



Korea Important Agricultural Heritage
Damyang Bamboo Agrosystem

Damyanggun County

Table of Contents

I . Damyang Raises Bamboos...

1. Damyang, the biggest bamboo cultivation area of Korean Peninsula
2. Damyang Bamboo with half millenium history
3. Various habitats of Damyang Bamboo
4. Four distinctive seasonal landscape of Damyang Bamboo-field

II . Bamboo Raises Damyang

1. Bamboo referred as 'Money Tree', Bamboo-field as 'Golded Field'
2. Knowledge system and skills of Damyang Bamboo Agrosystem
3. Bamboo aroma filled culture and social atmosphere of Damyang

III. Bamboo Oriented Future of Damyang

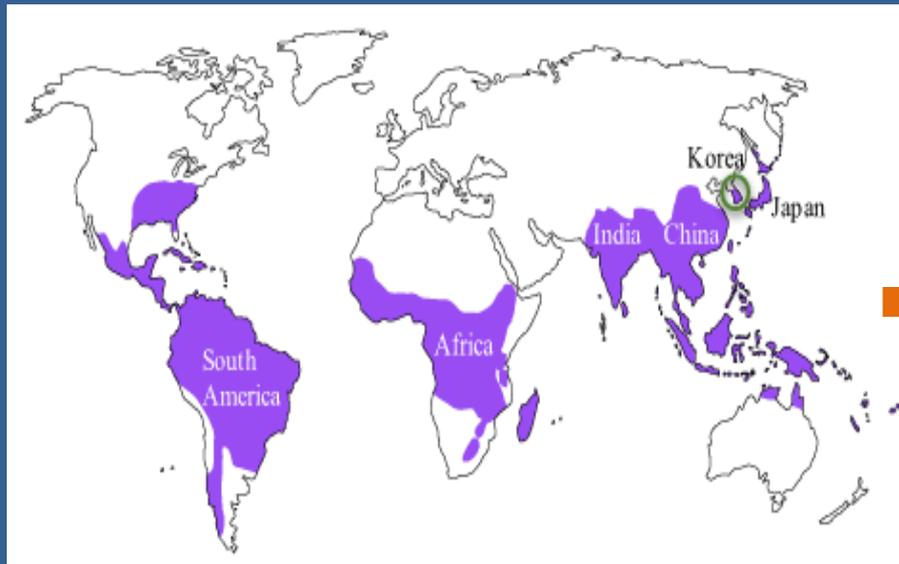
1. Modern significance of Damyang Bamboo Agrosystem
2. Threats and challenges for Damyang Bamboo
3. Efforts for FAO GIAHS acknowledgement and designation
4. Plans for preservation and management of Damyang Bamboo Agrosystem

I . Damyang Raises Bamboos...

1. Damyang, the biggest bamboo cultivation area of Korean Peninsula
2. Damyang Bamboo with half millenium history
3. Various habitats of Damyang Bamboo
4. Four distinctive seasonal landscape of Damyang Bamboo-field

1. Damyang, the biggest bamboo cultivation area of Korean Peninsula

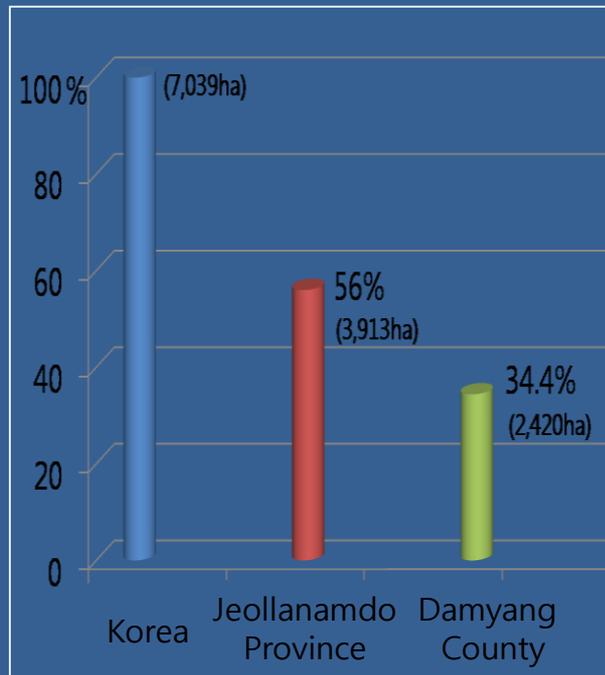
- Ideal climate for bamboo cultivation
 - Annual average temperature: 14.2°C
 - Annual precipitation: 1366mm
- Rich soil area surrounded by windshield mountains and Youngsan River



