



Korea Important Agricultural Heritage

Damyang Bamboo Agrosystem

Damyanggun County

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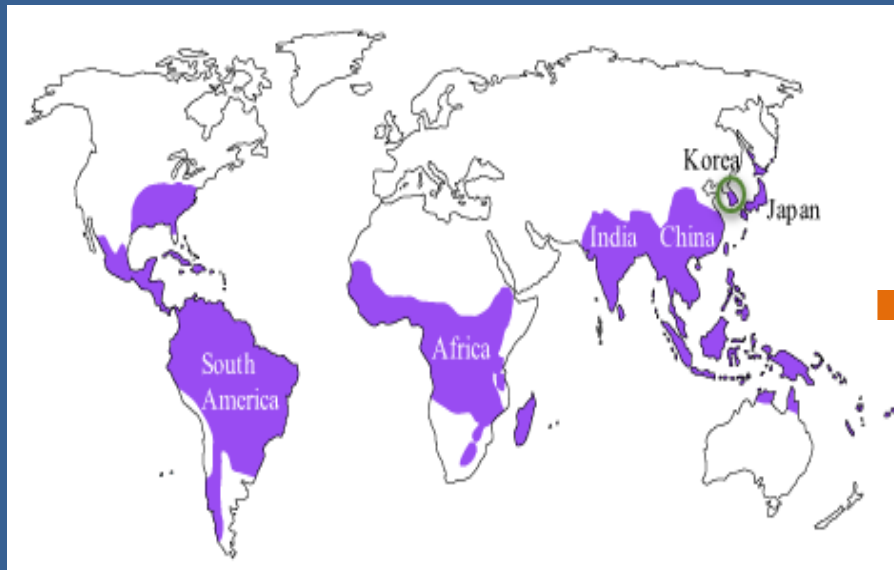
1. Modern significance of Damyang Bamboo Agrosystem
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I . Damyang Raises Bamboos...

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

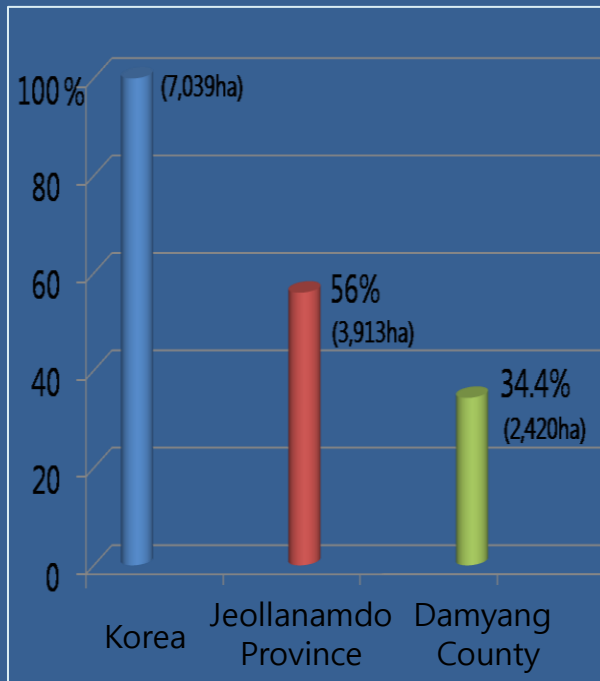
- Ideal climate for bamboo cultivation
 - Annual average temperature: 14.2°C
 - Annual precipitation: 1366mm
- Rich soil area surrounded by windshield mountains and Youngsan River



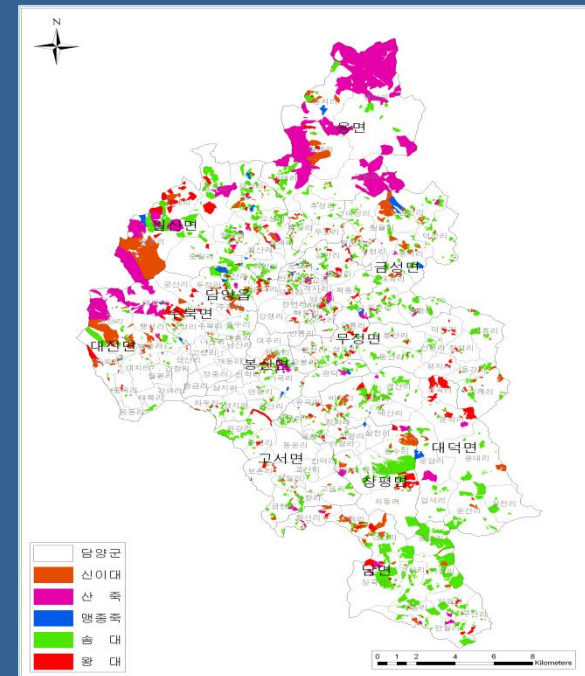
<Global Bamboo Distribution and Bamboo-field Boundary in Korea>

