIODIVERSITY INITIATIVE

GUIDEBOOK FOR

MAINSTREAMING BIODIVERSITY: INDIAN AGRICULTURE SECTOR

Worked on by :
Dr. Pravir Deshmukh
Ms Syamala Gowri Lingala

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BIODIVERSITY AND INDIAN AGRICULTURE SECTOR

Indian Agriculture Sector

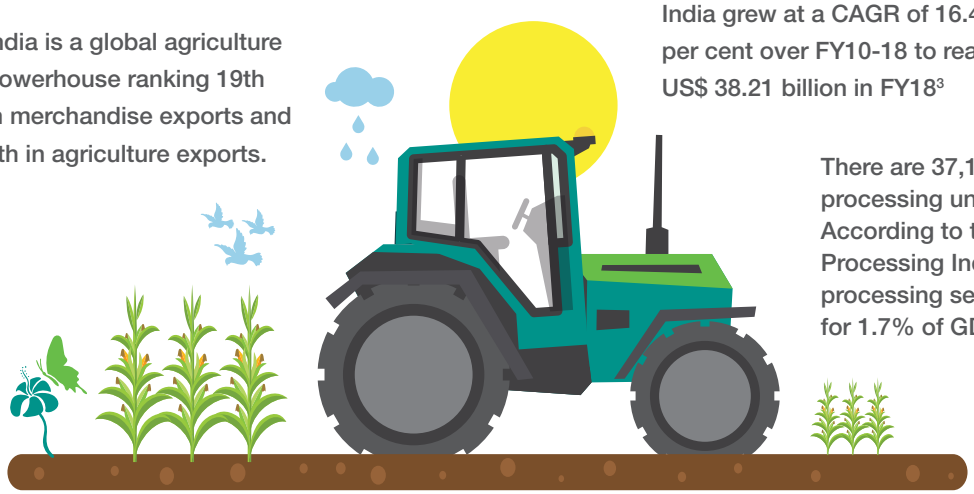
India is located at the tri-junction of the three realms of global biogeographical zones. It has conditions that enable rich floristic and species diversity leading to many indigenous and exotic crop plants, bringing a revolution in the growth of agriculture and agrobiodiversity. In India the Agriculture sector has grown into the key sector contributing up to 16.8% GDP and accounts for 47% of the labour force globally[1].

India is an agrarian economy and more than 52% of land area is considered arable. Over 58 % of rural households depend on agriculture as their principal means of livelihood. The share of primary sectors (including agriculture, livestock, forestry and fishery) is estimated to be 20.4 % of the Gross Value Added (GVA) during 2016-17 at current prices. GVA from the sector is estimated to have grown at 3 per cent in FY18[2].

Agriculture Sector in India

India is a global agriculture powerhouse ranking 19th in merchandise exports and 6th in agriculture exports.

Total agricultural exports from India grew at a CAGR of 16.45 per cent over FY10-18 to reach US$ 38.21 billion in FY18[3]



There are 37,175 registered food processing units in the country. According to the Ministry of Food Processing Industries, the food processing sector accounts for 1.7% of GDP[4].

Indian region is one of the world's eight centers of crop plant origin with 166 crop species and 320 wild varieties of crops

India has the world's largest diversity of domesticated animals, with 26 breeds of cattle, 40 of sheep, 20 of goats, 8 of camels, 6 of horses, and 18 of poultry, apart from the yak, the mithun, and several species and breeds of birds including geese, ducks, pigeons, and doves.

Biodiversity and Ecosystem Services

Biodiversity includes plants, animals and other organisms and is defined in the Convention on Biological Diversity (CBD) as "the variability among organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; it includes diversity within species, between species and of ecosystems"[5].

