GSPC IMPLEMENTATION in INDONESIA

LIPI
Indonesian Institute of Sciences

Global Strategy for Plant Conservation
GSPC

CBD

PROGRESS REVIEW SUMMARY TOWARDS NATIONAL IMPLEMENTATION OF THE GLOBAL STRATEGY FOR PLANT CONSERVATION (GSPC) INDONESIA

REVIEW BACKGROUND

In 2010, the Conference of the Parties to the CBD adopted the *Updated Global Strategy for Plant Conservation 2011-2020* (UNEP/CBD/COP/10/DEC/X/17) (Convention on Biological Diversity, 2010). This decision invites CBD Parties and other governments to develop or update national and, regional targets as appropriate, and, where appropriate, to incorporate them into relevant plans, programmes and initiatives, including national biodiversity strategies and action plans. It also invites stakeholders to align the further implementation of the GSPC with national and/or regional efforts to implement CBD's Strategic Plan for Biodiversity 2011-2020, including Aichi Biodiversity Targets.

In late 2012, Bogor Botanic Gardens - LIPI as the national focal point of GSPC started to revitalize its role as GSPC national focal point in Indonesia by conducting a focal group discussion on GSPC. Bogor Botanic Gardens has determined to make a review of GSPC implementation in Indonesia. The review results are hopefully thought to provide guidance to conservation practitioners and policy makers in Indonesia on how to enhance and consolidate different conservation approaches in accordance with GSPC 2011-2020 and CBD's Strategic Plan for Biodiversity 2011-2020. This review is not claimed to be an indepth review given not only the complexity of the issues involved, but lots of government institutions and other stakeholders involved as well. Moreover, references available concerning programs, activities and outputs relevant to GSPC targets are very limited in many issues.

Progress in national implementation of GSPC

Table: Status of progress toward GSPC implementation (up to 2014)

Objective I. Plant diversity is well understood, documented and recognized		
	**Target 1.** An online flora of all known plants.	Nationally, good progress has been made towards databasing all plant species identified although still fragmentary kept by different institutions and some are available online. However, an integrated plant database (interoperability database) was initiated in 2013 using GBIF facility (InaBIF). Indonesian Botanic Gardens also develops integrated database of their living plant collections, as well as its herbarium collection. National flora database is being developed by Indonesian Institute of Sciences based on reference collection (Herbarium and Museum), namely IBIS online (http://ibis.biologi.lipi.go.id).
	**Target 2.** An assessment of the conservation status of all known plant species, as far as possible, to guide conservation action.	Not achieved nationally as many species are considered to continue declining in abundance and distribution. However, some efforts have resulted in the recovery of targeted species. Updating some plant species' conservation status under the IUCN Red List Categories & Criteria is just started. One supposedly extinct species (*Dipterocarpus cinereus* Sloot.) has been successfully rediscovered recently in very low individual numbers. Other conservation status re-assessments were also taken, mainly for Dipterocarpaceae (*Vatica bantamensis, Dipterocarpus littoralis, D. cinereus, Hopea bilitonensis*).
	**Target 3.** Information, research and associated outputs, and methods necessary to implement the Strategy developed and shared.	National plant conservation strategy not yet developed specifically, however sectoral action plans and strategies or guidelines relevant to plant conservation available (Botanic Gardens Action Plan, Forest Management Strategy, Guidelines for National Conservation Strategy 2008 – 2018, Indonesia's Sustainable Development I & II), as well as IBSAP documents which is being updated. Since 2008, Indonesian Institute of Sciences has been worked on prioritizing plant species for conservation of selected threatened taxa by developing a prioritization methodology. In 2010, Indonesian Bioresources was published to support conservation of native bioresources which is also included in the national mid term development planning up to 2019.