□ 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)

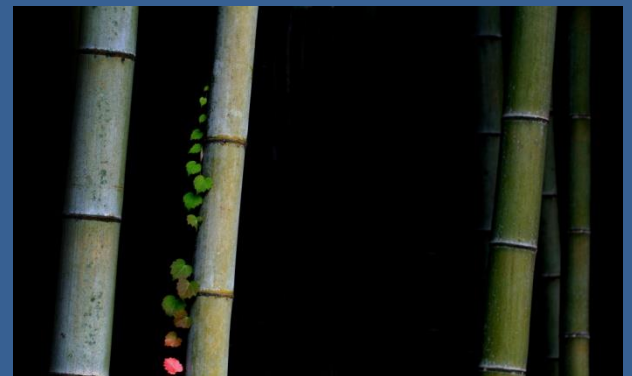
4. Four distinctive seasonal landscape of Damyang Bamboo-field

Harmonious landscape,
embracing rural villages

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

Micro landscapes
in Bamboo-field

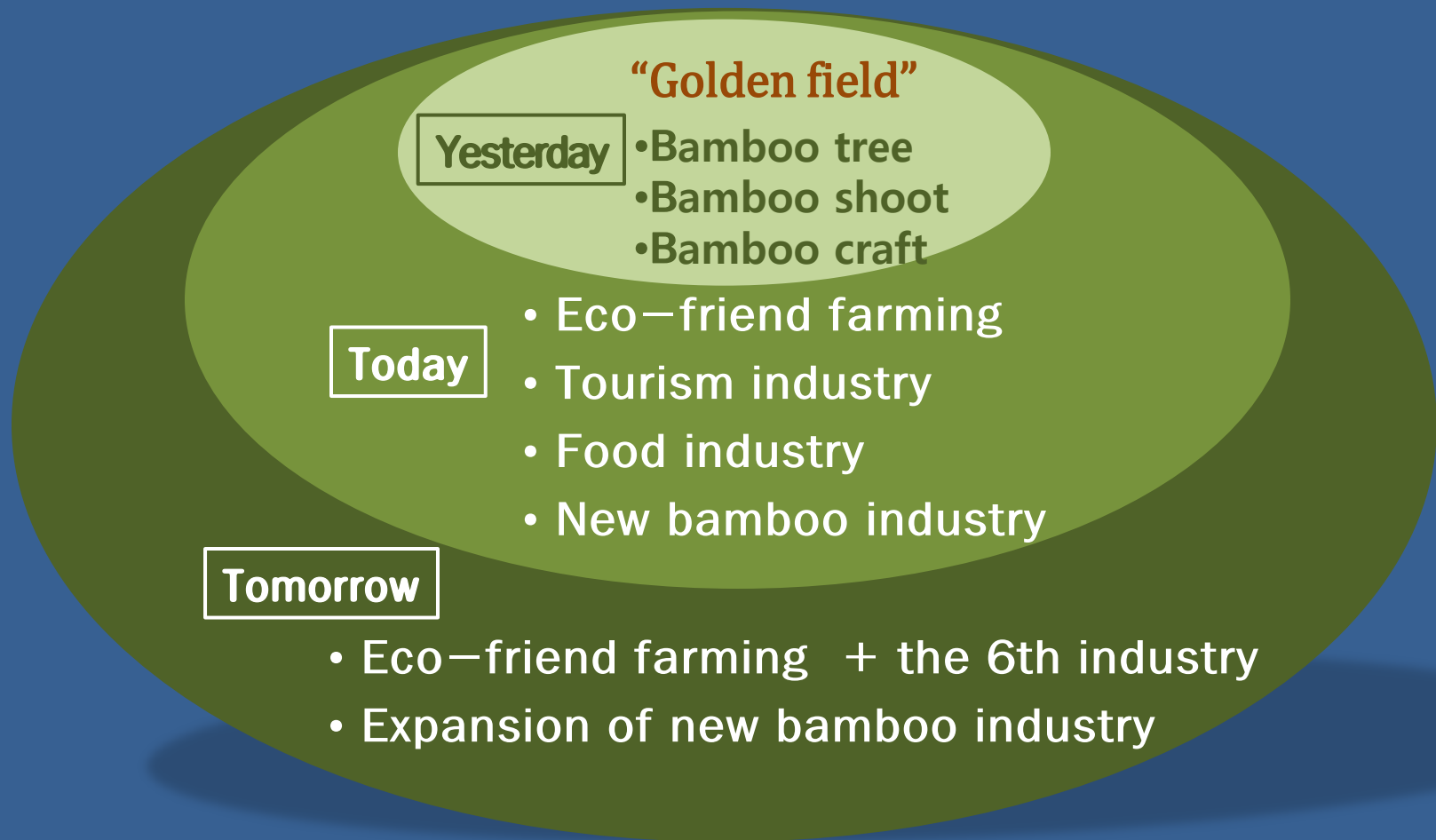




II. Bamboo Raises Damyang

1. Bamboo referred as 'Money Tree', Bamboo-field as 'Field of Real Gold'