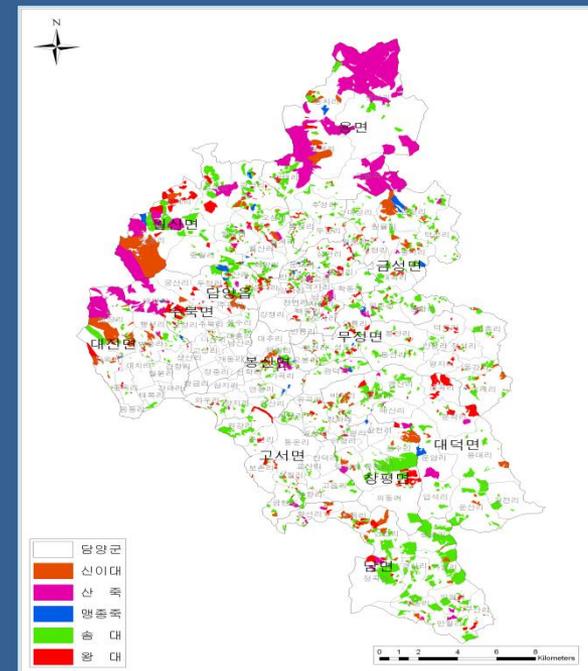
<Global Bamboo Distribution and Bamboo-field Boundary in Korea>

□ Current status of Damyang Bamboo-field

- Distribution of bamboo village: 351 villages in Damyang from national total of 354
- Distribution Bamboo tree: 2,420ha
 - 34.4%(National level 7,039ha) or 61.9%(Jeollanamdo Province 3,913ha)
 - Species: *Phyllostachys bambusoides* Sieb. Et Zucc(352ha),
Phyllostachys nigra var. *henonis* Stapf(871ha),
Phyllostachys pubescens Mazel(93ha), others(1104ha)



<Damyang Bamboo-forest distribution against Korean in ratio>



<Damyang Bamboo-forest distribution>

2. Damyang Bamboo with half millenium history

- Kings gifts from Damyang included *Phyllostachys bambusoides* Sieb. Et Zucc, *Phyllostachys nigra* (Lodd.) Munro Zuccr, and arrow shaft per *The Annals of Sejong*(1454)
 - Bamboo industry is among 3 major industries in Damyang(rice, barley) for 500 years.

□ Bamboo history built on Damyang Bamboo-field

- Home of bamboo craft and the major cultivation area of bamboo, Damyang
 - Damyang became Home of Bamboo in Joseon Dynasty for flexibility and spalling capability
 - Government of Joseon Dynasty assigned Masters for supervision of bamboo fan production
 - Exported spinning wheel, needle case, bamboo mat, basket to Manchuria and Mongol
- Golden Ear of Damyang craft continued till 1970s
 - 7,000 household(30%) or 20,000 people involved in craft or bamboo-forest management
- Regain the glory of Damyang bamboo craft in new industry condition
 - Designate Bamboo Masters from levels of nation, region and local for continuous management and succession of skills



3. Various habitats of Damyang Bamboo

- Organism rich and shaded Bamboo-field with abundant birds and mammal
- Ecological repository with distinctive flora and fauna per the age of bamboo-field
- Mammal(12 species) birds(23), amphibian/reptile(4) mushroom(108)



- Damyang Wetland(980,000m²) around Bamboo-fields
- Birds(58 species), mammal(7), fish(48) and rare plant: *Phragmites japonica*
- Endangered species: hawk, wildcat, otter, *Charadrius placidus*
- Landscape of bamboo-field sets bed form for various wetland flora



□ Ecosystem of Damyang Bamboo

- Bamboo-fields in valley area have solved water supply in dry season
 - Bamboo releases water in dry season and forms puddle in the lower area