[1]The world Factbook, Central Intelligence Agency (CIA) 2018: https://www.cia.gov/library/publications/the-world-factbook/geos/in.html
[2]https://www.ibef.org/industry/agriculture-india.aspx
[3]Indian Agriculture Industry Analysis: https://www.ibef.org/industry/agriculture-presentation
[4]Indian Agriculture Commodities: https://www.export.gov/article?id=India-Agricultural-Commodities
[5]https://www.cbd.int/convention/articles/default.shtml?a=cbd-02

Ecosystem services are defined as “the benefits provided by ecosystems to humans”. Ecosystem services are the goods and services that biodiversity provides. They include soil formation, the provision of food and fiber, air quality and climate regulation, the regulation of water supply and quality and the cultural and aesthetic value of certain plants and species.

Humankind and businesses are heavily dependent as well as have an impact on biodiversity and ecosystem services. To sustain humankind and business, the conservation of biodiversity and sustainable management of ecosystem is crucial.

Indian Biodiversity and Agriculture Sector

Agriculture, biodiversity and ecosystems are interwoven and the interacting elements of distinct species of plants and pollinators, varieties of species, intervention of various ecosystem services and different land use mechanisms form the agricultural biological diversity or agriculture biodiversity.

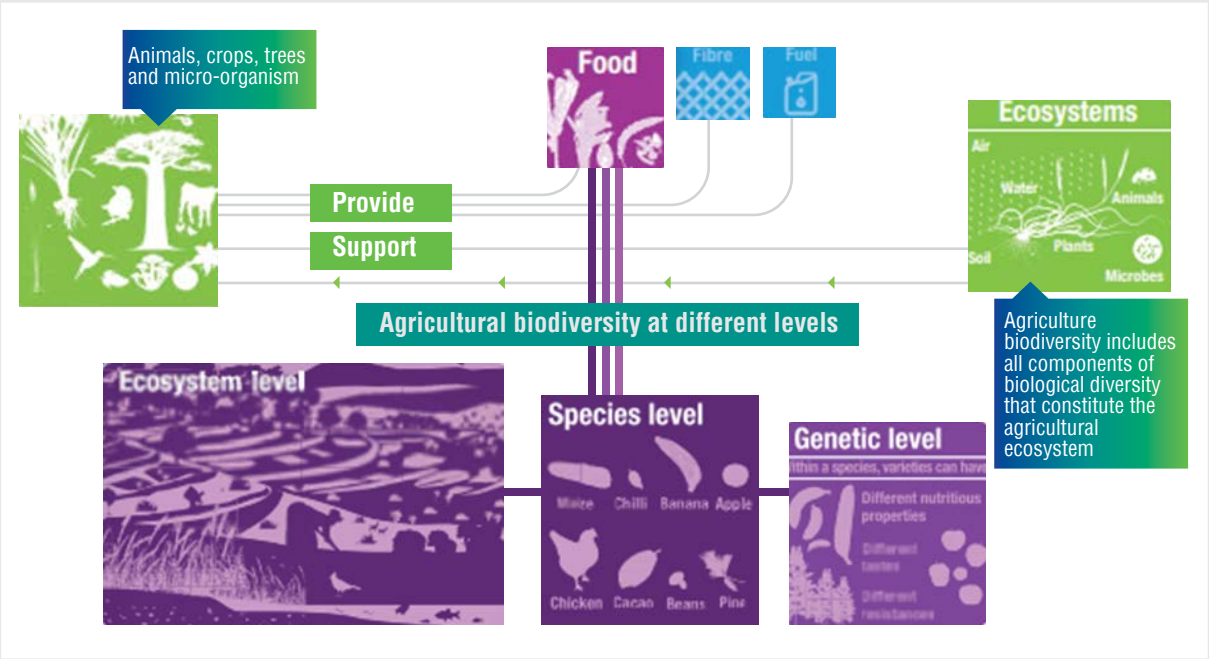


Image 1: Agrobiodiversity[6]

> “Agricultural biodiversity is a broad term that includes all components of biological diversity of relevance to food and agriculture, and those that constitute the agro-ecosystem: the variety and variability of animals, plants and micro-organisms, at the genetic, species and ecosystem levels, which are necessary to sustain key functions of the agro-ecosystem, its structure and processes”
>
> - defined by Convention of Biological Diversity[7].

