

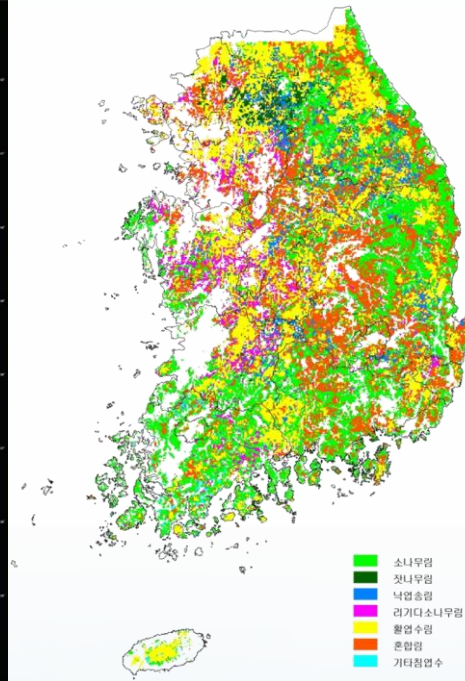
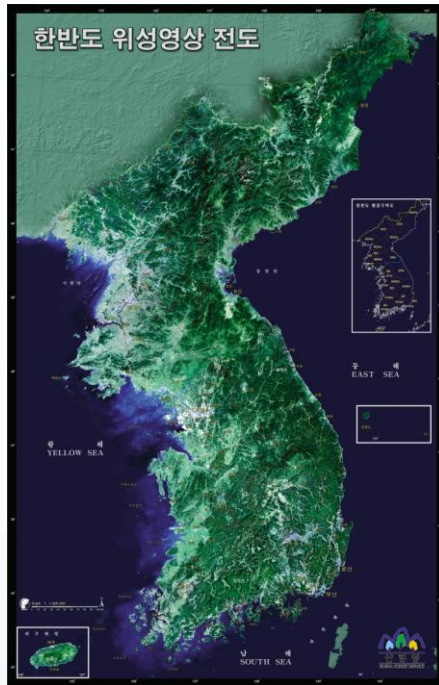
The background of the slide is a bright, sunny landscape. The top half shows a clear blue sky with scattered white clouds. A large, curved, semi-transparent blue graphic element arches across the upper right portion of the sky. Below the sky is a lush green field that curves gently. In the distance, a dense line of green trees stretches across the horizon. The foreground is filled with tall, green grass blades, some of which are in sharp focus.

National Strategy for the Implementation of the GPA FGR in the Republic of Korea

Feb. 26, 2016



Forest cover and forest biodiversity in Korea



- 64% of South Korea's land area is covered with forests (70% of Korea peninsular)
- Forests hold 92% of the nation's terrestrial species
- A total of 246 wildlife species have been designated as endangered species

(Endangered 44 plants and 9 mushrooms inhabiting forests are legally protected by 'Forest Protection Law')

	Plant	Insect	Mush-room	Lichen	Bird	Amphibian/ Reptile	Fresh water Fish	Mammal
Total	5,912	13,384	2,098	510	518	53	213	124
Forests	5,550 (93.9%)	12,483 (93.3%)	2,091 (99.7%)	272 (53.3%)	296 (57.1%)	50 (94.3%)	147 (69.0%)	84 (67.7%)

(data from <http://www.cbd-chm.go.kr>; <http://www.nature.go.kr>)



Legislation and strategies for biodiversity conservation

	Ministry of Agriculture, Food and Rural Affairs	Ministry of Environment	Ministry of Science, ICT and Future Planning	Ministry of Oceans and Fisheries
Law	Act on conservation, management and utilization of agricultural bio-resources	Act on conservation and utilization of biodiversity	Act on securement, management and utilization of bio-research resources	Act on securement, management and utilization of marine bio-resources
Strategic Plan (5yrs)	Master plan for agricultural bio-resources	National biodiversity strategy and action plans	Master plan for management of bio-research resources	Master plan for management of marine bio-resources
Target	Agricultural bio resources (including FGR)	Nation's biodiversity	Bio research resources	Marine bio-resources (including freshwater bio-resources)
Information System	Bio-resources Information Service (www.bris.go.kr)	Korea Bio-resource Information System (www.kobis.re.kr)	National Bio-resource Management System (www.kbr.go.kr)	Marine Bio-resource Information System (mbris.kr)

“Act on Access and Benefit Sharing of Genetic Resources” has been enacted and expected to be in effect in 2016.

