



HOKKAIDO
UNIVERSITY

How to Create Sustainable Campus Assessment System

ICU
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小篠隆生

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Area: 178 ha

Floor Space: 740,000 m²

Population: 22,000 (18 000 students, 4 000 staffs)



■ Spatial structure



Central Mall



Historical Building and Open Space



poplar avenue, farm and the mountain



Gingko Avenue



■ Public Space



Information Center , terrace



Recreation area

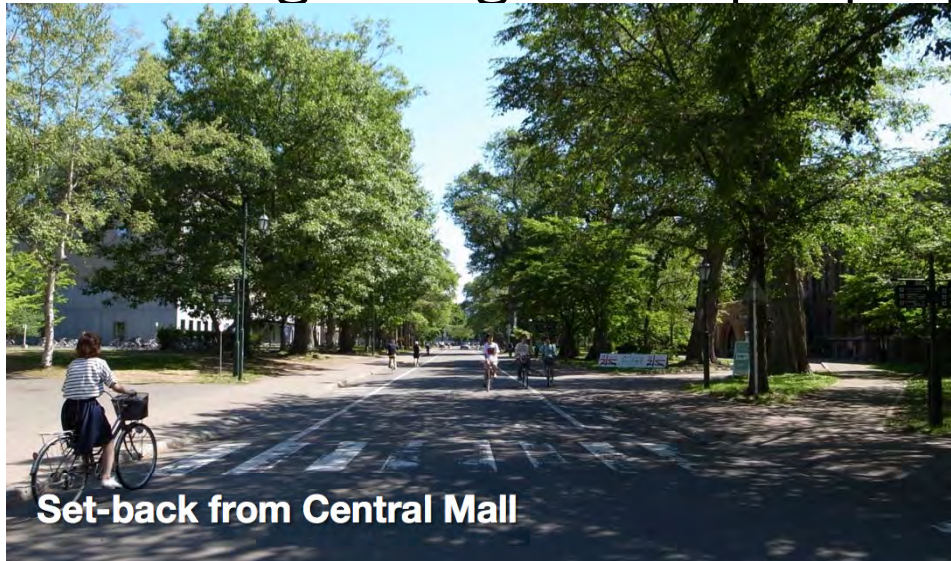


Waterfront



Central lawn

■ Building setting for campus people



Set-back from Central Mall



Faculty house



Wood deck of University museum



Studio of Architectural Course



■ Correspondence and relation with society, community



University hospital



Playground for children



Symposium



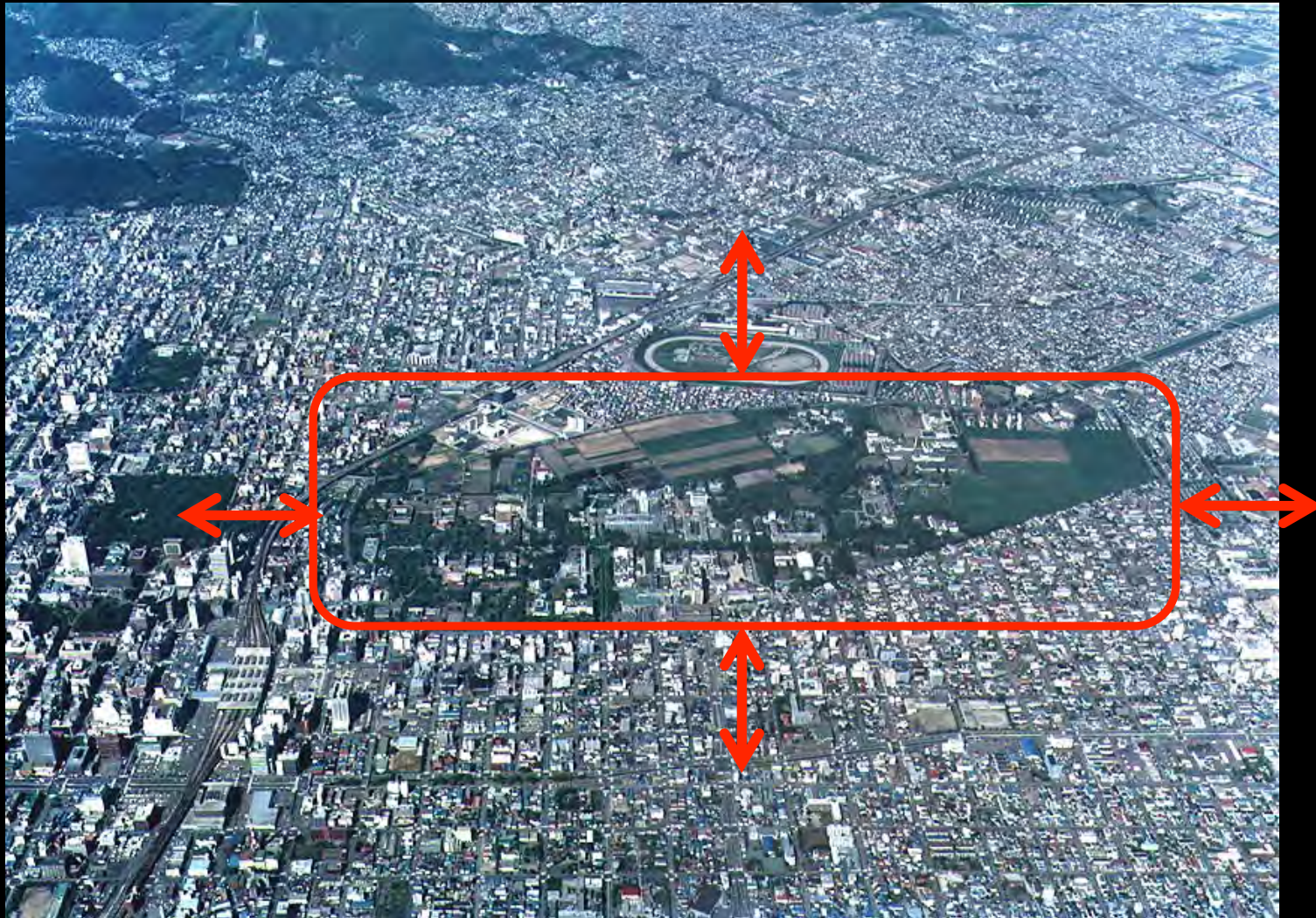
Farmers Market



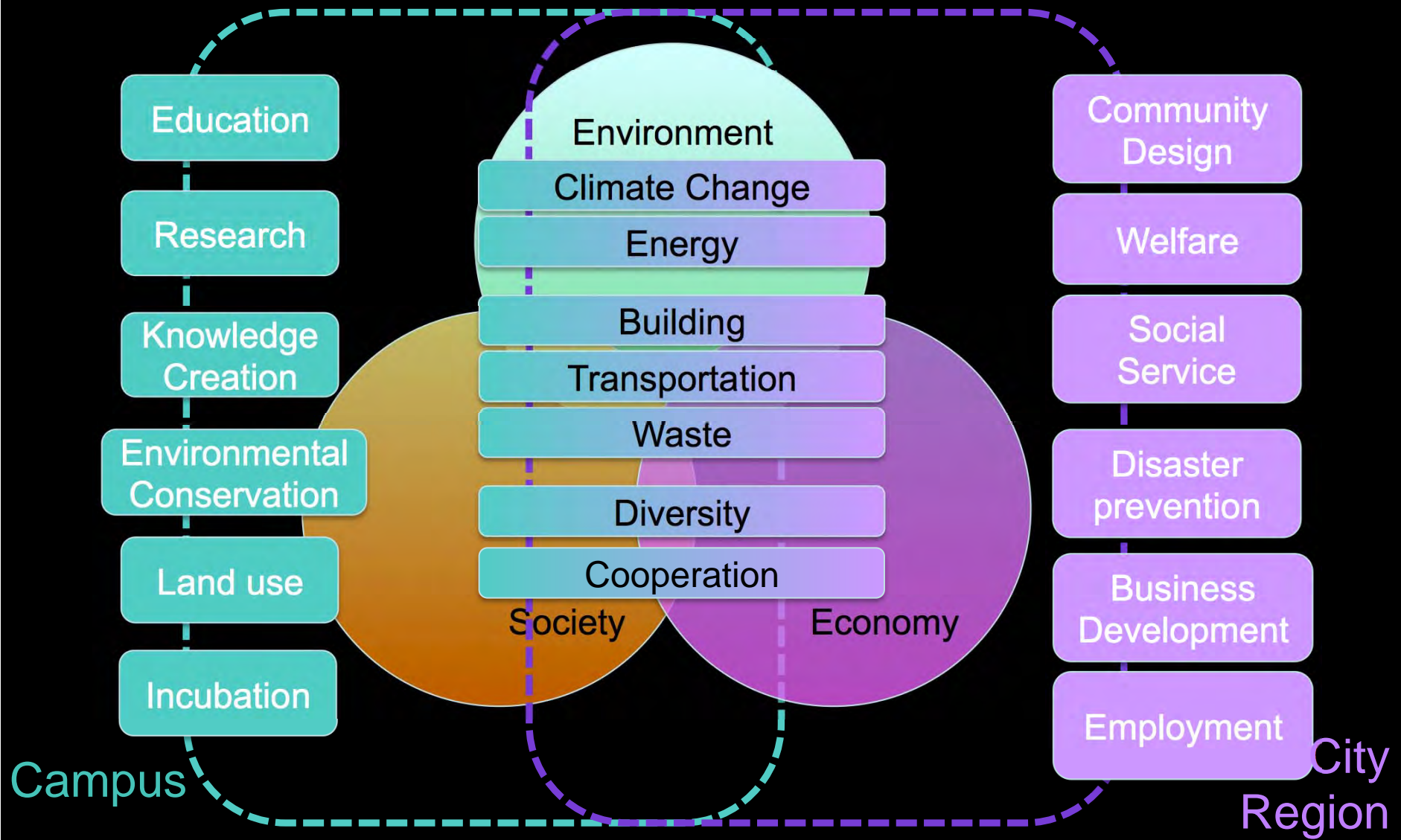
■ Matching for Future development

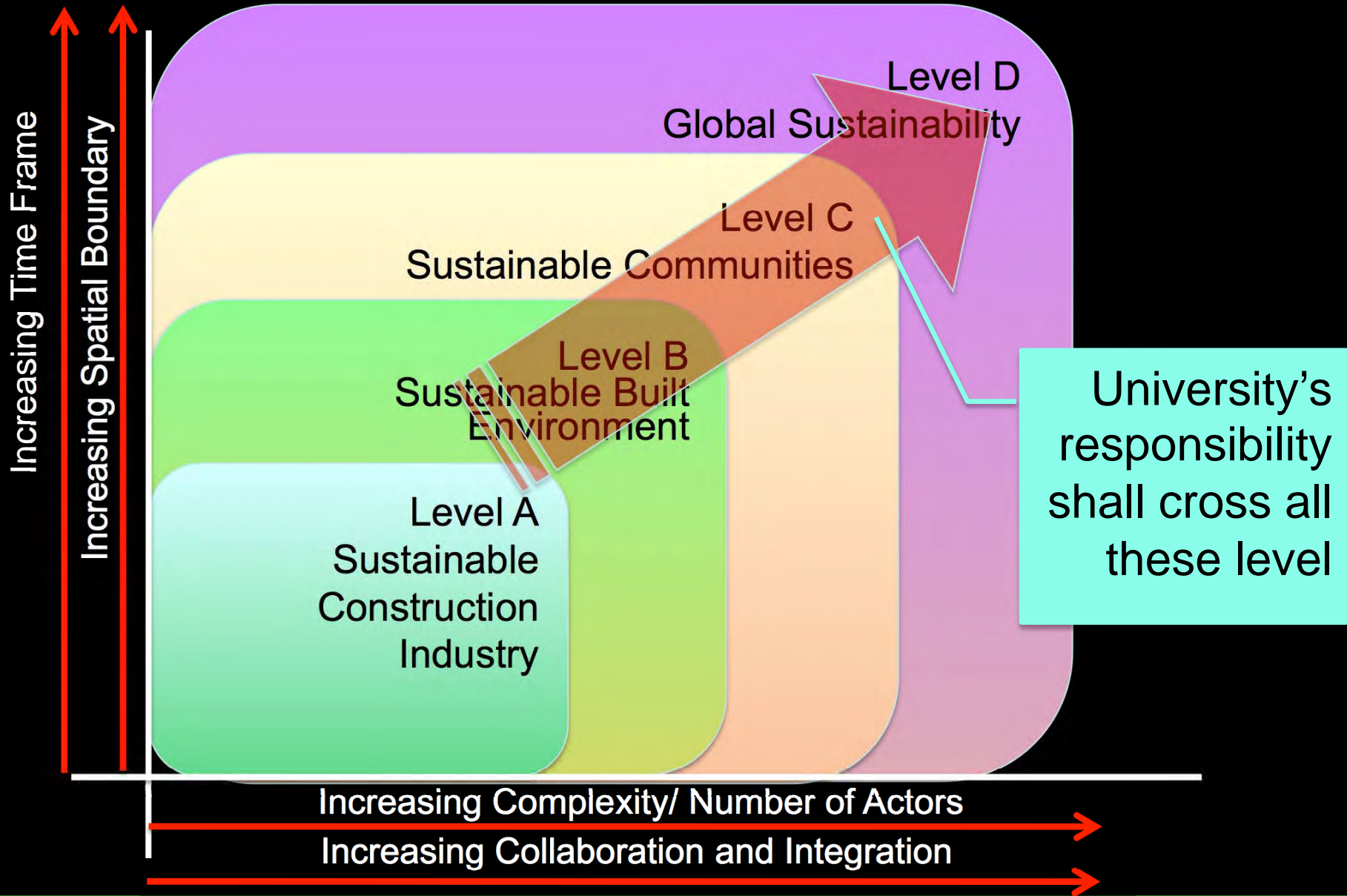


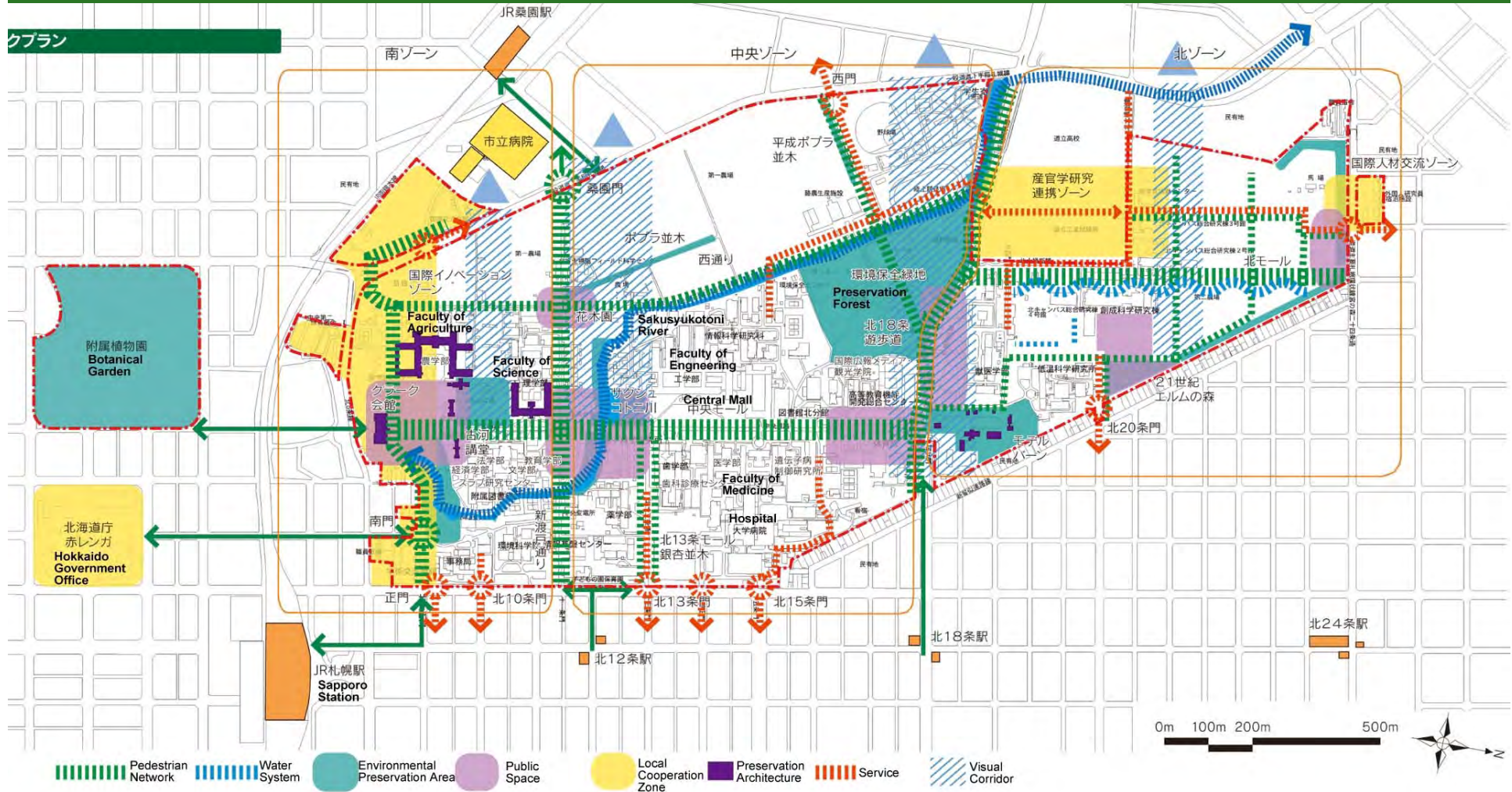
- Need for good relationship between campus and city