[6]https://www.bioversityinternational.org/fileadmin/user_upload/online_library/Mainstreaming_Agrobiodiversity/Mainstreaming_Agrobiodiversity_Sustainable_Food_Systems_WEB.pdf

[7]UNEP CBD, Executive Note on implementing agriculture biodiversity: https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-02-en.pdf

Millennium Ecosystem Assessment (MA) (2005), has served to emphasize that the health and well-being of humans and other species across the planet depends on a variety of ecosystem's goods and services.

One of the most important ecosystem services for humans is the provisioning service which provides food and many agricultural goods. Other ecosystem services such as water cycling (providing rain and irrigation facilities) is essential for agricultural production. Agriculture practices came into existence due to availability of diverse crops and livestock resulting as the outcome of thousands of years of deliberate selection, planned exposure to a range of natural conditions, field-level cross-breeding, and other manipulations that farmers have tried out.

Biodiversity Linkages with Agriculture Sector

The agriculture sector is one of the major natural resource-based industries directly linked to biodiversity. The agriculture sector encompasses five primary areas: research, industry, agriculture production, processing and transport. Operations within the entire agriculture value chain- production, processing, distribution, consumption and waste, not only have impacts on biodiversity but these impacts pose a threat to businesses[8].

Value chain of Agriculture sector	Areas of work	B&ES Linkages	
Research	Research and development on seeds, livestock, fertilizers, insecticides & pesticides, agriculture instruments, etc.	High	Low
Industry	Manufacturing of fertilizers, pesticides and instruments for farm use	Low	High
Agriculture production	Farming and livestock rearing	High	High
Processing	Procurement from farms, storage of material and food processing	Medium	Medium
Transport	Transportation of agriculture products and products required for agriculture	Low	Low

Agriculture sector is directly dependent on biodiversity and ecosystem services. Food and agri-businesses use animal genes, floral species and ecosystem services like pollination, creation of genetically diverse plant and crop varieties, watershed and suitable climate.

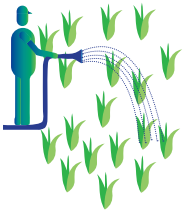
[8]TEEB for Agriculture and Food: Interim Report 2015

Dependency of Agri-Business on Biodiversity

CROP DIVERSITY

384 crops cultivated in India, eg. rice (Oryza sativa) has more than 50,000 varieties, mango (Mangifera indica) has yielded over 1000 varieties.

WATER



The total area under cultivation is about 194 mha, out of which net sown area is only about 140 mha. Only about 66 mha, i.e., 47.6% of the net sown area is irrigated and remaining is dependent on the monsoon.

Water Irrigation: 60% ground water, 24% canals, 16% ponds and others

FOREST

Maintain favorable and stable conditions, provide wild varieties, maintain hydrological cycle and regulating water flow,

POLLINATION

Most of the food crops need insect (mainly bee) pollinators for sufficient successful pollination. Oil seeds (such as sunflower, niger, safflower), vegetables (cucurbitaceous vegetable crops, legume crops) and many fruit crops are profoundly reliant on pollinators.

INSECTS AND PESTS CONTROL

It is estimated that 10% to 25 % of India's food crop is destroyed every year by rats, either in the field or as stored grain. Insectivorous and predatory birds and reptiles like snakes and lizards play a very useful role in controlling insect and rodent pests of crops

NUTRIENT CYCLE

In natural ecosystems C, N, P, K, Ca, Mg, S and all other mineral nutrients are cycled back into soil through litter fall and decay of the organic matter. The soil microbes which include bacteria, fungi, actinomycetes, protozoa and algae play a significant role in the nutrient cycling.

Box 1: Dependency on Water

Rajagopal et al (2016) pointed out that in Tamil Nadu, agriculture is substantially dependent on rain which is erratic and occurs only during short periods each year. Further, evapotranspiration is quite high in a state which is subtropical and semi-arid, resulting in the need for irrigation to support cultivation[9].

