

The Impact of COVID-19 on DPRK's Health System and Future Inter-Korean Biomedical Cluster Cooperation in the Post-pandemic Era

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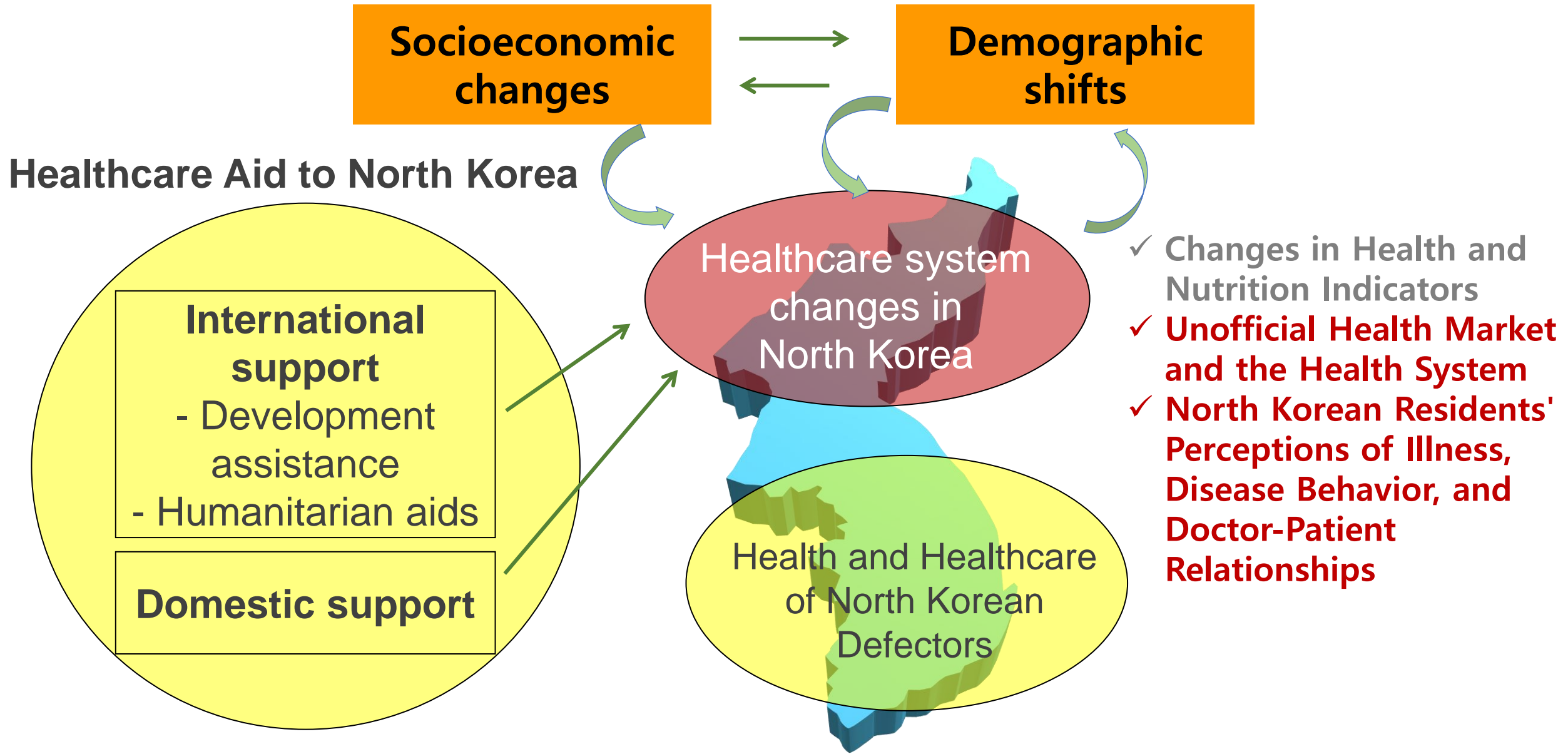
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Seoul National University College of Medicine**

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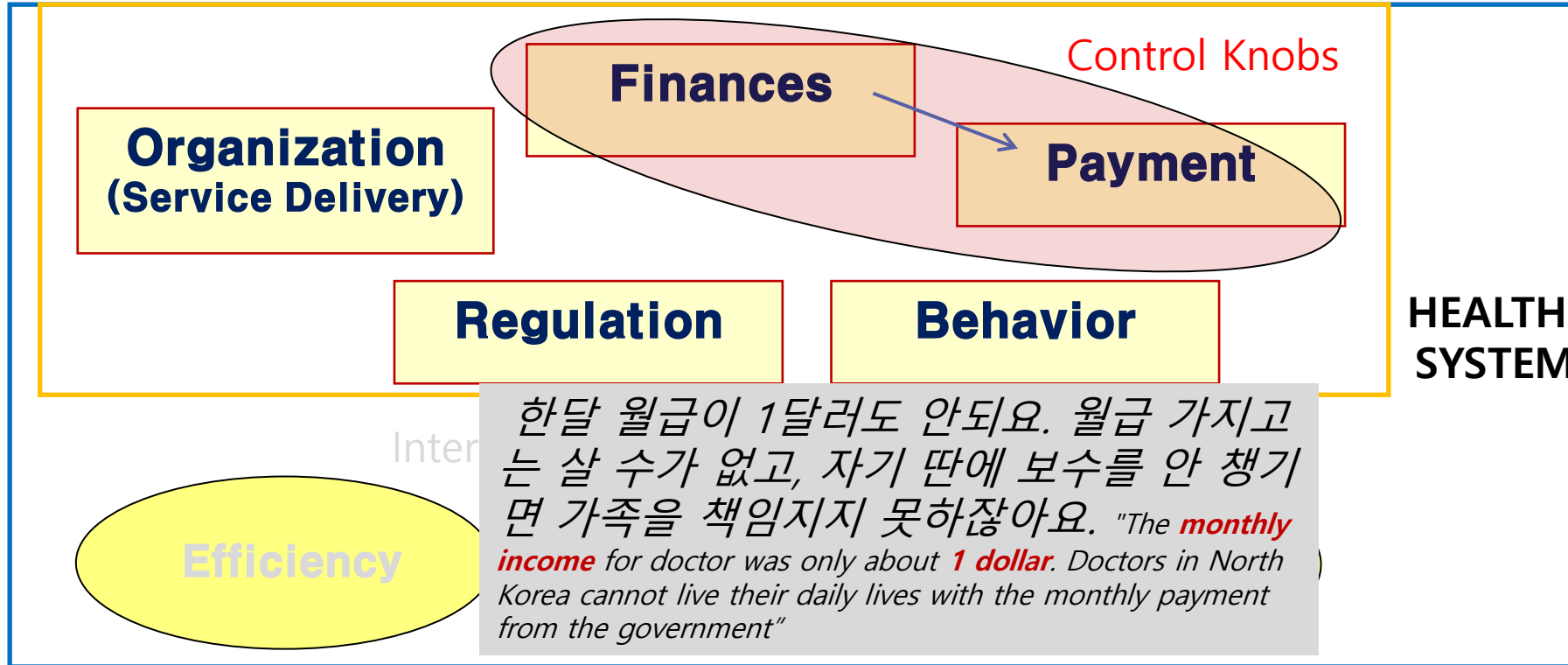
- 1. Impact of the DPRK Covid-19 Response on the DPRK's Health System**
- 2. Trends in Global Health Aid to DPRK During the International Sanction and the Role of the ROK Government in the COVID-19 Pandemic Era**
- 3. Future Inter-Korean Biomedical Cluster Cooperation at the Demilitarized Zone (DMZ) or Border Area in the Post-pandemic Era**

1. Impact of the DPRK Covid-19 Response on the DPRK's Health System



정부의 보건의료재정 부족 => 의료인에 대한 지불능력 저하

Limited governmental health finance and lack of financial supports to physician in the DPRK

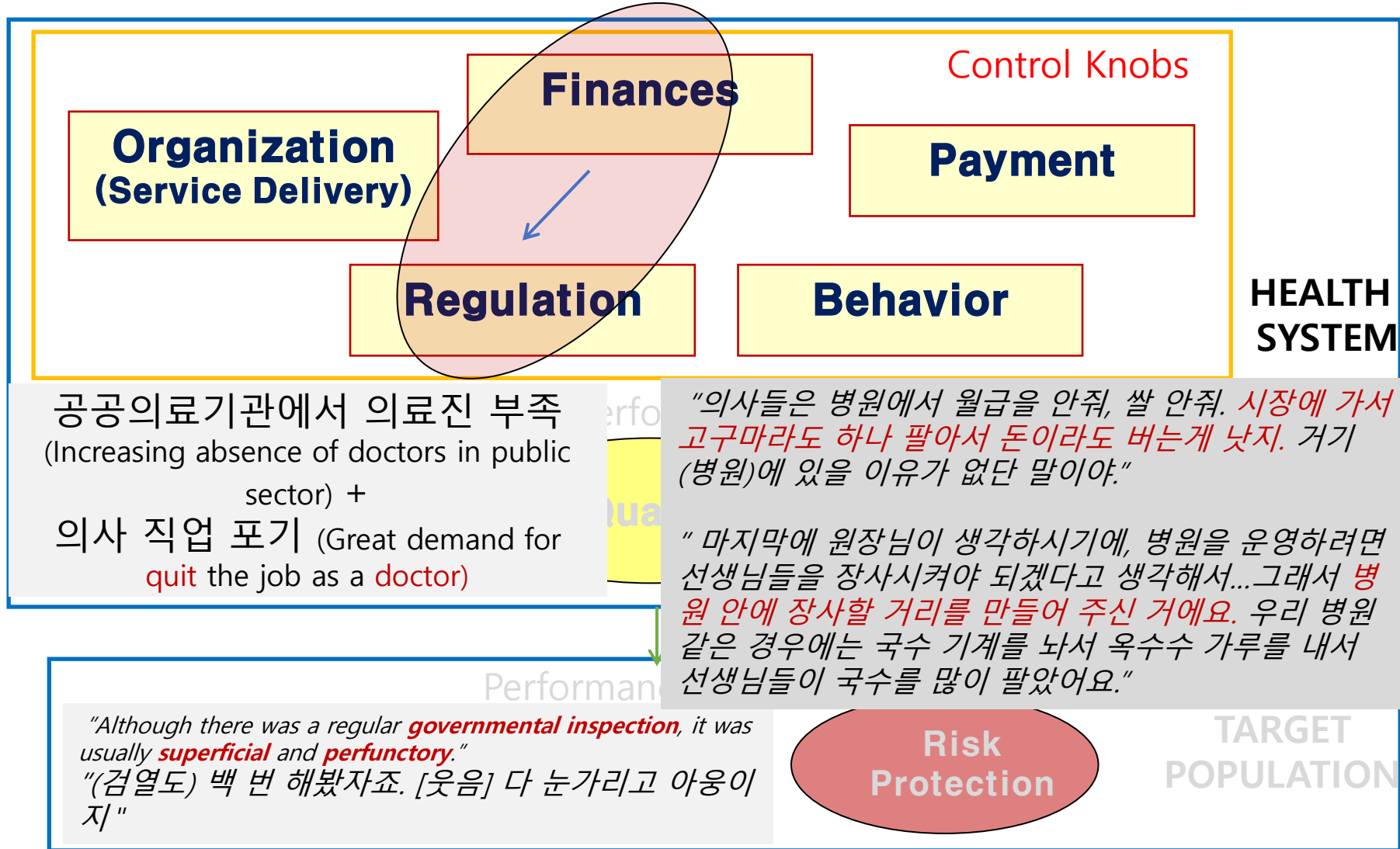


"Since 2009 currency revaluation, I could not receive any monthly salary from government. They gave only some government bond to doctors, but everyone knew that the bond was useless."