National Forest Biodiversity Strategy 2014-2018

- KFS develops the National Forest Biodiversity Strategy and Action Plans (NFBSAP) every five years in compliance with the Korea's National Biodiversity Strategy and Action Plans (NBSAP) and the Master Plan for Agricultural Bio-resources.

NFBSAP		GPA FGR	
Priority 1	Forest biodiversity inventory and monitoring (6 actions)	Priority Area 1	Improving the availability of, and access to, information on FGR (4 SPs)
Priority 2	Expansion of protected areas (5 actions)	Priority Area 2	<i>In situ</i> and <i>ex situ</i> conservation of FGR (7 SPs)
Priority 3	Strengthening <i>Ex situ</i> conservation (6 actions)		
Priority 4	Restoration of degraded forest ecosystems (4 actions)	Priority Area 3	Sustainable use, development and management of FGR (6 SPs)
Priority 5	Reducing threatening elements of forest biodiversity (3 actions)		
Priority 6	Sustainable utilization of FGR (6 actions)		
Priority 7	Strengthening international collaboration (4 actions)	Priority Area 4	Policies, institutions and capacity-building (10 SPs)
Priority 8	Policies, institutions and capacity-building (5 actions)		

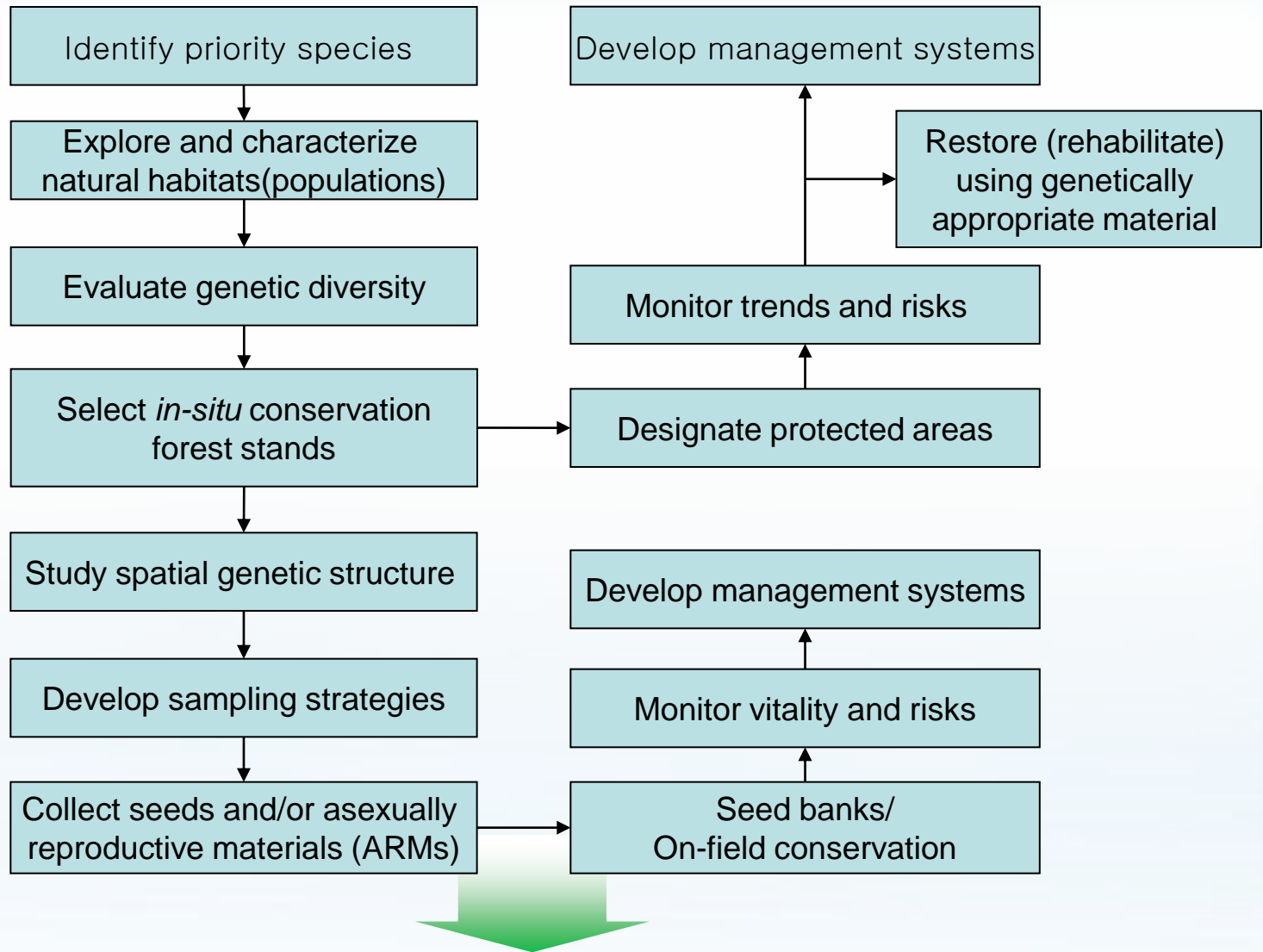
Governmental bodies in charge of FGR conservation