- Environmental species Bamboo responses to climate change effectively
 - Carbon dioxide absorbed from Bamboo-field: 29.34 ton/ 1 ha (3.8 times higher than pines)
 - Oxygen emission rate: 35% higher than other species
 - Annual biomass production: 16 ton/1 ha(7.7 times higher than pines)

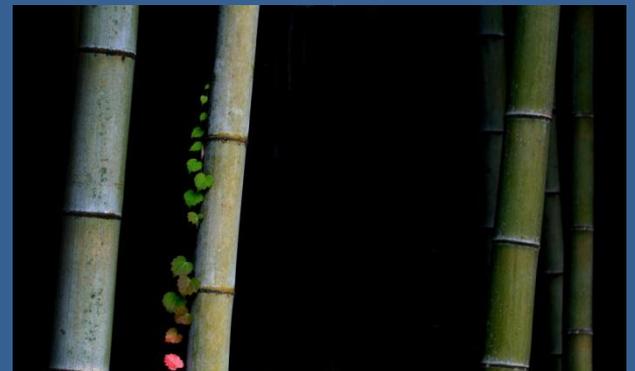
4. Four distinctive seasonal landscape of Damyang Bamboo-field

Harmonious landscape,
embracing rural villages

Various landscape
of Bamboo-field
per weather condition
and different season

Micro landscapes
in Bamboo-field

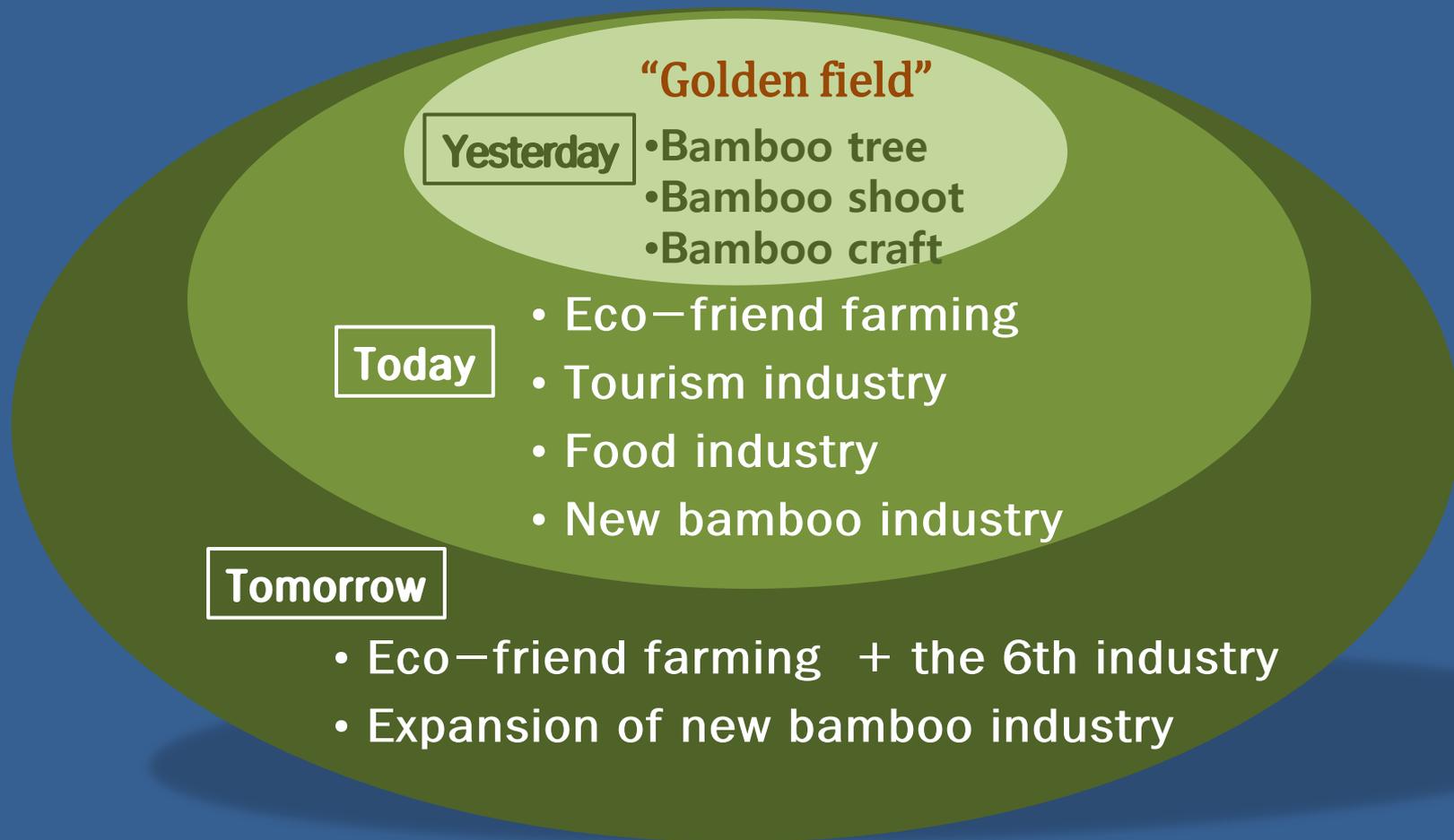




II. Bamboo Raises Damyang

1. Bamboo referred as 'Money Tree', Bamboo-field as 'Field of Real Gold'
2. Knowledge system and skills of Damyang Bamboo Agrosystem
3. Bamboo aroma filled culture and social atmosphere of Damyang

■ Bamboo Raises Damyang



1. Bamboo referred as 'Money Tree', Bamboo-field as 'Golden Field'

- Bamboo-field with 5 times of added value per production cost
 - Primary item: Bamboo tree, bamboo shoot, sap, leaf, bamboo sheath
 - Composite culturing of special species and medicinal species of Jungno tea, *Broadleaf Liriope* and *Lycium barbarum*