"**화폐개혁 이후부터** 갑자기 나라 경제사정이 어려워진다고 하면서 채권을 발행해 가지고. 그 **채권 발행하고부터는 (노임을) 쪽 못 받았던 것 같아요.** 그냥 채권으로 받았으니까. (채권을) 나중에 사용할 수 있다고 했었는데. 사용할 수 있는 기간이 몇 십 년 후라고 했었는데..."

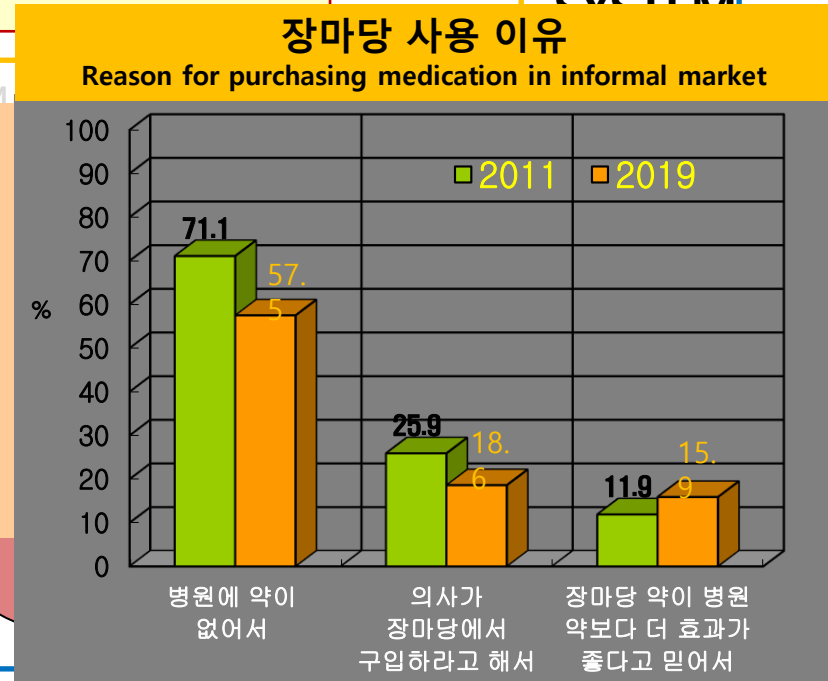
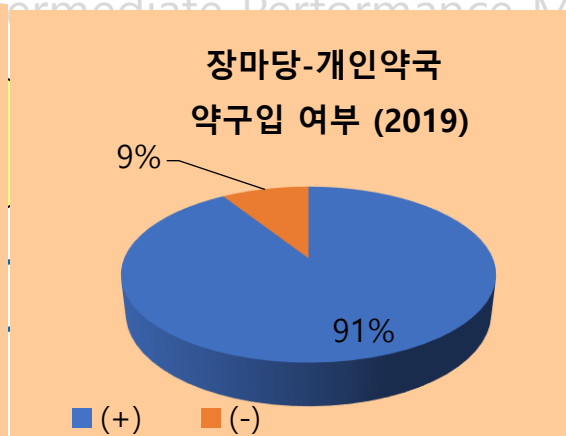
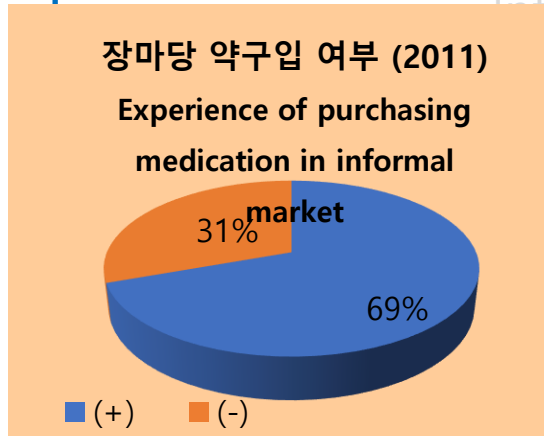
의료인에 대한 정부의 통제 약화

Limited governmental health finance and loosening of governmental control



북한 장마당, 개인 약국과 의약품 거래

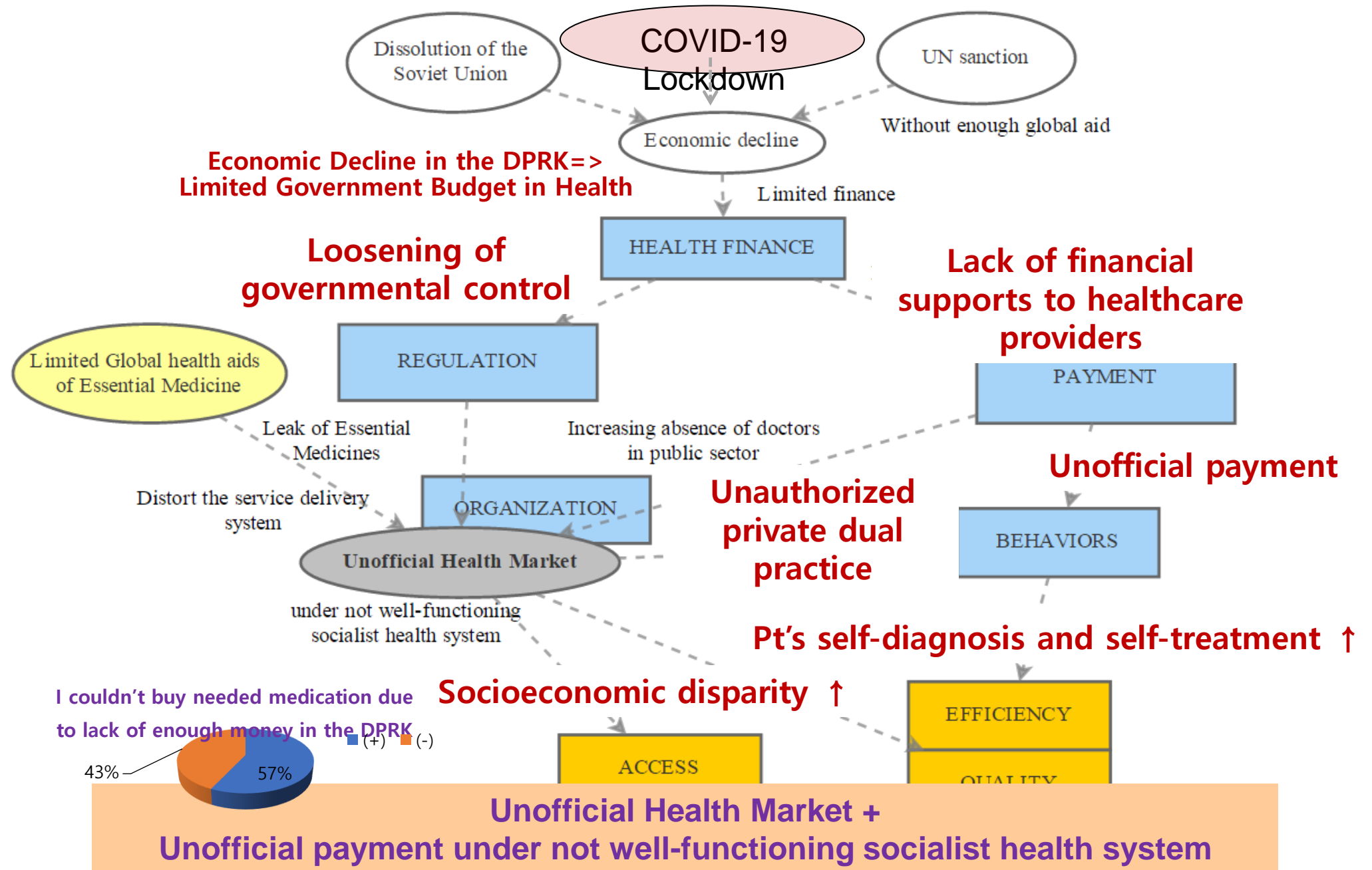
Experience of **purchasing medicines** at an **unofficial health market** in the DPRK



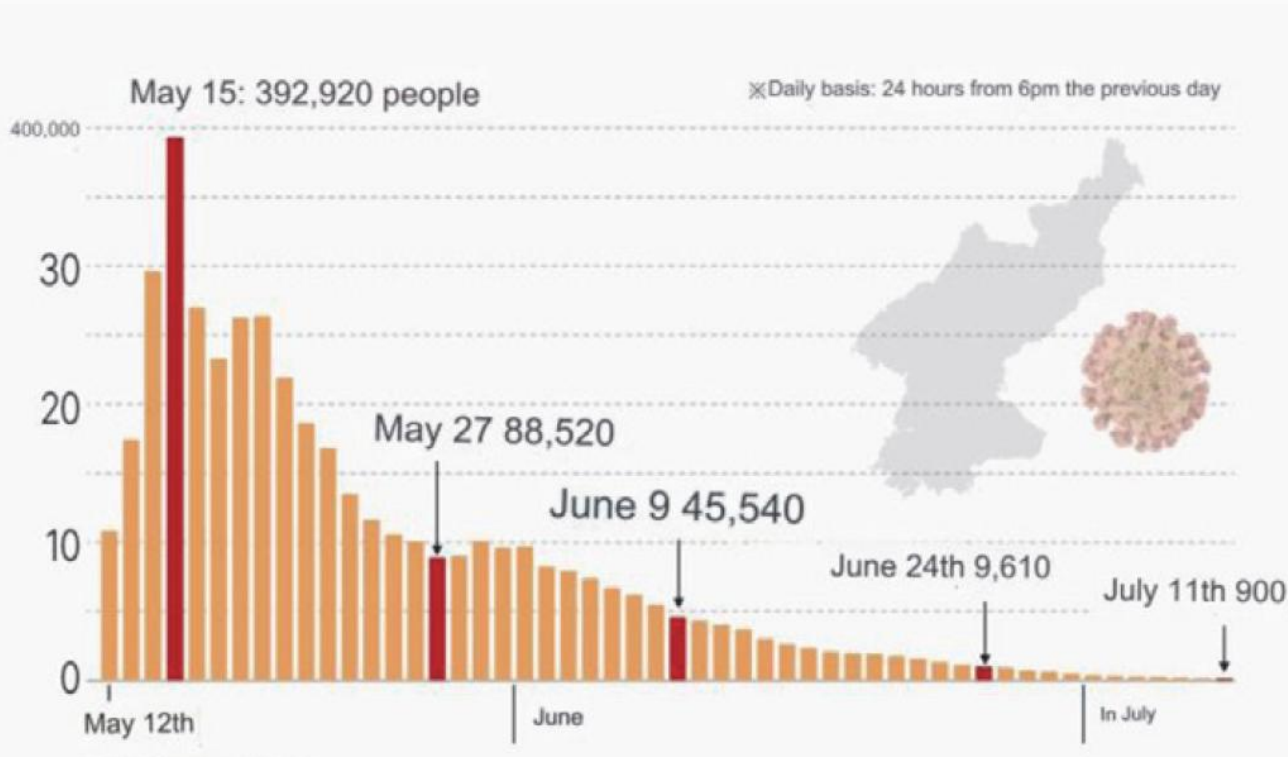
Health status

Customer satisfaction

The Impact of the DPRK Covid-19 Response on DPRK's Health System



New fever patient in North Korea (suspected COVID-19)