- ❖ Focusing on the conservation of genetic/ecosystem diversity
(database: <http://ratis.kfri.go.kr>)
- ❖ Focusing on the conservation of species diversity
(database: <http://www.nature.go.kr>)
- ❖ Focusing on the conservation of new varieties of forest plants and mushrooms

The Korea Forest Service has been performing the FGR conservation programs in collaboration with 27 organizations including universities, public/private arboretums and local forest R&D institutes.

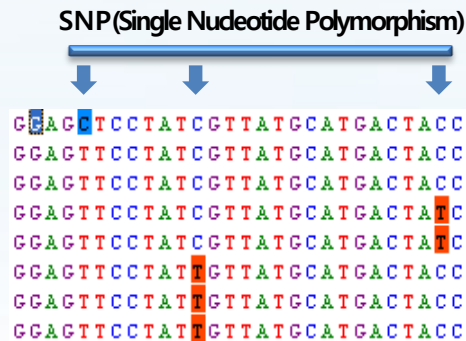
Schematic strategies for FGR conservation



Web-based FGR information systems (DB)

In situ conservation of FGR

- A total of 150,316 ha of forests have been designated as the Protected Areas for the conservation of forest biodiversity. Among them, 3,147 ha are for the conservation of forest genetic resources.
- Since 1972, a variety of biochemical and molecular markers have been developed and utilized for assessing the genetic diversity of target tree species for conservation.
- To date, NIFoS has studied genetic variation of 233 populations of 25 tree species (12 conifers and 13 broad-leaved species) employing molecular markers.
- The genetic diversity indicators have been used for selecting *in situ* conservation forest stands and monitoring the trends of biodiversity (genetic diversity) stability and loss.



SNP development for *Pinus densiflora*



Protected Area for FGR conservation

Ex situ conservation of FGR

	Storage Place	No. species	No. individuals	Percentage
Seed	NIFoS	1,106	24,402	73.5
	KNA	1,759	8,548	25.7
	NFSV	43	259	0.8
	Total	2,432	33,209	100
Asexually Reproductive Material (ARM)	NIFoS	100	226,209	50.6
	KNA	5,265	30,105	6.7
	NFSV	180	190,546	42.6
	Total	5,335	446,860	100
Microorganism (mushroom)	NIFoS	347	1,639	70.9
	KNA	326	674	29.1
	Total	563	2,313	100

NIFoS: National Institute of Forest Science; KNA: Korea National Arboretum; NFSV: National Forest Seed Variety Center

Each year, NIFoS, KNA and NFSV are obligated to collect and store a planned amount of seeds, germplasms, ARMs and micro-organisms from forests by the **'Act on Conservation, Management, and Utilization of Agricultural Bio-resources.'**

Ex situ conservation of FGR

NIFoS started tree breeding programs in 1956. Since then, NIFoS has established and managed a variety of breeding populations. These populations have a function as on-field *ex situ* conservation of FGR.

Type	No. species	Area (ha)	
Clone bank	22	78.5	2,335 clones
Seed orchard	56	702	
Variety Collection	53	30	1,718 varieties



Clone bank & progeny test



Seed orchard of *Pinus densiflora*

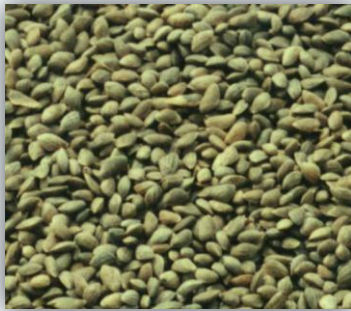


Hybrid poplar breeding

Seed programs to supply genetically appropriate seeds

KFS has been developing and reinforcing national seed programs to ensure the availability of genetically improved forest tree seeds in the quantities and of the quality needed for national plantation (afforestation) programs.