- ⇒ Saenggeumbat or golden field is another title for a Bamboo-field, referring the gold culturing field.



□ Bamboo craft and Bamboo market

- Higher demand of chemical-free bamboo craft vs. general interest decrease
-Chungjuk Market: the only Bamboo Craft Market of Korea
- Per national yield rate index: 70% of Wonjuk Bamboo
- Sale volume(2014): Bamboo tree - \$750,000(6 business), Craft - \$6.7 million(28 business),
Processed item - \$19.8 billion(30 business)



□ Bamboo shoot brings higher income for farming household

- Bamboo shoot contains various nutritious components and special fiber for growth speed
- Annual yield rate of bamboo shoot: 24,000ton (60% of Korea),
Sale volume: \$30 million(\$1:1200won applied)
- Estimated annual sales volume of processed fresh bamboo shoot: \$90 million from 7,200 ton(30% of gross yield amt)

□ Various food culture with bamboo

- Jungno tea(180ha), medicinal /special crop, edible mushroom(24 kind)
- Bamboo stem: rice, bbq, wine, salt baking
Bamboo leaf: tea, noodle, tofu, liquor, taffy, Korean traditional sweets
Bamboo shoot: sashimi, bbq, chilled bamboo shoot mix, kimchi, bean paste
- 27 bamboo menu earned \$6.4 million(\$1:1200won applied) in 2014