The Importance of Health Security

1. Daily Release of COVID-19 Statistics with Active Response Measures Based on Risk Levels
2. Demonstrated Capacity to Implement Nationwide Quarantine Policies as per the 'Emergency Disinfection Law' Announced in August 2020

북한 "코로나19 안정세...당정부주민 일치 단결" 선전

이민윤식 대기자 | © 송민 2022.05.27 07:02

“안정 국면에 들어선 다음에도 모든 현상을 투시하면서 나타난 문제점 관별하고 대책”



북한 방역요원들이 평양역사를 소독하는 모습(사진=노동신문)

북한에서 코로나19에 대한 적절한 대책들이 신속하게 강구됨으로써 다른 나라들에 비해 전파상황이 짧은 기간에 안정세를 보이고 있다고 보도했다.



북한, 코로나19 극복 다급 방역..."80여 일 만에 종식"

2023년 01월 24일 10시 34분



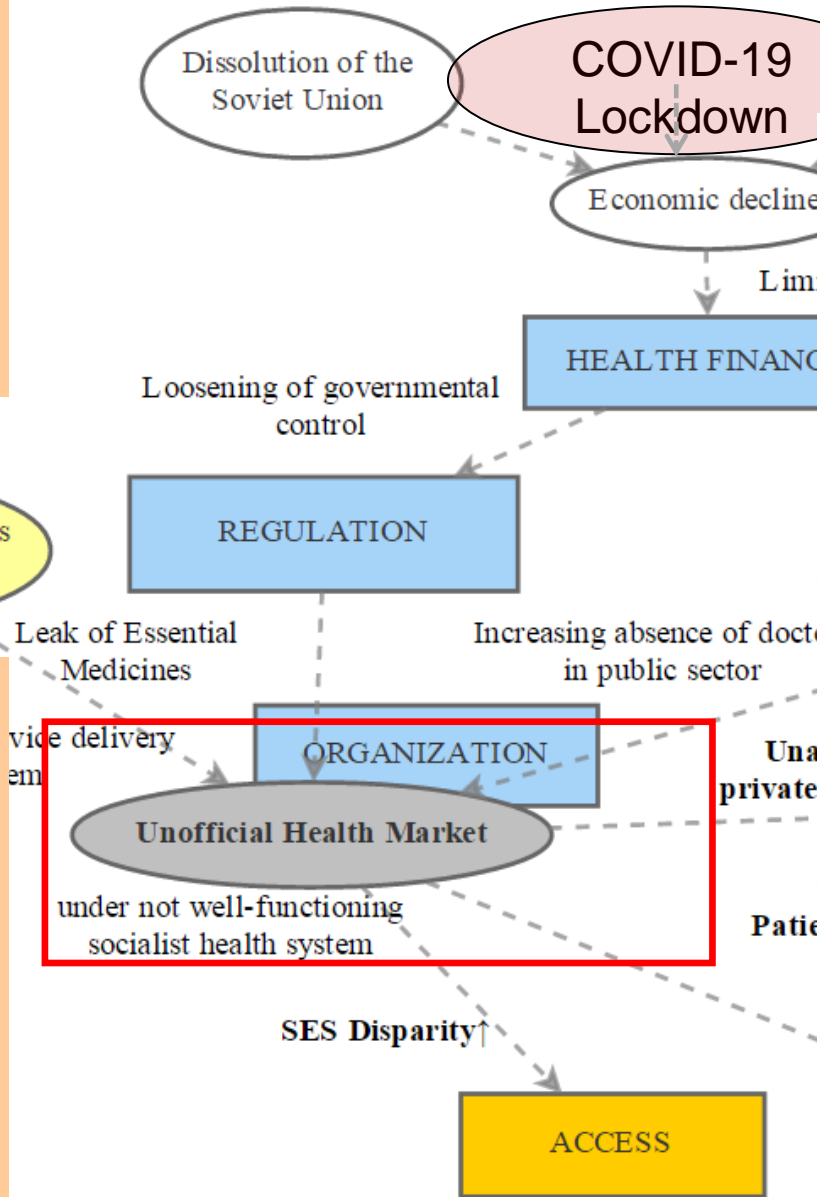
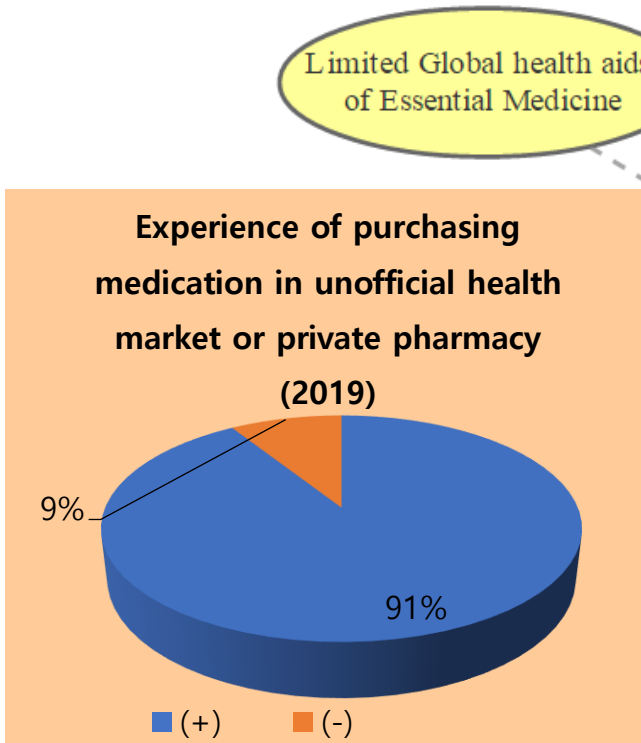
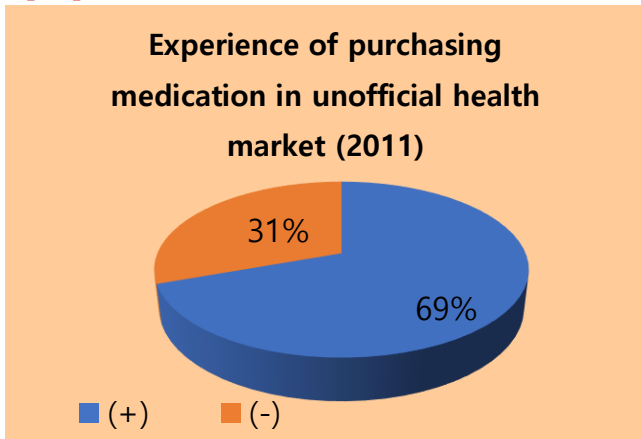
North Korea Lifts 'Mask Mandate' as of July 2023

Dissolution of Local-Level Quarantine Command Centers Related to COVID-19 (July 2023)

Roles of the Quarantine Command Centers: Operating Isolation Facilities for High-Fever Patients, Enforcing Mask-Wearing, and Controlling Civilian Movement

Changes in North Korea's Healthcare System Before and After the Pandemic:

(1) Unofficial Health Market



“COVID-19 exposes inadequacies in North Korea's healthcare system... medicine shortages and hoarding”

국가 공급망 이미 무너진 상황...갑작스런 대량유통에 우왕좌왕한듯
김정은, 손전등 비추자 간신히 약국 방문...주변 가로등도 없어



북한 김정은, 보건·사법 부문에 약 공급문제 질타 ...군투입 특별명령

Changes in North Korea's Healthcare System Before and After the Pandemic: (2) Self-diagnosis and Self-treatment



47% of COVID-19 Deaths in North Korea Attributed to Adverse Drug Reactions

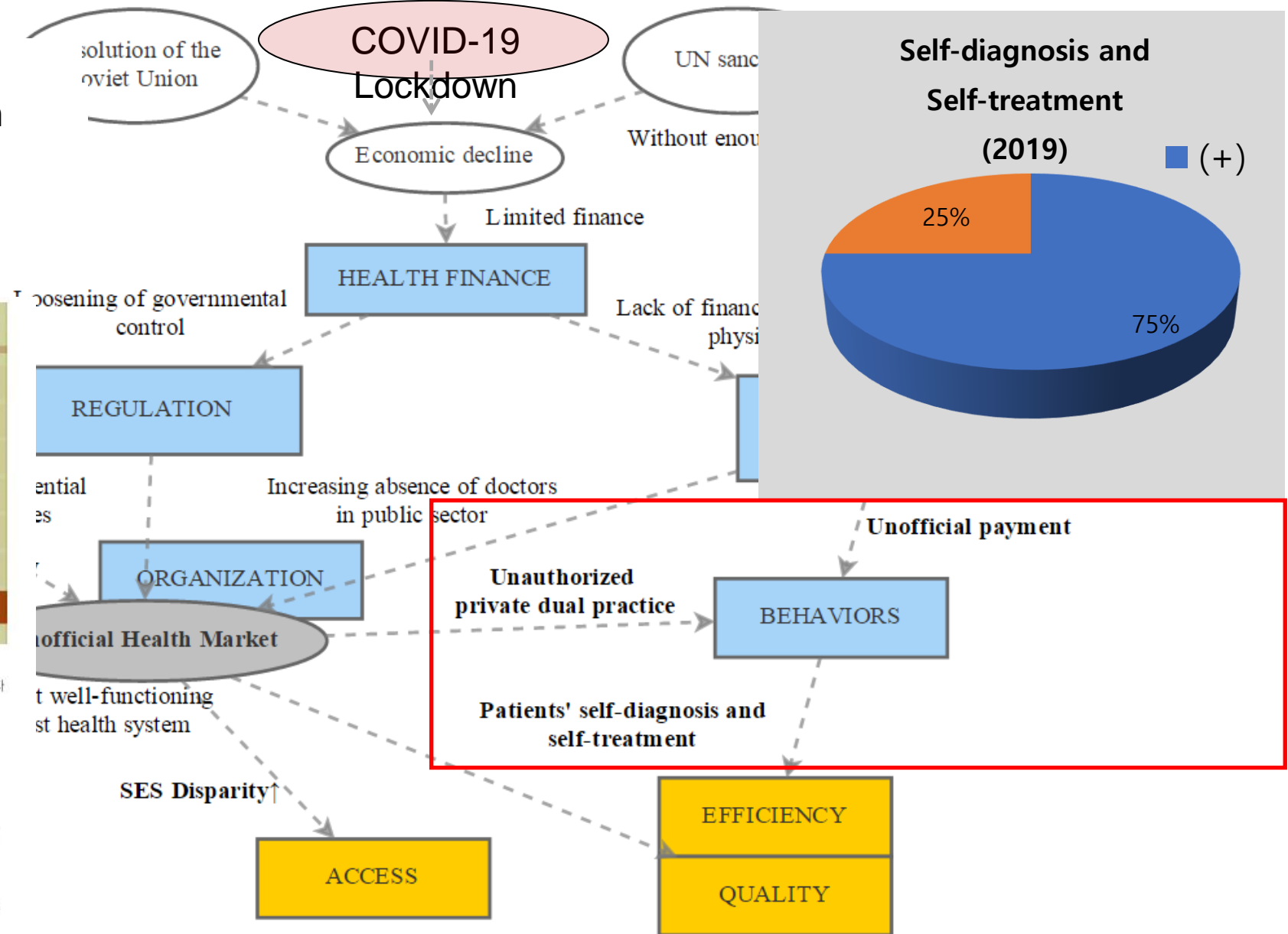
평양의대 "반드시 의사와 협의해 해열·항생제 쓰라"



