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Food Security Prospective and Strategic Plan for Korea






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Summary

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- Food Situation
- N. Korea's Food Production
- Food Demand: sudden unification
- Fishery Products
- Food Industry
- Food Policy Projects for unification

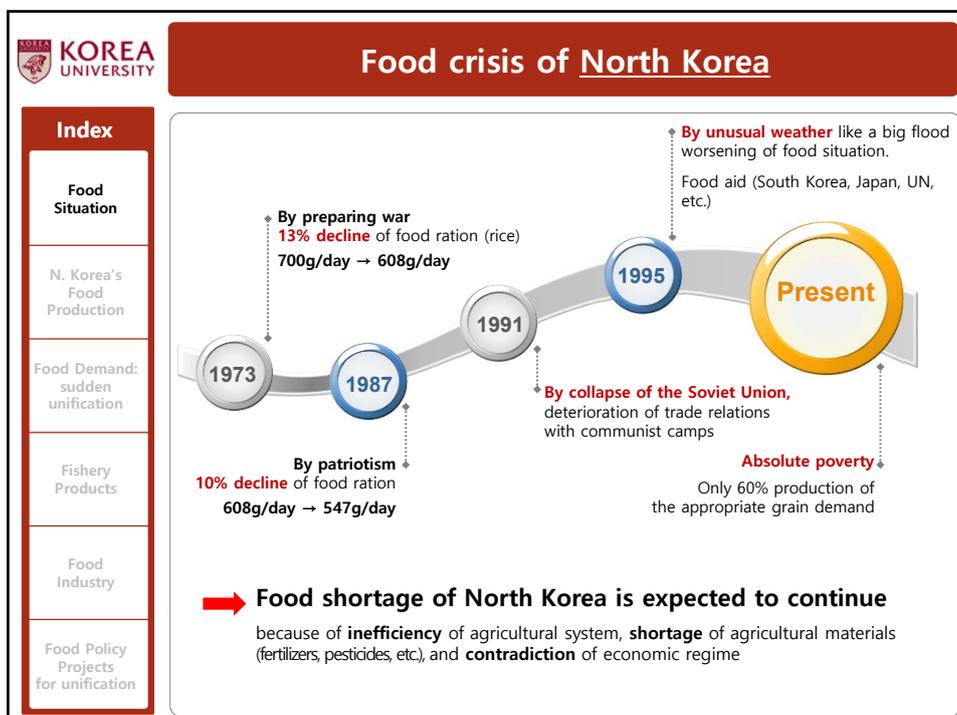
- **Predict supply & demand for future unification, then set acquisition method for 70 million people's food**
 - Analysis of **food situation** in South & North Korea
 - Study based on the **nutritional anthropology**
 - **Potential assessment** of North Korea's food production
 - **Prediction** of Korean food supply & demand assuming future unification
 - **Comparison** of the two camps' sea food production, **survey** of changing consumption, and **study** of further improvement
- ➔ **Six suggestions of food policy for Korea unification**

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Food situation in Korea





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Aid of North Korea by South Korea

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Food Situation

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- »» **1995**
 Free aid of rice 150,000 tons
- »» **After 2000**
 Loan (10 year-grace, 20 year-repayment, interest rate: 1%/year)
- »» **1995 ~ 2007**
 Rice 2.5 million tons, Corn 0.2 million tons
- »» **2008**
 - The Korean government interrupted food & fertilizer aid to N. Korea (Worsening of the two Koreas' relationship)
 - Provide aid for vulnerable group (infants) through government, private and international organization
- »» **2009**
 Supply vaccine and hand sanitizer for swine flu
- »» **After 2010**
 No further aid as sanctions were imposed on North Korea due to the sinking of the Cheonan vessel



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Change of Food energy supply