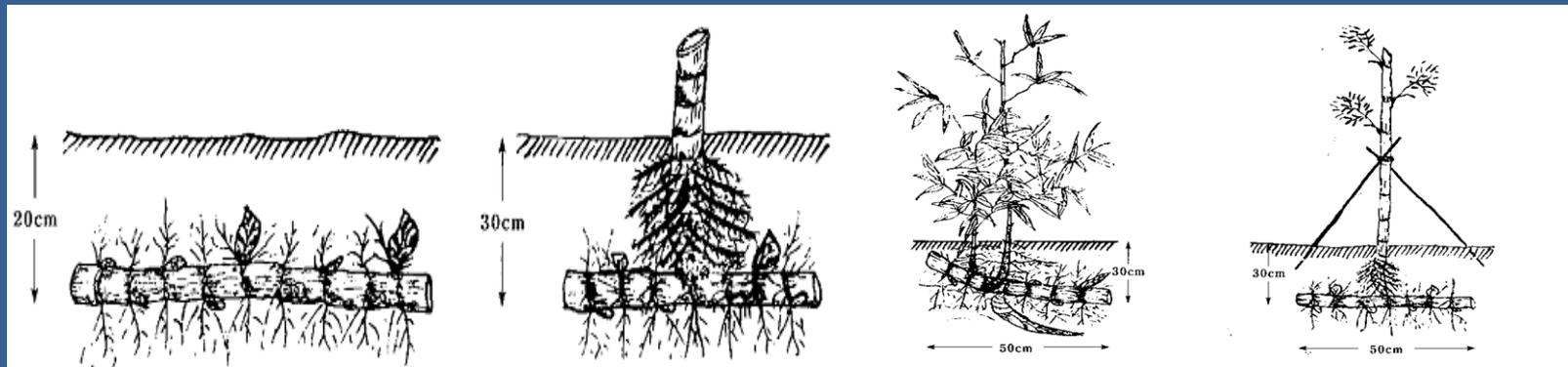


2. Knowledge system and skills of Damyang Bamboo Agrosystem

□ Cultivation skill of Damyang Bamboo

- Ideal field: + average temperature 10°C, precipitation +1,000mm
 - Sandy soil, min depth of 60cm, less wind and north-eastward direction
- Management: no interruption to produce bamboo shoot and materials
 - Utilize rice husks for evaporation from the forest
- Plant : Feb to Mar and complete before May.
Harvest season: different per species

□ Method of Bamboo-field building



Whip 鞭近

Root pillar 近柱

Bamboo sprout 竹苗

Mother bamboo 母竹

□ Farming skills, utilizing bamboo

- Farming machinery and tools
- Utilization of byproduct to improve yield rate
 - Traditional soil enrichment technique, utilizing byproducts
 - : bamboo sap is captured with chilled smoke when burnt Bamboo
 - : Sterilization, insecticide, growth rate improvement
 - : Bamboo vinegar, strawberry, rice are utilized for livestock product
 - Bamboo charcoal
 - : excellent for deodorization, removal of metals, water purification and anti-microbial effect
 - : Various application for soil improvement and agricultural adsorbent



3. Bamboo aroma filled culture and social atmosphere of Damyang

□ Community culture

- Village level *Hyangyak* rule managed farmers' cooperation and maintenance of Bamboo-field
- In slow winter season, farmers added extra income, sharing divided work
 - Divided work for craft one who cuts bamboo, one who ties and one who marks the work, etc
 - Community culture in the ritual ceremony and *Hwanggeumdeul* work song



□ Bamboo for construction/landscape and living gadgets



□ Activities of bamboo organizations

- Damyang Bamboo Craft Cooperatives, Korea Bamboo Development Association, Damyang Gungno-tee Association, Damyang Bamboo shoot Producer Association, Bamboo Culture Research Association, Damyang County Handicraftsman Association
- Cooperatives of KIAHS Damyang Bamboo-tree
- Korea Bamboo Museum, Bamboo Resource Research Institute of Damyang