Objective II. Plant diversity is urgently and effectively conserved		
	**Target 4.** At least 15 per cent of each ecological region or vegetation type secured through effective management and/or restoration.	14 out of 47 ecoregions in Indonesia have been represented in totally 25 botanic gardens development and management through *ex situ* conservation. Some universities' arboreta also available in some regions. 50 National Parks, c 170 Nature Reserves, 55 Wildlife Sanctuary, c. 150 other conservation areas throughout Indonesia are under management of MoF and MoFish → 130.786.014,98 ha (July 2012).
	**Target 5.** At least 75 per cent of the most important areas for plant diversity of each ecological region protected with effective management in place for conserving plants and their genetic diversity.	Not IPA (Important Plant Area) nor KBA (Key Biodiversity Area) is developed. However, the National Action Plans for Protected Area 2010-2015 was developed but not explicitly stated plant genetic diversity. Some sectoral action plans has been developed, such as mangrove (National Strategy and Action Plans 2012-2015).
	**Target 6.** At least 75 per cent of production lands in each sector managed sustainably, consistent with the conservation of plant diversity.	National regulation on protection of sustainable food-productive land (UU No.41/2009) has been released in 2009 but not stating sites to protect, and not many relevant actions undertaken.
	**Target 7.** At least 75 per cent of known threatened plant species conserved *in situ*.	Increasing trends of protected area numbers will hopefully leads to more threatened species protected. Most threatened plant species are in protected areas managed by MoF– esp. narrow endemic species (*Vatica bantamensis* at Ujung Kulon National Park; *Dipterocarpus littoralis* at Nusakambangan NR; *Dipterocarpus cinereus* at Musala Island NR).
	**Target 8.** At least 75 per cent of threatened plant species in ex situ collections, preferably in the country of origin, and at least 20% available for recovery and restoration programmes.	Only 24% of Indonesian threatened plant species have been conserved *ex situ* in botanic gardens. However, some efforts have resulted in the recovery of targeted species through reintroduction and population reinforcement activities. Botanical expeditions in line with plant diversity inventories are increasing. 25 botanic gardens have been newly developed representing 15 ecoregions. Legal aspect: Presidential Regulation No. 93/ 2011 on Botanic Gardens. At least 4% threatened plant species available for recovery programmes.
	**Target 9.** 70 per cent of the genetic diversity of crops including their wild relatives and other socio-economically valuable plant species conserved, while respecting, preserving and maintaining associated indigenous and local knowledge.	No exact percentage provided, but a database of Genetic Resource, Traditional Knowledge and Folklore have been developed since 2012. The legal aspect of "Sustainable Use of Tradisional Knowledge and Folklore" Act has been submitted to the national house of representatives. Documents of Indonesian plant uses has been published both online and printed since the last decades or more (Plant Resources of South East Asia – 24 books, 19 volume 5952 species useful in SE Asia 1983; Buku Tumbuhan Berguna Indonesia; Medicinal Plant Conservation in Indonesia).

	**Target 10.** Effective management plans in place to prevent new biological invasions and to manage important areas for plant diversity that are invaded.	List of IAPS (invasive allien plant species) was developed and included in the national strategy of Invasive allien species (IAS). The National Strategy for IAS management to erradicate and prevent IAPS has just been launched in May 2014.

Objective III. Plant diversity is used in a sustainable and equitable manner sustainable and equitable manner		
	**Target 11.** No species of wild flora endangered by international trade.	This target requires data on numbers of illegal wild plant-based trade caught in the field, which is kept by certain authority. Generally, Indonesia has ongoing activities which is linked to the national implementation of CITES. Policies, regulation, methods and evaluation of this issue mainly aims for agarwood species, followed by ramin species. Indonesia has also developed a national single window for trading of wild flora and fauna.
	**Target 12.** All wild harvested plant-based products sourced sustainably.	Certification method has been applied to timber wood by MoF (Indonesian Legal Wood), namely Timber Legality Assurance System (SVLK) for sustainable forest management.
	**Target 13.** Indigenous and local knowledge innovations and practices associated with plant resources maintained or increased, as appropriate, to support customary use, sustainable livelihoods, local food security and health care.	Database of Genetic Resource, Traditional Knowledge and Folklore have been developed since 2012. Furthermore, draft of Sustainable Use of Tradisional Knowledge and Folklore Act is being finalised to be submitted to the House of Representative. Meanwhile, scattered research and activities in terms of protecting ILK were carried out in local level.

