



# “Medical, Health, and Bio Bank Data Service” in Bhutan

April , 2022

Royal Government of Bhutan

and

Japan International Cooperation Agency



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## Leading the world with trust

JICA values the relationship of mutual trust with developing countries and is working with them to rise to the challenges.





\*Figures exclude JICA's cooperation for multiple countries and/or multiple regions and international organizations.

\* 1 USD = 115.555 JPY (as of Mar. 2022)

## 【Human Security】

Aiming for a society where all people can protect themselves from various threats and live their daily lives in security and with dignity.



### People

A society where all can live healthy, safe lives

- Education
- Health
- Social Security



### Peace

A peaceful, just society without fear or violence

- State-Building to Prevent the Outbreak and Recurrence of Conflicts
- Governance Support
- Gender Equality and the Empowerment of Women and Girls

## 【Quality Growth】

Promoting sustainable growth with less disparity and without harming the environment.



### Prosperity

A prosperous, sustainable economy at harmony with nature and prepared for promoting social development

- Agricultural and Rural Development
- Private Sector Development
- Urban and Regional Development
- Ensure Access to Affordable and Clean Energy
- Development of Transport Infrastructure



### Planet

Care for the Planet

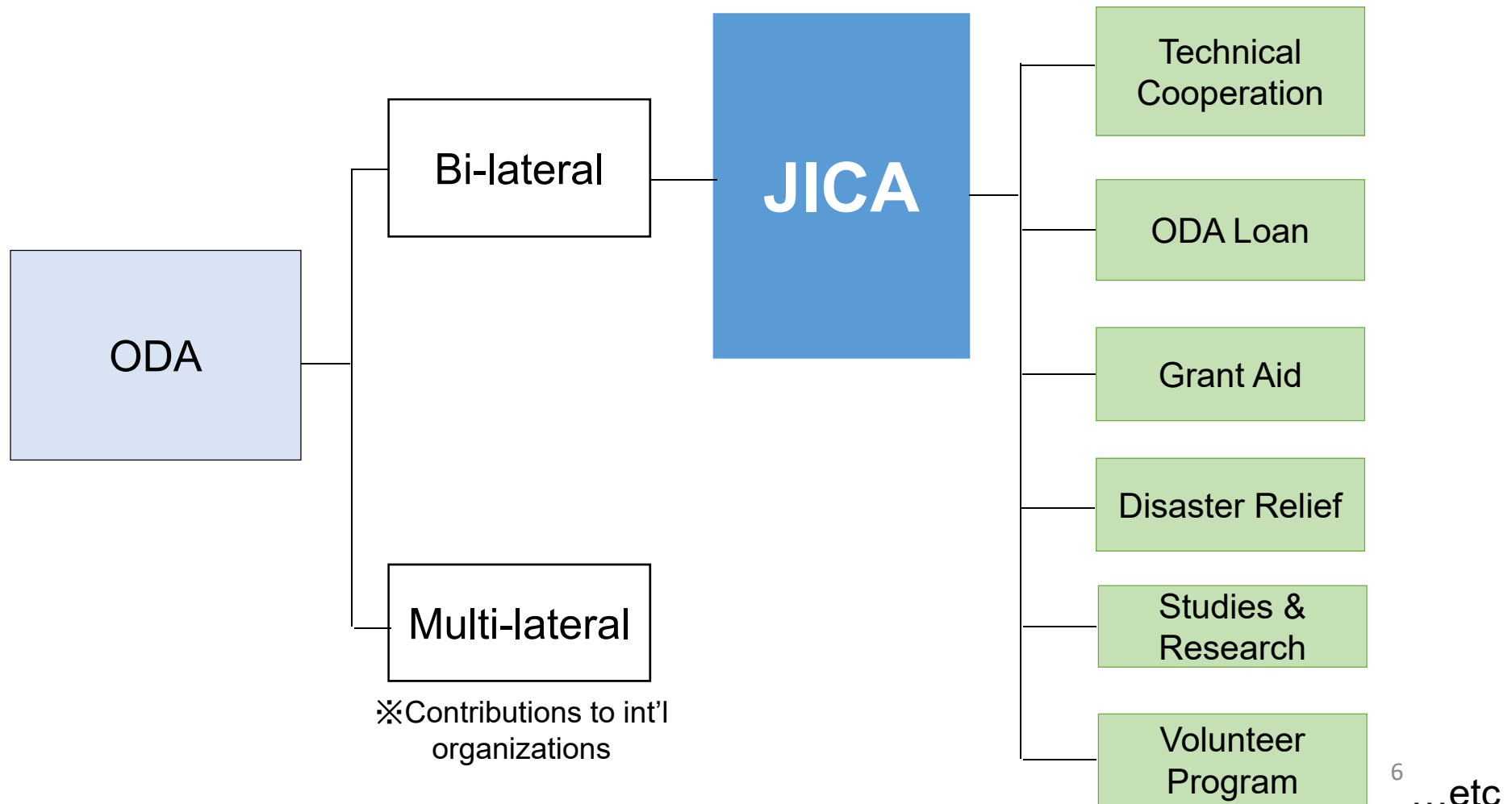
- Environmental Conservation and Management
- Water Resources Management
- Disaster Risk Reduction
- Climate Change