What is Sustainable Campus



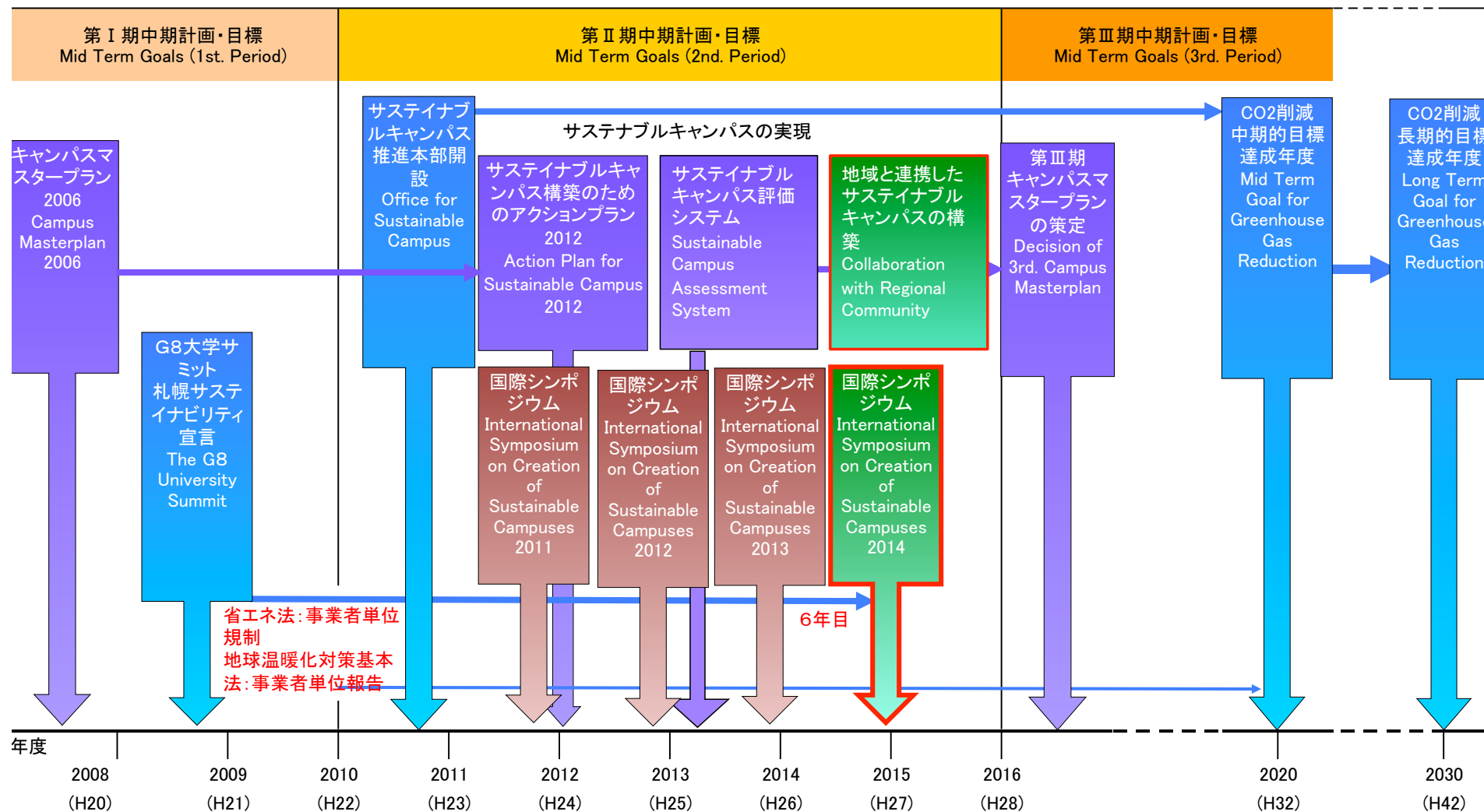


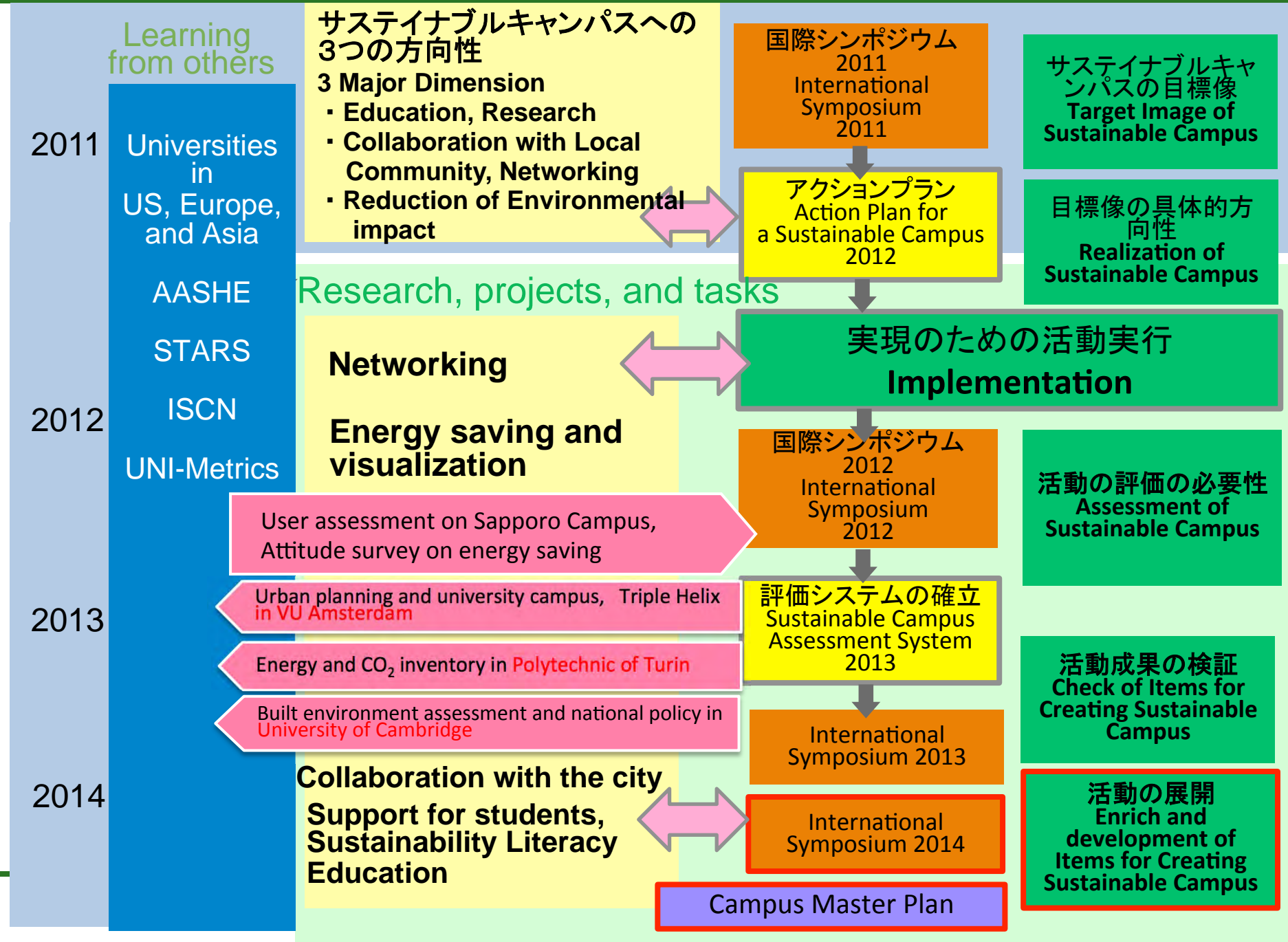


Basic concept
for our sustainable campus

- Preservation of resources
- Lower environmental impacts
- Living Laboratory
- Students and staffs involvement







International Comparison of Existing System

	Organization	Region	Participants	Version	Characteristic
STARS	AASHE	Northern America and Canada	666	2.0	1) Self- assessment system 2) Introduce good practices 3) Lead toward achievement better results 4) common assessment indicator 5) The tool for better understanding of comprehensive sustainability
UNI-Metrics	Politecnico di Torino Vrije Universiteit Amsterdam University of Cambridge Hokkaido University		4 (Research Project)		Objective area of assessment is both campus and surrounding community
UI GreenMetric World University Ranking	University of Indonesia	Aisa, Europe, U.S.	178	3.0	There is deflection of physical categories. This system is totally ranking system.
College Sustainability Report Card	Sustainable Endowments Institute	U.S., Canada	over 300	4.0	Using existing indicators which are consist of environmental report Easy to refer to how to create sustainable campus
Green League	People & Planet	England	152		There are four classes. Totally ranking system This system puts special emphasis on environmental policy.

AASHE: Association for Advancement of Sustainability in Higher Education



Representative data collection, assessment system and organization in the world

- 2007 College Sustainability Report Card (U.S.)
- 2007 Green League – People and Planet (UK)
- 2007 International Sustainable Campus Network (EU + U.S. + Asia)
- 2008 Princeton Review Green Rating (U.S.)
- 2010 AASHE STRAS (U.S. + Canada)
- 2010 UI Green Metric Ranking (Indonesia)



Evaluation Factor	STARS	Uni-Metrics	UI GreenMetric World	College Sustainability Report Card	Green League	Total	
Condition(Planning and administration)	3			1	2	6	2.1%
System		4		5	2	11	3.8%
Physical Element	22	35	27	28	35	147	51.2%
Activities	30	21	6	12	24	93	32.4%
Other (Purchasing, Diversity and Affordability, Hralth, Well-Being and Work, Innovation, Endowment Transparency, Fairtrade & Ethical Procurement)	19			4	7	30	10.5%
Total	74	60	33	50	70	287	100.0%

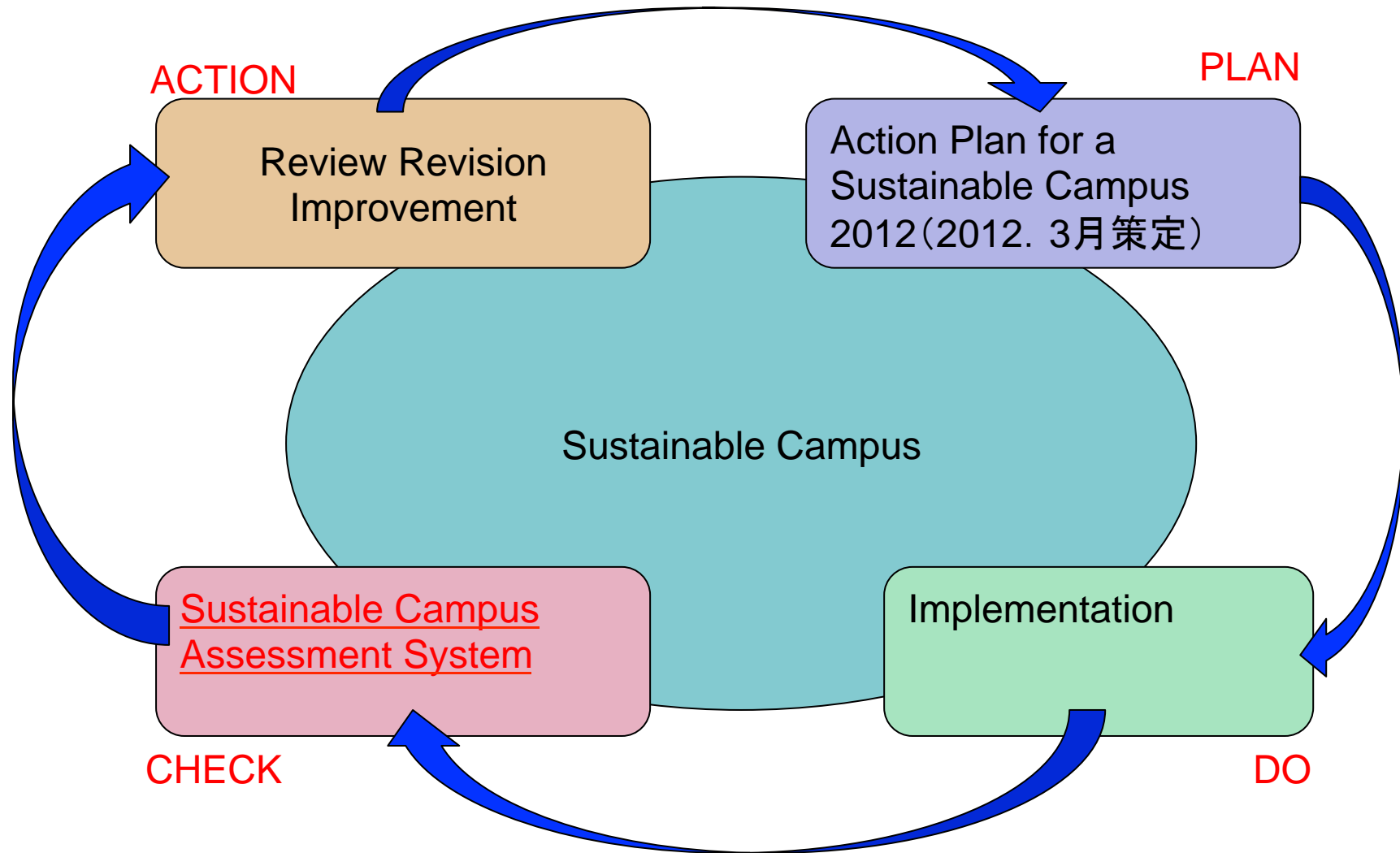


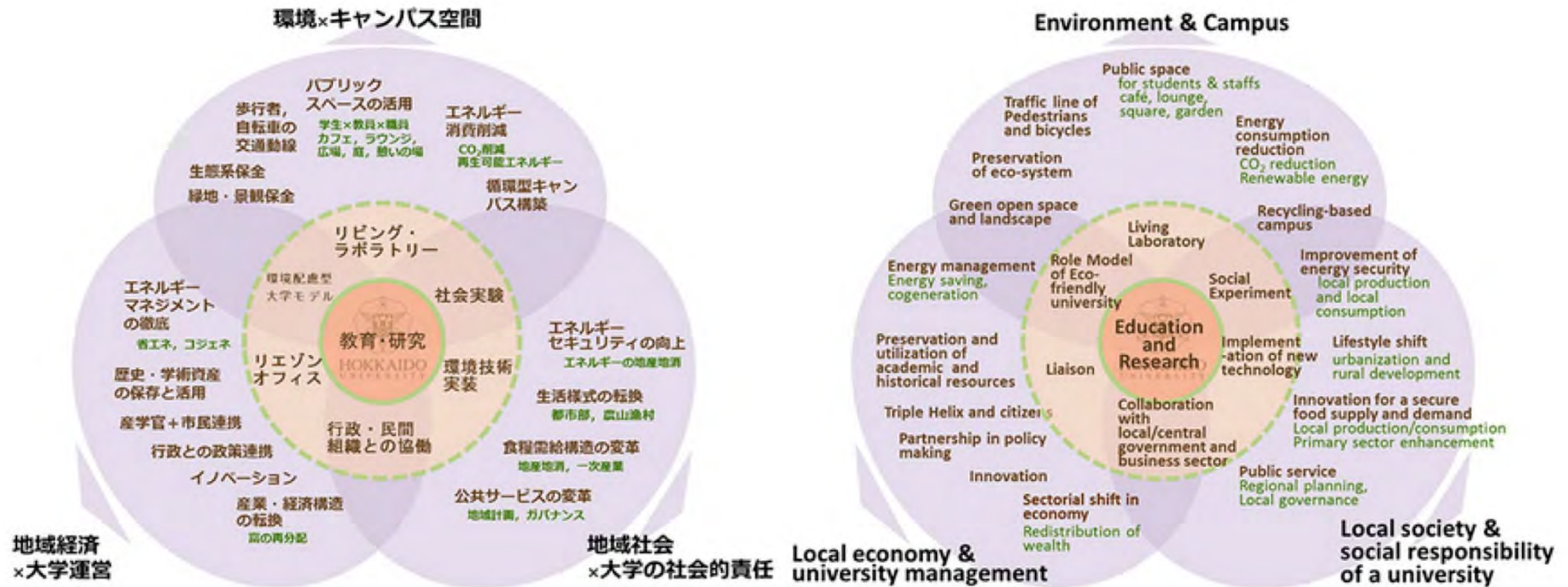
Evaluation Factor	Indicator	STARS	Uni-Metrics	UI GreenMetric World University Ranking	College Sustainability Report Card	Green League
Condition	Planning and Administration					
	C1 Sustainability Policies	●			●	●
	C2 Sustainability planning	●				●
	C3 Governance	●				●
System	S1 Sustaibility Office and Staff		●		●	
	S2 Sustainability Website		●	●	●	●
Physical Element	Air and Climate					
	P1 Greenhouse Gas Emissions Reduction	●	●	●	●	●
	Buildings					
	P2 Design amd Construction	●	●	●	●	●
	P3 Operation and Maintenance	●	●		●	
	P4 Campus Density		●			
	P5 Histriacal Architecture's Quality		●			
	Energy					
	P6 Building Energy Consumption	●	●	●	●	●
	P7 Renewable Energy (usage policy, Generation, Purchase)	●	●	●	●	●
	Grounds					
	P8 Conservation of Vegetated Area	●	●	●		
	P9 Biodiversity	●				●
	P10 Preserved Existing Area		●			
	P11 Connected Green Area		●			
	P12 Community's Memories		●			
	P13 Open Space Area		●	●		
	Transportation					
	P14 Commute Modal Split	●	●	●	●	●
P15 Bicycle Program	●	●	●	●	●	
P16 Accessibility to the public transportation		●		●	●	
Waste						
P17 Waste Minimization, Recycling	●	●	●	●	●	
Water						
P18 Water conservation	●	●	●	●	●	
Food & Recycling						
P19 Organic and Sustainability Produced Food		●		●	●	
Activities	Education					
	A1 Academic Course	●	●	●		●
	A2 Campus as a Living Laboratory	●	●			
	Research					
	A3 Academic Research	●	●	●		
	A4 Sustainability Research Funding	●	●	●		
	Campus Engagement					
	A5 Student Organization	●		●	●	●
	A6 New Student Orientation	●			●	
	A7 Internships/Outreach Opportunities	●			●	●
	A8 Employee Education Prigram	●				●
	Public Engagement					
	A9 Community Partnerships	●			●	●
	A10 Continuing Education	●	●			
A11 Empower Private and Public Sector Collaboration		●				
Investment						
A12 Sustainable Investment	●	●		●	●	
A13 Community Investment				●		
A14 On-Campus Sustainability Projects				●		