[9]https://www.epw.in/journal/2018/41/review-environment-and-development/agroecological-farming-water-deficient.html

Agriculture sector is directly dependent on biodiversity and ecosystem services. Food and agri-businesses use animal genes, floral species and ecosystem services like pollination, creation of genetically diverse plant and crop varieties, watershed and suitable climate.

Impacts of Agri-Business on Biodiversity

Loss of agri-biodiversity	Agriculture sector is directly dependent on biodiversity and ecosystem services. Food and agri-businesses use animal genes, floral species and ecosystem services like pollination, creation of genetically diverse plant and crop varieties, watershed and suitable climate.
Land Use	Of the total geographical area in India, 55.3 % (181.95 mha) is under agriculture. 5.3 billion tonnes of soil gets eroded annually and soil loss is about 16.4 t/ha/year.
Pollution	▸ Over utilization of chemical fertilizers leads to loss of soil fertility, degradation of water bodies and loss of wetland habitats. ▸ Burning crop residue resulting in air pollution, damages soil fertility and nutrient cycling, degradation of soil microbial diversity. ▸ The intensive use of insecticides and pesticides have been shown to adversely affect a broad range of non-target species and, also those having economic value.
Climate Change	Intensive agricultural practices lead to various changes in habitat and eco-system thus contributing to climate change. Major source of emissions: (63.4 per cent), rice cultivation (20.9%), agricultural soil (13.0%), manure management (2.4%) and on-field burning of crop residues (2.0%).
Invasive alien Species	Expansion of agricultural/agrarian activities near natural forest areas leads to introduction of invasive alien species in the natural and agriculture areas. This encroachment of invasive species results in the loss of native ground flora of forests and reduction in agriculture production.
Over Exploitation	▸ Depletion of water table, deterioration of water quality, water logging and drainage issues ▸ Widespread deficiency of micronutrients, such as deficiency of zinc, iron, manganese and boron ▸ Decline of soil biodiversity and depletion of organic matter.
Loss of Soil fertility	The quality of soil has deteriorated over time due to different/various combination of factors, such as injudicious use of fertilizer, accumulation of heavy metals and metalloids through various forms of emissions.

Box 2: Endosulfan Tragedy in Kerala-Impacts of Agriculture Practices

Over 20 years of aerial spraying on cashew plantations in Kerala and other states has left many with mental and physical disorders. Studies have established linkages between aerial spraying of the pesticide and the growing health disorders in Kasaragod district. Over the years, other studies confirmed these findings, and the health hazards associated with endosulfan are now widely known and accepted[10].

[10]https://www.downtoearth.org.in/coverage/health/tracking-decades-long-endosulfan-tragedy-in-kerala-56788

National Biodiversity Targets (NBTs) and Agriculture Sector

UN Convention on Biological Diversity (CBD) mandates each Party to prepare a National Biodiversity Strategy and Action Plan (NBSAP) or an equivalent instrument, and to ensure that the strategy is mainstreamed into relevant sectoral or cross sectoral plans, programmes and policies.

CBD developed the Strategic Plan for Biodiversity 2011-2020 – A ten-year framework for action by all countries and stakeholders to save biodiversity and enhance its benefits for people. The Strategic Plan is comprised of a shared vision, a mission, strategic goals and 20 ambitious yet achievable targets, collectively known as the Aichi Targets.

In 2008 CBD in consultation with Food and Agriculture Organisation (FAO) of the United Nations and other international organisations, in-depth review was done for implementation of agriculture biodiversity programs. Parties have been asked to implement the program and take up activities to strengthen capacity and raise awareness on the importance of agriculture biodiversity.

Box 3: Implementing Conservation and Sustainable Use of Agriculture Biodiversity

- Implementing agricultural practices that support positive effects and mitigate the negative impacts on biological diversity,
- The conservation and sustainable use of genetic resources
- Fair and equitable sharing of benefits arising out of the genetic resources.