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Food Situation

N. Korea's Food Production

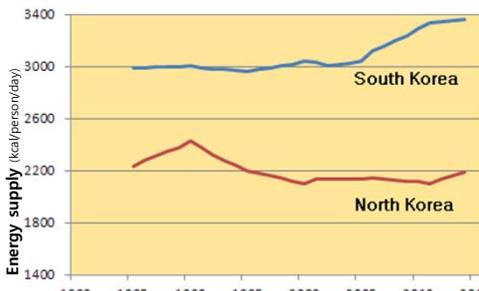
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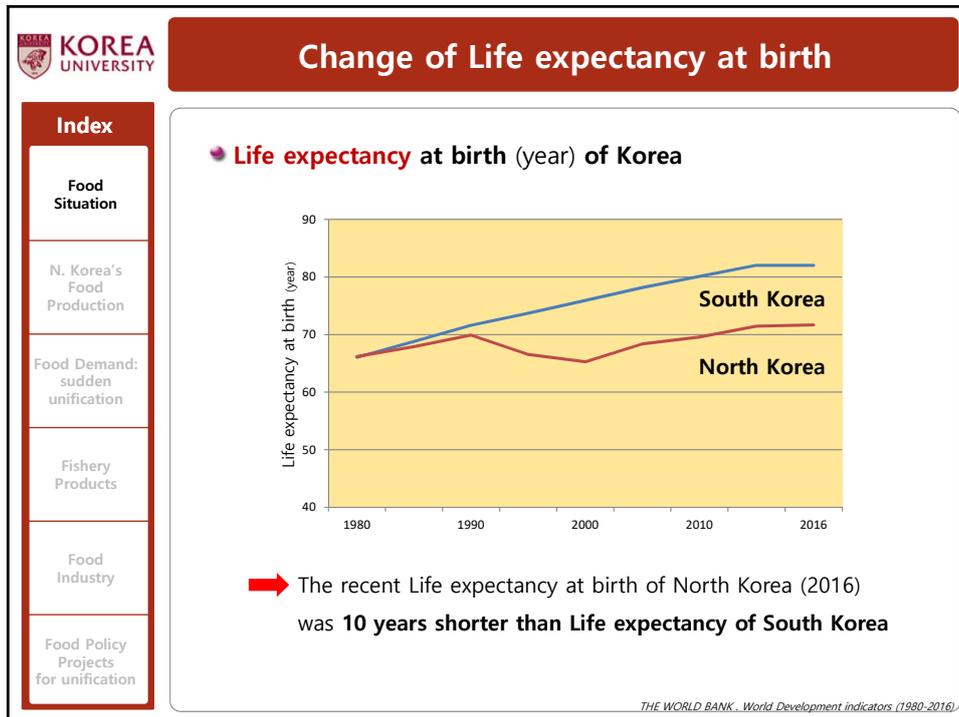
Food Policy Projects for unification

• Energy supply (kcal/person/day) of Korea



➔ The food energy supply of North Korea(2014) was **2/3 of the supply of South Korea**

FAO, Statistical Yearbook (1985-2015)





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Food supply and demand of the North Korea

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	Unit (1000 tons)						
	Rice	corn	A sort of barley	Miscellaneous grain	potato	soybean	total
Supply (A)	1,573	2,200	71	137	473	268	4,722
Main crop production	1,573	2,200		137	148	268	4,326
Spring crop production			71		325		396
Demand (B)	1,819	2,677	201	137	473	267	5,524
For food	1,525	2,073	177	105	302	245	4,427
For feed	-	110	-	-	20	-	130
For seed	50	70	12	10	80	9	230
Harvest loss	245	374	12	22	71	13	737
Expected amount of imports (C)							150
Deficiency amount (B-A)	246	427	130	-	-	-	802
Net deficiency amount (B-A-C)							652

➔ • The total food deficiency amount of 2017/2018 was **802,000 tons**

- Even if the planned 15,000 tons of food imports were made as planned, the **net deficiency amount** of North Korean food in 2018 amounted to **652,000 tons**



Food and nutrition situation of North Korea

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- **Vulnerable(weak) groups be more than 7.6 million people**
 - Children, pregnant & nursing women, the elderly, the disabled, and tuberculosis patients

- **The UNICEF/WFP/North Korea survey on 2013**
 - One-third of **pregnant women** are malnourished and anemic
 - Percentage of **underweight children** under 5:
 - ✓ Urban - 13.2%
 - ✓ Rural – 26.7%
 - **Food shortage** in rural areas is more serious than in urban areas
 - ◆ UNICEF (United Nations Children's Fund)
 - ◆ WFP (World Food Programme)