- Contained more than half system
- Newly setting indicator
- Continuosly using indicator

Sustainable Campus Assessment System

- For implementation of action plan, all stakeholders related university need to ready for action
- Evaluation of progress of implementation





ここから記入を開始してください / Start from here

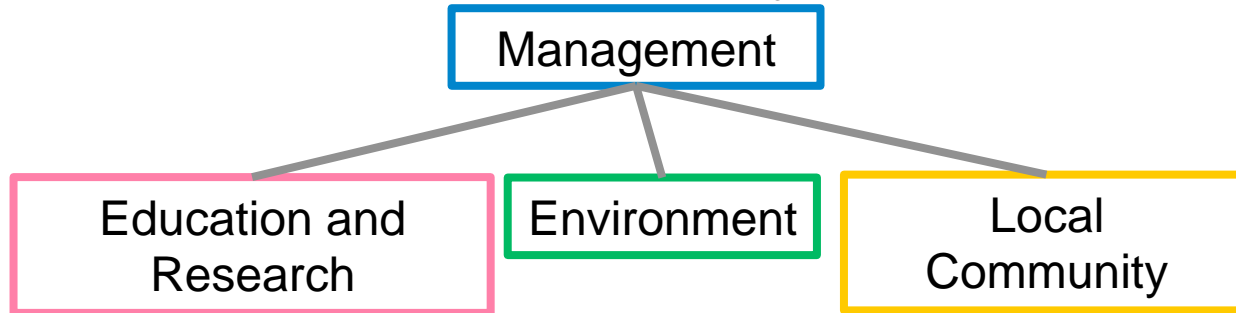
1. 下記から、貴学の考えるサステナビリティの概念にあてはまるキーワードにチェックをつけてください。そのほかのキーワードや明文化された定義がある場合は自由記入欄に記載ください。
1. Please tick all items which match the concept of sustainable campus your institution has. If your ideas are not listed or if you have an official definition of the concept, please describe it in the text box below.



Sustainable Campus Assessment System (ver.2)

4 categories

*Policy, strategy,
and plan for
whole university*



<u>Number of criteria (ver. 2)</u>	
Management	43
Education and Research	16
Environment	77
Local community	34
Total	170

Holistic: Criteria cover holistic activities of the university.

General: to be adopted to universities in Japan/Asia.

Guiding: to help the university develop their future strategy.
to show their strengths and weaknesses in each field.

What is component of sustainable campus?
First step for creation of common understanding

Understanding of character of own university
and creating strategy

- Preferential Question**
- Overall Plan
 - Organization for management
 - Recruiting talent
 - Funding



Presence of specific activities

Indicators List

43 indicators

I Management	I-1 Policy and overall plan	I-1-1 Education and research
		I-1-2 Campus
	I-2 Organization to consider sustainability	I-2-1 Dedicated staff
		I-2-2 Activities
		I-2-3 Mechanisms to support policy decisions
	I-3 Financial resource management	I-3-1 Long-term planning
		I-3-2 Securing budgets and acquiring funds
		I-3-3 Operations
	I-4 Asset management	I-4-1 Community utilization of university assets
		I-4-2 Servicing of university assets
	I-5 Facility management	
	I-6 Network to enhance sustainability	
	I-7 Personnel training	I-7-1 Faculty evaluation
		I-7-2 Recruiting talent
	I-8 Procurement and contracts	I-8-1 Procurement
		I-8-2 Contracts

III Environment	III-1 Ecosystem	
	III-2 Land	III-2-1 Green space and forest land
		III-2-2 Other open space
	III-3 Public Space	
	III-4 Landscape	
	III-5 Waste	
	III-6 Energy and resources	III-6-1 Energy management
		III-6-2 Greenhouse gases
		III-6-3 Renewable energy
		III-6-4 Other resources
	III-7 Basic Equipment	
	III-8 Facilities	III-8-1 Environmental performance
		III-8-2 Indoor environment
	III-9 Transportation	III-9-1 Flow planning
		III-9-2 Pedestrians and cycling
		III-9-3 Connecting with the local community
III-10 Use of historical assets on campus		

77 indicators

16 indicators

II Education and Research	II-1 Education	II-1-1 Curriculum
		II-1-2 Sustainability Literacy
	II-2 Research	II-2-1 Sustainability research
		II-2-2 Living lab
		II-2-3 Practical community research
	II-3 Students	II-3-1 Encouraging and supporting student activities
		II-3-2 Student participation in university management

34 indicators

IV Local Community	IV-1 Collaboration between industry, academia, and government	
	IV-2 Community service	IV-2-1 System
		IV-2-2 Activities
	IV-3 Dissemination of Information	
	IV-4 Disaster prevention	IV-4-1 Disaster prevention inside the university
		IV-4-2 Disaster prevention in the local area
	IV-5 Role of university after strike	IV-5-1 Continuity of university's function (BCP-Business Continuity Plan)
		IV-5-2 Support for local community

I Management

Category	Field	Section
I Management	I-1 Policy and overall plan	I-1-1 Education and research
		I-1-2 Campus
	I-2 Organization to consider sustainability	I-2-1 Dedicated staff
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	I-5 Facility management	
	I-6 Network to enhance sustainability	
	I-7 Personnel training	I-7-1 Faculty evaluation
		I-7-2 Recruiting talent
	I-8 Procurement and contracts	I-8-1 Procurement
I-8-2 Contracts		

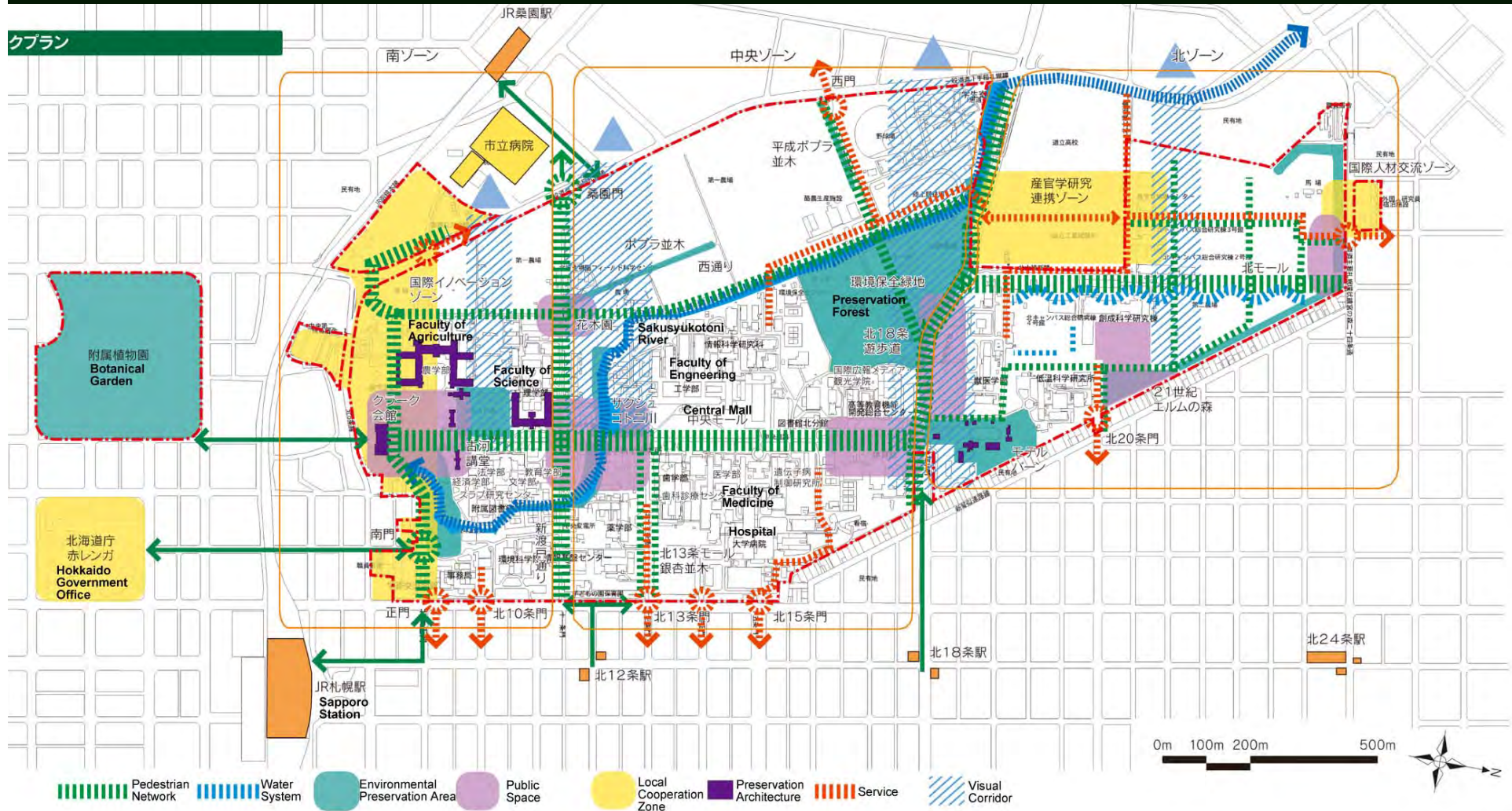
I-1	Policy and overall plan	I-1-1	Education and research	1	Is there an overall plan and policy for education and research on sustainability?
		I-1-2	Campus	2	Is there a Campus Master Plan with reference to sustainability?
				3	Does the master plan contain policies and schemes to construct a sustainable energy system?
				4	Does the master plan contain policies and schemes to enhance sustainability of the university besides energy issues?
		I-2-1	Dedicated staff	5	Is there a sustainability office and a coordinator?
				6	Are faculty and staff being educated about sustain
					Are there education programs for sustainability or

Campus Master Plan
- Sustainable energy system
- Other sustainability issues

- Is there a **Campus Master Plan** with reference to sustainability?
* Does the master plan contain policies and schemes to construct a **sustainable energy system**?
* Does the master plan contain policies and schemes to **enhance sustainability** of the university **besides energy issues**?

		I-2-3	Mechanisms to support policy decisions	12	Is there a permanent committee that makes policy decisions related to the university's sustainability?		
				13	Is there a system to evaluate the progress of the overall plan?		
I-3	Financial resource management	I-3-1	Long-term planning	14	Is there an operation policy and secure funds for long-term development of a sustainable campus with regards to education and research funds, university administrative costs, and overall university resources?		
				I-3-2	Securing budgets and acquiring funds	15	Has sustainability been specifically set as a budgetary expense?
						16	Are national funds for sustainability being acquired?
		17	Are private funds for sustainability being acquired?				
		18	Are international funds for sustainability being acquired?				
		I-3-3	Operations	19	Are internal funds of university for sustainability being guaranteed? E.g. space charging, carbon credit purchase.		
				20	Are investments being made in relation to the environment and sustainability? And are impact assessments for these investments being made?		
				21	Is there a research fund allocation system in place especially for exploratory sustainability research?		

Campus Master Plan 2006



Campus Master Plan
 Facilities Department (Task Force, Working Group)
 Sustainable Campus Assessment System
 Revision

I-4	Asset management	I-4-1	Community utilization of university assets	22	Is the community utilizing the university's facilities on all campus?
				23	Is the infrastructure of the university utilized among local community? (e.g. green area, evacuation sites, etc.)
				24	Are historical assets being preserved, opened to public, and are the information on the assets being disseminated in around the entire university?
				25	Are there environmental policies and campus development plans to be carried out in conjunction with the local community and environment?
		I-4-2	Servicing of university assets	26	Are public-private partnerships and fixed-term leases being utilized to maintain the university's environment?

- Is ***the community utilizing*** the university's ***facilities*** on all campus?
- Are ***historical assets*** being preserved, opened to public, and are the information on the assets being disseminated?
- Are there environmental policies and campus development plans to be carried out ***in conjunction with the local community and environment?***

I-6	Network to enhance sustainability			33	Has the university created a sustainability network with overseas universities, research institutes, and communities? And is there awareness of movements on the global stage? E.g. OECD, UNESCO, ICN, AASHE
				34	Has the university created a sustainability network with domestic universities, public research institutes, and communities? And is there awareness of movements on the domestic stage?
I-7	Personnel training	I-7-1	Faculty evaluation	35	Is there a mechanism for evaluating researchers' dedication to administrative affairs related to university's sustainability? E.g. Researchers' dedication to administrative affairs like campus eco-system planning, development of campus master plan, utilization of historical assets etc.
				36	Are the results of researchers' work for administrative affairs disseminated to whole university and implemented? E.g. giving incentives like securing posts to those researchers.
		I-7-2	Recruiting talent	37	Is there a system with a flexible means for recruiting talent with competency in sustainability? E.g. Secure contract term, designation to a post which fits his/her professional skills
				38	Is there a career development system to educate personnel who can propose practical solutions/ideas toward sustainability? E.g. Provision of sustainability knowledge, WS, seminar
I-8	Procurement and contracts	I-8-1	Procurement	39	Is green purchasing being employed for office equipment and is there procurement regulation oriented eco-friendly products in overall university? E.g. Local food purchase, Office equipment, cleaning materials, OA papers.
				40	Are contracts being completed based on the contract patterns prescribed in the Green Contract Law? Contract patterns: Electricity purchase, cars, boats, ESCO, facility design
				41	Are environmentally conscious contractors being used? E.g. supplier quality management system
		I-8-2	Contracts	42	Are local contractors being actively used? e.g. food, materials, etc.
				43	Is there a sustainability guideline for goodwill? e.g. social and environmental responsibility of vendors, regulation for vendors which meet the university's sustainability conditions

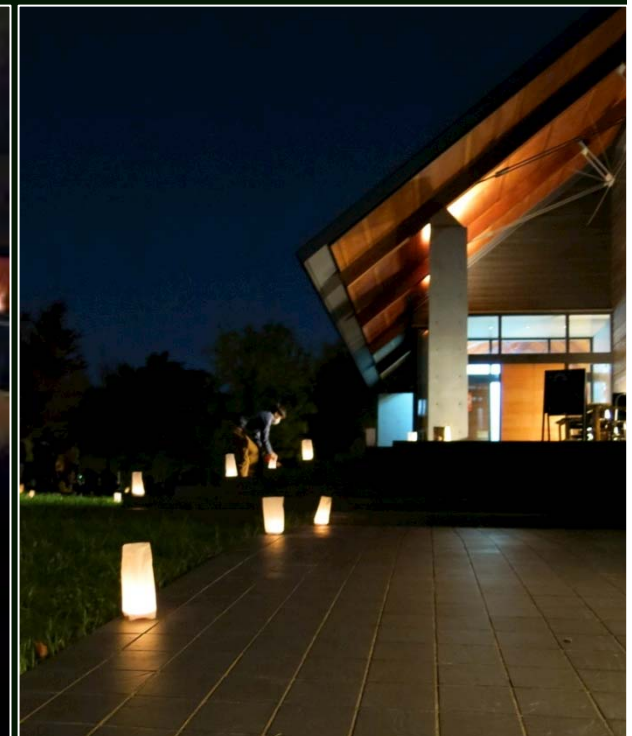
the community utilizing the university's facilities



Model Barn



Café, sustainable lifestyle with firewood



II Education and Research

Category	Field	Section
II Education and Research	II-1 Education	II-1-1 Curriculum
		II-1-2 Sustainability Literacy
	II-2 Research	II-2-1 Sustainability research
		II-2-2 Living lab
		II-2-3 Practical community research
	II-3 Students	II-3-1 Encouraging and supporting student activities
		II-3-2 Student participation in university management

- ✓ **Not mentioning details** of curriculum or research to value faculties' originality.
- ✓ Focusing on **how campus is being utilized** for sustainability education and research (**Living Lab**) and **practical community research**.

	II-1	Education	II-1-1	Curriculum	1	Are there educational programs related to sustainability?
					2	Has the university individually defined "sustainability" and developed a specific curriculum including educational programs, internships, and lectures to which this definition applies?
					3	What is the ratio of sustainability programs and lectures to all?
					4	Is the university providing incentives for this type of curriculum?
	II-1-2	Sustainability Literacy	5	Is sustainability orientation for new students and environmental education for current students being carried out?		
			6	Is the university developing and conducting diverse measures for dissemination of sustainability issues? e.g. Life-long education program s, questionnaire for students.		
	II-2-1	Sustainability research	7	Is the topic of sustainability being researched at the bachelor's, master's, and doctoral degree level?		