# About JICA ~Types of Cooperation~



- JICA is Japan's sole Official Development Assistance (ODA) implementing body, as an incorporated administrative agency of Government of Japan.





# About JICA ~Activities in Bhutan~



## ■ Achievements (cumulative total till Mar 2021)

Scheme	Amount / million JPY (equivalent million USD*)
Grant	40,506 (350)
ODA Loan	5,763 (50)
Technical Cooperation	24,058 (208)

\* 1 USD = 115.555 JPY (as of Mar. 2022)

Scheme	Amount (Person)
Expert and volunteer, etc	5,173

## ■ Agriculture

- Agriculture Mechanization  
(Grant, Technical Cooperation, JICA volunteer)
- Commercial Agriculture Promotion  
(Technical Cooperation)

etc...



## ■ Infrastructure

- Bridge Construction  
(Grant, Technical Cooperation)
- Rural Electrification  
(ODA Loan)

etc...



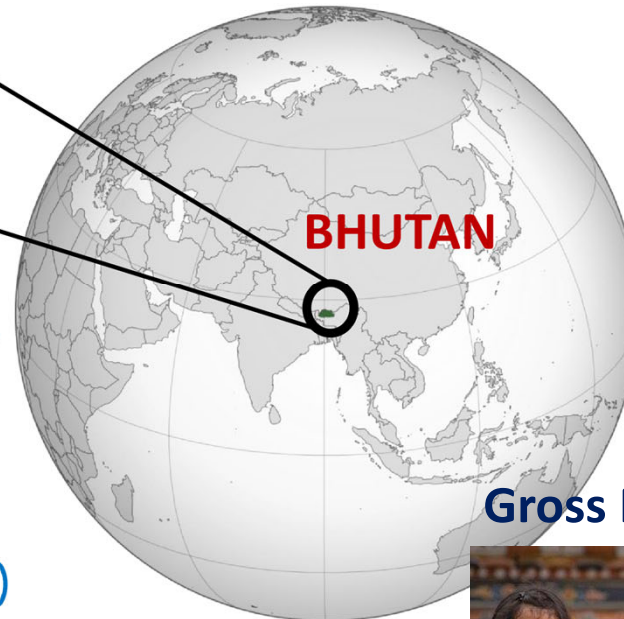
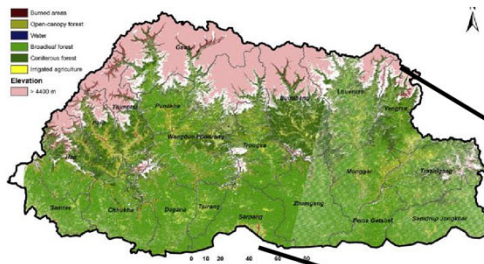
## ■ Health and Medical

- Medical Equipment (Grant, JICA Volunteer)
- Ambulance (Grant)
- Strengthening Quality of Medical Education(Technical Cooperation) etc...