2. Knowledge system and skills of Damyang Bamboo Agrosystem
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■ 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

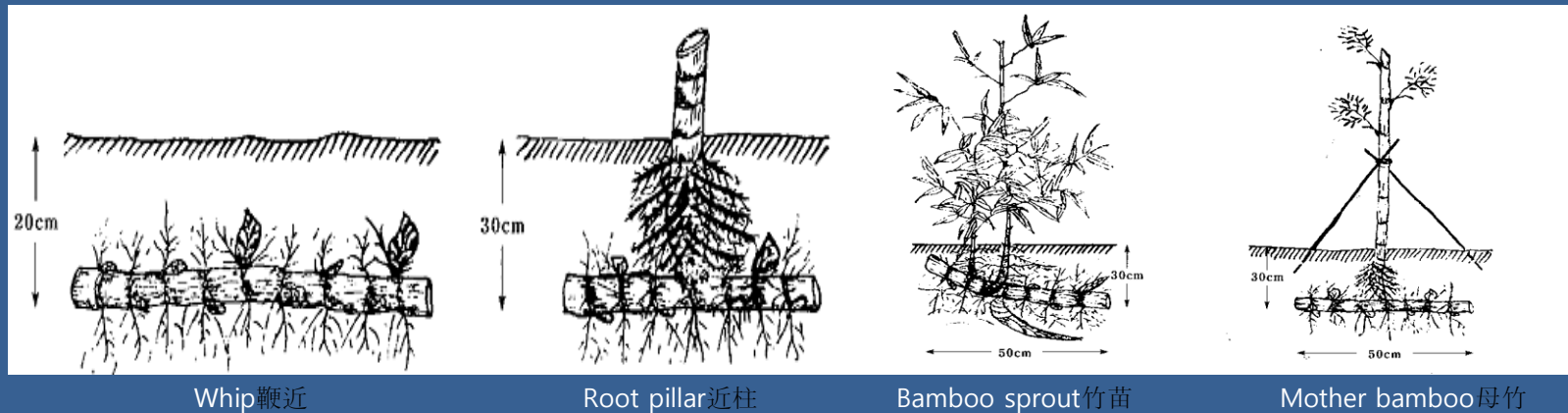


2. Knowledge system and skills of Damyang Bamboo Agrosystem

□ 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



□ 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



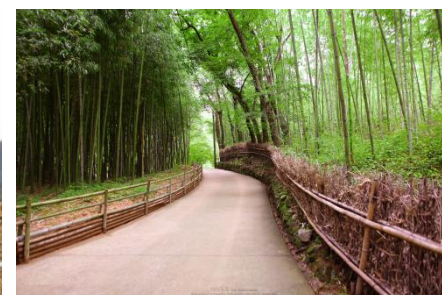
3. Bamboo aroma filled culture and social atmosphere of Damyang