Objective IV. Education and awareness about plant diversity, its role in sustainable livelihoods and importance to all life on earth is promoted		
	**Target 14.** The importance of plant diversity and the need for its conservation incorporated into communication, education and public awareness programmes.	Good progress have been made as many of public education moduls and programmes, visitor information centers and center of botanic gardens information developed and increased, as well as public outreach programmes. Plant diversity and some topics of plant conservation have been incorporated in national or local school curricula. Numbers of local and international NGOs plays important roles in implementation of this Target. GSPC toolkit for Indonesia (guide for implementation, brochures and webbased information) is under construction in Indonesian language.

Objective V. The capacities and public engagement necessary to implement the Strategy have been developed		
	**Target 15.** The number of trained people working with appropriate facilities sufficient according to national needs, to achieve the targets of this Strategy.	An estimate of 300 botanists, plant technicians and horticulturists, and IT staff working in botanic gardens and ca. 90 botanists in Biology Research Center. People trained abroad on plant conservation and management, and number of staff funded for their educational background upgrade tends to increased. Annual trainings for botanic gardens staff (managers and technicians) are available, done by Bogor Botanic Gardens in line with establishing new botanic gardens throughout Indonesia. Grants and colaborative research in the last decade are increasing, provide more appropriate facilities.
	**Target 16.** Institutions, networks and partnerships for plant conservation established or strengthened at national, regional and international levels to achieve the targets of this Strategy.	Nationally, some networks and partnership are revitalized and established to achieve GSPC targets. Indonesian Network for Plant Conservation (INetPC) is re-activated to engage as much as GSPC stakeholders in national level, and Botanic Gardens Community (MAPI=Masyarakat Perkebunrayaan Indonesia) are newly established. Web-based social networking relevant to this target also available.

 No progress

 Little progress

 Significant progress

The main constraints to GSPC implementation were felt to be common across the region and included lack of funding, capacity and facilities. Opportunities and mechanisms to accelerate progress were discussed and these included increasing co-ordination and data sharing within and between countries, identifying 'champions' for plant conservation and greater engagement by Government, policy makers and other stakeholders. Other suggestions included more incentives and recognition for plant conservation activities, funding focused on component parts of the GSPC, rather than the strategy as a whole and greater regional and international collaboration. It was noted that the Clearing House Mechanism provides a tool for the exchange of information and ideas.

NOTES/RECOMMENDATIONS	ACTIONS
To build linkage between GSPC and NBSAPs, because GSPC is considered weak on mainstreaming and engagement with sectors	• GSPC NFP has been involved in updating IBSAP (Indonesian Biodiversity Strategy and Action Plan), specifically in biodiversity stocktaking data phase. • GSPC NFP has strengthen a networking of national stakeholders through annual meetings since 2012 for coordinating, updating and monitoring target achievements.
To develop or update national and regional targets as appropriate	• Sectoral plans and programs were inventoried, indicators were identified, national targets were developed towards each targets, but finalisation is still required and harmonized with the Strategic Plant for Biodiversity 2011-2020. • GSPC stakeholders were grouped into three to make coordination and monitoring more focus and easier: conservation, sustainable use, and institutional working groups. Each working group have a coordinator.
To update any information and achievement at national or regional level, relevant to each GSPC target through GSPC toolkit developed by Global Partnership in Plant Conservation (GPPC)	Progress made in GSPC 2011-2020 translation into Indonesian language with support of BGCI (Botanic Gardens Conservation International), as part of GSPC toolkit in Indonesia program. The Toolkit found very useful to reflect GSPC in national implementation, as well as providing lesson learned from other countries or region.
To build linkage between GSPC and ABS	No actions done yet.
To build national indicators for each target, and use method introduced by Biodiversity Indicator Partnership (BIP)	National indicator for each target were identified mainly based on RWGSPC 2013 exercise, but not strictly follow BIP method/approaches. Training or capacity building from BIP to GSPC NFP and its stakeholders is therefore needed.
To participate in 4th Global Biodiversity Outlook (GBO-4) preparation by providing information such as case studies or participate in the peer reviews of the drafts	No actions done yet, but the GSPC national mid-term report preparation is following GBO method in measuring progress, as written in the table above. Case studies is being selected from literatures gathered.