Food and nutrition situation of South Korea

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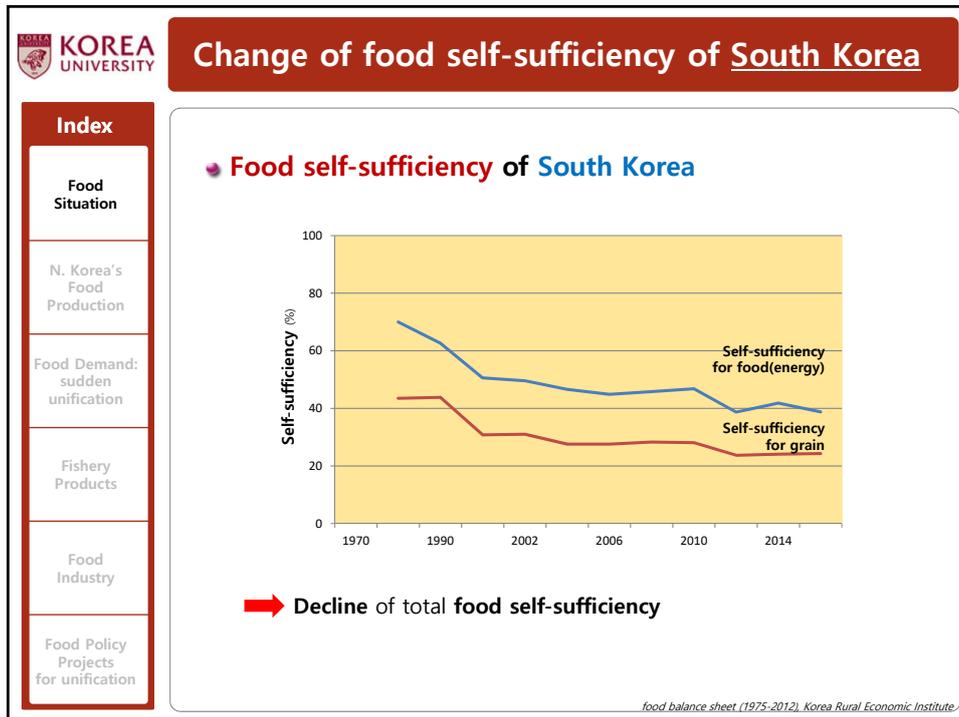
Food Policy Projects for unification

- **Increase adult diseases** by nutritional excess and overweight

- Face high level of **food dependence** on overseas import because of food waste and lowered food self-sufficiency
 - **Flour**: 100% imported
 - **Edible beans**: 30% self-sufficiency, 70% imported
 - **Feed grains**: Less than 3% self-sufficiency, 97% imported

- Reduced **rice consumption** by westernization of diet

- Increase in **flour consumption** due to intake of instant noodle





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Assessment of nutritional anthropology of Korea

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	S. Korea	N. Korea
Farming population (1000 person)	1,367 (2018)	2,930 (2014)
Ratio of farming population (%)	4.9 (2018)	11.7 (2014)
Average food intake (g/person/day)	1,300	500 (+)
Energy intake (kcal)	2,400	1,600
Component ratio of energy (Carbohydrate : protein : fat)	65 : 15 : 20	80 : 12 : 8
Self-sufficiency of grain (%)	26	63
Average height (cm, men/women)	173/159	166/155
Change of weight (%)	obesity rate of adult, 33	chronic malnutrition, 42
Incidence rate of tuberculosis / mortality rate (person / 100,000 person)	90/8	344/25
GDP per person (US \$, 2019)	29,743	648
Political system	open free liberal democracy	closed communitarianism

➔ **South Korea** : High obesity rate by high fat intake,
Low self-sufficiency of food

➔ **North Korea** : Malnutrition and tuberculosis patients due to lack of
food & energy intake



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North Korea's food production



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North Korea's food production and composition

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- **Food production of North Korea in 2017: 4.7 million tons**
 - About **1.8 million tons of insufficiency** compared with the average of standard calorie requirement which recommended by FAO

	Crops	Rice	Corn	Barley	Pulses	Potatoes	etc
							(1000 ton)
2013	4,807	2,101	1,762	176	165	582	21
2014	4,803	2,156	1,722	174	171	558	22
2015	4,512	2,016	1,645	164	164	502	21
2016	4,803	2,224	1,702	154	154	550	19
2017	4,702	2,192	1,667	146	146	532	19
Average	4,725	2,138	1,700	163	160	545	20
Composition ratio (%)	100.0	45.0%	36.0%	0.03%	0.03%	0.12%	0.00%

Statistics Korea (2018)



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**Solutions for increase of food productivity
of North Korea**

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- 1. Set-up for infrastructure of agricultural materials**
 - Modernization of old manure factories in North Korea
 - Aid from South Korea