북한, 코로나 사망자 절반이 약물부작용
 (서울=연합뉴스) 북한 조선중앙TV가 24일 보도한 코로나 사망자 원인 분석자료를 보면, 22일 오후 기준 전체 사망자 68명 가운데 가장 많은 32명이 약물부작용으로 인해 사망한 것으로 확인됐다. [조선중앙TV 화면] 2022.5.24
 [국내에서만 사용가능. 재배포 금지. For Use Only in the Republic of Korea. No Redistribution]
 nkphoto@yna.co.kr

북한에 코로나 치료제 파스로비드가 반입되지 않은 점을 고려하면 주민들이 치료제가 아닌 '대중요법'에 필요한 약물을 오남용하다 사망에 이른 것으로 추정된다.

의약품이 부족한 상황에서 발열 환자가 급증하자 공황에 빠진 주민들이 의사 처방전 없이 함부로 검증되지 않은 약을 무분별하게 먹었을 수 있다.



Changes in North Korea's COVID-19 Pandemic Response Strategy

North Korea Shifts to Maximum Emergency Disinfection System, Expands Mobile Quarantine and Lockdown Personnel

기존보다 10~20명 더 늘려...소식통 "비상방역의 달을 쓰고 주민 통제하는 탄압조나 같다"

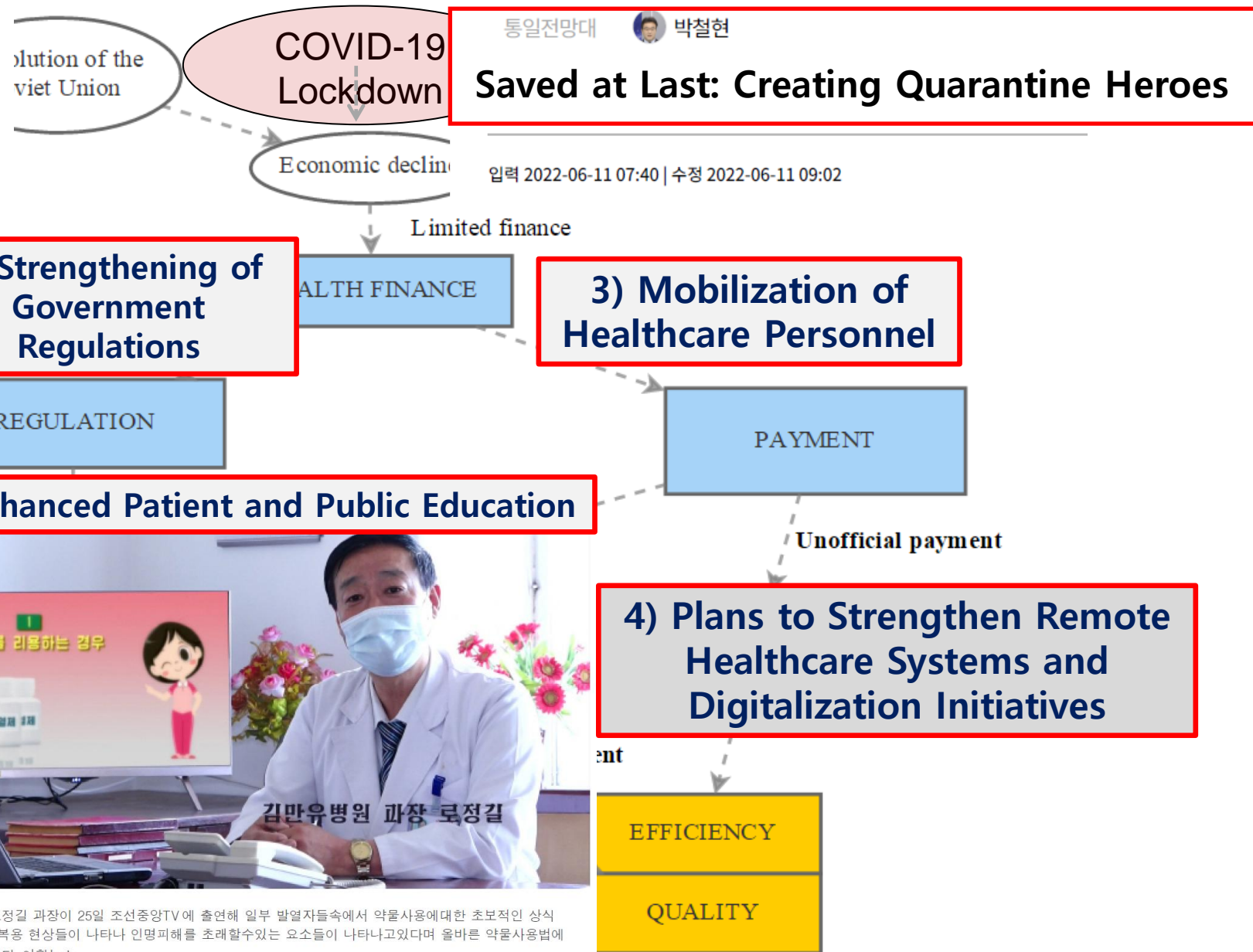
By 김채환 기자 - 2022.05.19 8:00 오전



2022.05.12

Kim Jong-un Issues Special Order for Military Involvement and Drug Supply Amidst COVID-19 Surge...

평양 약국 시찰 공급판매 직접 파악..."주민들에 제때 공급안돼 내각 두
 북, 어제 신규 발열자 39만여명, 8명 사망...누적 사망자 50명
 4월 말부터 누적 발열자 121만여명...현재 56만4000여명 치료중



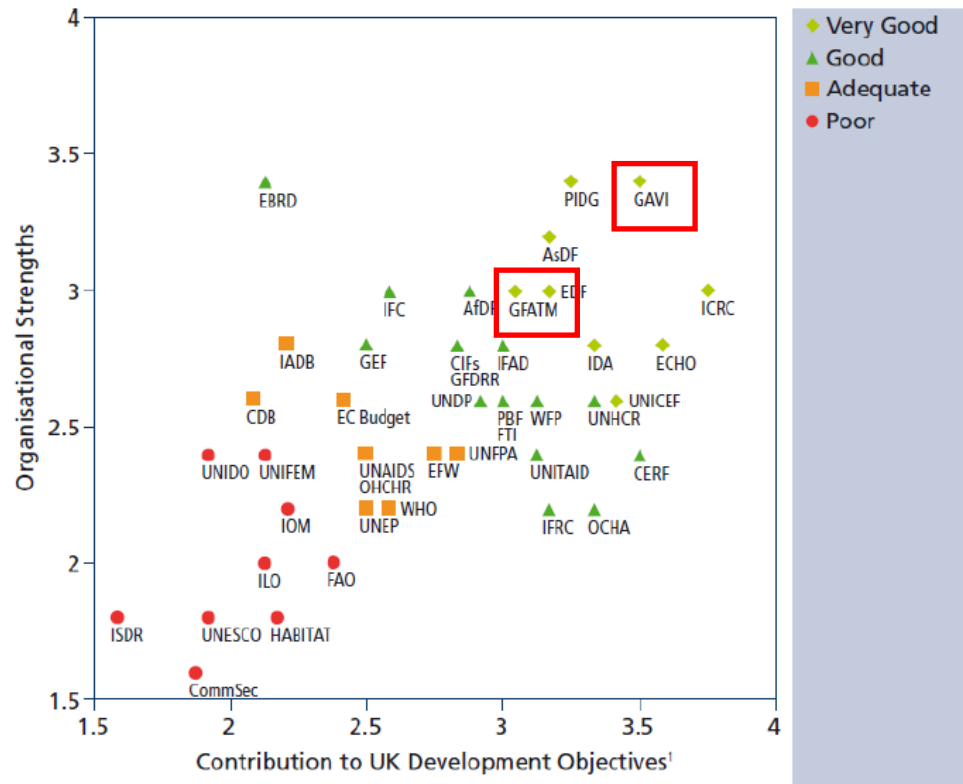
Global Responses to Health and Disease: How to **Allocate Resources**?

Health Security

vs

Health Right

Figure 1. Value for money delivered by multilateral recipients of UK aid



Source: 2011 DFID Multilateral Aid Review.

The Case of the **United Kingdom**
- Multilateral Aid Review

Strengths of Various Organizations vs. Contribution to National Objectives

The Global Vaccine Alliance (GAVI) and the Global Fund receive High Praise from the UK in terms of National Interests
=> These organizations are directly connected to **health security**, particularly in **the management of infectious diseases**.

Global Responses to Health and Disease: How to **Allocate Resources**?