□ 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

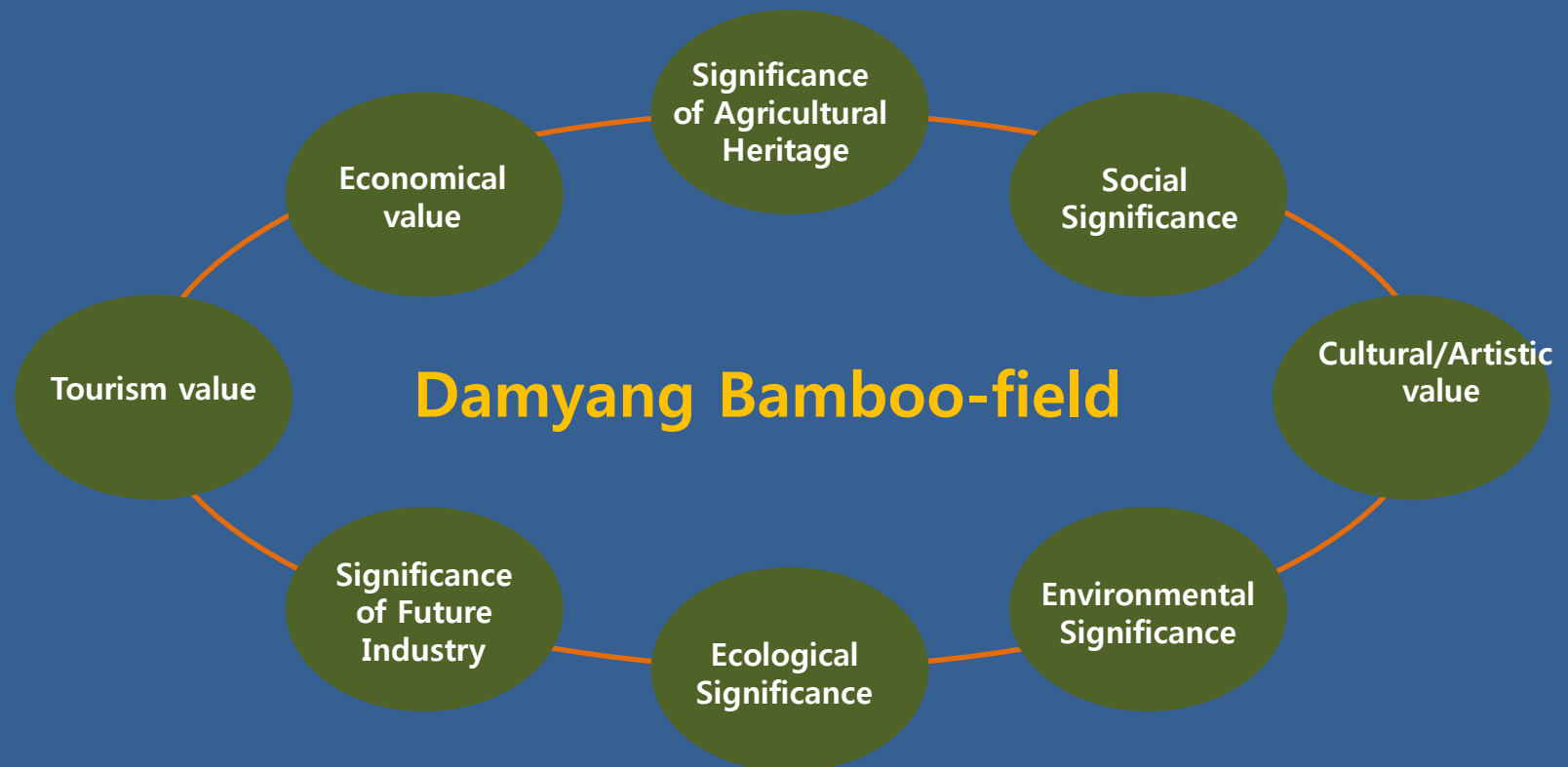


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1. Modern significance of Damyang Bamboo Agrosystem