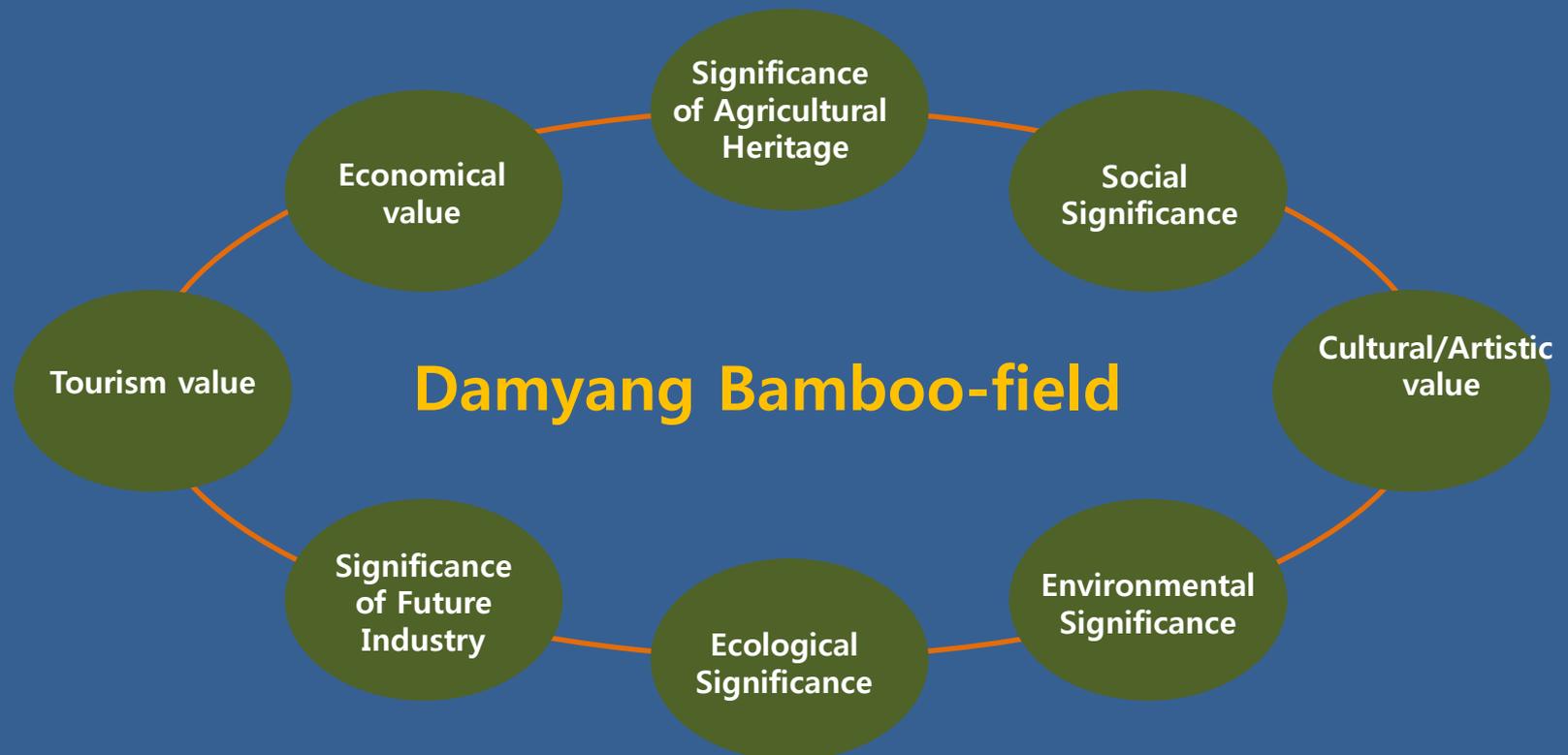


III. Bamboo Oriented Future of Damyang

1. Modern significance of Damyang Bamboo Agrosystem
2. Threats and challenges for Damyang Bamboo
3. Efforts for FAO GIAHS acknowledgement and designation
4. Plans for preservation/management of Damyang Bamboo Agrosystem

1. Modern significance of Damyang Bamboo Agrosystem

- Further utilization of Damyang Bamboo-field is in demand for various scope of ecology, environment, culture, art, medicinal purpose, industry and tourism
 - Environmental species against climate change/ cultural art material, expressing artist's constancy and holy/various medicinal effects from amino acid, fatty acid and inorganic components
 - Utilized in everyday life of food, advanced bio, food, textile, construction and landscape in addition to bamboo craft



□ New Bamboo Industry of Damyang County

- Home of Korean Bamboo, Damyang is going thru transition period from traditional Bamboo industry to New Industry with following detail.
- Bio Industry: Utilize Bamboo leaf, stem, root, vinegar, sap, charcoal
 - Outstanding outcome in eco-friendly farming environment, food and medicinal area
 - Medicinal effect of Bamboo is applied for health-food
- Food Industry: Utilize for Bamboo leaf tea and various drinks
- Textile Industry: Ongoing studies for bamboo utilization on building interiors
 - Biggest Bamboo charcoal production facility situated in Damyang
 - Improved applications scope of bamboo with soju filtration and bamboo charcoal for floorings
- Bright future for Bamboo New Industry: large corporations partake in researches in semiconductor, biotechnology, health food and construction material area