Health Security

vs

Health Right

Infectious Disease Control

Non-communicable Disease Control

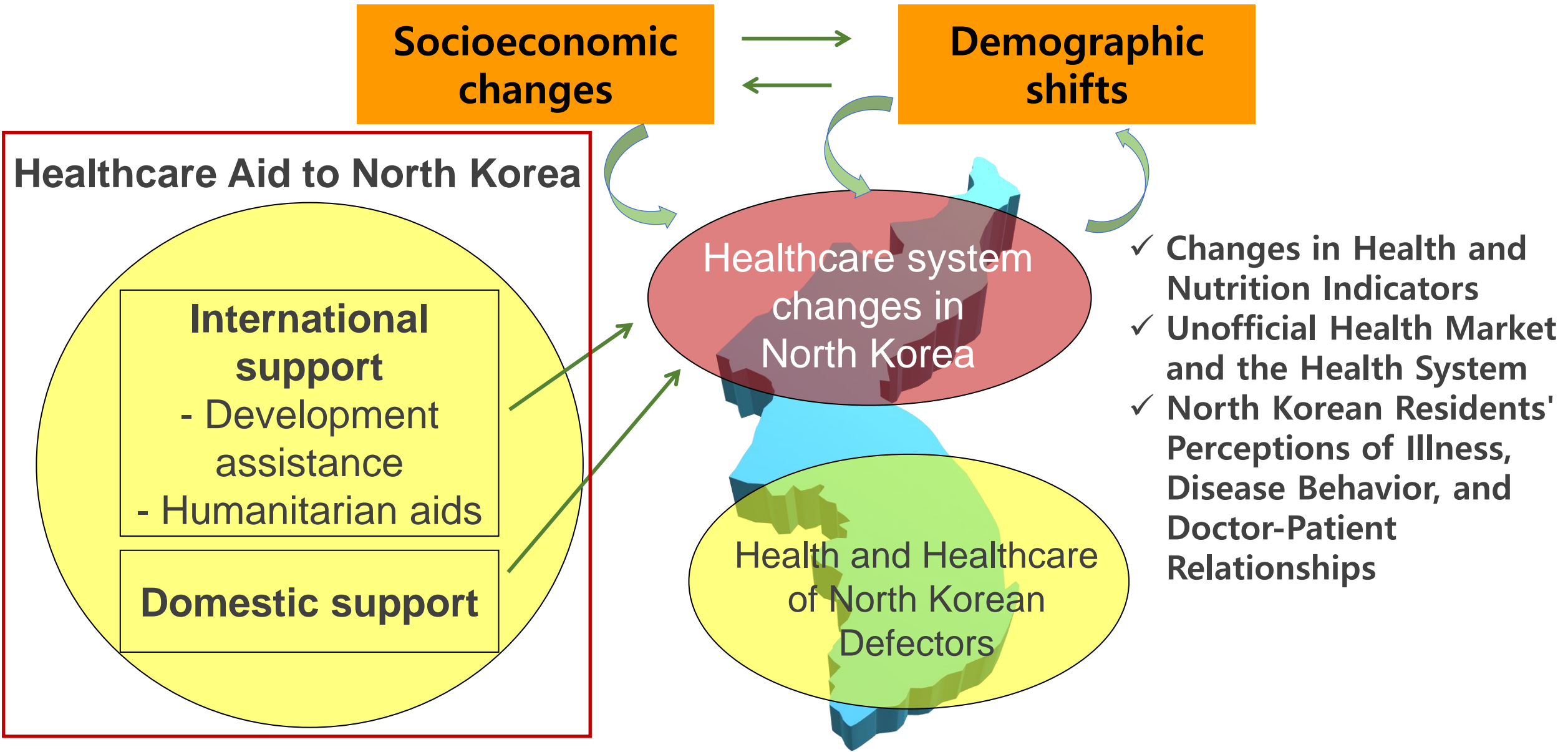
The Global Vaccine Alliance (GAVI) and the Global Fund Receive High Praise from the UK in Terms of **National Interests**.

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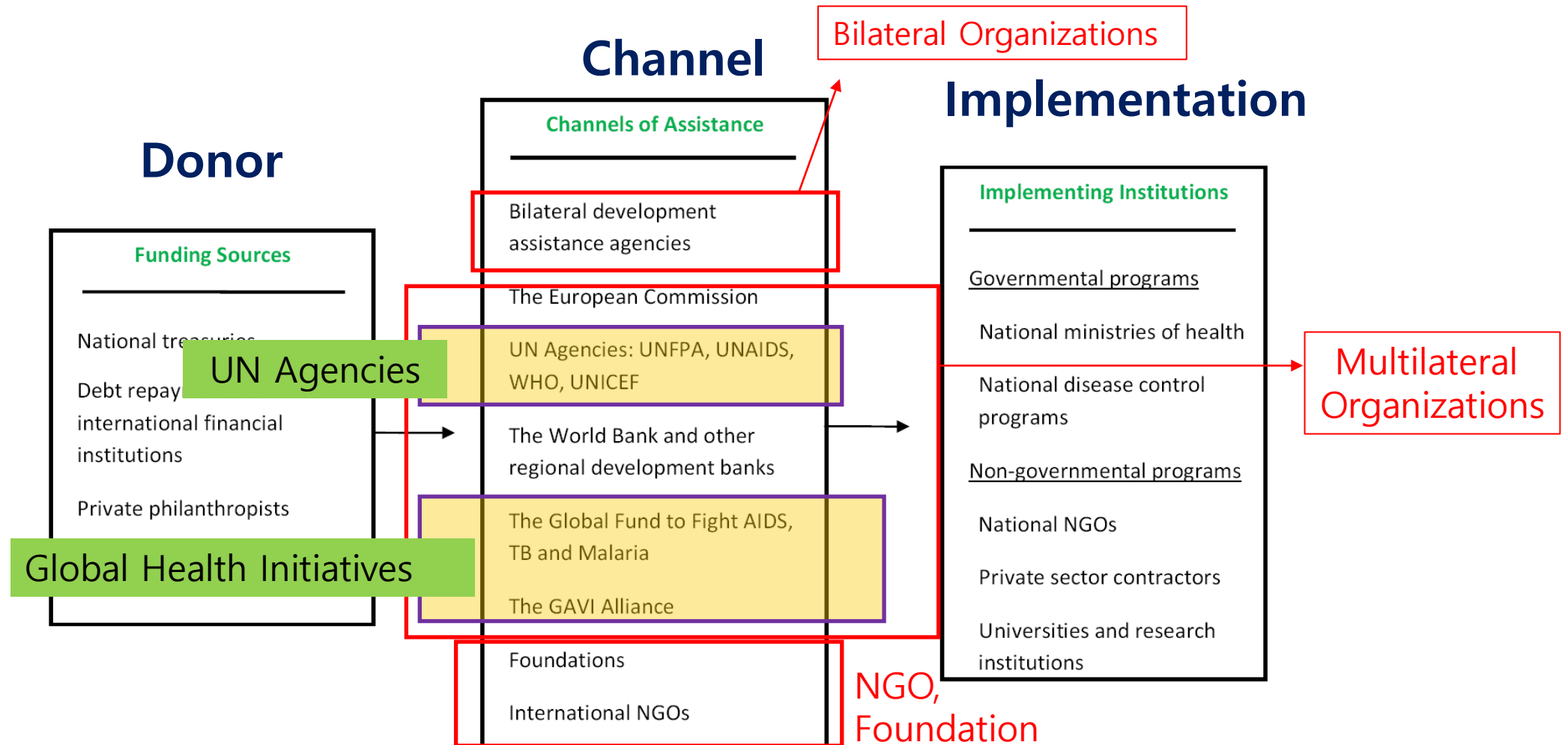
Lack of Systematic International Healthcare Support for North Korea in the Management of **Non-Communicable Diseases**

Expansion of the unofficial health market and Weakening of the Socialist Healthcare Delivery System in North Korea

2. Trends in Global Health Aid to DPRK During the International Sanction and the Role of the ROK Government in the COVID-19 Pandemic Era

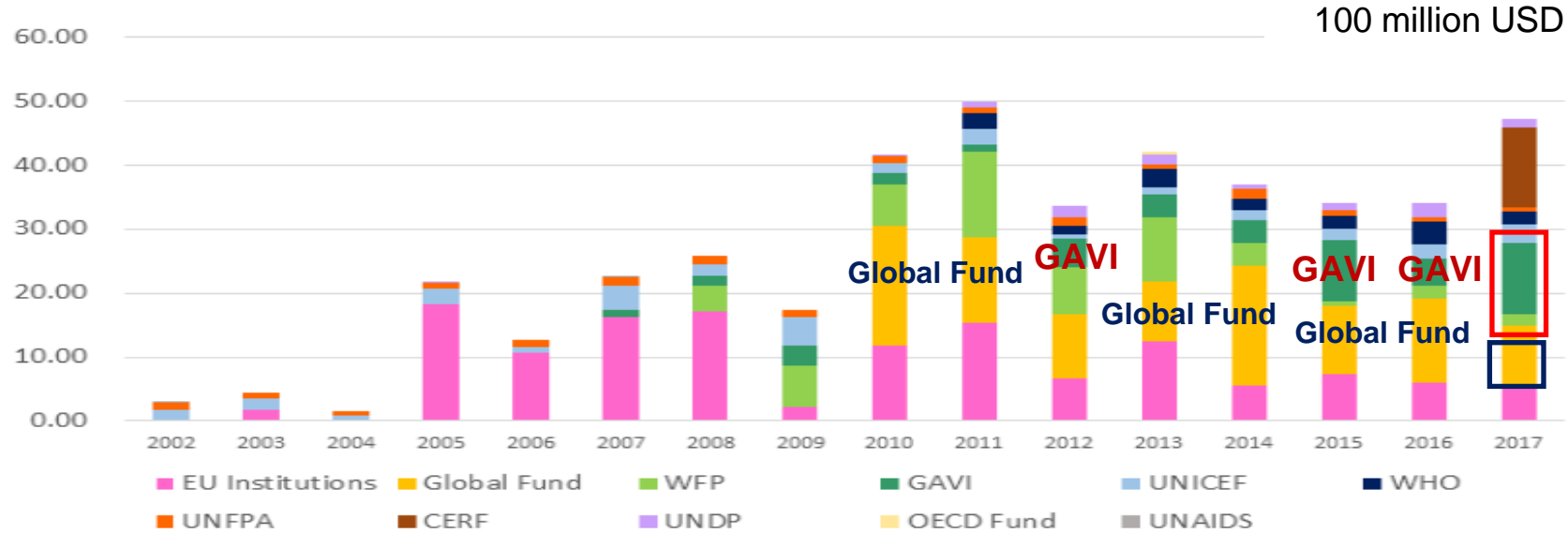


Flow of Global Assistance for Health

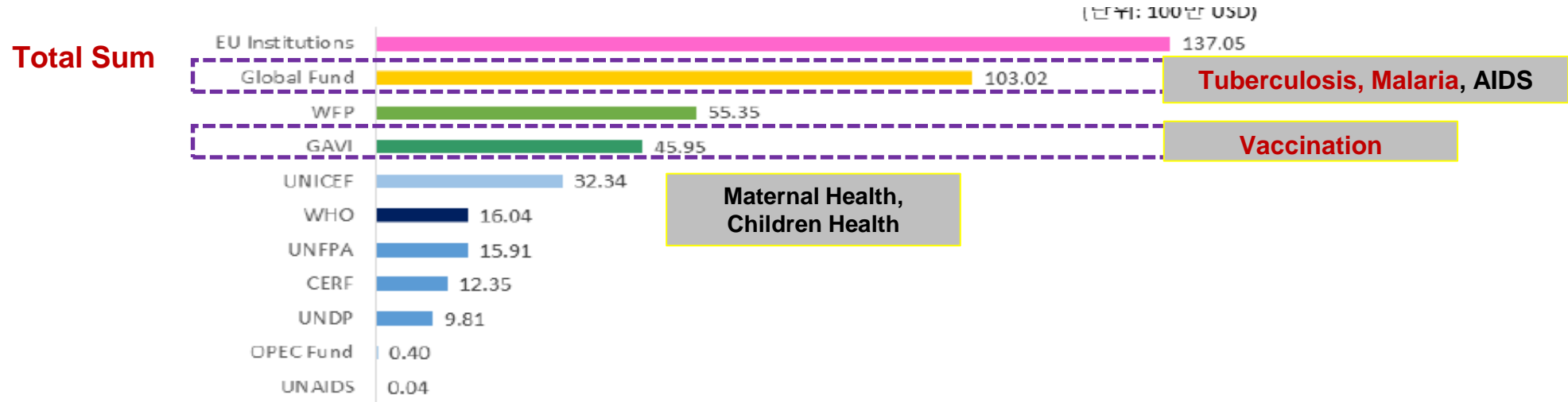


Source: Lancet, 2009. Financing of global health: tracking development assistance for health from 1990 – 2007