- 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

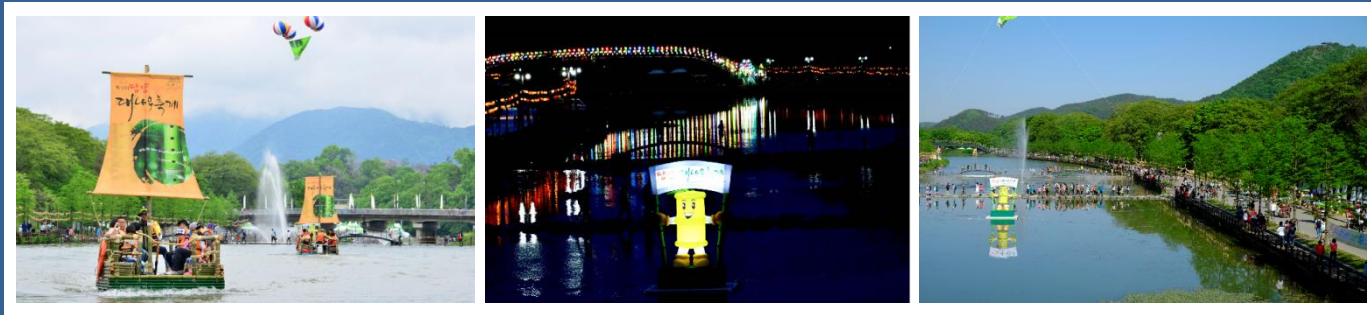
□ Korea Bamboo-tree Museum

- 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

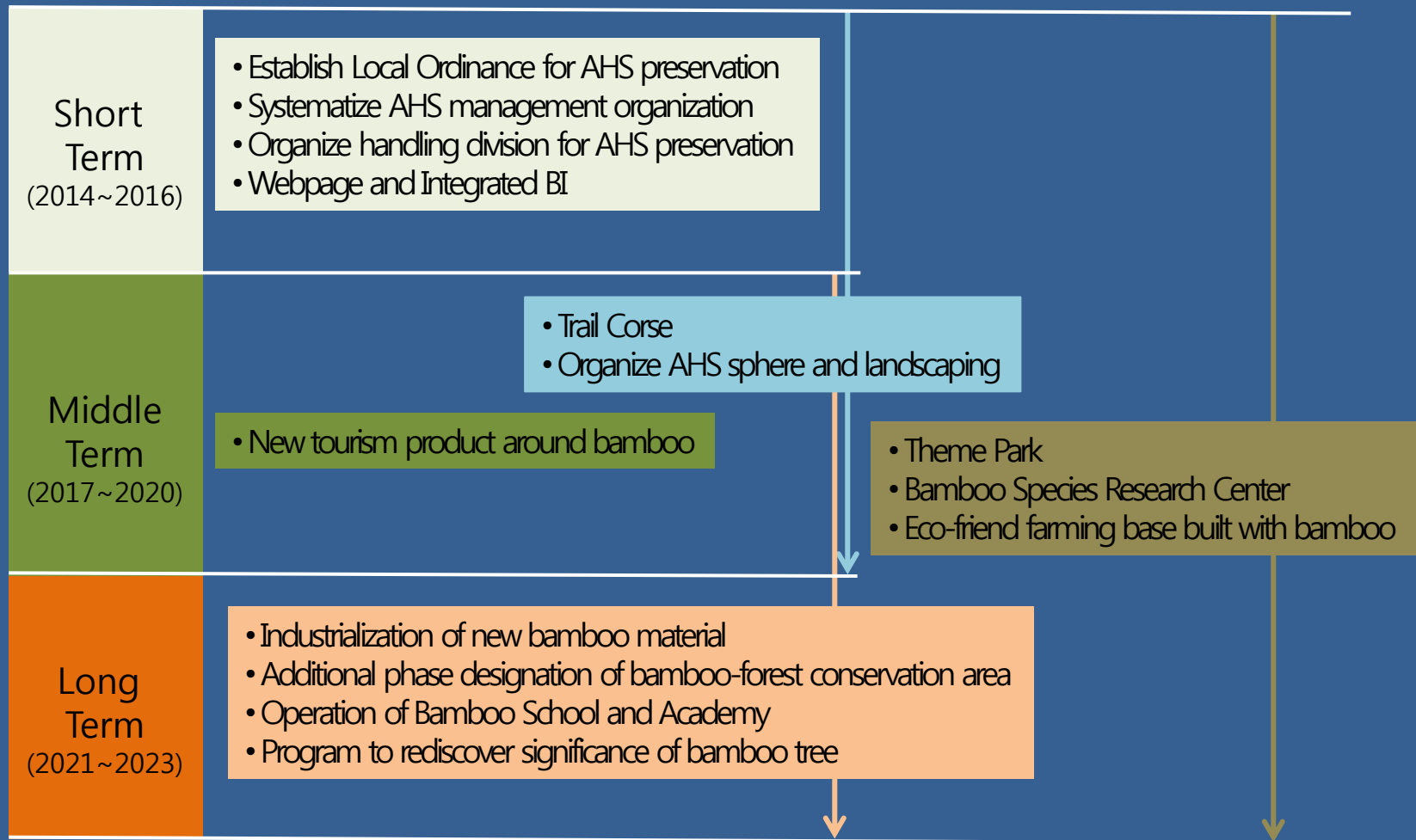
Vision	Vitalize regional economy and realize Eco-tourism city Damyang thru preservation/management/utilization of Damyang Bamboo-fields
Target	Sustainable preservation and management system for AHS & Systematic utilization for eco-tourism city establishment
Project	<ol style="list-style-type: none"> 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!