Bogor Botanic Gardens


Cibodas Botanic Gardens


Cibinong Science Center & Botanic Gardens


Banua Botanic Gardens


Baturraden Botanic Gardens


Danau Lait Botanic Gardens


Katingan Botanic Gardens

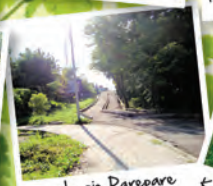

Purwodadi Botanic Gardens


"Eka Karya" Bali Botanic Gardens


Balikpapan Botanic Gardens


Batam Botanic Gardens


Bukit Sari Botanic Gardens


Jompie Parepare Botanic Gardens


Kendari Botanic Gardens

Establishing New Botanic Gardens for Sustainable Development with Special Emphasis on Sustainable Use of Biodiversity: An Indonesian Note


Kuningan Botanic Gardens


Lombok Botanic Gardens


Minahasa Botanic Gardens


Sambas Botanic Gardens


Solok Botanic Gardens


Wamena Botanic Gardens


Pelalawan Botanic Gardens

Liwa Botanic Gardens

Massenrempulu Enrekang Botanic Gardens

Pucak Botanic Gardens


Samosir Botanic Gardens


Sumatera Selatan Botanic Gardens

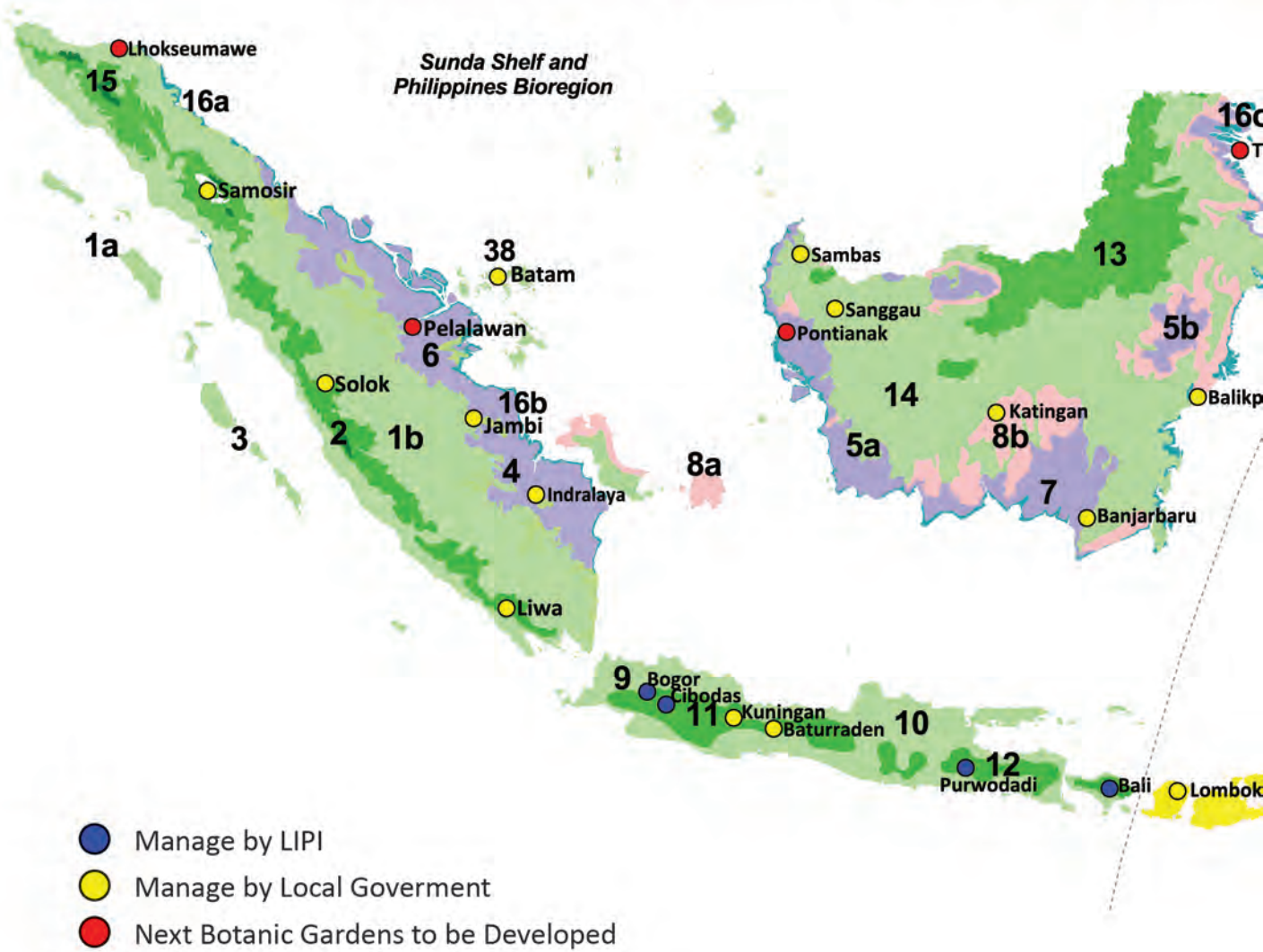

Botanic Gardens in Ratatotok

Agenda 21 Indonesia priorities programs conserving biodiversity and establishing new *ex situ* conservation areas (Chapter 16 Biodiversity Conservation). The Agenda also identifies the need for strengthening the capacity of the existing botanic gardens as a conservation and environmental education center. In its proposed activities, the development of at least one botanic garden in each province of Indonesia is a priority activity. The development of new botanic gardens has also currently been included in the National Priority Program 9 in the National Medium-term Development Plan II (2010-2014).