- NFSV has been establishing seed orchards and designating seed collecting forest stands (1,173 ha) to produce and supply genetically appropriate tree seeds. NFSV is also in charge of developing Seed Quality Standards in accordance with OECD/CFRM(Certification of Forest Reproductive Material).
- NIFoS has been conducting research to develop tree breeding technologies and seed transfer zones in collaboration with NFSV and to develop technologies for production of seedlings that fulfill the Seedling Quality Standards.



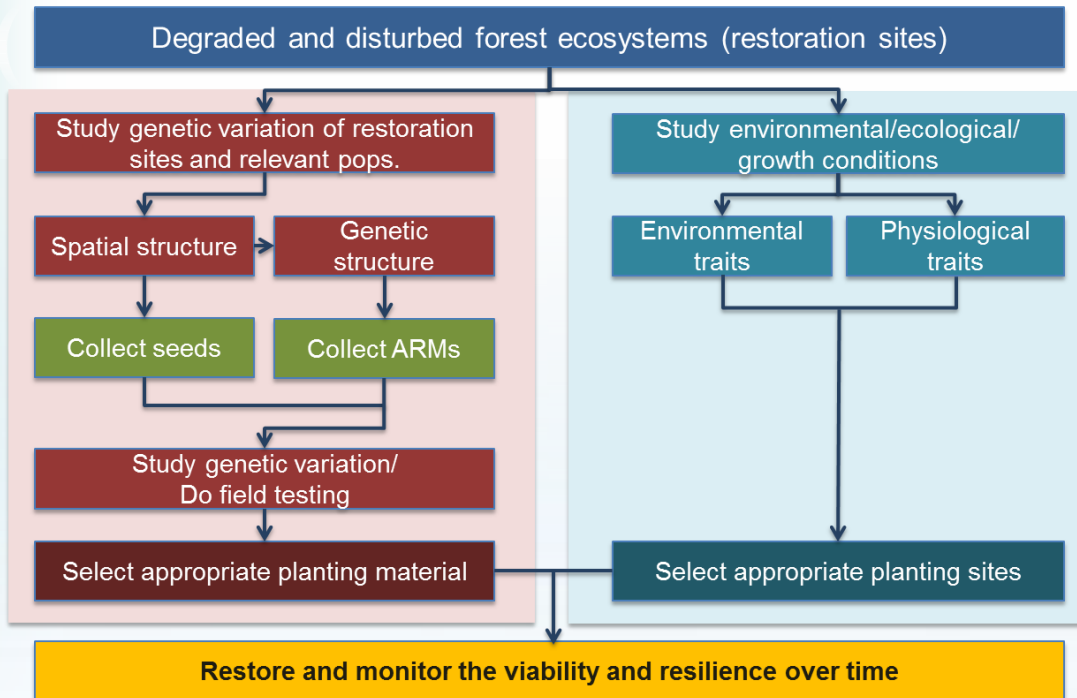
Production of genetically improved tree seeds



Production of container seedlings

Restoration of degraded ecosystems using genetically appropriate material

NIFoS has been conducting research 1) to identify key variables for choosing populations and individuals that are well-matched to current and future conditions at degraded sites; 2) to select appropriate genetic materials for restoring; and 3) to implement monitoring for assessing the viability and resilience of tree populations at restored sites.



NIFoS' Strategy for restoring degraded forest ecosystems



Restoration site	Genetic diversity (<i>S.I.</i>)	
	Before	After
Site 1	0.099	0.456
Site 2	0.060	0.470
Site 3	0.085	0.481
Average	0.081	0.469