2. Threats and challenges for Damyang Bamboo

□ Threats

- Standstill status of Bamboo-field size
- Disappearance of human resources in bamboo field
- Bamboo-field damages due to development projects

□ Challenges

- Expand the bamboo-fields
- Propelling the bamboo related 6th industry

Primary industry

- Systematic management of Bamboo-field for production increase
- Produce bamboo products of native plants and fungus

Secondary industry

- Processed food production from bamboo trees and bamboo shoot
- Expand the utilization of bamboo vinegar, charcoal, etc
- Development expansion of processed food and product

Tertiary industry

- Vitalize bamboo craft
- Expand bamboo tourism resource thru Bamboo Theme Park
- Multilateral application in tourism sector thru Bamboo Festival and International Bamboo Exhibition, etc

- Expand environment-friendly agriculture, utilizing bamboo-field resources
- Succession and development of bamboo crafts

3. Efforts for FAO GIAHS acknowledgement and designation

□ Designation of Korea Important Agricultural Heritage System(KIAHS) Damyang Bamboo Agrosystem in June 2014

- Background - High level of contribution in local economy development
 - Plantation, establishing preservation/management strategy and multilateral utilizations means
- Further management direction
 - Establish and subsidize systematic preservation/management strategy
 - Aims to develop rural area and income increase for farmers

□ Juknokwon Bambooforest Garden

- 22.5ha size landmark for bamboo-forest eco-tourism Damyang
- Improves value of Bamboo-forest and set the model of management/cultivation of Bamboo

□ Korea Bamboo-tree Museum

- Opened in 1981 for conservation, exhibition, demonstration, selling and direct hands on experience the Bamboo tree tourism resource



□ Development of Bamboo tourism contents

- The 18th Damyang Bamboo Festival: launched in 1999



- Damyang International Bamboo Exhibition
 - 1.04 million visitors enjoyed the 45 day event from September 17, 2015
 - Held the 10th, International Bamboo Forum(320 experts from 40 countries)
 - Promoted concept 'Damyang = Bamboo' and significance of economy/ ecology
 - Improved regional value 'Eco City Damyang, Environment-friendly City Damyang!'



□ Bamboo Research Center

- Target: effective management of Bamboo-field and systematic industry
- Current status: field researchers searches for the advanced bio-industry base building
 - : large scale thinning project for neglected bamboo-forests from 2010
 - : 26 ongoing projects to develop items from Bamboo leaf

□ Bamboo-field preservation project with local residents

- Bamboo shoot localization, collaborating with Bamboo Production Project Group
- Resume *Jukchwiil Day*
- Promote bamboo value for students with 'Jukjuk Dream Day'(November 11) Festival
- 'KIAHS Damyang Bamboo Cooperatives' to promote high value added production
- Multilateral efforts of resident capacity building workshop and guide book provision