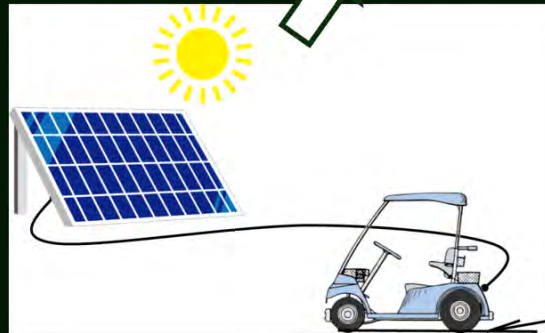
- Is the **campus being used** for sustainability research?
- * Is the university providing **incentives** for this type of research?
- * Are researchers **publishing the results** of these research works?

	II-2	Research	II-2-3	Practical community research	11	Is interdisciplinary research on sustainability being conducted together with the local community?
					12	Is the university providing incentives for this type of research?
					13	Is the achievements from this type of research being disseminated through publications, published up, and implemented in a real society?

- Is the university **supporting students' activities** related to sustainability?
- Does the university **encourage off-campus internships** (related to the environment and sustainability)?
- Are mechanisms being created for **student participation** in overall university's sustainability planning and campus-wide activities?

campus being used for sustainability research

Mobility improvements
for tourists and local people



Organic fertilizer for university farm



leftover from cafeteria
+ livestock manure
(faculty of agriculture)

↓
Compost

↓
University farm

supporting students' activities



Sustainability Awareness

The 4th Sustainable Campus Contest, 2013

organized by Students Council for Sustainable Development

III Environment

Category	Field	Section
III Environment	III-1 Ecosystem	
	III-2 Land	III-2-1 Green space and forest land
		III-2-2 Other open space
	III-3 Public Space	
	III-4 Landscape	
	III-5 Waste	
	III-6 Energy and resources	III-6-1 Energy management
		III-6-2 Greenhouse gases
		III-6-3 Renewable energy
		III-6-4 Other resources
	III-7 Basic Equipment	
	III-8 Facilities	III-8-1 Environmental performance
		III-8-2 Indoor environment
	III-9 Transportation	III-9-1 Flow planning
		III-9-2 Pedestrians and cycling
		III-9-3 Connecting with the local community
III-10 Use of historical assets on campus		

- Is there a **database** in which **flora and fauna** characteristics and distribution on campus are recorded?
- Are there **ecosystem conservation plans**?
 - * Does the plan contain **the strategy** for indigenous ecosystem conservation? (e.g. biodiversity)
 - * Is there **an organization to execute** these plans?
 - * Are the plans' state of **implementation and results** fully understood?

		7	Is there an organization to execute t
		8	Are the plans' state of implementat
		9	Are there green space and forest land m e
		10	Do these plans contain a plan to cop forest land?
		11	Is there an organization to execute these plans?

- Understanding the current situation
- Defining a future plan
- Organization,
- Implementation and monitoring

- Are there **guidelines to build public spaces** inspired by intellectual creativity with humanity and culture in mind?
 - * Are the plans based on these guidelines **being carried out**?
 - * Are the plans' state of **implementation and results** fully understood?
- **open public space** (e.g. square, trail, courtyard)
- **indoor public space** (e.g. Lounge, atrium, café, bar)

		16	Are there guidelines to build public spaces inspired by intellectual creativity with humanity and culture in mind?
		17	Are the plans based on these guidelines being carried out?
		18	Are the plans' state of implementation and results fully understood?
		19	Is the area of open public space inspired by intellectual creativity with humanity and culture in mind fully understood? Is such open area designed in campus master plan? e.g. square, trail, courtyard
		20	Is the area of inner public space inspired by intellectual creativity with humanity and culture in mind fully understood? e.g. Lounge, atrium, cafe, bar
		21	Does the university aim to have a suitable campus that preserves the current design and does everything possible to avoid rebuilding?
		22	Does the university aim to have a campus that takes its surroundings into consideration? (building height, design)

- HU's campus is very open to public
<Important elements>
- Public space
 - Attractive landscape
 - Efficient Transportation inside/outside campus

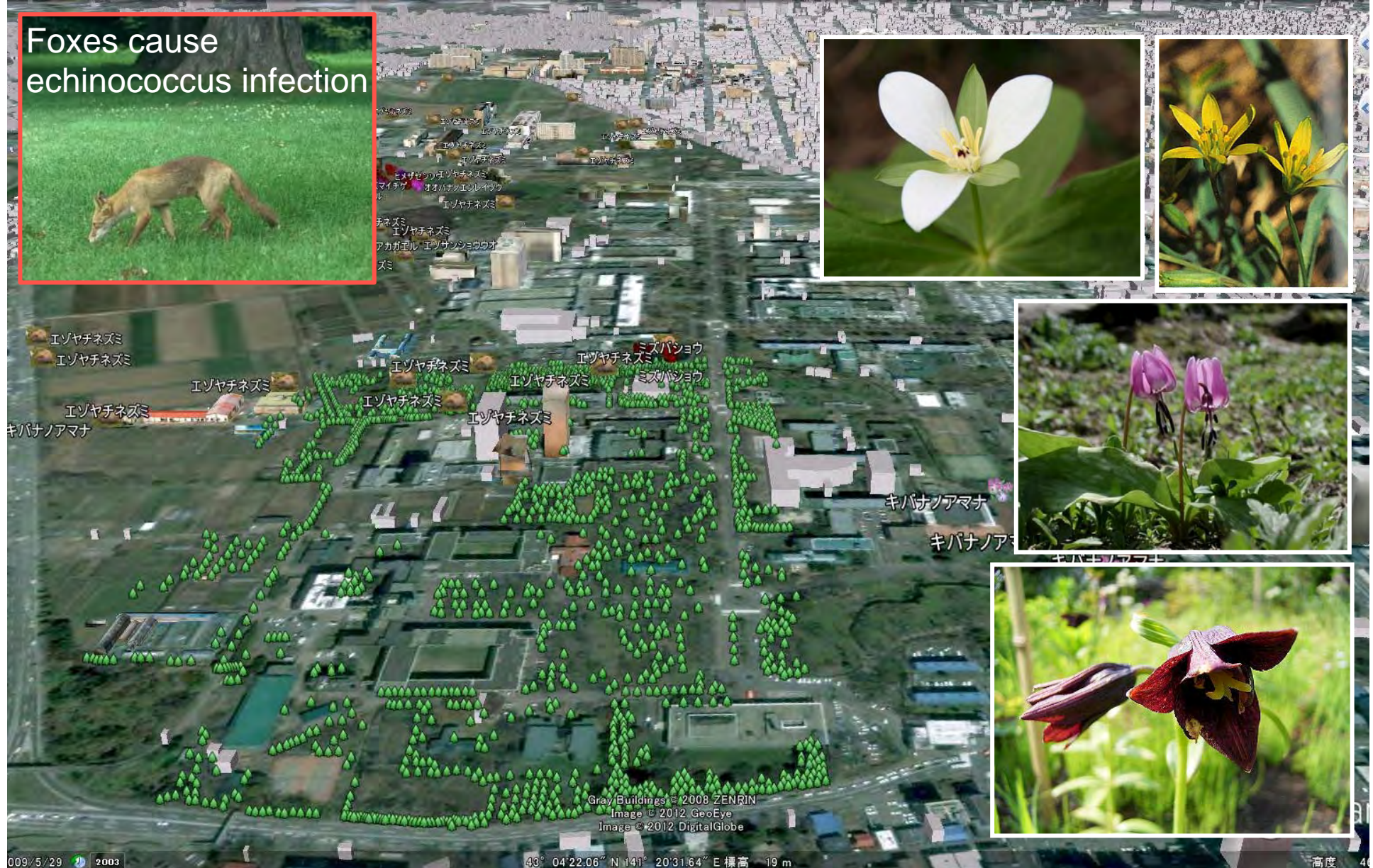
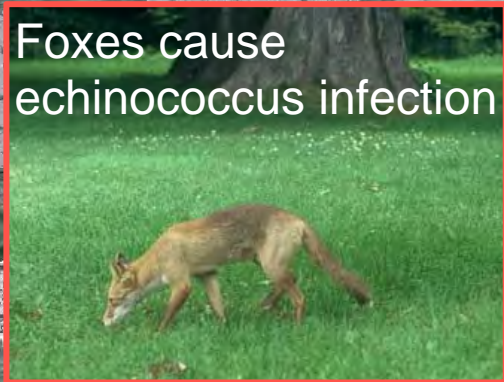
III-3 Public Space

III-4 Landscape

Conservation and disclosure

Indigenous and particular flora and fauna

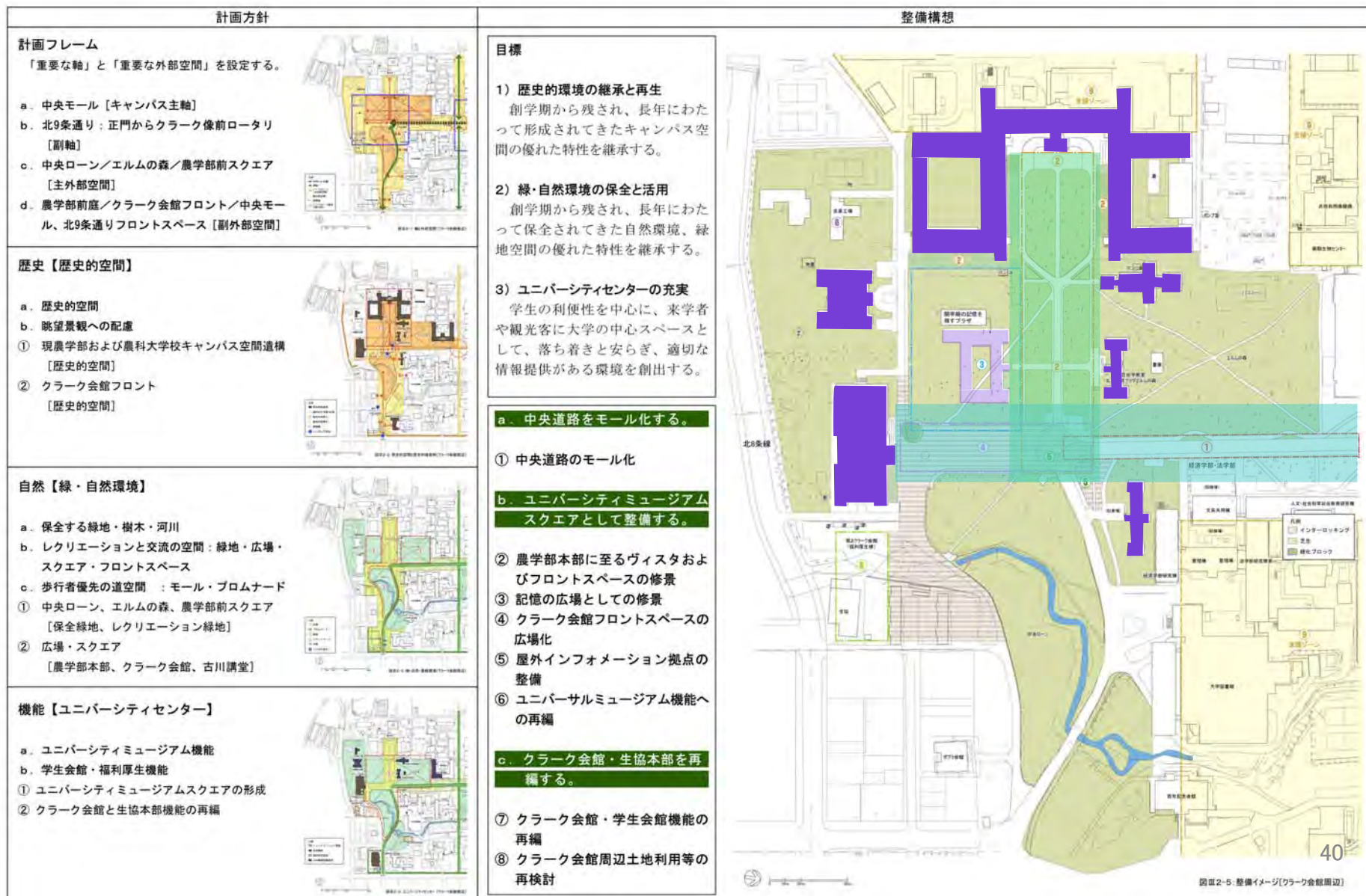
Foxes cause echinococcus infection



Propose to set up public space

Emphasize of historical loan and building setting

クラーク会館周辺は、札幌キャンパスの中心的な場所として位置づけられている。大学創建時からの歴史が、建築および自然環境として残され、札幌キャンパスのシンボル空間となっている。歴史を感じさせる外部空間と豊かな自然環境を中心に、保全と利用を促進し、キャンパスの中心空間にふさわしい「風格ある ゆとりとうるおいの空間イメージ」をクラーク会館周辺パブリックスペース整備の目標とする。



■ Propose to set up public space

- Emphasize of historical loan and building setting

■ 整備イメージ：クラーク会館周辺



open public space



Indoor public space



III-6-4 Other resources	102 Is the university utilizing intermediate water and sewage?
	103 Is the university utilizing rainwater or ground water?
III-7 Basic Equipment	104 Is a food mileage improvement policy being practiced in the cafeterias? E.g. promotion of products from university farms.
	105 Is there an overall plan with an integrated infrastructure design for roads, energy, water supply and sewage network, electricity, and communications?
	106 Is there an organization to execute these plans?
	107 Are the plans' results evaluated?
	108 Is there an overall data of CAD (Computer Aided Design) including the attributes of roads, energy, water supply and sewage network, electricity, and communications?
	109 Is these data being utilized in facility management and energy management?
	110 Does LAN cover all campus?

Energy saving standard+ Implementation

- Are there criteria **for energy-saving designs** in the entire university?
 E.g. efficient allocation of central control and individual control, **quality of insulation**
 * Have the **building areas** that meet these criteria been identified?
 * Is the university **taking incentive** to meet these criteria?
 E.g. financial support for energy-saving designs

III-8 Facilities	III-8-1 Environmental performance	assess newly built buildings in the entire university? And is the target of the grade set?
		115 Is the assessment system defined by MEXT (Ministry of Education, Culture, Sports, Science and Technology in Japan) for carbon reduction, earthquake resistant, out-of-date buildings, built environment, and basis for education and research being adopted to assess existing buildings in the entire university? And is the target of the grade set?
		116 Adding to criteria of MEXT's assessment system, are the criteria below being adopted to assess existing buildings? - Using low impact materials - Controlling lighting/shading - Installing energy consumption monitoring system in each relevant block of rooms/buildings - Installing equipment which enable users to adjust room/building environment (e.g. lighting sensor, LED)
		117 Are the results of CASBEE and MEXT's assessment system reflected in campus management plan at the entire university?
	118 Has seismic index information been used in facility maintenance plans?	
	III-8-2 Indoor environment	119 Is there a target value in the entire university for room temperature, humidity, and carbon dioxide concentration?
		120 Is there an organization to achieve these targets?
121 Are the achievements evaluated?		

Information Center (Environmentally friendly architecture)



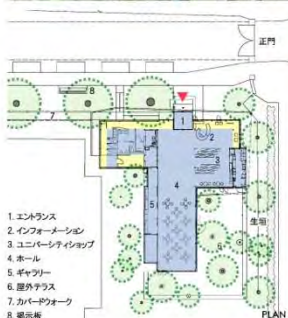
北海道大学の正門横に建つ、インフォメーションセンターである。新しいインフォメーションセンターにふさわしい立地として、大学の玄関口正門横の旧守衛室位置が選択された。都市の幹線道接続するも、学術交流会館と生垣で囲まれた芝生が広がり、ニレ・サクラなどの木々が心地よい木陰をつくる、静けさを感じる敷地である。

- 計画テーマ
- 〈情報とリラックススペースの提供〉
 - 〈学術交流会館との機能連携等、新しい大学の顔づくり〉
 - 〈樹林がつくる緑環境と共生した施設づくり〉



■ 樹林の環境が建築をつくる

プログラムでは、計画地の樹木を残しつつ、約300㎡の施設を整備する。木々の下には光が射し込み、爽やかな風が流れる。既存樹木を保全しつつ、樹林地の心地良さを生かした新しい場をつくる。
地面よりやや高いレベルに床をつくり、フラットルーフを設け、空間を切り取り、光や風をコントロールする。樹林がつくる環境と一体化する。インフォメーション・休憩・グッズショップ等の機能を、開放的なワンルーム・屋外デッキや樹林へと連続する空間として構成している。



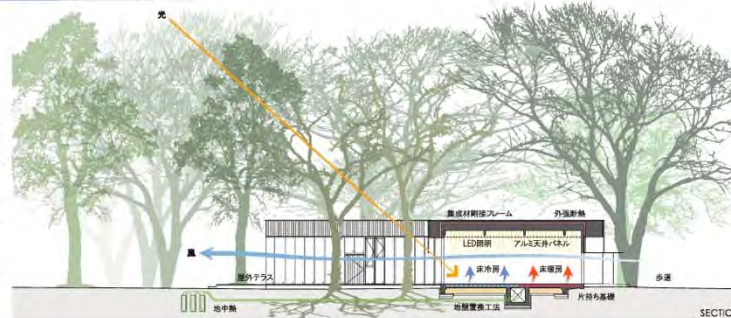
■ 環境共生の建築

正面から続くエルムの並木(新渡戸稲造夫人記念植樹)は、北大の最初の印象をつくる。

〈ファサード〉 浮いた木の縦格子がつくる屈折した壁は、並木と背景の木々との柔らかな関係をつくり、四季の風景を受け止める。正面からの見通しは、背景にある樹林へと導く。