Trends in Global Health Aid to DPRK by Channel



[그림 2-1-22] 연도별 국제기구의 대북 보건의료 지원 총 금액



[그림 2-1-21] 국제기구 대북 보건의료 지원 총 금액 비교 (2002-2017년)



Global Health Initiatives: GAVI, Global Fund

focus on specific diseases or on selected interventions, commodities, or services

Global Alliance for Vaccines and Immunization (GAVI)

Vaccination

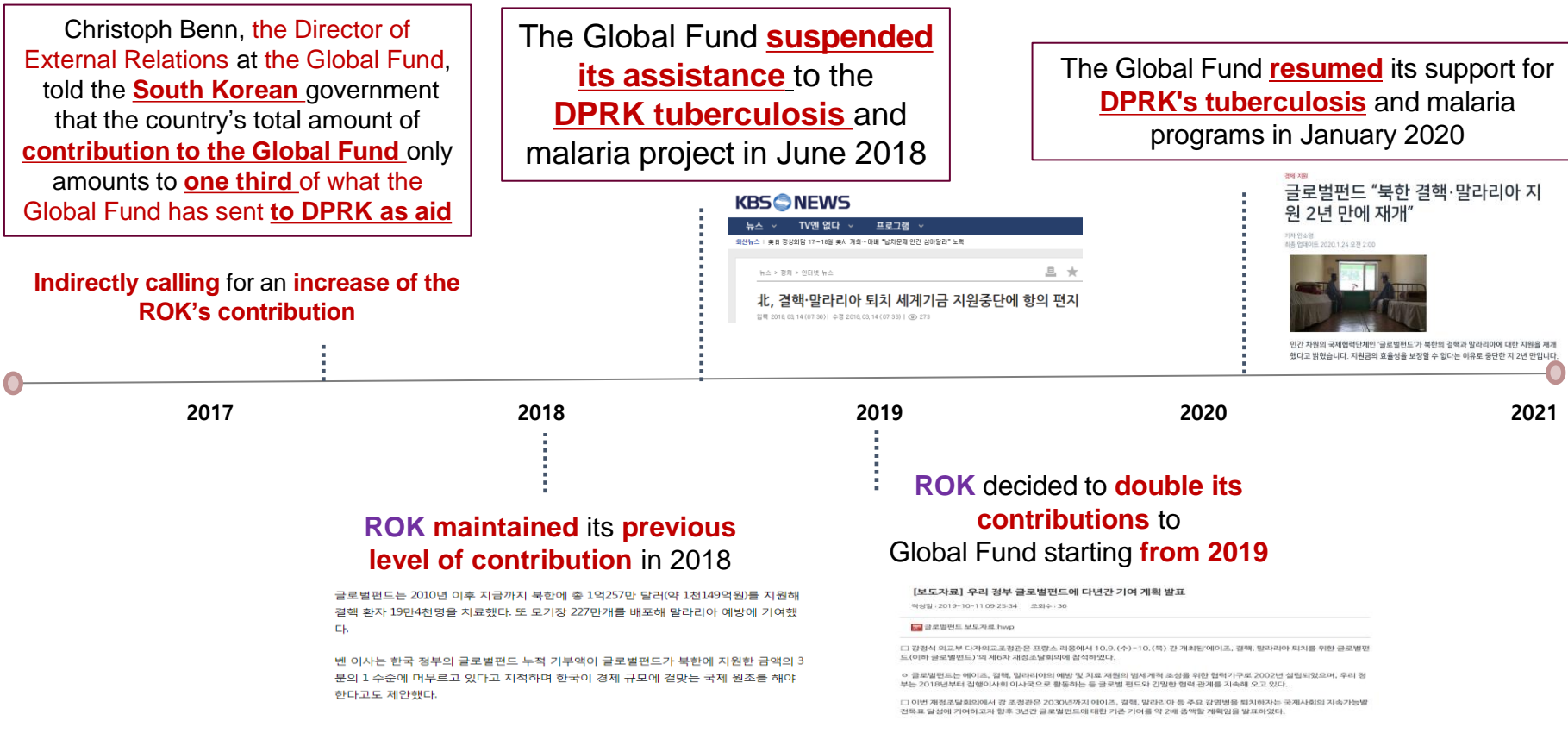
GAVI is co-leading **COVAX** (Covid-19 Vaccines Global Access)

Global Fund

Tuberculosis, Malaria, AIDS

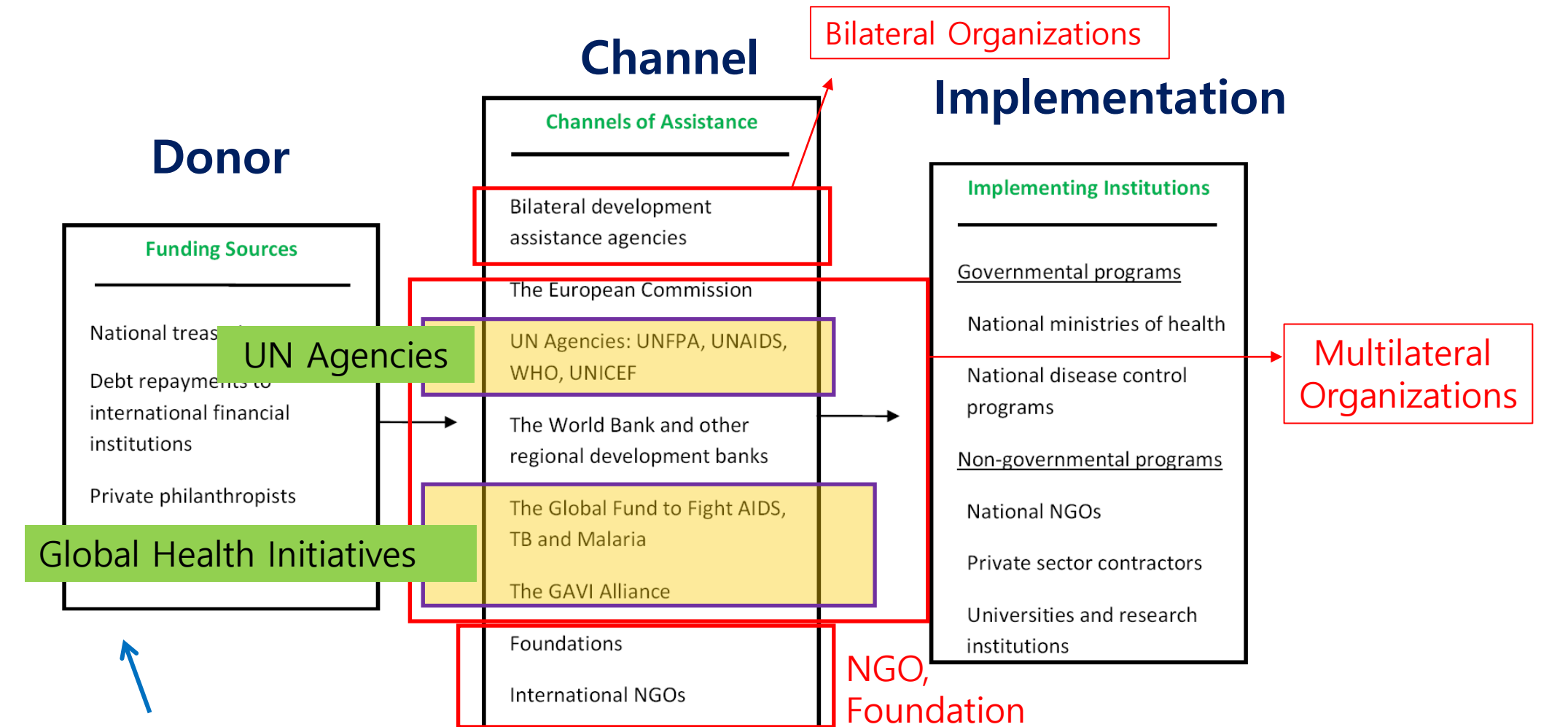
- Public donors' contributions **cannot be earmarked** for specific countries or programs, and the allocation of funding is the responsibility of the Global Fund Board
- **Performance based financing** : inputs linked to performance

Ex > Tuberculosis crisis in the DPRK



This is a classic example of how a country that financially depends on certain external organizations in **tackling infectious diseases** can become **extremely vulnerable to international relations and political decisions.**

Flow of Global Assistance for Health



Role of Republic of Korea

Ministry of Unification: Inter-Korean Cooperation Fund → UN Agencies

Ministry of Foreign Affairs: Global Disease Eradication Fund → GAVI, Global Fund

Ministry of Health and Welfare: Budget for Projects by the Korea Foundation for International Healthcare (KOFIH)