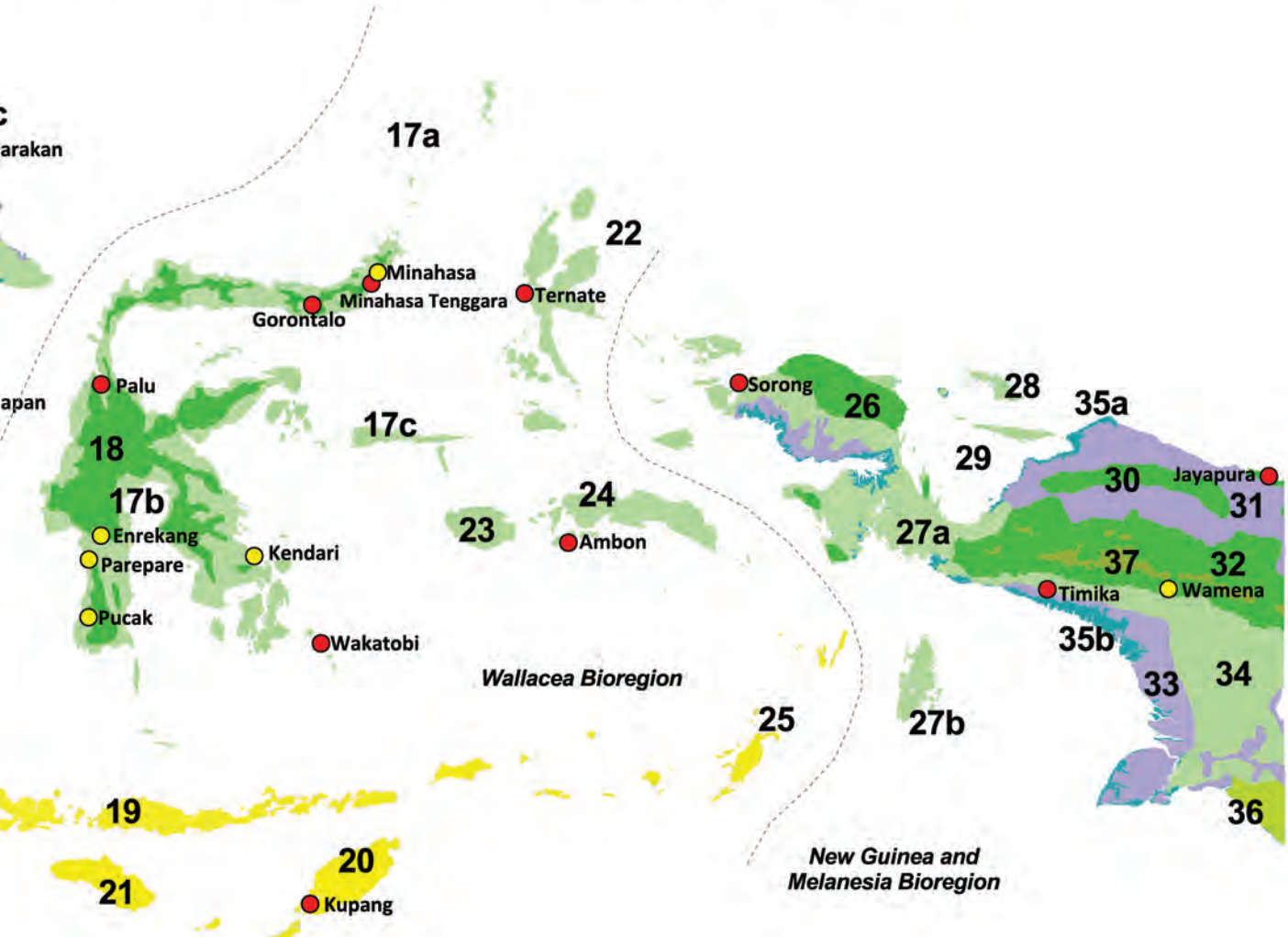
Within international contexts, the development of new botanic gardens is in line with global commitments, such as the 1992 Convention on Biological Diversity (CBD) and the target VIII of the Global Strategy for Plant Conservation (GSPC). Current status of the achievement of the GSPC Target 8 is that 24 % of the Indonesian threatened plants have been collected in the gardens. The program has also been identified as an important element in biodiversity conservation by the World Bank Environment and Development Report on Indonesia.

Indonesian Botanic Gardens have a potential role in biodiversity conservation and environmental education programs and are located at very strategic places for promoting biodiversity conservation and sustainable utilization, as the gardens are visited by more than 2 million people annually (4 gardens: namely Bogor Botanic Garden, Cibodas Botanic Garden, Purwodadi Botanic Garden and Bali Botanic Garden), situated at very strategic sites, and accommodating not less than 50,000 living specimens belonging to more than 6,000 flowering plant species. The gardens would certainly make environmental and conservation education accessible to everyone. Thus people awareness can effectively be stimulated and encouraged through various conservation education programs (through demonstrations and interpretations) within the gardens, through enjoying and efficient ways (Target 14 GSPC).