## **2. Background of the Cooperation between JICA and Royal Government of Bhutan**

## ■ Country background of Bhutan



- ❖ Size: 38,394 Sq kms
- ❖ Population - 727,145 (2017)
  - ❖ Male — 52.3 %; Female — 47.8 %
  - ❖ Rural- 62.2%
  - ❖ Density — 19 persons/km.sq
- ❖ Governance — Democratic Constitutional Monarchy (2008)
- ❖ Forest cover — 71%

## Gross National Happiness



## ■ Development Challenges

### ➤ **“A landlocked country with steep mountains and small and dispersed population.”**

- It covers an area of about 38,400 km<sup>2</sup> and has a population of about 750,000.
- Only three cities have a population of 10,000 or more. Except for the capital Thimphu (about 100,000 people), the population is between 10,000 and 27,000.



### ➤ **“The major source of employment is agriculture. Limited industrial growth and weak export capacity.”**

- Chronic trade deficit and electricity sales to India accounts for a large share of exports.
- Primary industries such as agriculture accounts for 54% of employment, followed by public servants (8.2%).
- The domestic market is small; to attract foreign investment has been a challenge.

### ➤ **“Limited FDI compared to neighboring countries”**

- FDI remains limited -- less than 10 new projects and approximately 3 billion ngurtrum (about 40 mil USD) per year for a long time.
- The hotel industry has accounted for about 40% of the past projects.

- Strong sense of concern by His Majesty the King and the Government
  - His Majesty the King and the Royal Government of Bhutan (RGoB) concern the **lack of attractive economic and employment opportunities for Bhutanese youth.**
  - Now, RGoB is formulating **“The 21st Century Economic Roadmap”** to overcome the situation, and JICA is strongly interested in cooperating with Bhutan in realizing the Roadmap.



*“The world is changing rapidly. We cannot afford to avoid what we don’t yet understand, and hope for the best. Such an attitude will cost us our national objective of self reliance.*

*We have to create economic opportunities for the next generation. It’s time to recalibrate ourselves to succeed in the fast-paced world. The government, lawmakers, the private sector, the people, and experts in various fields must work collectively to chart out a clear economic roadmap for the 21st Century– this will help every individual and entity to understand their respective roles and work towards a common national objective.”*