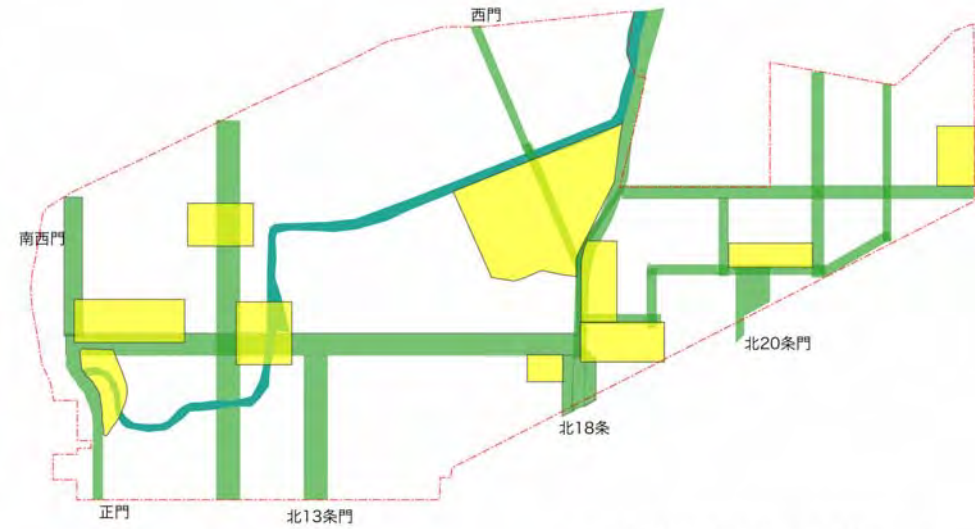
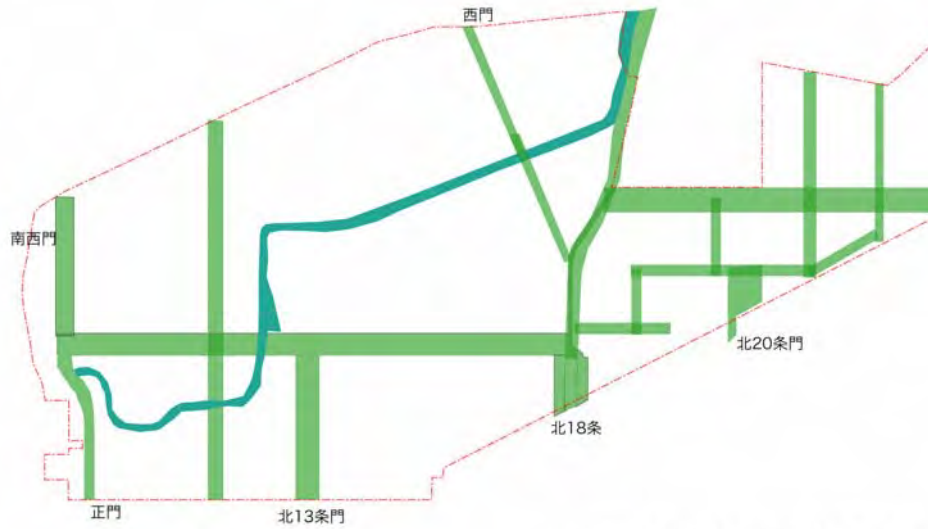
〈インテリア〉 リーフ型を切り取ったアルミパネルの天井と壁に映し出されるシルエットは、背景の樹林風景と同調する。

〈環境技術〉 樹木への影響を最小にする地盤置換工法。地中熱活用の床暖冷房システム。太陽光発電、LED照明を採用している。



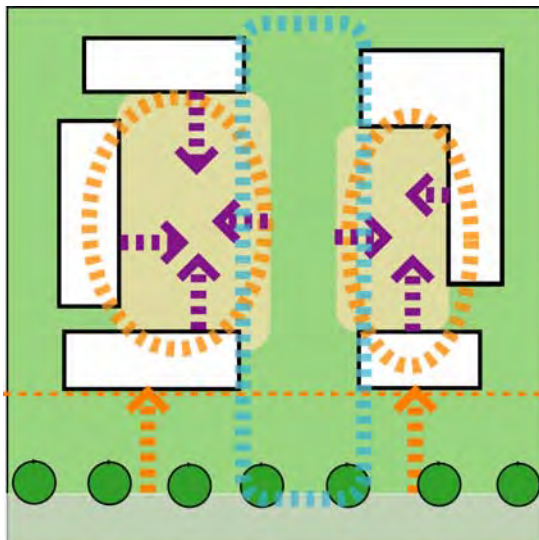
■ Facility Design and Management

● Guide line for building setting



パブリックスペースをキャンパスの骨格軸とし
位置づける

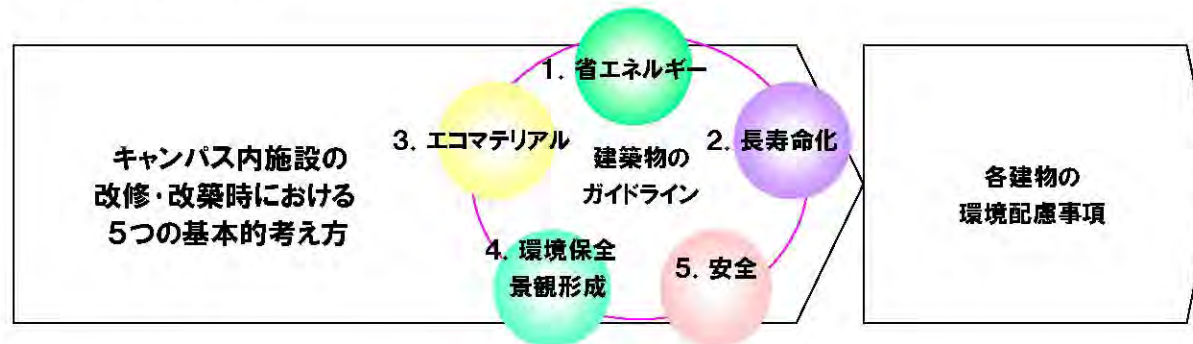
キャンパスの重要なコアとしてパブリック
スペースを位置づける



Facility Design and Management

Guide line for Architecture

サステナブル建築を目指して



サステナブル建築のための5つの柱

Energy saving

1. 省エネルギー

キャンパス全体の環境負荷低減を図るため、室内環境のための負荷要素を低減し、室内温熱環境の質的向上と消費エネルギーの削減、さらに自然エネルギーの有効利用を重視する。

Long life and Flexibility

2. 長寿命化

キャンパスのサステナブルな発展を可能にする、躯体、設備の長寿命化と、経年劣化等の外的要因のみならず、研究内容等の変化に対応するフレキシビリティを確保する。

Eco-material

3. エコマテリアル

キャンパス建築が、環境配慮型建築のモデルとなるような、環境負荷の少ない材料の採用、地場産出資材の積極的な活用を図る。

Environmental Preservation and formation of campus-scape

4. 環境保全・景観形成

キャンパス内自然環境の保全、キャンパス全体の景観形成に寄与する。

Security

5. 安全

学校建築として要求される建物自体の安全性の確保と、研究・実験環境としての安全性の確保

Facility Design and Management

Guide line for Architecture

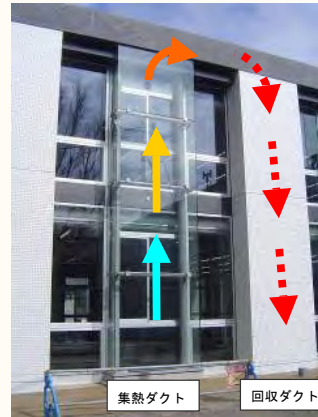
3.1 冬季に熱回収可能なダブルスキン

・夏モード

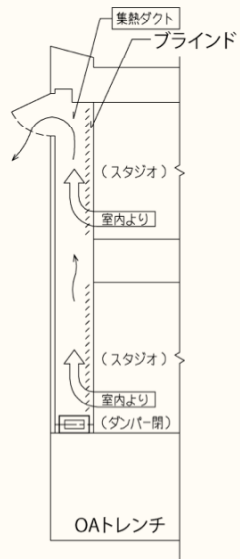
ブラインドによる日射遮蔽を行うとともに、ダブルスキン (= 集熱ダクト) 上部排気窓を利用した自然換気による排熱を行う。

・冬モード

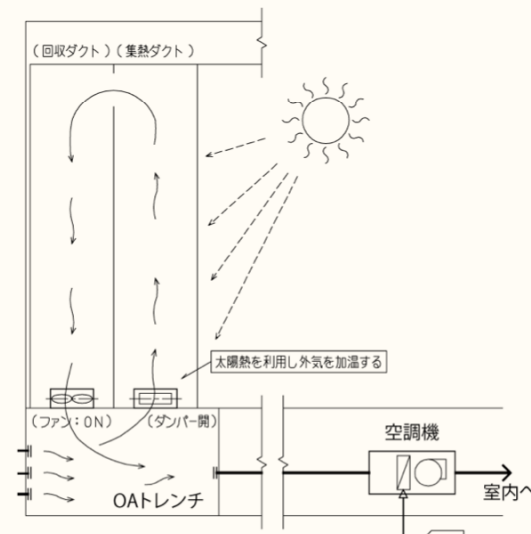
OA トレンチ経由の新鮮外気を、ダブルスキン (= 集熱ダクト) 上方に流すことで太陽熱による予熱を行い、熱回収ダクトを経由して下方の OA トレンチに戻す。(右図参照)



ダブルスキン外観
(冬モードの空気の流れ)



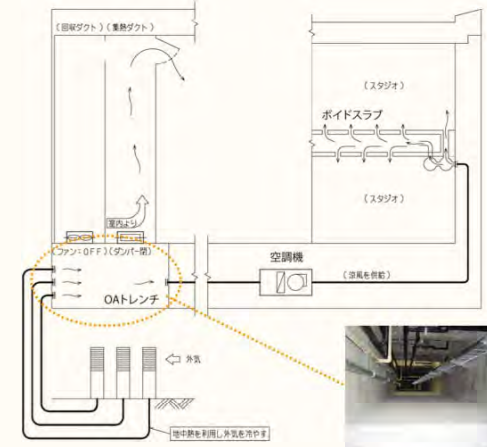
夏モード



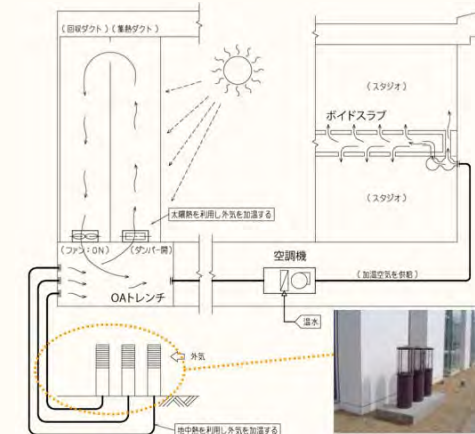
冬モード

3.3 地中熱を利用するクール&ヒートチューブ

新鮮外気を OA トレンチ経由で取り入れることにより、地中熱を利用した外気の予冷・予熱を行う。



地中熱利用夏モード



地中熱利用冬モード

-Has an **implementation plan been formulated with a circulation design** that controls the amount of vehicle, pedestrian, and bicycle traffic in the entire university?
 E.g. carpool, efficient vehicle, efficient delivery system

124 Are the plans' results evaluated?

-Are there **circulation plans and implementation plans for bicycle and pedestrian traffic** in the entire university?
 E.g. bicycle road, bicycle parking, removal abandoned bicycles, bicycle-sharing system ,rent-bicycle

128 Are the plans' results evaluated?

-Is an implementation plan being formulated with a circulation design that **connects to the campus's surrounding transportation network**?

III-9-3 the local community

131 Is there an organization to execute these plans?

132 Are the plans' results evaluated?

III-10 Use of historical assets on campus

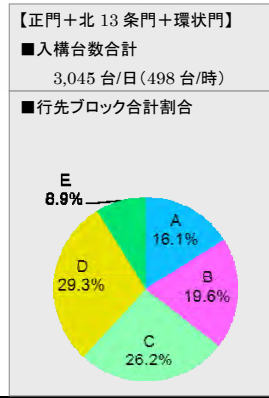
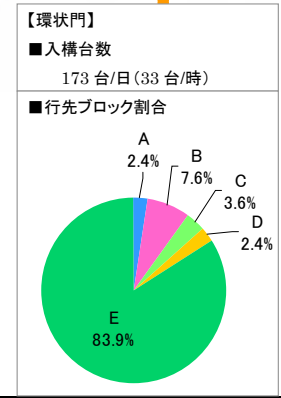
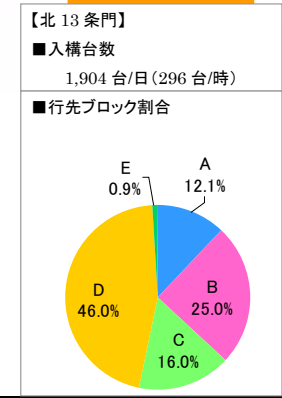
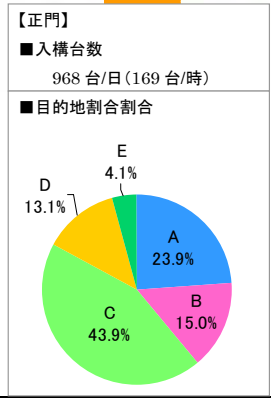
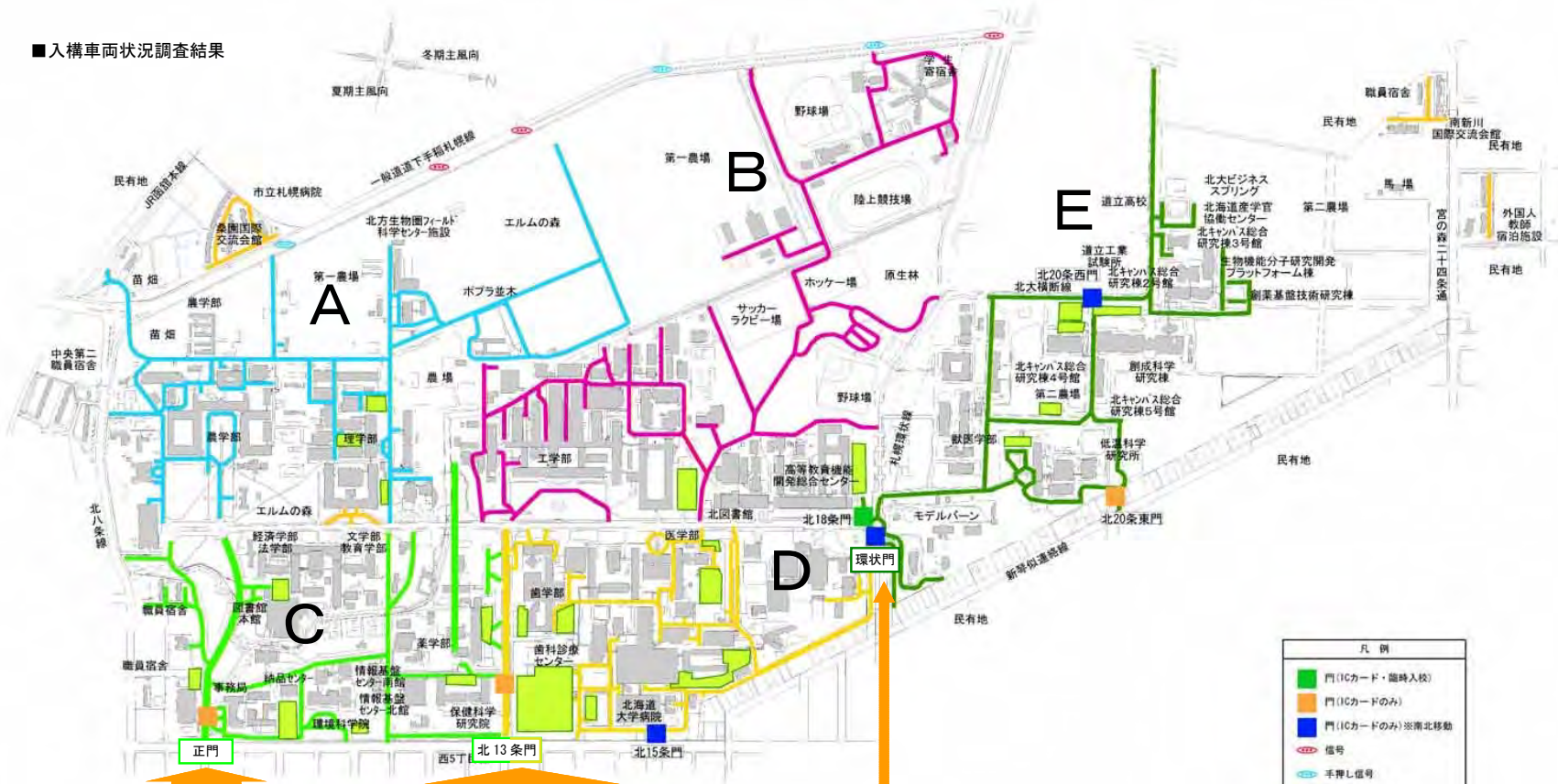
133 Is the state of conservation of historical buildings being evaluated?