Trends in Global Health Aid to DPRK by Donor Countries

Source Location	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	계	%
1 Australia	6.66	2.89	3.39	1.74	7.44	-	0.78	1.98	-	-	-	5.51	2.02	1.50	-	-	-	-	-	-	33.91	2.73%
2 Austria	-	-	-	-	0.06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.06	0.00%
3 Brazil	-	-	-	-	-	-	-	-	-	-	0.20	-	4.12	-	-	-	-	-	-	-	4.32	0.35%
4 Canada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29.04	2.34%
5 China	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.21	0.42%
6 Cuba	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.40	0.11%
7 Czech Republic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.10	0.01%
8 Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.60	0.53%
9 Finland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.22	0.50%
10 France	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.51	0.04%
11 Germany	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.81	0.95%
12 Greece	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04	0.00%
13 Hungary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.14	0.01%
14 India	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.00	0.16%
15 Indonesia	-	-	-	-	-	-	-	-	-	-	-	-	2.00	-	-	-	-	-	-	-	2.00	0.16%
16 Ireland	0.22	-	-	0.09	3.10	-	0.64	-	-	-	-	-	0.25	-	-	-	-	-	-	-	4.30	0.35%
17 Italy	2.30	7.08	-	6.52	3.66	-	-	1.35	0.93	-	-	0.77	-	0.26	-	-	-	-	-	-	22.87	1.84%
18 Japan	95.66	104.89	0.00	-	46.70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	247.25	19.92%
19 Korea, Republic of	0.47	15.79	16.24	16.83	52.40	0.03	7.28	13.31	11.24	14.21	-	-	4.39	12.08	6.57	4.00	4.00	-	-	-	178.84	14.41%
20 Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	0.20	0.11	0.11	-	0.10	-	-	-	-	0.52	0.04%
21 Luxembourg	-	-	0.56	0.44	0.81	-	-	0.10	-	0.35	-	0.64	0.33	0.48	-	-	-	-	-	-	3.71	0.30%
22 Netherlands	-	0.10	-	2.20	0.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.52	0.20%
23 New Zealand	0.11	-	0.05	0.20	0.87	-	0.19	-	-	-	-	-	-	-	-	-	-	-	-	-	1.42	0.11%
24 Norway	1.70	1.58	0.74	2.62	2.76	-	2.43	4.65	2.86	4.70	0.78	0.88	1.77	0.86	1.00	-	-	-	1.74	0.43	31.50	2.54%
25 Poland	-	-	-	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02	0.00%
26 Russian Federation	0.01	-	-	10.00	-	-	-	0.51	-	-	-	-	5.00	3.00	-	-	3.00	-	8.00	-	29.52	2.38%
27 Saudi Arabia	-	-	-	-	-	-	-	-	8.48	0.56	-	-	-	-	-	-	-	-	-	-	9.04	0.73%
28 Singapore	-	-	-	-	-	-	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	0.04	0.00%
29 South Africa	-	-	-	-	-	-	-	0.08	-	-	-	0.14	0.12	-	-	-	-	-	-	-	0.34	0.03%
30 Sweden	1.21	0.62	0.97	2.26	6.04	1.81	-	1.00	-	-	-	3.83	-	1.69	-	0.64	1.23	0.56	2.65	1.08	25.59	2.06%
31 Switzerland	0.89	2.22	-	0.35	0.10	0.23	-	0.45	-	-	-	4.95	4.91	7.95	-	-	4.59	-	5.32	5.99	37.95	3.06%
32 United Kingdom	0.07	1.71	1.71	-	1.89	-	-	1.01	-	-	-	-	-	-	-	-	-	-	-	-	6.39	0.51%
33 United States	29.23	102.70	63.49	31.52	19.30	-	-	-	-	-	-	-	-	-	-	-	-	1.00	-	-	247.24	19.92%
34 국가 제외 기관	7.08	1.25	25.75	45.39	25.8	1.12	0.45	29.91	-	17.85	11.1	42.49	20.49	15.84	2.99	7.18	11.38	12.35	10.25	-	288.67	23.26%
계	149.83	247.41	118.34	130.42	184.83	4.75	11.77	55.27	23.51	37.67	12.08	61.70	54.67	45.75	11.46	12.47	27.22	13.91	29.82	8.21	1241.08	100.00%

It is very important for the ROK, United States and other donor countries to maintain its direct and indirect financial support in order to contribute to DPRK's health and medical care, including Covid-19 tests, treatments, and vaccines through various multilateral organizations in spite of difficulties in UN sanctions, inter-Korean cooperation and DPRK's Covid-19 lockdown.

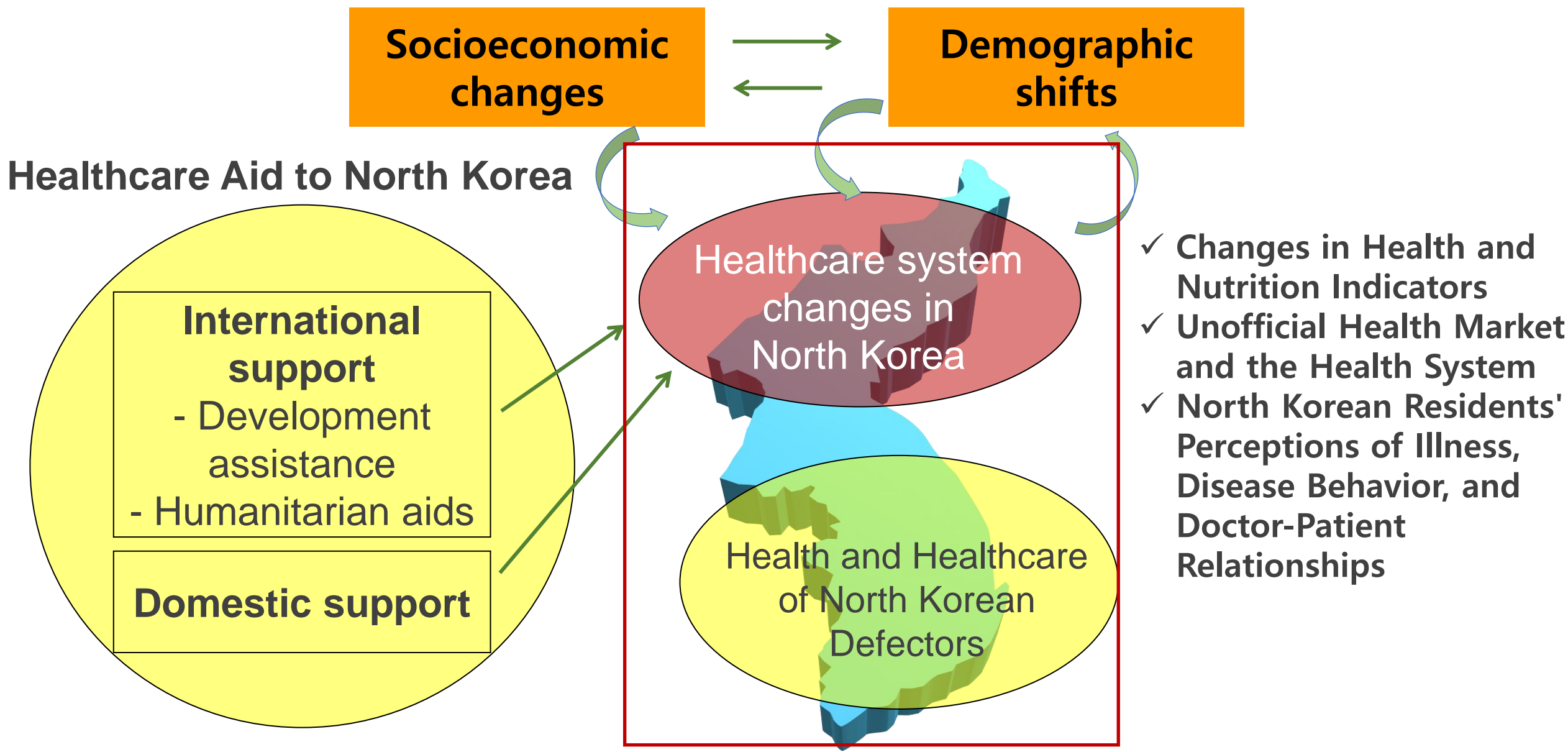
Balancing North Korean Human Rights with Support and Cooperation Measures

- **Under Kim Jong-un's Leadership, North Korea shows resistance and rejection in areas of accountability and Human Rights Sanctions, but displays relative receptiveness on Issues related to the Rights of Women, Children, and Persons with Disabilities**
- **The areas of Women's, Children's, and Disability Rights are closely linked to International Humanitarian Aid and Development Cooperation**
 - ✓ North Korean authorities have shown interest and willingness to secure funding and implement projects through humanitarian assistance and development cooperation in international healthcare.
- **To improve Human Rights in North Korea, accountability measures alone are Insufficient: A simultaneous pursuit of accountability and cooperation is Necessary** (Elizabeth Salmon, UN Special Rapporteur on North Korean Human Rights)

Need for a Consultative Body for Inter-Korean Healthcare Cooperation to Protect the Human Rights and Right to Health of North Korean Citizens and Ensure Health Security on the Korean Peninsula

- To ensure that essential healthcare services related to infectious disease management in North Korea are carried out with financial stability:
 - 1) Utilize multilateral channels that are acceptable to North Korea,
 - 2) Coordinate the roles of various government agencies within South Korea, and
 - 3) Systematically monitor and gather input from experts, NGOs, and international organizations.
- ⇒ A consultative body for inter-Korean healthcare cooperation is essential to protect the right to life and health security on the Korean Peninsula.

3. Future **Inter-Korean Biomedical Cluster Cooperation** at the Demilitarized Zone (**DMZ**) or **Border Area** in the Post-pandemic Era



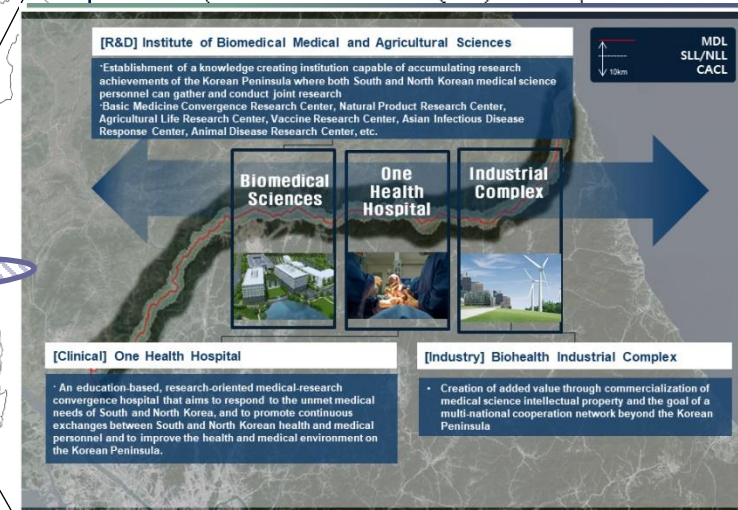
Inter-Korean Biomedical Cluster Cooperation could be accompanied by the Cooperative Threat Reduction Program

Biomedical cluster
Medicon Valley
in Sweden and
Denmark

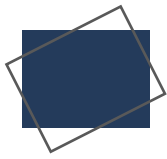
A sustainable and synergistic horizontal inter-Korean cooperation model

- ❖ Due to an economic crisis in early 1980 the two fellow Scandinavian countries decided to join hands to solve the problem of high unemployment rate in Sweden and high wage problems in Denmark
- ❖ Medicon Valley offers jobs to the Swedish people and an incentive for competition among businesses in Denmark. This benefits both countries and has become a model case of a cross-boundary biomedical cluster.