**His Majesty The King**

112th National Day, 17th December, 2019

Changlingmithang Stadium

## ■ “4 Principles” for JICA’s cooperation:

### 1. Advantages of Disadvantages



Creating competitive advantages of disadvantages inherent in Bhutan

### 2. Bhutan’s Bottlenecks



Tackling with bottlenecks of Bhutan's development

## 3. Connecting to the World



Connecting with the global market

## 4. Advanced Technology



Incorporating the benefits of cutting-edge technologies and innovations



## Background of the Cooperation between JICA and Royal Government of Bhutan



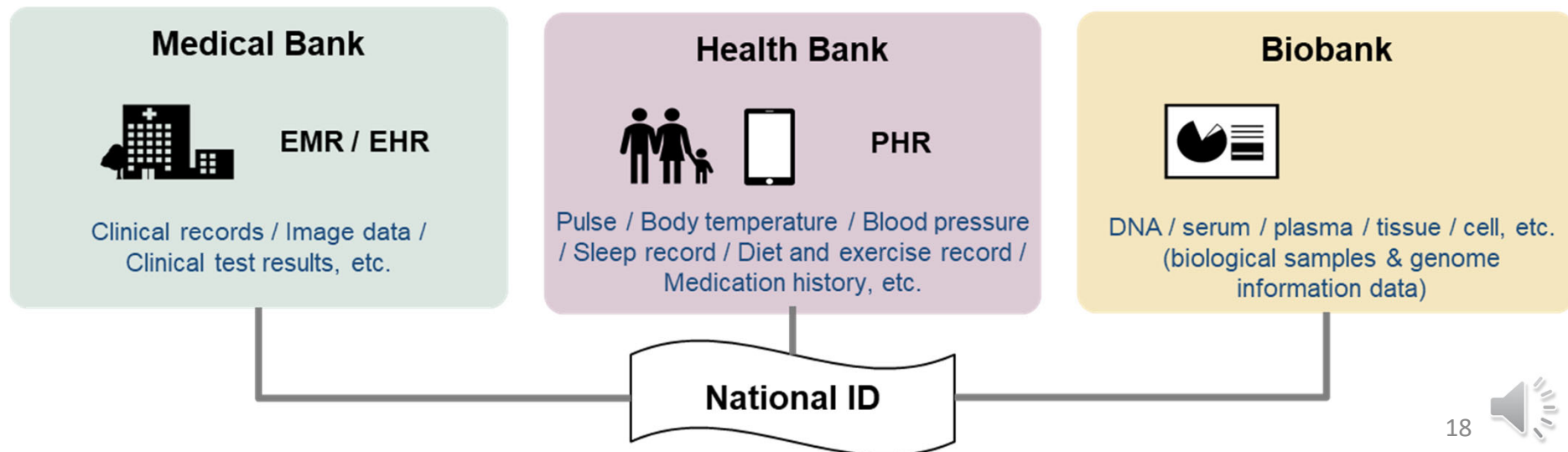
- Summary of “Medical, Health, and Bio Bank Data Service Project”
  - Through JICA’s preliminary survey on RGoB’s development needs, it is concluded that the project idea of “**Medical, Health, and Bio Bank Data Service** ” can fit all the four principles as stated, and it **has a huge potential to meet development needs in Bhutan.**
  - Although there are **many challenges to be overcome by RGoB** for the full installation and operation of medical, health and bio-banks, **the first step will be cooperated** by JICA’s technical cooperation under the strong initiative of RGoB.



# 3. Project Overview

## ■ Concept of “Medical, Health, and Bio Bank Data Service”

- Data from three banks will be integrated and managed via national ID.
- The accumulation of continuous and relevant data will enable stratified analysis by various parameters, such as analysis of disease pathology and the influence of lifestyle on disease.
- Such analyses will lead to the development of new treatments, drug discovery, personalized medicine, precision medicine, and other medical services, which in turn will provide opportunities for the development of new industries.