134 Is a plan for their use being formulated?
 E.g. open to public, exhibition

135 Is there an organization to execute these plans?

136 Are the plans' results evaluated?

■入構車両状況調査結果



※ヒアリング調査時間 (8-11時、13-16時) 以外は推計。
 ※ () 内はピーク時8時台の台数。
 ※目的地割合の数値は確定したものではありません (一部目的分類中)
 ※北15条門の入構車両は全て大学病院・医学部・歯学部に行くものと想定

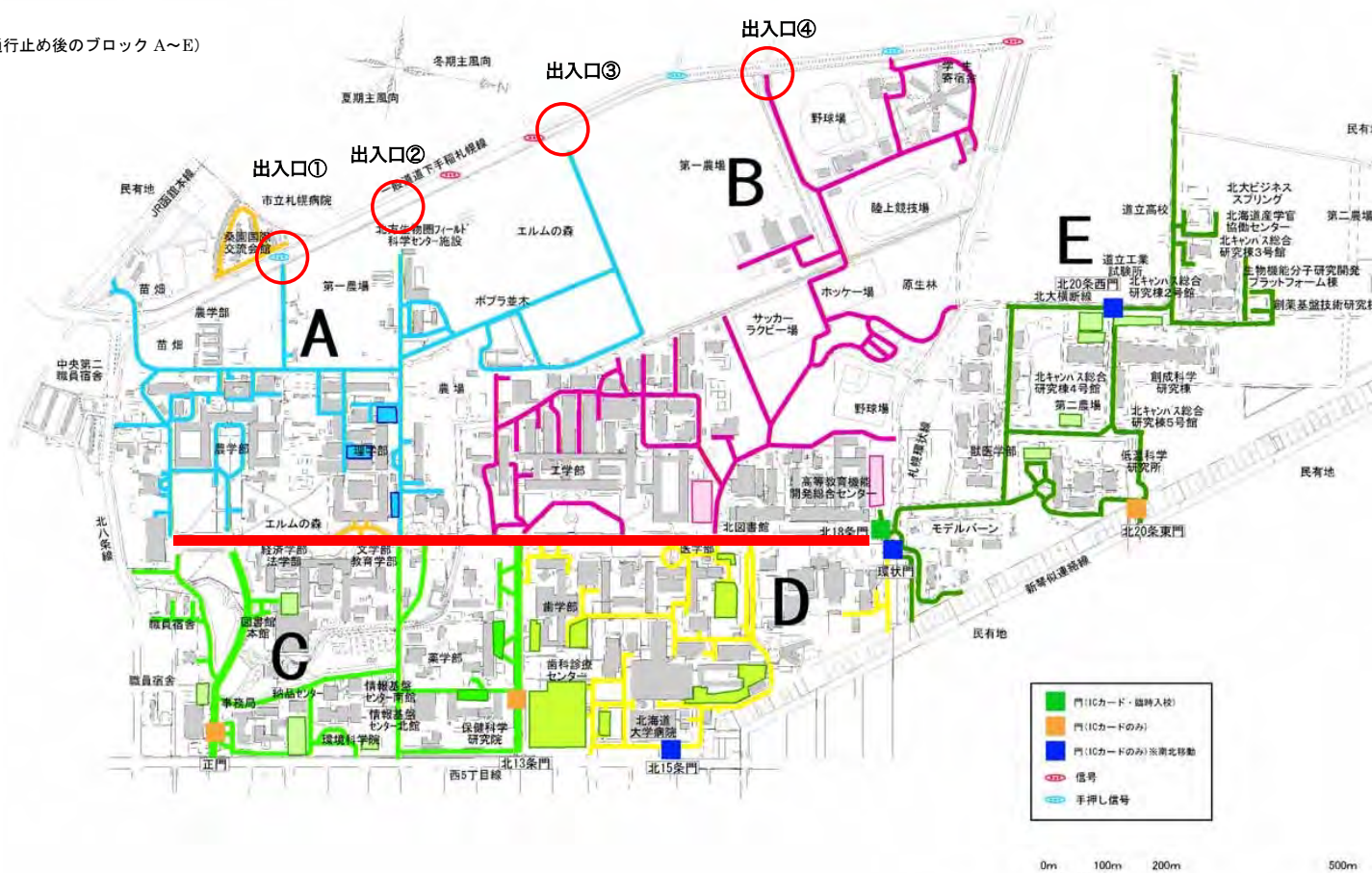
■北海道キャンパス 西側新設出入口のメリット・デメリット整理

1. 前提条件

- ✓ 将来的に中道路を車両通行止めにより、構内は大きく5つ（A～E）のブロックに分断されることが想定される。
 - ✓ 分断されるブロックのうち特に西側ブロック（A・B）は、既存の出入口がないため、新しく西側（国道230号沿い）に出入口を新設する必要がある。
- ⇒既存の構内道路状況を考慮して、敷地西側の新設出入口を4つ（①～④）想定する。次頁にそれぞれの新設出入口について、想定されるメリットとデメリットを整理する。
- ※中央道路の車両通行止め後のA・Bブロックへの転換交通量は分析中（2/28入構車両状況調査結果より）

■構内道路網図

（中央道路車両通行止め後のブロックA～E）



IV Local Community

Category	Field	Section		
IV Local Community	IV-1	Collaboration between industry, academia, and government		
	IV-2	Community service	IV-2-1	System
			IV-2-2	Activities
	IV-3	Dissemination of Information		
	IV-4	Disaster prevention	IV-4-1	Disaster prevention inside the university
			IV-4-2	Disaster prevention in the local area
	IV-5	Role of university after strike	IV-5-1	Continuity of university's function (BCP-Business Continuity Plan)
			IV-5-2	Support for local community

IV-4	Disaster prevention	IV-4-1	Disaster prevention inside the university	156	Does the university have a disaster prevention plan and a manual?
				157	Is an emergency drill being held with all students and staffs every year?
				158	Is a safety confirmation method defined and fully disseminated to all students and staffs at normal time? (Consider power failure, block of transportation system, limited information access etc. Support for international students and foreign workers must be considered, too.)
				159	Is a decision making process and criteria for an instruction to stay at home or to lift the instruction defined clearly and being disseminated to the people in charge? (Consider power failure, block of transportation system, limited information access etc. Support for international students and foreign workers must be considered, too.)
				160	Is there a plan to hold adequate functions of disaster prevention on campus? E.g. Plan to hold emergency generators, Plan for installation of a mirror server at a distant satellite campus or other universities, plan to build stockpile warehouses, plan to build earthquake resistant buildings, etc.
				161	Are those plans executed?

- Is a disaster prevention plan at the local area developed ***under the collaboration between the university and local entities?***

164 Is adequate information publicized to local people for an efficient evacuation? For example, publication of a campus map for disaster prevention, signboards of evacuation routes, etc.

- Is there a plan ***to continue education/research*** after the strike? (Business Continuity Plan)
- Is there ***a contact office*** for local community?
(university members collect relief aids, provide volunteer work, support education for schools)
- Is adequate ***local information and knowledge disseminated*** by the university to local people? (set a contact office, publicize a result of damage investigation, etc.)

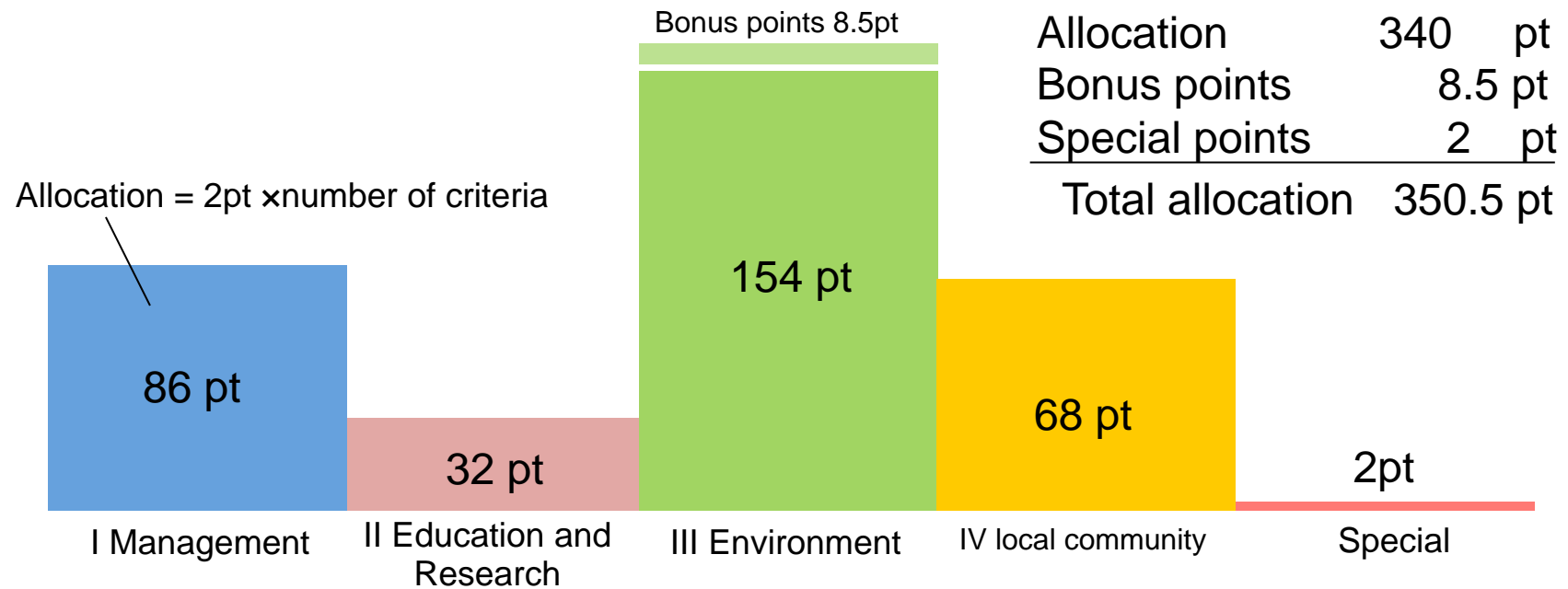
a place been created *for ongoing consultation* with the local government

Agreement with City of Sapporo, July 2013

- Long-term energy vision until 2050
- Scenario building for city planning
incl. Sapporo Campus



Scoring (ver.2)

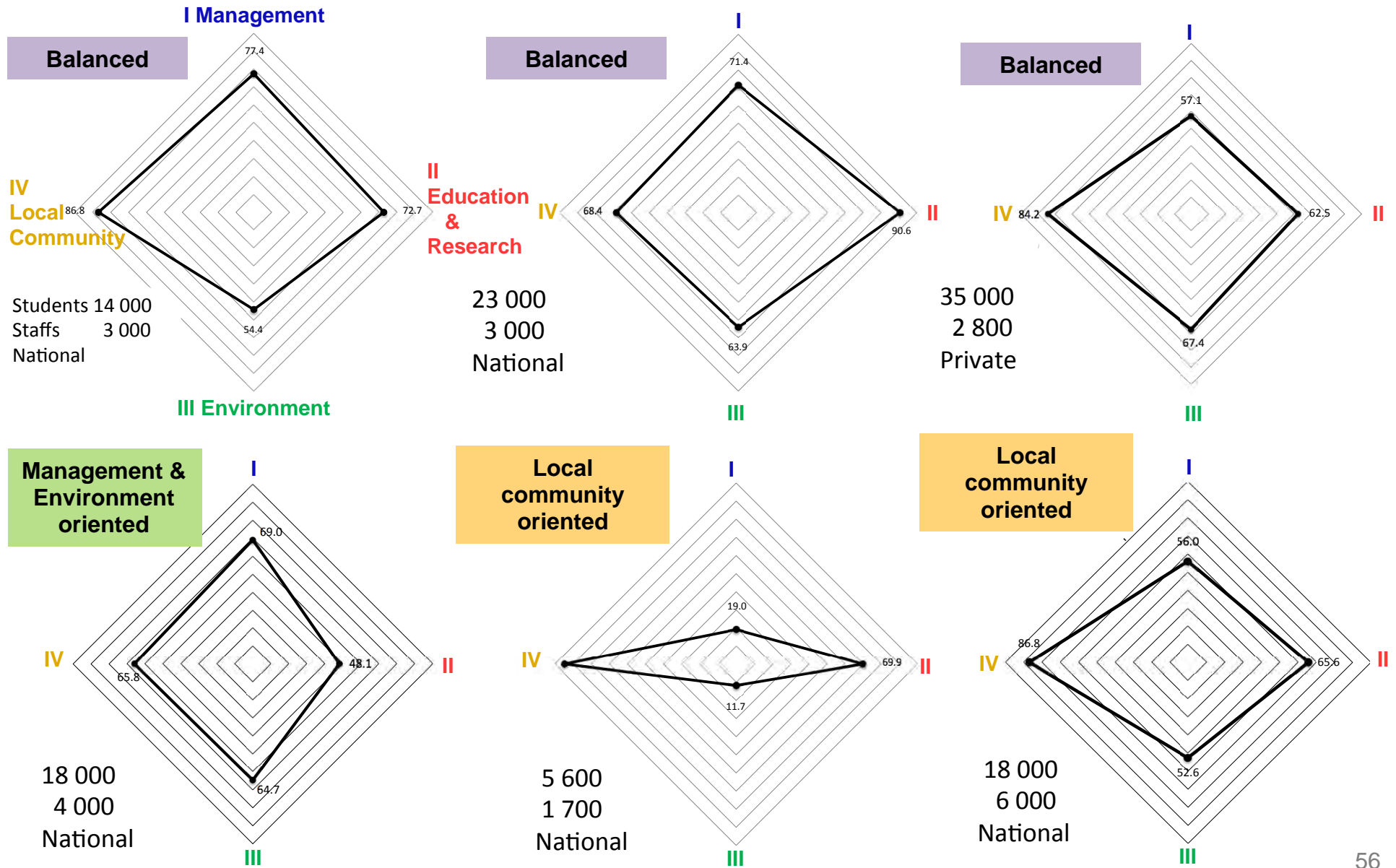


Scoring percentage $A[\%] = (\text{score}) / (\text{allocation excl. "not applicable"}) \times 100$

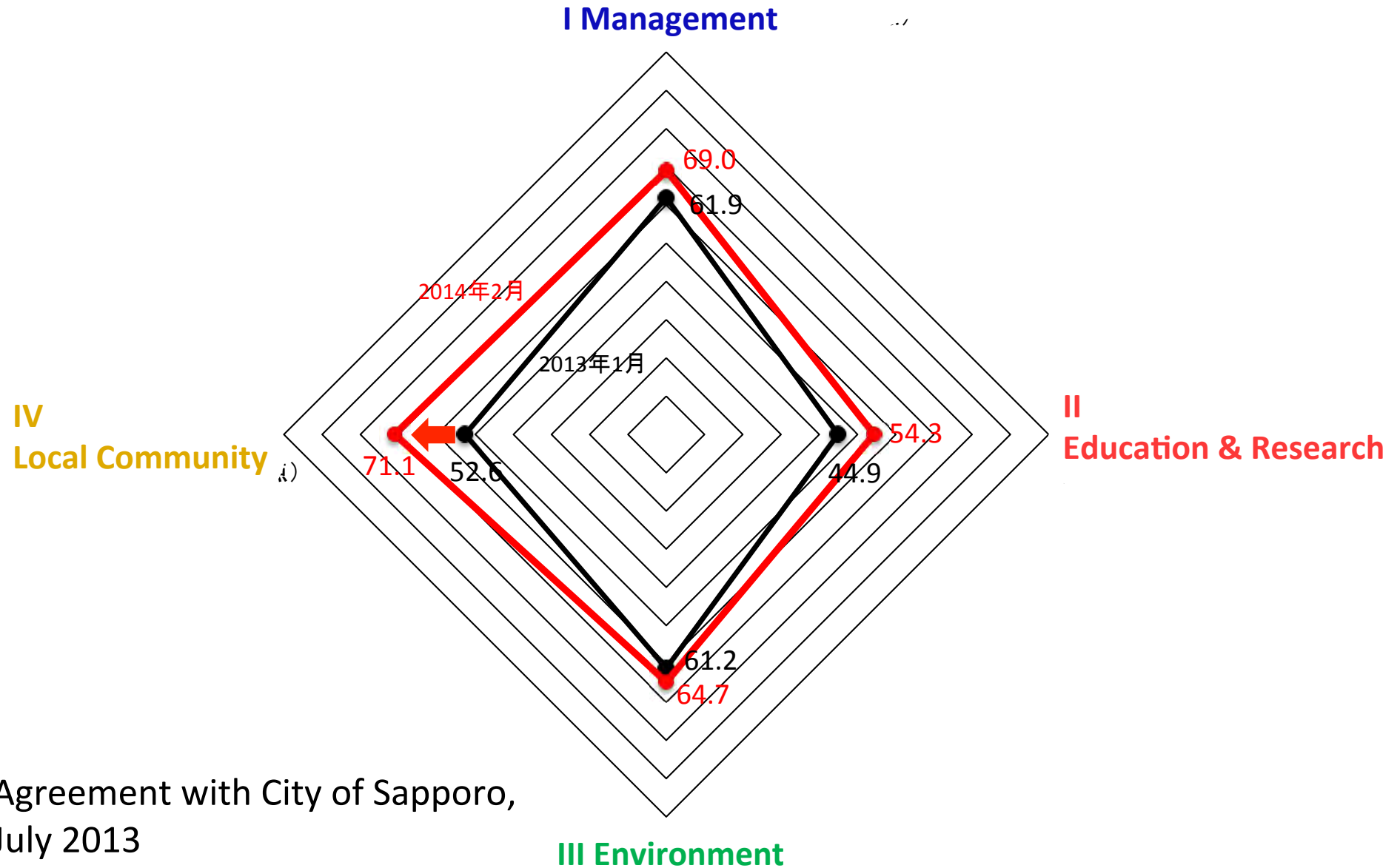
Rank	Score percentage
Bronze	$A < 45$
Silver	$45 \leq A < 65$
Gold	$65 \leq A < 85$
Platinum	$85 \leq A$

Trial run through Architectural Institute of Japan

Results of 6 universities (score [%] in each category, ver.1)