Monitoring the vitality and genetic structure



Propagating planting material

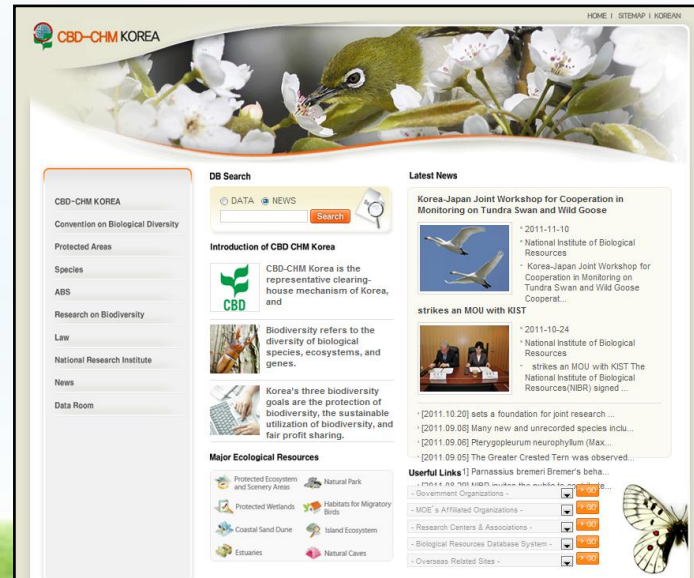
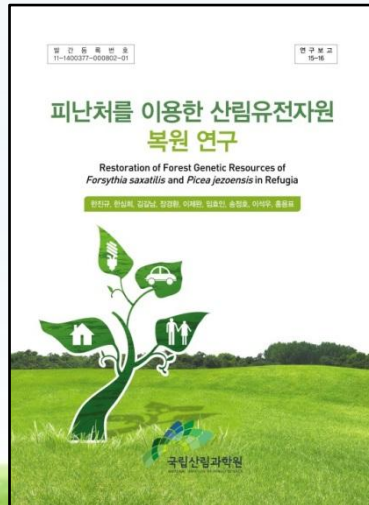
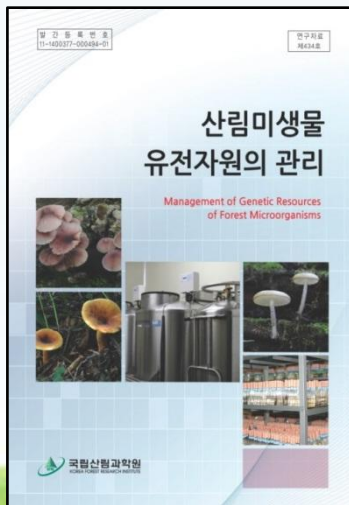
Policies, institutions and capacity-building

- KFS integrates FGR conservation needs into the national frameworks of the Action Plans for Sustainable Forest Management.

Two FGR conservation indicators (1. expand *in situ* conservation areas; 2. promote the establishment of *ex situ* conservation systems) are included in the National Plan of Actions for Sustainable Forest Management which is legally binding.

- NIFoS and KNA disseminate FGR-related knowledge to policy makers, universities, institutes, forest practitioners and stakeholders for strengthening capacity-building and promoting public awareness.

- Central government including KFS has established and managed Clearing-House Mechanism (CHM) to provide global, regional and national information services to facilitate the implementation of the Strategic Plans for Biodiversity Conservation.



CBD-CHM Korea homepage (www.cbd-chm.go.kr/english)

Regional collaboration



AFoCo

한-아세안 산림협력협정

ASEAN-Korea Forest Cooperation

(<http://www.afocosec.org>)

Governing Council (11 members - ROK + AMS)

Secretariat
(Executive Director)

- ◆ Rehabilitation of degraded lands
- ◆ Sustainable forest management
- ◆ Combat desertification

Dialogue for
AFoCo

Regional
Cooperation
Projects

Other
Cooperation
Activities

AFoCo is a regional cooperation mechanism in the forest sector between ASEAN Member States and the Republic of Korea, which was entered into force on 2 August 2012.

- Individual projects : Bilateral programs between AMS and ROK (USD 1.73M)
 - ❖ Short-term (one year) projects : By 2015, a total of 20 projects had been performed.
 - ❖ Key areas : forest restoration, climate change mitigation, **biodiversity conservation**, NTFPs & community forestry, capacity building
- Regional cooperation projects : Multilateral programs (USD 7.4M)
 - ❖ Mid- and long-term projects : To date, a total of 7 projects have been conducted.
 - ❖ Key areas : forest restoration, sustainable forest management, forest resource assessment, **quality seed supply**

Regional collaboration

- Budget : USD 16.6 M
- Period : 2014-2023
- Proponent : ROK and 10 ASEAN Member States
- Activities : Holistic approach of “Restoring Degraded Forest in Southeast Asia as a Model for a Greener Asia”

Hardware

Software

1 Establishment of Education and Training Center

- Construction of centralized scientific research and training center
- Provision of the center with research equipment and training facilities

2 Education and Training Programs for Capacity Building

- Development of education and training courses and modules to address various topics
- Integrated experts program by the convergence of courses and modules

4 Advocating Activities

- Development of forest biodiversity awareness campaign & fund raising
- Community build-up programs & integrated website