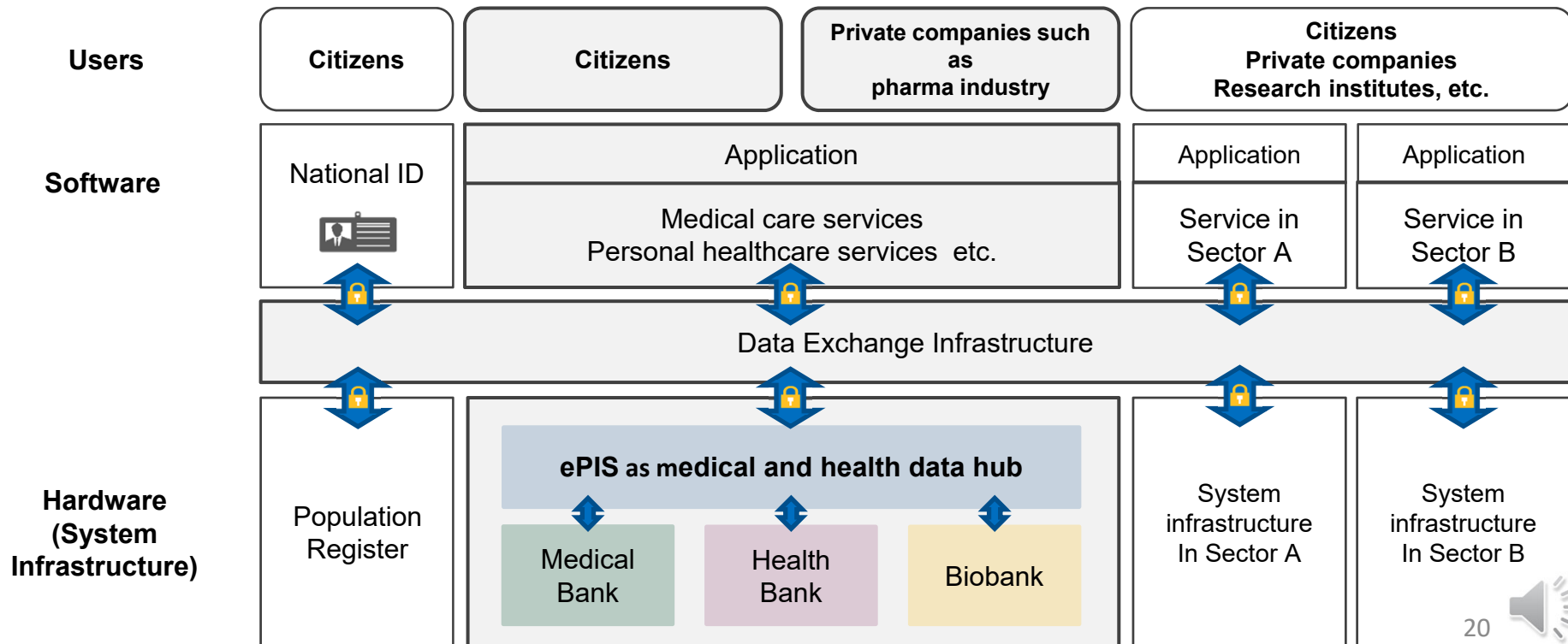
## ■ Schematic Design

- The ePIS (electronic Patient Information System), which has been developed by RGoB to institute one electronic health record, is expected to function as a hub for integrated management of the data stored in these banks.
- JICA is expected to cooperate for organic installation of these three banks as trial, and development of the schematic design of whole system structure which can tied to National ID through data exchange infrastructure.



## ■ Schematic Design

- In the future, all kinds of data from various sectors, not just the healthcare sector, will be integrated and managed through the data exchange infrastructure, with a view to realizing the efficient and unified provision of public services to citizens and the promotion of data utilization by private companies and research institutions.



## ■ Key Success Factors

- Simply integrating these banks will not result in a global superiority. **But if the Health Bank could build a meaningful dataset on its own, it could lead to industry development.**
- **“Promotion of public understanding”** and **“Collection of unbiased data”** can also be the key success factors. Bhutan has the strengths of strong government governance, and the people's trust in the government, so the possibility of realizing these key success factors is higher than in other countries.



Health bank × Biobank



Public Understanding



Unbiased Data





# Project Overview



## ■ Expected JICA’s technical cooperation framework (tentative)

Project title	■ <b>Project for Strengthening Government Capacity for Using Digital Technology and Data</b>
Duration	■ 4 years
Main Implementation Agency	<ul style="list-style-type: none"> <li>■ Ministry of Information and Communication</li> <li>■ Ministry of Health</li> </ul>
Project purpose	■ <b>“Medical, Health, and Bio Bank Data Service” is introduced as a trial.</b>
Output	<p>【Output1】  <u>Schematic design</u> for data utilization system (including “Medical, Health, and Bio Bank Data Service development plan”, “Human resource development plan”, and “Law and regulation development plan”) is formulated.</p> <p>【Output2】  <u>Necessary ICT infrastructure and draft law(s) &amp; regulation(s)</u> for the project implementation is formulated.</p> <p>【Output3】  <u>Health bank</u> is introduced as a trial.</p> <p>【Output4】  <u>Bio bank</u> is introduced as a trial. ✖It takes huge costs for the introduction of full scale of biobank.</p> <p>【Output5】  <u>Public understanding</u> for “Medical, Health, and Bio Bank Data Service” is promoted.</p>