- 2. Mechanization of agriculture**
 - Mechanization of agriculture have stopped since 1980s due to shortage of fuel and machine parts

- 3. Improvement of production system**
 - Development of superior species
 - Improvement of cultivation techniques
 - Improvement of irrigation facilities



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Food demand
in case of the sudden unification



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Prediction of food demand

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Prediction of food demand for 10 years after unification (KFSRF)

- **Plan 1**
 Step1. **Maintain calorie intakes** per each North Korea resident right after unification
 Step 2. Increase to regular calorie intakes after 10 years, unification

- **Plan 2**
 Step 1. Provide **food ration** and transfer to the **market economy** right after unification
Step 2. Increase food intake as same as food intake of 1980's South Korea after 10 years, unification

❖ KFSRF (Korea Food Security Research Foundation)



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Prediction of food demand

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Prediction of food demand after unification (KFSRF)

Year	Korea					Import (3)	million tons Shortage of products in Korea	
	Demand		Supply	Shortage			Plan 1 (1)+(3)	Plan 2 (2)+(3)
	Plan 1	Plan 2		Plan 1 (1)	Plan 2 (2)			
2020	29.0	29.5	28.5	0.6	1.0	15.7	16.3	16.7
2025	30.5	30.7	29.5	1.0	1.1	15.8	16.8	16.9
2030	31.9	31.7	30.4	1.4	1.2	15.8	17.2	17.0

➔ **Shortage of food after 10 years of unification**

- Plan 1 : 17.2 million tons
- Plan 2 : 17.0 million tons

❖ KFSRF (Korea Food Security Research Foundation)



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Implication of food demand

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- **Implication of food demand after unification**
 - **Increase food production** from Korea.
 - **Improve the self-sufficiency of soybean.**
 - **Improve self-sufficiency of animal feeds** to decrease the dependence on animal feed import.
 - **Maintain and enhance** the superior farmlands.
 - **Establish food policies** for preparation of the unification.



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Food policy projects
for Korea unification



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1. Legislation of 1.2 million tons of rice holding program

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• Legislation of 1.2 million tons of rice holding program based on Trust-building process policy

- Storage of Rice:**
 - Storing 0.6 million tons of rice annually for 2 years and then releasing **the reserved rice** to processing industry






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2. Implementation of rice coupon system

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• Implementation of rice coupon system to improve the welfare of the poor

- After unification, it can be **legal basis** to supply the rice reserves to North Koreans
- Set the **welfare system** for poor people in **South Korea**
- After Korea unification, almost all **North Koreans** fall under the **lower income family**, so they can receive the benefits





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3. Increase rice production

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● Increase rice production

- To generate rice demand because of **rice storage(1.2 million tons)** for unification, **rice coupon system**, and **policy support of rice processing industry**
- **Requirements of 4.8 million tons of rice** production annually in South Korea
- Current Rice production: 4 million tons

Additional demands for 800,000 tons of rice each year

➔





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4. Plan for self-sufficiency in soybean

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● Plan for self-sufficiency in soybean

- **Traditional Korean diet based on rice and soybean dishes**
 - Soybean sprouts, tofu, soybean paste soup, etc.

➔ Need to self-sufficiency of rice and soybean
- **Self-sufficiency of soybean in South Korea :**
 - 1990 (60%) → 2016 (29.1%)
- **North Korea is suitable for production of soybean :**
 - Geography of North Korea is mostly mountainous, and wide field area
 - Need of conversion of corn field into soybean field.





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5. Improve self-sufficiency of animal feeds

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- **Improve self-sufficiency of animal feeds**
 - Self-sufficiency of animal feeds in South Korea
 - Feed grains: usage (8.8 million tons), self-sufficiency 2.1%
 - ➔ **Main reason of decline in self-sufficiency of foods** in South Korea

- 1) **Set the Limit of animal population** per farmland area
- 2) Development of compulsory **self-sufficiency of animal feeds** to a certain level
- 3) Reasonable **licensing system** for livestock industry






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6. Develop food industry

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- **Develop food industry as a main body of food supplier in case of a food crisis in Korea/world**
 - Korea Food Industry works as a main body of Food Supplier for Korean People
 - A plan for balanced development of food industry in Korea
 - Need for transport/logistic systems along the major ports in North Korea
 - Enhancement of national competitiveness of Korea food industry







Thank you for listening