Box 4: CBD Initiatives for Mainstreaming Agriculture Biodiversity Conservation

- For the conservation and sustainable use of pollinators (decision V/5, section II) and its action plan (decision VI/5, annex II);
- For the conservation and sustainable use of soil biodiversity (decision VI/5, paragraph 13) and its framework for action (decision VIII/23 B); and
- On biodiversity for food and nutrition (decision VII/32, paragraph 7, and decision VIII/23 A, annex)[11].

[11]CBD Agriculture Biodiversity- SUBSIDIARY BODY ON SCIENTIFIC, TECHNICAL AND TECHNOLOGICAL ADVICE: https://www.cbd.int/doc/meetings/sbstta/sbstta-13/official/sbstta-13-02-en.pdf

India adapted the Aichi targets framework and developed 12 National Biodiversity Targets (NBTs) along with indicators for monitoring and brought out a National Biodiversity Action Plan Addendum 2014[12].

National Biodiversity Targets (NBTs)		Action for mainstreaming of NBTs in Agriculture sector
	By 2020, a significant proportion of the country's population, especially the youth, is aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.	Incorporating awareness and attitude towards environment conservation through education
	By 2020, values of biodiversity are integrated in national and state planning processes, development programmes and poverty alleviation strategies.	Integrating and reflecting biodiversity and ecosystem service values into sectoral development, policy decisions, planning and reporting processes
	Strategies for reducing rate of degradation, fragmentation and loss of all natural habitats are finalized and actions put in place by 2020 for environmental amelioration and human well-being.	Strategies to reduce rate of degradation, fragmentation and loss of natural habitats
	By 2020, measures are adopted for sustainable management of agriculture, forestry and fisheries.	Adaptation of sustainable management of agriculture, forestry and fisheries
	Ecologically representative areas under terrestrial and inland water, and also coastal and marine zones, especially those of particular importance for species, biodiversity and ecosystem services, are conserved effectively and equitably, based on protected area designation and management and other area based conservation measures and are integrated into the wider landscapes and seascapes, covering over 20% of the geographic area of the country, by 2020.	Conservation measures for biodiversity and ecosystem services-land, air and water
	By 2020, genetic diversity of cultivated plants, farm livestock, and their wild relatives, including other socioeconomically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.	Safeguarding genetic diversity and minimizing genetic erosion

[12]CBD-THIRD MEETING OF THE SUBSIDIARY BODY ON SCIENTIFIC, TECHNICAL AND TECHNOLOGICAL ADVICE: https://www.cbd.int/doc/meetings/cop/cop-04/official/cop-04-02-en.pdf

National Biodiversity Targets (NBTs)		Action for mainstreaming of NBTs in Agriculture sector
	By 2020, ecosystem services, especially those relating to water, human health, livelihoods and well-being, are enumerated and measures to safeguard them are identified, taking into account the needs of women and local communities, particularly the poor and vulnerable sections.	Management & Monitoring of Ecosystem services through various initiatives. Programs to strengthen the capacities of farmers, indigenous and local communities. Implementation of restoration and rehabilitation measures.
	By 2015, Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization as per the Nagoya Protocol are operational, consistent with national legislations.	Measures for accessing genetic resources and equitable sharing of benefits
	By 2020, an effective, participatory and updated national biodiversity action plan is made operational at different levels of governance.	Establishing strategies and action plan for minimizing and mitigating biodiversity and ecosystem services risks
	By 2020, national initiatives using communities' traditional knowledge relating to biodiversity are strengthened, with the view to protecting this knowledge in accordance with national legislations and international obligations	Encouraging grassroots innovations and traditional practices
	By 2020, opportunities to increase the availability of financial, human and technical resources to facilitate effective implementation of the Strategic Plan for Biodiversity 2011-2020 and the national targets are identified and the Strategy for Resource Mobilization is adopted.	Establishing collaborations for opportunities to increase availability of financial, human and technical resources

Integration of Biodiversity through Various Agriculture-based Industries for Sustainable Development:

There are several options for the Agriculture sector to reduce its impacts and dependencies on biodiversity and ecosystem services in the value chain through mainstreaming biodiversity. Some of the easy-to-implement steps are reduction of food loss during transport and storage, increasing crop yield using native crop species, moving from monoculture to multiple crop cultivation coupled with horticulture or medicinal plant cultivation, reduction of chemical fertilizer, pesticides and insecticides, judicious use of water, use of crop residue as fodder or fuel.