3 Rehabilitation of Degraded Forest Regions

- Establishment of best practice in forest rehabilitation and model forest of AFoCo
- Installation of facilities related to forest conservation and socio-economic development

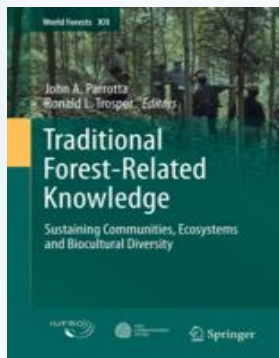
**AFoCo
Landmark**

Regional collaboration

Asian Center for Traditional Forest-related Knowledge (ACTFOK)

ACTFOK, officially launched on 12 September 2012, is a network for sharing information on traditional forest-related knowledge (TFK) and promoting TFK research cooperation in Asia.

- Members : Republic of Korea, China, Japan, ASEAN Member States (APAFRI)
- Activities
 - Holding annual international conference on TFK and culture in Asia since 2008
 - Holding regional workshops
- Secretariat : NIFoS (<http://actfok.kfri.go.kr>)



Traditional forest-related knowledge (Parrotta and Trosper, 2012)

Total expression of folklore represented as the form of cultural heritage, **biological(genetic) resources** and traditional intelligence succeeded from generation to generation at the specific or groups(tribes and natives) or area.

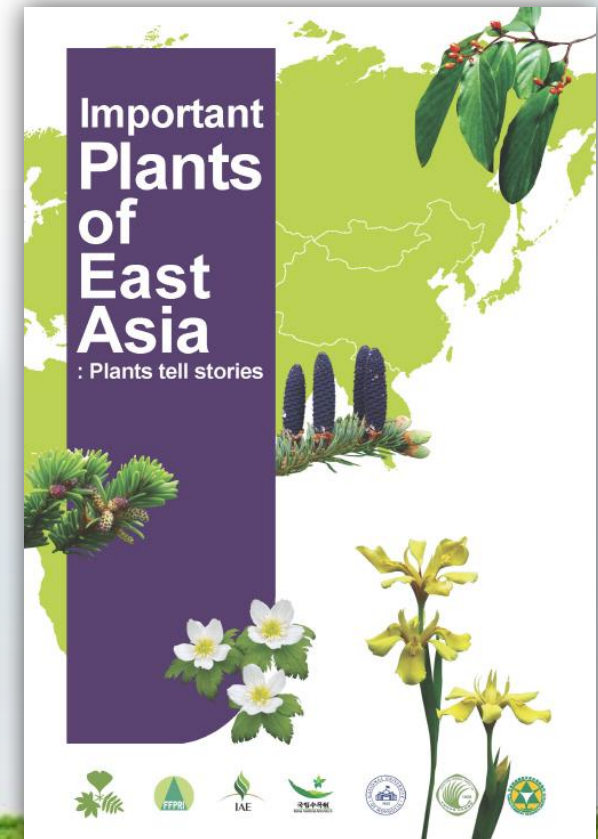
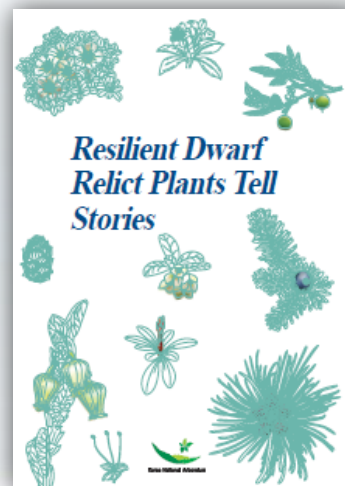
GPA SP2 : Develop national and subnational systems for the assessment and management of traditional knowledge on FGR

Regional collaboration

East Asia Biodiversity Conservation Network (EABCN)

EABCN, officially launched on 2 June 2015, is a network for reinforcing regional cooperation to support education, research and knowledge dissemination of plant biodiversity.

- Members : Republic of Korea, China, Japan, Russia
- Activities
 - Conducting research on floral survey (biodiversity inventory) in the East Asian region
 - Monitoring climate change impacts on plant diversity at regional level
 - Holding regional workshops
- Secretariat : KNA



A young boy and girl are hugging in a forest. The boy is on the left, wearing a white shirt, and the girl is on the right, wearing a blue tank top. They are both looking up and smiling. In the background, a large, thick tree trunk is visible, surrounded by other trees and a clear blue sky. The scene is brightly lit, suggesting a sunny day.

THANK YOU!