DMZ



- ✓ A model of **coexistence** in which **research, clinic, education, and production** are intertwined in an interdisciplinary network, based on a model of **economic cooperation** that builds upon the notion of “**One Health**”
- ✓ **DMZ** would no longer remain a symbol of the Korean war, but a **symbol of life and peacebuilding**



Analysis of the Concept and Types of Inter-Korean Bio Medical Cluster

Bio Medical Cluster

- A biomedical cluster refers to an aggregation and linkage of companies, service providers, and institutions in the **biotechnology sector that are geographically concentrated and either competitive or cooperative.**
- However, mere geographical concentration of companies does not define a cluster. It is considered a cluster when there is an exchange of information, products, or personnel among the members of the cluster (Korea Research Institute of Bioscience & Biotechnology, 2016).

Advanced Medical Complex

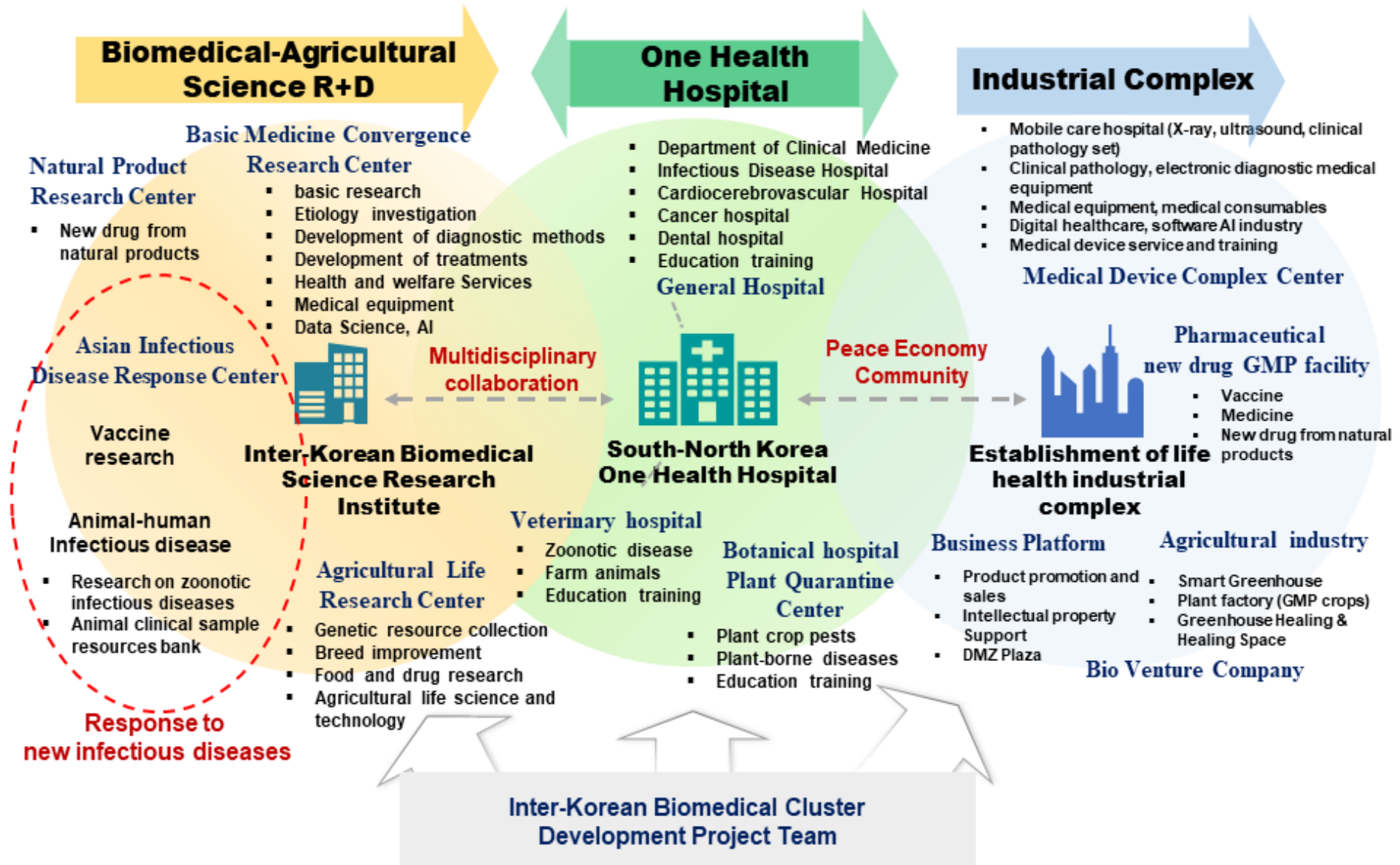
- The Advanced Medical Complex, referred to domestically as a biomedical cluster, was initiated in 2005 by the **Medical Industry Advancement Committee** to serve as a global R&D hub with top capabilities in advanced medical industries.
- Its main objective is to develop a medical R&D hub, **concentrating human and physical infrastructure essential for creating global new drugs and advanced medical devices, aimed at boosting the medical industry as a national growth engine.**

Healthcare Complex on the Korean Peninsula

- It includes the establishment of a health and medical cooperation system between the North and South, alongside a network of enterprises, knowledge-creation institutions, and connecting organizations that generate added value.



Inter-Korean Biomedical Cluster at the DMZ or Border Area



Administrative, financial, and legal promotion for inter-Korean joint R&D

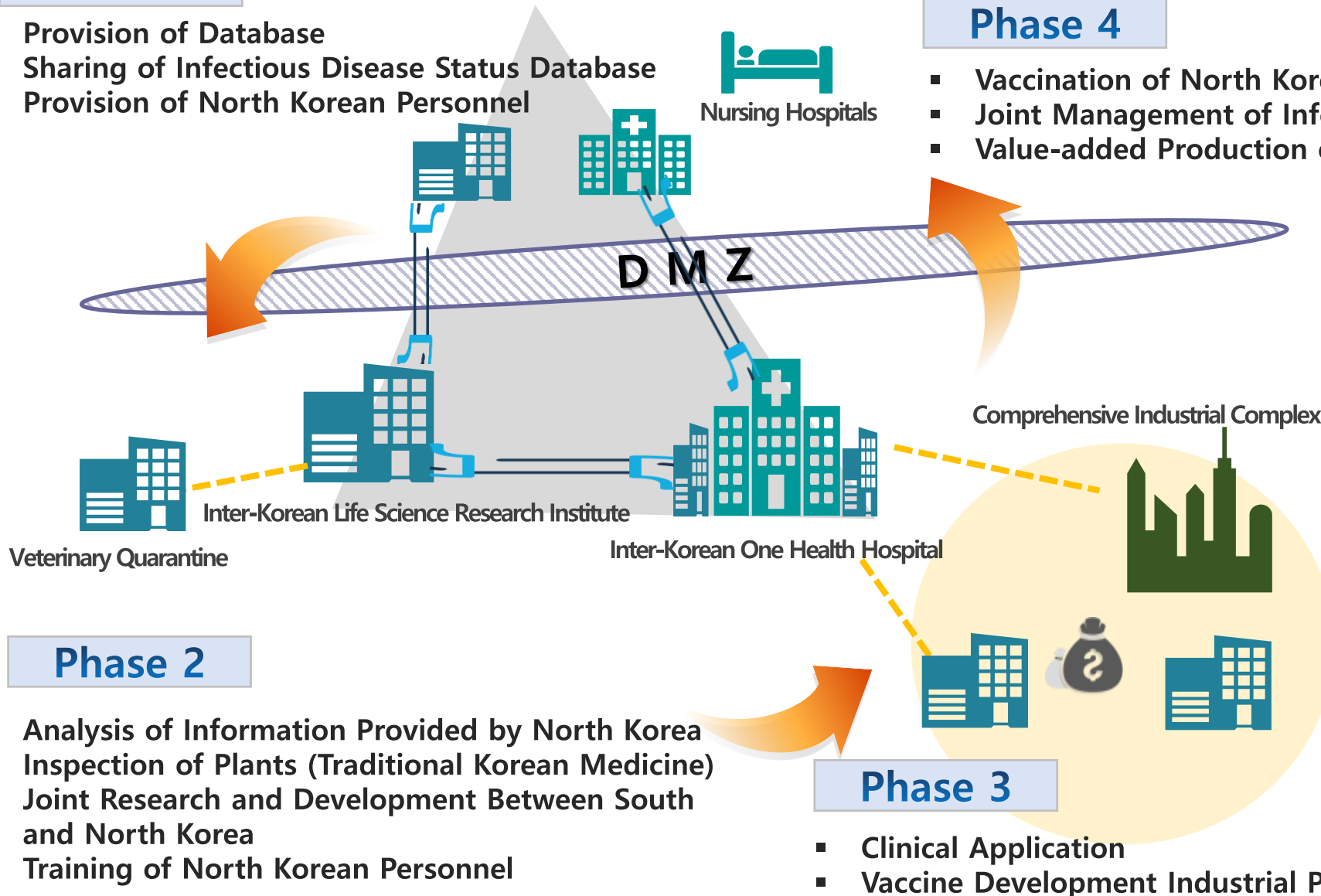
(e.g.) Infectious Disease Control and Vaccine Development

Phase 1

- Provision of Database
- Sharing of Infectious Disease Status Database
- Provision of North Korean Personnel

Phase 4

- Vaccination of North Korean Residents
- Joint Management of Infectious Diseases on the Korean Peninsula
- Value-added Production of Intellectual Property



Phase 2

- Analysis of Information Provided by North Korea
- Inspection of Plants (Traditional Korean Medicine)
- Joint Research and Development Between South and North Korea
- Training of North Korean Personnel

Phase 3

- Clinical Application
- Vaccine Development Industrial Process



Economic Cooperation +

Integration with

International Healthcare

ODA



Expected Outcomes and Utilization Plans

1

Transforming the DMZ from an anti-life zone into a life-promoting space, symbolizing peace and civilized values.

2

A model where South and North Korea collaboratively address infectious viruses threatening the Korean Peninsula and lead the biotechnology industry, identified as the next engine of growth.

3

A One Health-based economic cooperation model linking interdisciplinary research, clinical practice, education, and production in healthcare, medical science, and agricultural biology, contributing to mutual prosperity in South and North Korea.

4

Shifting from unilateral aid to North Korea to a horizontal cooperation model, promoting a paradigm shift in technological collaboration underpinned by food security on the Korean Peninsula.

5

Enhancing inter-Korean exchange and cooperation to serve as a bridge for peace on the Peninsula and strengthen international influence.

6

A new proposal for inter-Korean exchange and cooperation, expected to foster not only biomedical science advancement but also jointly address the long-term costs of peace on the Peninsula.

Overall Roadmap

1st Phase: Preparation

2nd Phase: Initial stage

3rd Phase: Expansion stage

Maintain sanctions on North Korea

Relief sanctions on North Korea

Lifting sanctions on North Korea

Year 1 Year 2 Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10 Year 11 Year 12 Year 13 Year 14 Year 15



Advancement of Medical Science in the Korean Peninsula

Stable Food Resource Security

Response to Emerging Infectious Diseases /Vaccine Development

- : ① Vaccination Response to infectious diseases
- : ② Agricultural & Biological Natural Products
- : ③ Medical device development & Manufacturing



Thank you



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