Value Chain of Agriculture Sector	Priority Action for Value Chain
 **RESEARCH**	▸ Conservation of native and wild relative of crop and livestock species ▸ Development of crops specific to regional climatic conditions
 **INDUSTRY**	▸ Development of customised fertilizer based on crop and soil requirements ▸ Development of biodiversity friendly pesticides and insecticides ▸ Training farmers on sustainable use of chemical fertilizer, pesticides and insecticides
 **AGRICULTURE PRODUCTION**	▸ Moving from monoculture to multiple cropping ▸ Judicious use of water for irrigation by using methods like drip or sprinkle irrigation, restoration of water harvesting ponds along the agriculture fields ▸ Orienting agriculture to climate change ▸ Promote organic farming to preserve soil quality ▸ Promote integrated nutrient management (INM) for maintaining the soil's carrying capacity ▸ Promote solar water pump for water extraction ▸ Use of agriculture waste for development of manure
 **PROCESSING**	▸ Local sourcing of agriculture products ▸ Sustainable use of energy and water resources ▸ Control on air emissions and waste water discharge ▸ Reuse of treated sewage for agriculture and horticulture purposes
 **TRANSPORT**	▸ Avoidance of damage/loss of agricultural or food commodities during transportation

Global attention is currently focused on the need to increase investment in agriculture and food production to feed a still growing population. Agriculture production system needs to focus more on the effective conservation and management of biodiversity and ecosystem services to address the twin objectives of environmental sustainability and food security. Businesses need to undertake activities to strengthen the capacities of farmers, indigenous and local communities, and their organisations and other stakeholders to manage agricultural biodiversity sustainably to increase benefits and promote awareness and responsible action.

Mainstreaming Biodiversity at Decision Making, Project Planning and Management Stage

Agriculture poses a direct threat to biodiversity because of the mal-practices of cultivation. Use of fertilizers has caused a huge negative impact on environment and contributed to biodiversity loss. Mainstreaming biodiversity brings in opportunities for businesses to design bio-friendly solutions for agriculture practices.

- Biodiversity in decision making, project planning and management: Businesses need to identify the importance of biodiversity conservation and the key role they can play in halting biodiversity loss. They need to integrate biodiversity conservation into their business decisions, policy, management plans and stakeholder engagements.

- Map biodiversity interfaces with business operations: Biodiversity and ecosystems which interfere with business operations and supply chains need to be assessed and mapped. Site specific assessments to map the surrounding ecosystems present. Mapping the intervention through supply chains will provide the source of raw materials and other interventions during transportation, procurement and product distribution.

- Identifying the impacts and dependencies of business on biodiversity and ecosystem services: businesses should measure how their operations are dependent on various ecosystem services and their impacts on the ecosystem. They should measure the direct and indirect linkage of the ecosystem services throughout their operations and value chain.

- Enhancing awareness on biodiversity within the organisation: Based on the assessment, companies can identify the risks and opportunities associated with their impacts and dependencies on biodiversity and ecosystem services and build the capacity of employees, owners, suppliers and customers.

- Strategies and action plans for minimizing and mitigating biodiversity and ecosystem services risks: Business should build strategies and action plans for management of biodiversity and the ecosystem. Industry should collaborate with government and NGOs to take up initiatives to mainstream biodiversity. Industry should play a key role in developing and promoting robust and effective biodiversity performance standards and impact mitigation guidelines for their stakeholders.