4. Plans for preservation and management of Damyang Bamboo Agrosystem

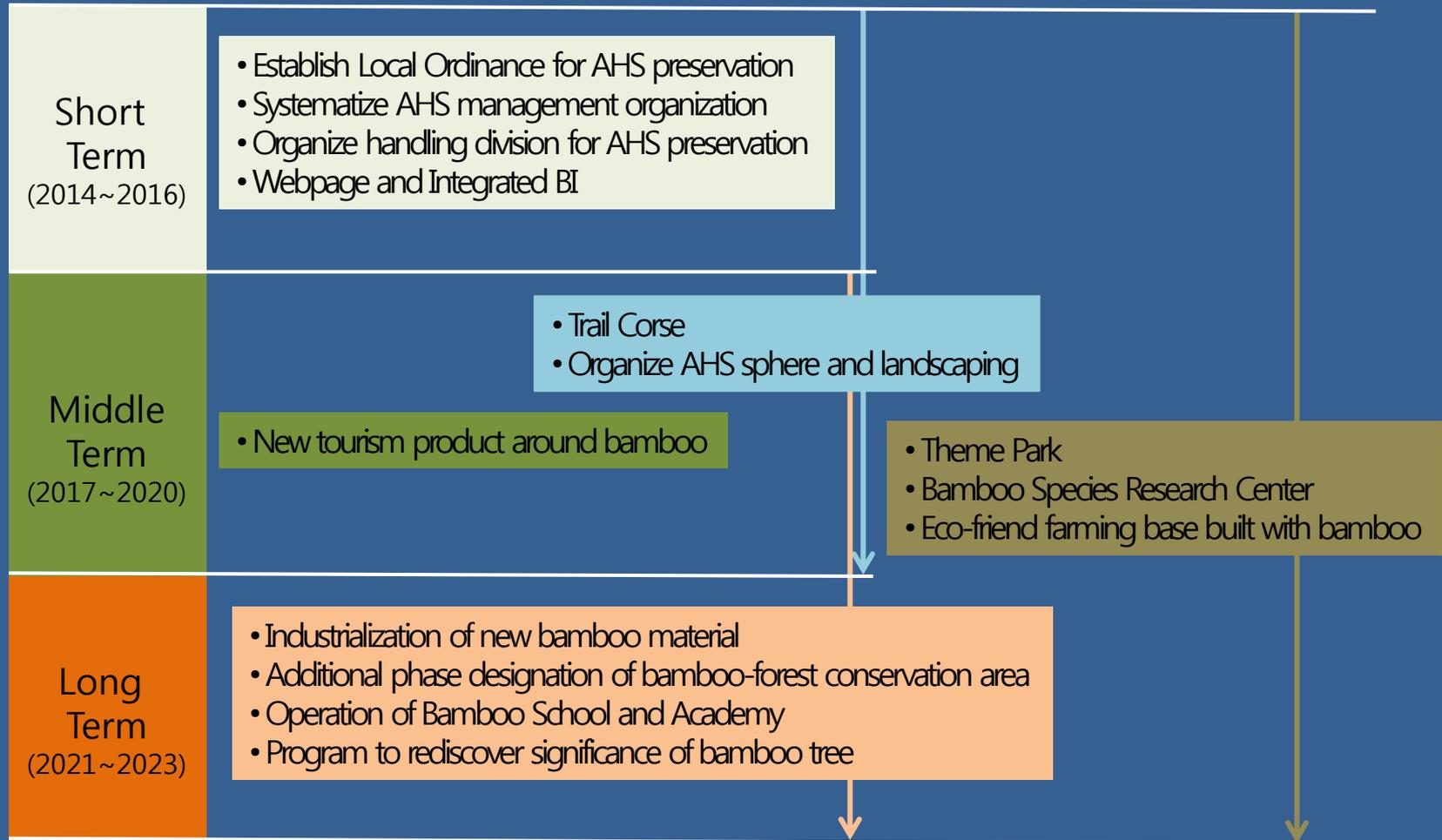
Vision	Vitalize regional economy and realize Eco-tourism city Damyang thru preservation/management/utilization of Damyang Bamboo-fields
Target	Sustainable preservation and management system for AHS & Systematic utilization for eco-tourism city establishment
Project	<ol style="list-style-type: none"> 1. To establish AHS preservation and management system 2. To expand acknowledgement level for Damyang Bamboo-field 3. To propel the sound utilization strategy for Damyang Bamboo-field

Core strategy

Action plan

1. Heritage area maintenance and utilization base establishment	→	<ul style="list-style-type: none"> • Organize AHS sphere and landscaping • Establish Local Ordinance for AHS preservation and management
2. Systematize AHS management organization	→	<ul style="list-style-type: none"> • Systemize administrative division for AHS preservation and management • Organize handling division for AHS preservation, management and utilization
3. Establish education system on AHS	→	<ul style="list-style-type: none"> • Operation of Bamboo School and Academy • Program to rediscover significance of bamboo
4. 3D promotion for AHS	→	<ul style="list-style-type: none"> • Webpage and Integrated BI • Brochure and booklets on AHS
5. The 6th Industrialization of bamboo related scope	→	<ul style="list-style-type: none"> • Industrialization of new bamboo material • Eco-friend farming base built with bamboo
6. Improve the significance of AHS	→	<ul style="list-style-type: none"> • New tourism product around bamboo • Bamboo Species Research Center • Additional phase designation of bamboo-field conservation area

□ Phased Plans for preservation and management of Damyang Bamboo Agrosystem



Thank you!