## ■ Example ultimate impacts for the major stakeholders in Bhutan

Category	Stakeholders	Benefit
Governmental organizations	RGoB (Ministry of Information and Communication, Ministry of Health, etc. )	<ul style="list-style-type: none"> <li>• <b><u>Fostering industries and creating job opportunities</u></b> through the inflow of foreign investment, human resources, and services</li> </ul>
		<ul style="list-style-type: none"> <li>• <b><u>Development of medical and pharmaceutical sciences, promotion of Evidence Based Policy Making, control of medical costs</u></b></li> </ul>
Bhutanese people	Approx. 750,000 Bhutanese people	<ul style="list-style-type: none"> <li>• Improving access to medical care through telemedicine, regional medical cooperation, etc.</li> <li>• <b><u>Health promotion and prevention, early detection and intervention of diseases through appropriate disease management, prevention of serious illness, personalized medicine, and enjoyment of advanced medical care, etc.</u></b></li> <li>• Visualization of medical and health information</li> </ul>
Healthcare providers	Doctors and healthcare professionals	<ul style="list-style-type: none"> <li>• <b><u>Strengthening the medical care delivery system, improve efficiency of medical care, provide better medical care, and improve capacity</u></b></li> <li>• Improving Accountability and Transparency and realizing Patient Safety</li> </ul>
Data users	Private companies, research institutes	<ul style="list-style-type: none"> <li>• <b><u>Promotion of service development (various sectors including healthcare, food/nutrition, insurance, etc.)</u></b></li> <li>• Promote medical and pharmaceutical research</li> </ul>



## ■ Challenges and hypothesis in initial stage

- It is necessary to first confirm the **needs of the demand side**, such as private companies and researchers who will be the users of the data generated by this project, and carefully examine the business model.
- As for the health bank, it is desirable to have collaborators such as medical facility, local community, and to **cooperate with them who can be influencers for the dissemination activities of PHR**, as it is the key to gain health data to make “Medical, Health, and Bio Bank Data Service” attractive in the world.
- As for the biobank, we need to confirm the direction of establishing a **population-based biobank** (not Disease-oriented biobank), with the aim that the data will be utilized for research and development in the **healthcare domain**.
- Also, it is hoped that **trial specimen collection** will begin in case a minimum business environment such as facilities, equipment, infrastructures and guidelines is successfully in place, so that **hypothesis testing** for these direction and strategy might be undertaken.





## ■ Why, in Bhutan?

### Advantages of Disadvantages -Comparative Advantage of Bhutan-



- In most developed countries, it is not easy to create unified clinical databases or to link databases. A variety of databases have been implemented individually at private hospitals, and it is difficult to integrate due to personal information protection, differences in specifications, etc.
- Bhutan has great advantage in this regard. Bhutan is in the process of creating a system for all public medical institutions. A unified database can be created without constraints, and development can be done with collaboration with other databases in mind.
- Strong Bhutanese governance and citizens' trust for the government of Bhutan seem to be the great assets to develop the database.
- RGoB has agile attitude for “innovation × health” such as formulation of e-health strategy and action plan.”

## ■ Why, in Bhutan?

### Bhutan's Bottlenecks

#### -Overcoming infrastructure bottlenecks-

- It is not easy for Bhutan to spread medical institutions across the country including high-mountain communities.
- Therefore, strengthening preventive medicine as well as telemedicine will be alternatives, thereby substituting construction of hospitals and protecting the health of the people.



## ■ Why, in Bhutan?

### Connecting to the World -Attract the world with data-

- According to interviews with Japanese pharmaceutical companies, if these three databases are developed and integrated, and if life-course data is accumulated in the national level, such database would be almost unprecedented in the world and would become very attractive for medical and pharmaceutical researchers from around the world.
- Data from hundreds of thousands of people can be valuable enough. With strategic usage of such database, Bhutan would have potentials to attract world class researchers.



## ■ Why, in Bhutan?

### Advanced Technology

#### -Cutting edge technologies and human resource development-

- Cutting edge digital technologies are utilized for developing and operating the databases.
- Human resources such as data analysts and data security specialists will be grown in the process of the development and operation of the databases.
- Such physical infrastructures and human capitals will be strong foundations for digitalization of Bhutan and utilized beyond the health and medical sector.



**Thank you for your kind attention**