INDONESIA BOTANICAL GARD



EN DEVELOPMENT MAP PLAN



NO.	BOTANIC GARDENS	PROVINCE	AREA (hectar)	COLLECTION THEME/FOCUS	Number of plants collection in the garden
1.	Bogor	West Java	87,0	Humid lowland plants	22.268
2.	Cibodas	West Java	120,0	Humid highland plants	10.263
3.	Purwodadi	East Java	85,0	Dry lowland plants	7.191
4.	"Eka Karya" Bali	Bali	157.0	Dry highland plants	20.971
5.	Cibinong	West Java	189,0	Indonesian bioregion plants	7.595
6.	Balikpapan	East Kalimantan	122,1	Indonesian timber plants	2.159
7.	Banua	South Kalimantan	122,1	Kalimantan medical flora	253
8.	Batam	Riau Islands	86,0	Small island flora	-
9.	Baturraden	Central Java	142,0	Java mountainous flora	2.134
10.	Bukit Sari	Jambi, Sumatra	425,0	Sumatra lowland flora	1.952
11.	Danau Lait	West Kalimantan	328,0	Equatorial region plants	-
12.	Jompie, Parepare	South Sulawesi	13,5	Coastal - Wallacea flora	623
13.	Massenrempulu, Enrekang	South Sulawesi	300,0	Wallacea region flora	3.208
14.	Katingan	Central Kalimantan	127,0	Indonesian fruit plants	663
15.	Kendari	Southeast Sulawesi	113,0	Ultrabasic flora	-
16.	Kuningan	West Jawa	172,0	Rocky and Mount Ceremai plants	22.907
17.	Liwa	Lampung, Sumatra	116,0	Indonesian ornamental plants	1.695
18.	Lombok	West Nusa Tenggara	130,0	Lesser Sunda plants	979
19.	Minahasa	North Sulawesi	186,0	Highland Wallacea region flora	-
20.	Pucak	South Sulawesi	120,0	Economical value plants	173
21.	Sambas	West Kalimantan	300,0	Kalimantan riparian flora	-
22.	Samosir	North Sumatra	100,0	North Sumatra highland flora	1.088
23.	Sumatera Selatan	South Sumatra	100,0	Sumatra medicinal and wetlands flora	25
24.	Solok	West Sumatra	112,6	Spice plants	-
25.	Wamena	Papua	160,0	Central Papua mountainous flora	160
26.	Ratatotok	North Sulawesi	221,0	-	-
27.	Pelalawan	Riau	100,0	-	-

Launching Balikpapan Botanic Gardens on August 20, 2014
by the Minister of Public Works of Indonesia
Ir. Djoko Kirmanto, Dipl. HE.

Ground Breaking Batam Botanic Gardens on August 28, 2014
by the Minister of Public Works of Indonesia
Ir. Djoko Kirmanto, Dipl. HE.

The development of at least one botanic garden in each province which becomes a national priority (Agenda 21) is also under the coordination of LIPI. By the publication of the Indonesian Presidential Regulation Number 93 in 2011, the development phases of new botanic gardens in Indonesia are strengthened and speed up. By the middle of 2014, there have been 27 new botanic gardens (both establishing and established gardens) located in 20 different provinces (Fig. 1). Nineteen of these gardens have already developed their master plans, including Bukit Sari Botanic Garden (BG), Liwa BG, Kuningan BG, Baturraden BG, Katingan BG, Balikpapan BG, Enrekang BG, Pucak BG, East Lombok BG, Sambas BG, Danau Lait BG, Batam BG, Samosir BG, Solok BG, Minahasa BG, Kendari BG, South Sumatera BG, Banua BG, and Wamena BG. During 2010-2014, as many as 15.681 plants have been collected by 22 new Botanic Gardens managed by the local governments, 32 thematic gardens have been arranged, 1 (one) book about the development plan of Indonesian Botanic Gardens, 8 (eight) books about the utilization of plants collection of the new botanic gardens, and 4 (four) training modules of Botanic Gardens Technical and Managerial Classes have been published.

In November 2013, MAPI (The Indonesian Botanic Gardens Society) as a non profitable organization has been initiated by Bogor Botanic Gardens. This organization has great attention and concern for promoting *ex situ* conservation activities and community parcitipation in Indonesia. Promoting community participation in the conservation and sustainable use of biodiversity has become a major concern in establishing new botanic gardens in Indonesia. The success of any biodiversity conservation would depend on the management of human attitude and participation of various stakeholders (including local people) in which the program to be devoted. Botanic gardens can play a major role in educating people on the sustainable utilization of the local biodiversity particularly in the areas of of local people empowerment and income generation. Once the local communities appreciate the importance of a botanic garden to their life they will become effective guards of the garden. These facts have a relevant relationship to the GSPC Target 14 and 16.