Box 5: Tata Chemicals Limited (TCL)[13]

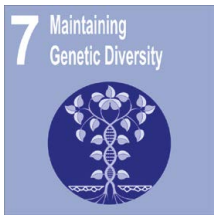
TCL is part of the $100 billion Tata group, a global company with interest in businesses that focus on Living, Industrial and Farm Essentials (LIFE). TCL is a pioneer in the field of crop-and region-specific customized fertilizers that provide balanced nutrition to the soil, boost crop productivity and improve overall quality of the yield. Under 'farm essential segment', the company offers farm inputs, such as fertilizers, pesticides, specialty nutrients, seeds and agro-services, which are required to improve crop health and productivity.

Box 6: Godrej Agrovet[14]

Godrej Agrovet Limited is a diversified, Research & Development focused agri-business company, dedicated to improving the productivity of Indian farmers by innovating products and services that sustainably increase crop and livestock yields. They hold leading market positions in the different businesses they operate—animal feed, crop protection, oil palm, dairy and poultry and processed foods.

Safeguarding
Natural Habitats

Sustainable
Management



Maintaining
Genetic Diversity

Ecosystem
Services

Mainstreaming Biodiversity at the Stage of Raw Material Procurement or Sourcing

- Capacity building for promoting awareness at local levels: Providing awareness and guidance towards environmental conservation through training programmes.
- Monitoring agricultural extensions: Training farmers and stakeholders in advanced technologies and providing services that encourage sustainable agriculture practices.
- Maintaining genetic diversity: Initiatives/measures to conserve indigenous crop varieties and their wild relatives.
- Sustainable agriculture: Encouraging use of native traditional variety of crops, proliferation of local crops and varieties that are more adapted to the environment, requiring less external inputs and integrate into the ecosystem.
- Reducing rate of degradation, fragmentation and loss of natural habitats: Working towards afforestation and restoration, combating desertification.
- Legal compliance and utilization of traditional knowledge: Planning and integrating protocols for access to genetic resources/ biological resources and associated traditional knowledge.

[13]http://sustainability.tatachemicals.com/product-stewardship/product-and-customers-/

[14]http://www.godrejagrovet.com/good-and-green.aspx

Box 7: ITC[15]

ITC's initiative on Sustainable Agroforestry for wood and food security. The Agro-forestry model enables framers to cultivate food crops and harvest trees after an interval of 4 years. In drought conditions income from the tree harvest would hedge the risk for farmers. The organisation also got about 8,028 hectares of plantations owned by more than 9,000 small and marginal farmers certified for FSC. This ensures more supply of FSC certified wood to its operations thereby giving options of reaching more certified material to the market. This certification brings better environmental practices and improves social benefits to the community around the Khammam district of Andhra Pradesh where the farm plots are located.

Box 8: DSCL Sugar[16]

DSCL Sugar, a subsidiary company of DCM Shriram Group, is one of the major sugar producers in India with four sugar plants and more than 150,000 farmers in its entire supply chain. DSCL, supported by IFC, introduced modern agri-techniques for farmers under the scheme of 'Mitha Sona' that has raised sugarcane productivity by an average of 25 per cent in the last three years in some districts of Uttar Pradesh. The project primarily focused on training the farmers to enhance the production of sugarcane in a sustainable manner and minimise the negative impacts of cultivation on biodiversity and ecosystem. DSCL has secured its supply chain of sugarcane through this program.

Biodiversity Awareness

Biodiversity valuation & Poverty alleviation

Safeguarding Natural Habitats

Sustainable Management

Ecosystem Services

Mainstreaming Biodiversity at the Stage of Product Manufacturing and Processing

- Measures for adopting sustainable management of agriculture: The production of agro-chemical fertilizers, bio fertilizers/biofuels, organic manure and vermicomposting.
- Providing supporting services in sustainable natural methods and means: Providing services to the local community for keeping the health of near pristine soils, maintaining soil health records and organic carbon and humus buildup.
- Measures to safeguard ecosystem services: Steps to safeguard ecosystem services especially those relating to water, human health, livelihoods and well-being, taking the needs of women into account and local communities particularly the poor and vulnerable sections.
- Protecting traditional knowledge: Supporting communities to strengthen biodiversity with respect to traditional knowledge, capacity building at local levels/ communities and preventing potential bio piracy/ wrong patent cases.