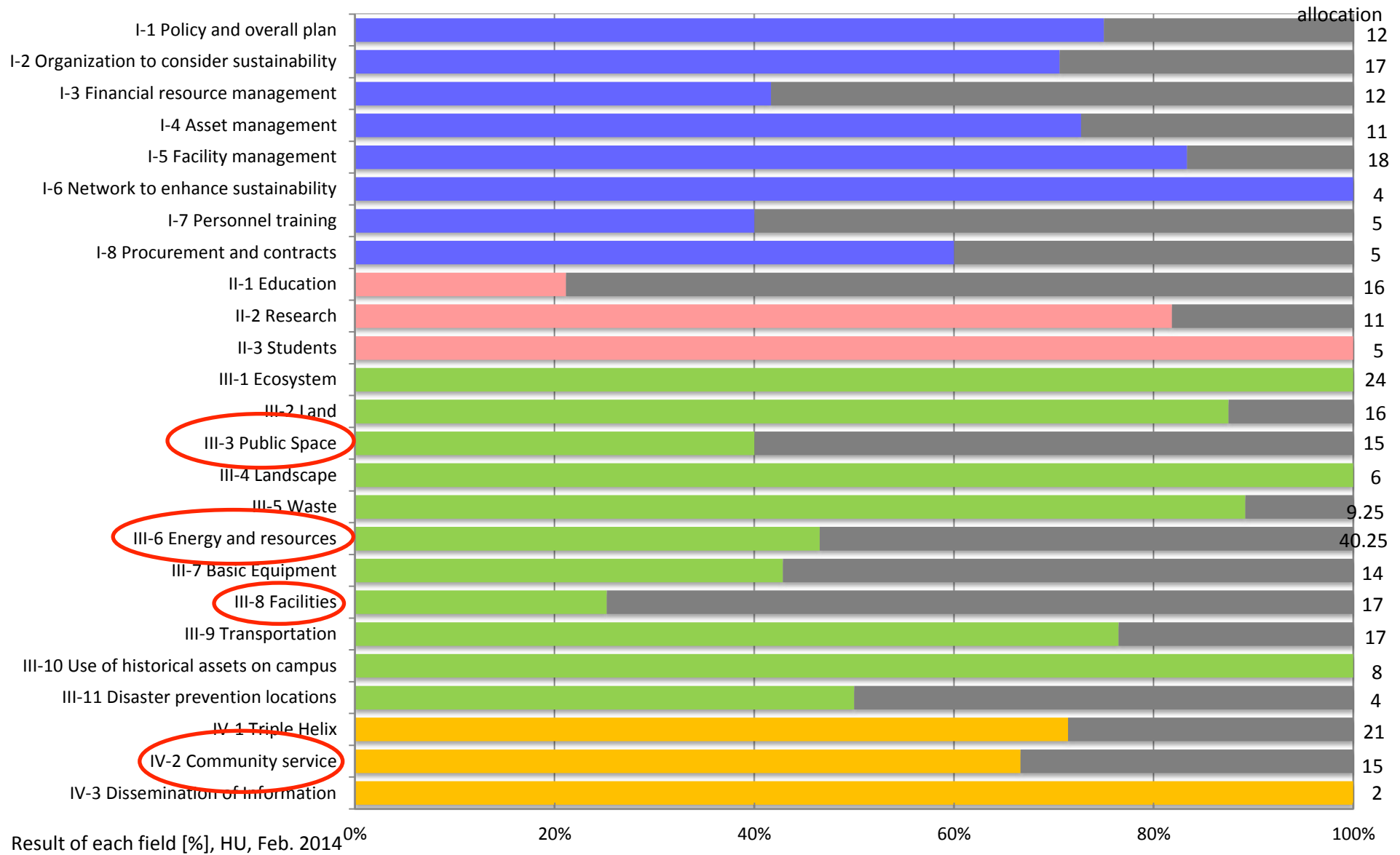


Hokkaido University's results



- Agreement with City of Sapporo,
July 2013
- Long-term energy vision
 - Scenario building for city planning
incl. Sapporo Campus

Result of each field, Hokkaido University (Feb. 2014)



our possible next steps

Sustainable Campus Assessment System Pilot Project

■ Sustainable Campus Assessment System Pilot Project ver.1

	The number of answer	The number of registrant school	The number of the distribution
National (except for large-scale universities)	15	26	79
National (large-scale universities)	4	4	7
Public	2	4	83
Private	13	23	592
Overseas	1	5	0
Incorporated association	0	1	0
Total	35	63	761

Period : 2014.9.1 ~ 2014.11.7

Overseas Universities ; Korea: 1 ,China: 1 、 Thailand: 2
Saudi Arabia: 1



Sustainable Campus Assessment System

www.osc.hokudai.ac.jp/scas/questionnaires/index/1/1/6

I 運営 / Management

I-6 サステナビリティを高めるためのネットワーク / Network to enhance sustainability

評価基準 Assessment Criteria	基準配点 Score Allocation	得点計算方法 How to calculate your score	得点 Score	内容説明 (出典やボーナス点の計算過程も可能な限り記入ください) Describe your activities/plans etc. which meet the criterion. (Please describe the information sources and calculations of the bonus score in quantitative questions).
1.海外の大学、研究機関、公的機関、地域等とサステナビリティに関わるネットワークを持ち、大学をあげて世界の動きを把握しているか e.g. OECD, UNESCO, I S C N (国際サステナブルキャンパスネットワーク) 1.Has the university created a sustainability network with overseas universities, research institutes, and communities? And is there awareness of movements on the global stage? E.g. OECD, UNESCO, ISCN, AASHE	2点	得点=該当がなければ0点、あれば満点(配点)。 サステナビリティについては、表紙のサステナビリティのイメージ図やキーワードを参考に各大学で解釈ください。 Score is 0 if your university doesn't meet this criterion. Score full marks if your university meets this criterion. Please refer the example image of sustainability on the top page if you're confused to define the concept of sustainability.	<input type="text" value="1"/> 点 <input type="checkbox"/> 回答不可能 Not applicable	<input type="text"/> ※500文字まで
2.国内の大学、研究機関、公的機関、地域等とネットワークを持ち、大学をあげてサステナビリティに関わる圏内の動きを把握しているか 2.Has the university created a sustainability network with domestic universities, public research institutes, and communities? And is there awareness of movements on the domestic stage?	2点	得点=該当がなければ0点、あれば満点(配点)。 サステナビリティについては、表紙のサステナビリティのイメージ図やキーワードを参考に各大学で解釈ください。 Score is 0 if your university doesn't meet this criterion. Score full marks if your university meets this criterion. Please refer the example image of sustainability on the top page if you're confused to define the concept of sustainability.	<input type="text" value="1"/> 点 <input type="checkbox"/> 回答不可能 Not applicable	<input type="text"/> ※500文字まで

一時保存 / Save 保存してマイページへ / Save and return to My Page. 回答をキャンセル / Cancel answers

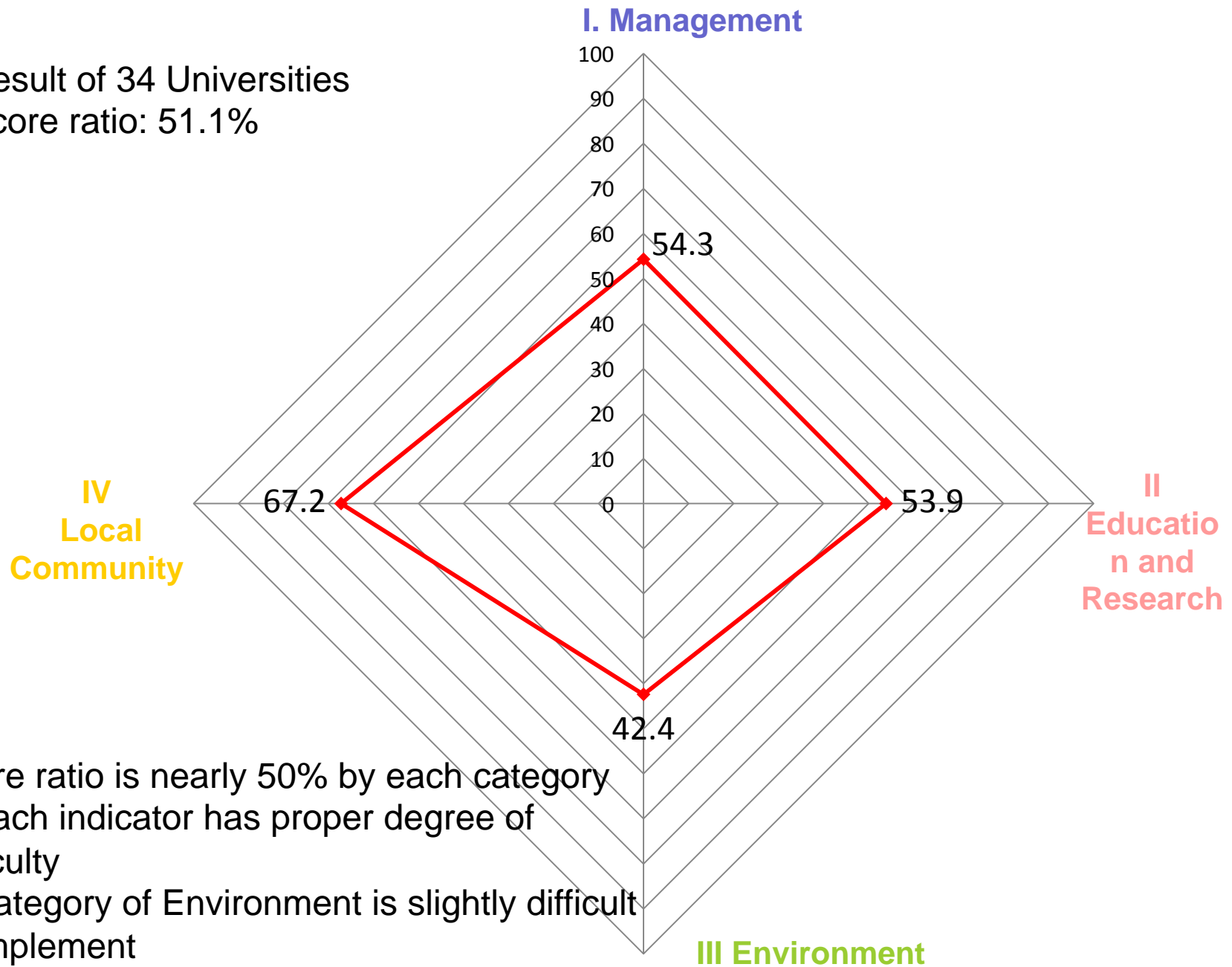
戻る / Back 6 / 28 Page 次へ / Next

■ It's possible to input on the Internet

<http://www.osc.hokudai.ac.jp/scas/>

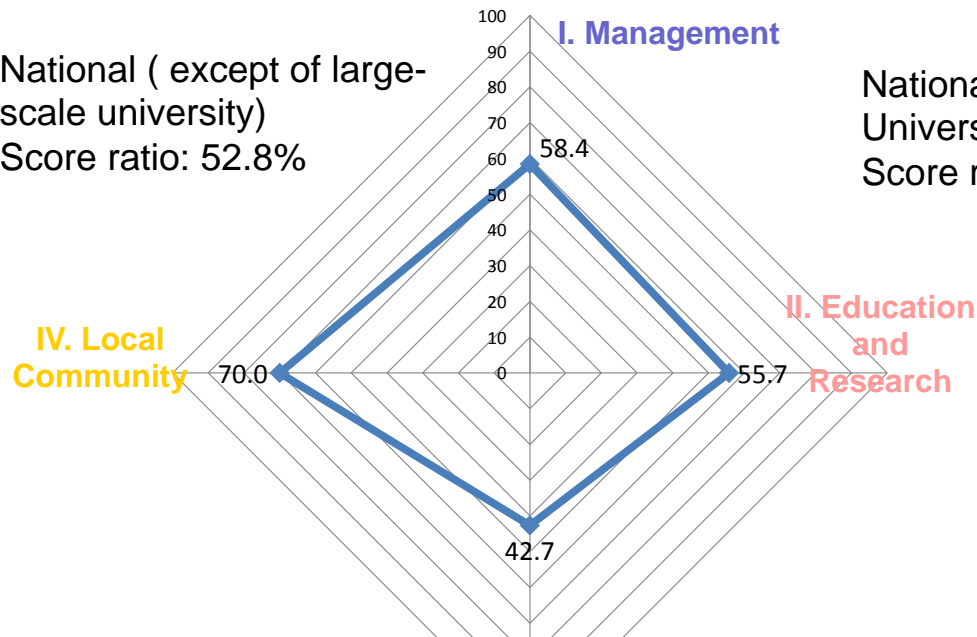


Result of 34 Universities
Score ratio: 51.1%

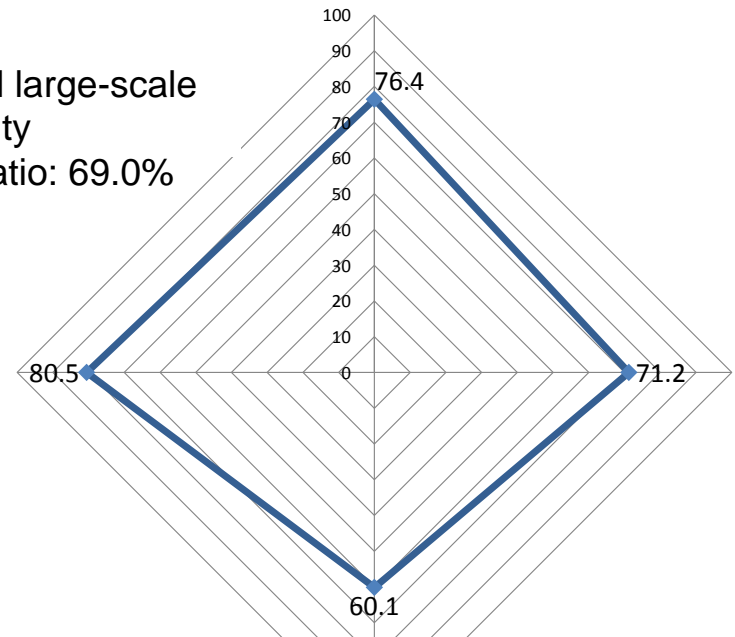


Score ratio is nearly 50% by each category
→ Each indicator has proper degree of difficulty
→ Category of Environment is slightly difficult to implement

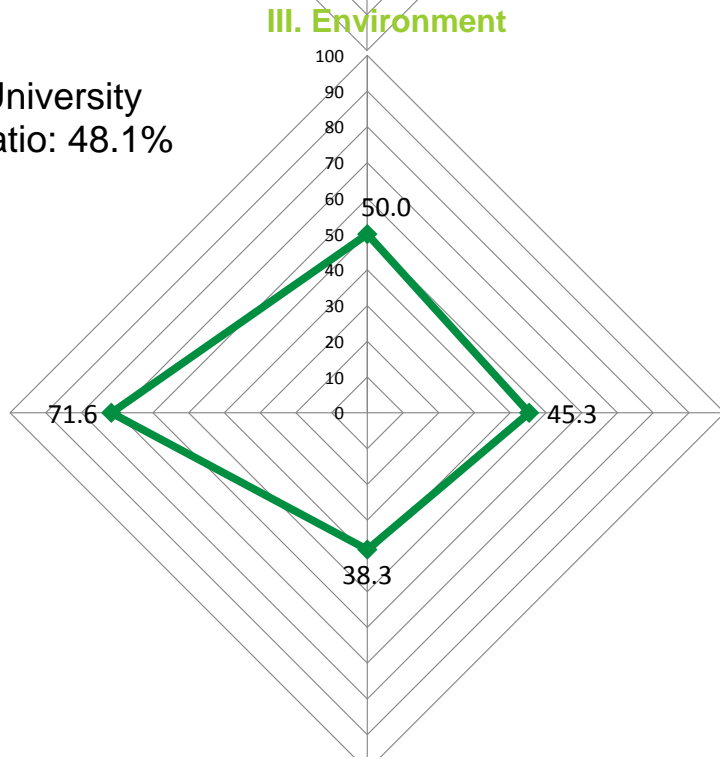
National (except of large-scale university)
Score ratio: 52.8%



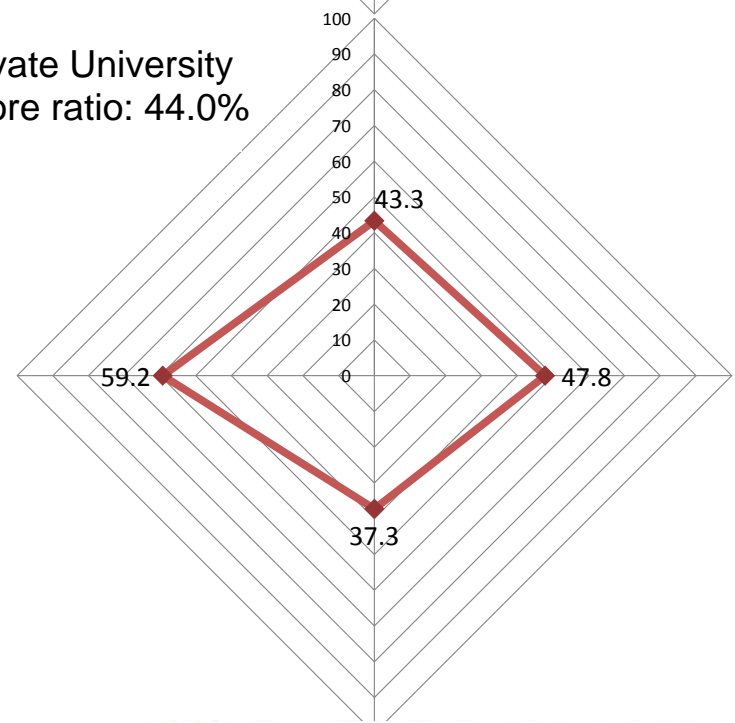
National large-scale University
Score ratio: 69.0%