Launching Roadmap Indonesian Botanic Garden by Indonesia 5th President Megawati Soekarnoputri at Cibodas Botanic Gardens September 30th, 2014

In September 2014, a Roadmap book of the Development of Botanic Gardens as Green Open Spaces in Urban Areas of Indonesia has been published by the Center for Plant Conservation Botanic Gardens, LIPI and Directorate General of Spatial Planning, Ministry of Public Works. According to the Roadmap, during 2015-2019 at least 1 botanic garden is going to be launched and 2 botanic gardens are going to be initiated each year. In addition, the functions of Botanic Gardens managed by LIPI and those have been launched are going to be strengthened.

Botanic gardens should involve activities relevant to improve social welfare. Social welfare is a key part that must be taken into account if botanic gardens are to succeed in their goals of biodiversity conservation and sustainable utilization. In order to succeed, conservation must relate to real community needs. It is generally recognized that people are unlikely to conserve natural resources if they do not appreciate their value. This means that conservation and economic development must take account of each other. This concept of balancing progress to social and environment goals is obviously linked to the idea of sustainable development.

Reintroduction and Recovery of Indonesian Threatened Plants

Since 2003, Bogor Botanic Gardens has conducted reintroduction of threatened plants. There were seven threatened species that have been returned to their native habitats. Furthermore, species recovery and restoration of degraded land using local species have also been conducted.

Pinanga javana Blume (Palms)

Location:
Mt. Halimun-Salak National Park, West Java

Habitat:
open space in slopes, at an altitude of 540 - 1,000 m asl.

No. of individuals:
5,200 seedlings (by 2005)

Percentage of survivalship:
37.04% (after 2 years)

Calamus manan Miq. (Rattans)

Location:
Bukit Dua Belas National Park, Jambi, Sumatra

Habitat:
lowlands, riversheds, and slopes, at an altitude of 135 - 200 m asl.

No. of individuals:
670 seedlings (by 2006)

Percentage of survivalship:
32.16% (after 2 years)

Alstonia scholaris (L.) R.Br.

Location:
Ujung Kulon National Park, Banten

Habitat:
lowlands, open space to 60% shade areas, riversheds at an altitude of 135 - 250 m asl.

No. of individuals:
1,000 seedlings (by 2007)

Percentage of survivalship:
Not monitored yet

Parkia timoriana (DC.) Merr.

Location:
Meru Betiri National Park, East Java

Habitat:
lowlands, riversheds, slopes 10-60%, at an altitude of 10 – 200 m asl.

No. of individuals:
1,000 seedlings (by 2007)

Percentage of survivalship:
Not monitored yet

Intsia bijuga (Colebr.) O. Kuntze

Location:
Ujung Kulon National Park, Banten

Habitat:
lowlands, near the beach, open space to 40% shade areas, riversheds at an altitude of 2-8 m asl.

No. of individuals:
500 seedlings (by 2009)

Percentage of survivalship:
80.7% (by 2010)

Diospyros macrophylla Blume

Location:
Ujung Kulon National Park, Banten

Habitat:
lowlands, open space to 90% shade areas, riversheds at an altitude of 135- 200 m asl.

No. of individuals:
100 seedlings (by 2009)

Percentage of survivalship:
75.6% (by 2010)

***Stelechocarpus burahol* (Bl.) Hook. F. & Thomson**

Location:
Ujung Kulon National Park, Banten

Habitat:
lowlands, shade areas 60-90%, riversheds at an altitude of 23-77 m asl.

No. of individuals:
400 seedlings (by 2009)

Percentage of survivalship:
97.4% (by 2010)

Upcoming activities:

Reintroduction to Ujung Kulon National Park, Banten and Sumatra. Some species are:

- *Vatica bantamensis,*
- *Heritiera percoriacea,*
- *Shorea guiso,*
- *Shorea pauciflora,*
- etc.







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