[15]https://www.itcportal.com/sustainability/sustainability-report-2013/initiative-on-sustainable-agro-forestry.aspx

[16]https://economictimes.indiatimes.com/news/economy/agriculture/sugarcane-production-up-25-per-cent-in-up-on-modern-agri-practices/articleshow/33826951.cms

Box 9: Jain Irrigation Systems Limited (JISL)

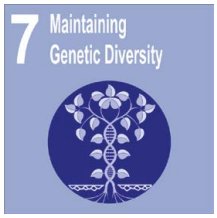
JISL works with a moto 'Small Ideas, Big Revolutions' and is engaged in providing solutions to agriculture, agro-processed products, tissue culture plants and agricultural inputs. It has pioneered a silent productivity revolution with modern irrigation systems and innovative technologies to save precious water and has helped to get significant increase in crop yields.

Box 10: Dabur[17]

Dabur is a FMCG & Health Care medicine manufacturer which works with the responsibility to deliver products while taking care of its customers' wellbeing, parallelly working towards conservation and mitigating biodiversity loss. Dabur identified the risk of exploitation of medicinal plants and gigantic need for conservation of medicinal plants. Through their state of art "Jeevanti nursery' they carry our in-house and field trials for medicinal plants. Through ex situ cultivation and propagation of important medicinal plants they ensure quality, quantity and sustainable supply of plants to farmers. This reduces their dependency on raw material from the forest areas and reduces negative impacts on forest resources due to uncontrolled extraction of plant material.

Safeguarding Natural Habitats

Sustainable Management



Maintaining Genetic Diversity

Ecosystem Services

Mainstreaming Biodiversity at the Stage of Product Marketing and End Phase

- Eco-friendly products: minimizing end phase impacts on natural ecosystems, level of toxic contaminants in wetlands/rivers and reduce groundwater pollution.
- Environmental Impact: Monitoring ambient air quality, water-quality for physico-chemical and bacteriological parameters, trace metals, pesticides at selected sites.

[17]https://www.dabur.com/img/assets/46-dil-br-report-2013-14.pdf

Box 11: Mahindra & Mahindra: Samriddhi[18]

With a mission of driving farm prosperity globally, Mahindra has expanded into farm-support services like end-to end mechanization solutions Mahindra AppliTrac, and agri-inputs, advisory and post-harvest services through the Samriddhi Initiative. Through this initiative Mahindra launched a comprehensive ecosystem with offerings across the value chain for the farmer. It entails access to smart machinery, precision farming practices, digital platforms and ecosystem connect with the aim to improve crop yields and double farm income.

Sustainable landscapes

Ecosystem Services

Inclusive Governance

Resource Mobilisation

[18]http://www.epcmahindra.com/PDF/EPC_Investor_Relations_QI_F18.pdf

CII-ITC Centre of Excellence for Sustainable Development

CII-ITC Centre of Excellence for Sustainable Development is a not-for-profit, industry-led institution that helps business become sustainable organisations. It is on a mission to catalyse innovative ideas and solutions, in India, and globally, to enable business, and its stakeholders, in sustainable value creation. It's knowledge, action and recognition activities enable companies to be future ready, improve footprints profiles, and advocate policymakers and legislators to improve standards of sustainable business through domestic and global policy interventions.

CESD leverages its role of all-inclusive ecosystem player, partnering industry, government, and civil society. It has been a pioneer of environment management systems, biodiversity mapping, sustainability reporting, integrated reporting, and social & natural capital valuation in India, thus upgrading business in India to sustainable competitiveness.

With three locations in India, CESD operates across the country and has also been active in parts of South and South East Asia, Middle East, and Africa. It has held institutional partnerships and memberships of the United Nations Global Compact, Global Reporting Initiative, International Integrated Reporting Council, Carbon Disclosure Project, development agencies of Canada, the USA, the UK, and Germany.

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