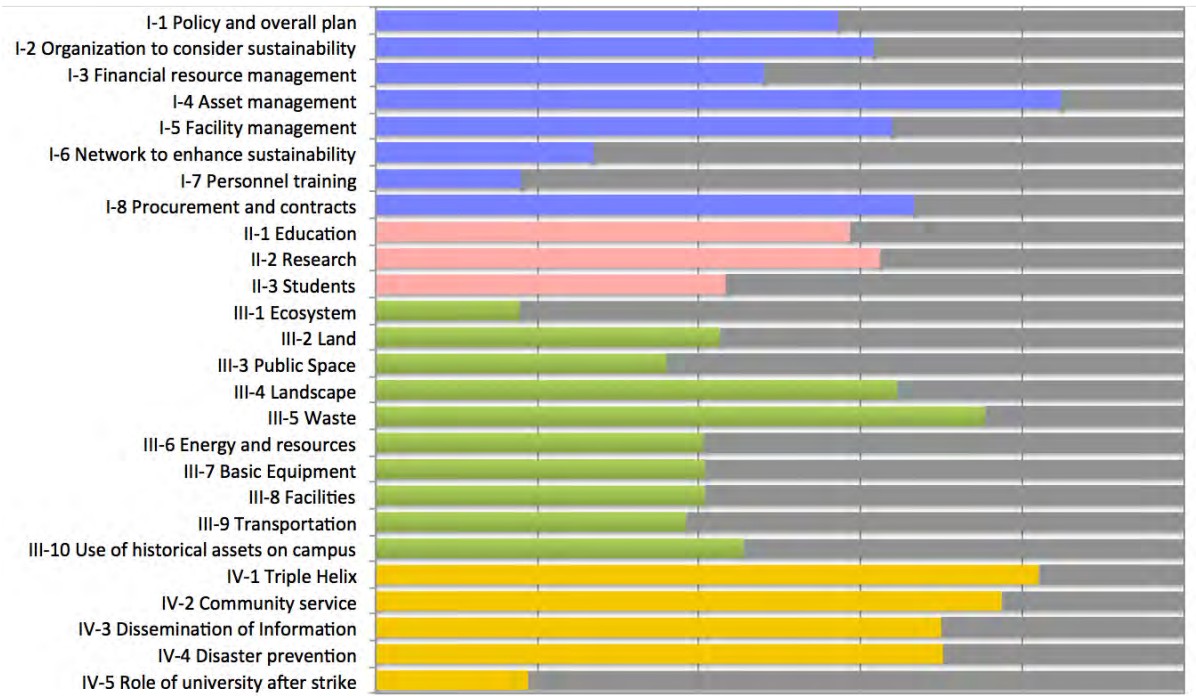


Public University
Score ratio: 48.1%

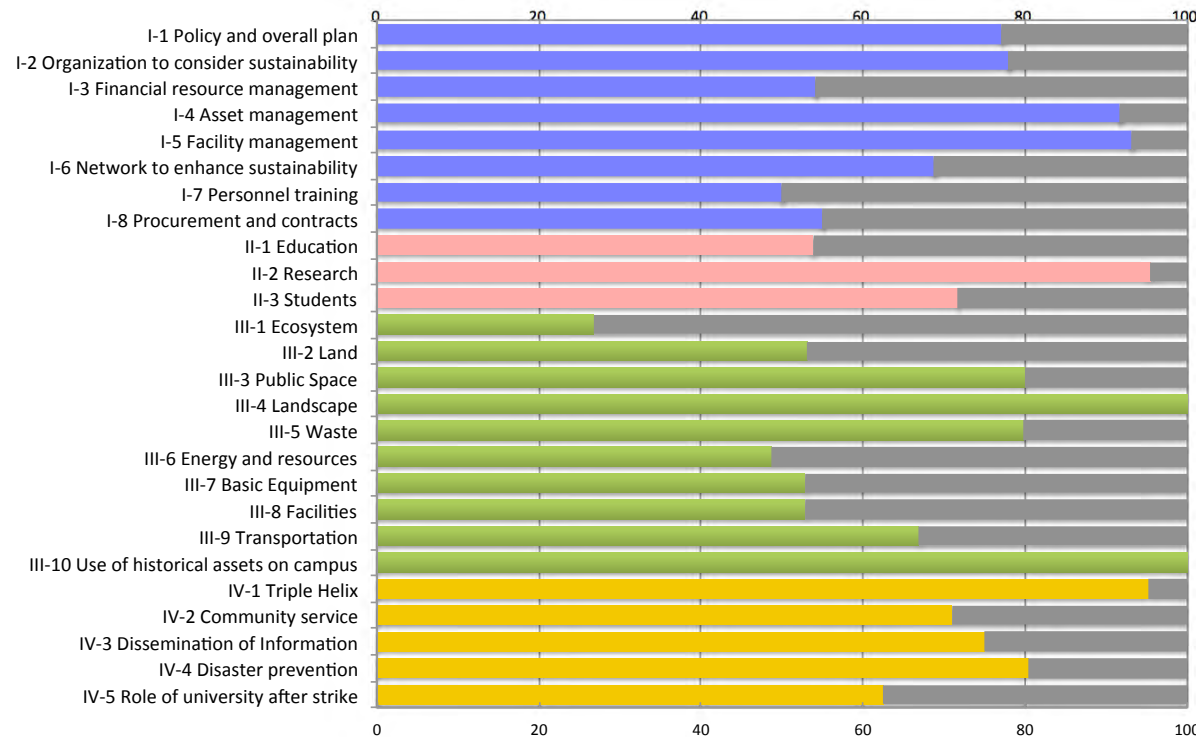


Private University
Score ratio: 44.0%

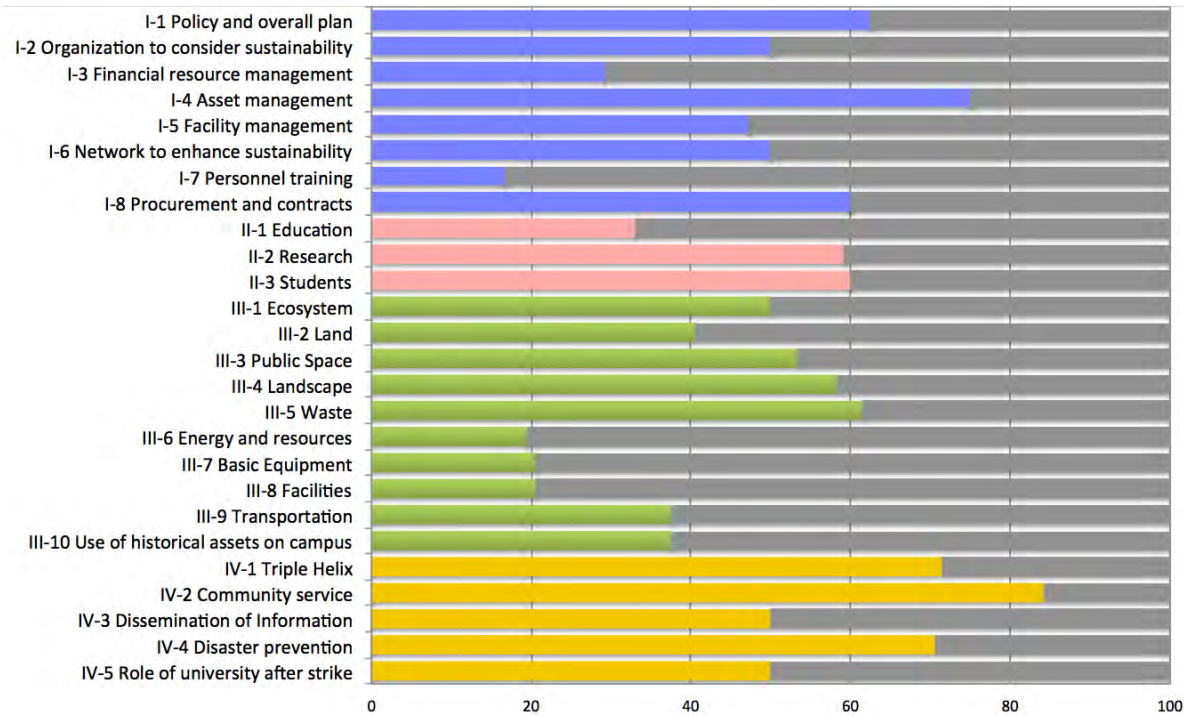




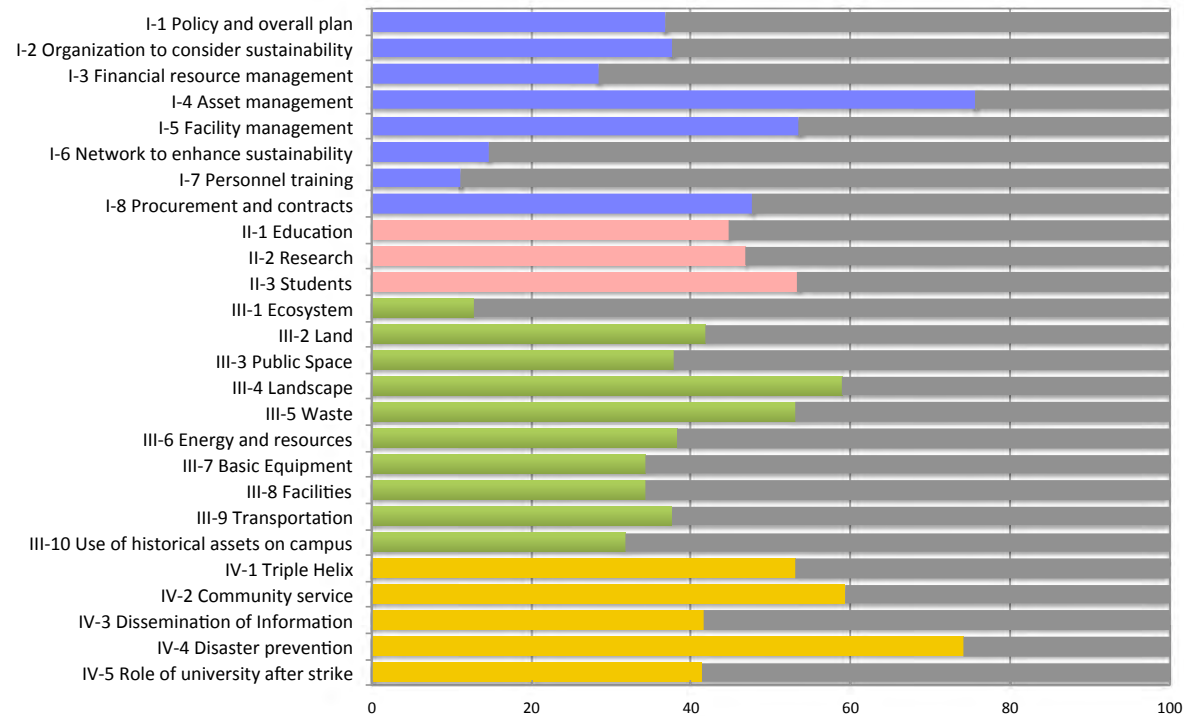
National (except of large-scale universities)



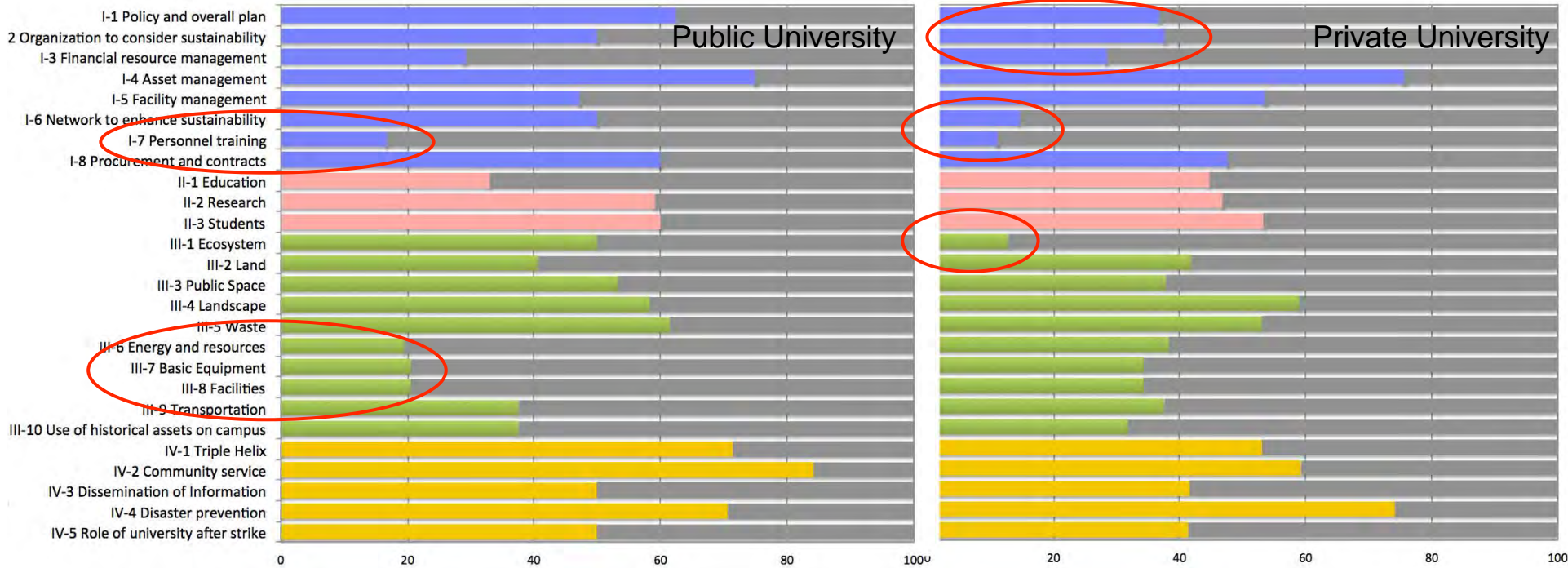
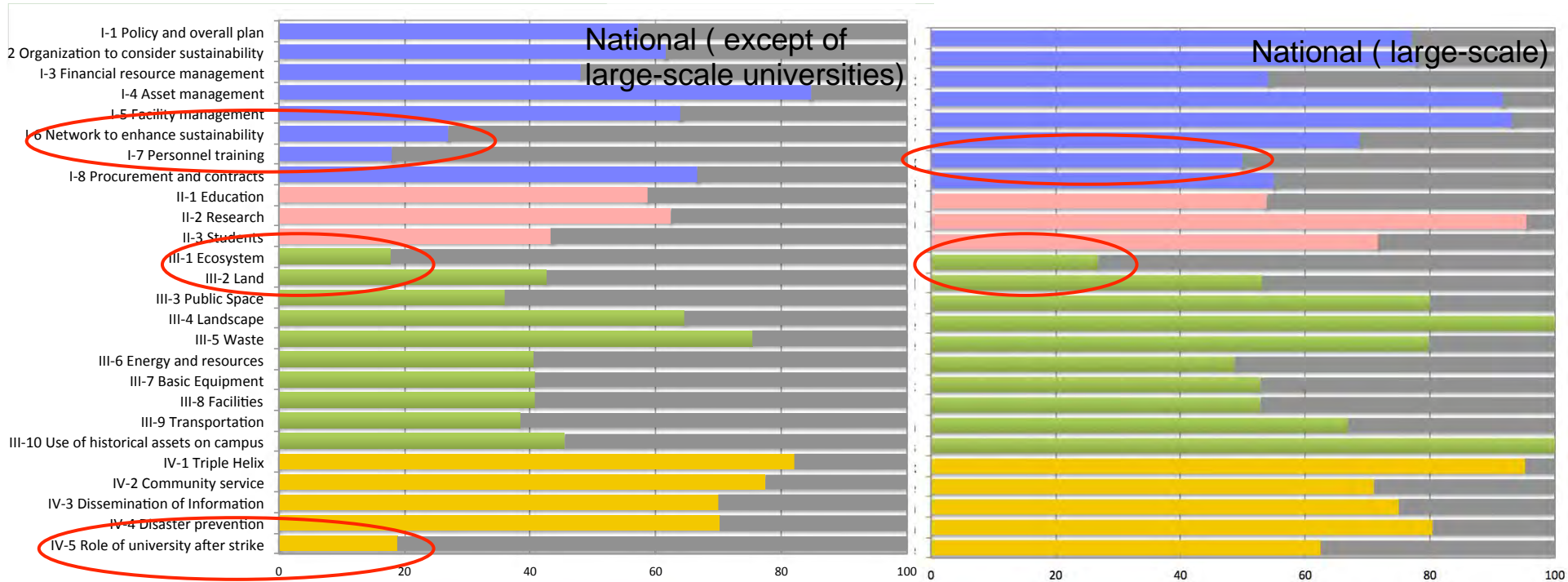
National large-scale university



Public University



Private University



Direction of Sustainable Campus Assessment

- エネルギー消費だけの評価ではない

It is not only in the evaluation of energy consumption

- 大学全体の活動の評価（研究・教育、運営、環境、地域社会）

Evaluation of the total activities of the University

- 活動情報、先進事例を集めるためのネットワークの構築

Establishment of network for data collection and good example

- 大学と地域の相乗的な関係の構築に寄与

Synergistic relationship between the University and the city

- キャンパス空間の質的評価など環境面の向上

Improvement of the quality of the campus setting

- 継続的なサステイナブル活動の支援

Support of continuous activity for creating sustainable campus

