Framework on Estimating Expected Benefits through Facilitating the Nagoya Protocol on Access and Benefit-Sharing:
Interim Report – An Attempt of Estimation of Non-Monetary Benefits

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科研費
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2 **Method of the Research**

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2 **Method of the Research**

Method of the Research

Basic Methodology

- Setting up Conditions for Estimation
- Estimation of Ripple Effects by Input-Output Analysis
- Clarifying the Benefits

Target Countries

- Country A
- Country B
- Country C

Hypothetical Cases

- Case 1 in Country A
- Case 2 in Country B
- Case 3 in Country C (to be completed in the near future)

Step 1: Setting up Conditions for Estimation

■Three hypothetical cases.
■Different countries.
■Different conditions are set up respectively.

Cases try to:
■Advocate typical and common characteristics of actual ABS cases.
■Reflect characteristics of the countries.
        A level of economic development
        Amount of transfer of capital (both private and public sectors)
        A level of capacity to host ABS related activities
        Biological and genetic resources suitable for ABS related activities
        Situations of stakeholders,
                and so forth.
■Hypothetical but plausible conditions.

Step 2: Estimation of Ripple Effects by Input-Output Analysis

- Input-output analysis (I-O Analysis)
- One of the standard tools in economics
- Effects by ABS related activities for a whole economy of a country. Increases in amounts of gross domestic products (GDP)

- Advantage of I-O Analysis: Effects by one industry to other industries
- Ripple effect:
    An increase in production can be observed not only in bio-related industry but also in some other industries such as agriculture, machinery, and transportation.
- I-O Analysis can evaluate these effects precisely.

Step 3: Clarifying Benefits

Benefit:

Conservation of biodiversity through ABS related activities. Forests can be conserved at least for a duration in which samples of plants are being collected in the forests.

Benefits as cost saving:
Costs for negotiation, transaction costs, can be saved/avoided, if well-organised ABS related laws and institutions responding ratification of the Nagoya Protocol can provide efficient processes for them.

Country A : Low income
Country B : Low income
             – but rapidly growing
Country C : Middle income
             – but not a OECD member country yet

■**Country A** is **a landlocked country.**
  a. **Her altitude is very high.**
  b. **Major industry is agriculture.**
  c. **GNI (Gross National Income) per capita is US$400 approximately.**

■**Country B** is **located in Indochina peninsular and has a long coastal line** on the eastern side of the country.
  a. **GNI per capita is approximately US$1,400.**
  b. **She is still a low income country but is rapidly growing.**

■**Country C** is a middle income country **in Southeast Asia** and her GNI per capita is approximately **US$3,000.**
  a. **The country already has had sufficient technology in a narrow sense.**
  b. **It means that know-how of business to access to the world market is desirable rather than technology.**

Factors to be considered for

Hypothetical Cases

Natue of Cases	Commercial/Non-Commercial	Targeted Resources	Final Products	Technological Transfer Needed	Capital Transfer Needed
Joint Resarch (ABS in a broad sense mainly by universities)	Commercial	Microbial Resources (mushrooms)	Foods	Elemental Vocational Training	Basic Equipments Needed
R&D (ABS in a narrow sense mainly by firms)	Non-Commercial	Medicinal Plants	Functional Foods	Doctoral Education	Basic Business Trip and Stay Needed
(TK)	Academic Research (Non-commercial in a narrow sense)	Plants in general	Cosmetics	Know-How to International Market	Basic Infrastructure Needed
		Traditional Medicine	Traditional Medicine		Necessary Investment to Develop New Products for **R&D**
			High-tech products e.g pharmaceuticals		Necessary Investment to Develop New Products for **Prduction and Distribution**

Factors to be considered for

Hypothetical Cases

What/Who Affected	How Affected
Farmers	Increase in Income through Training
(Rural/Local Communities)	Temporal increase in Income through Job Opportunities to Assist Researchers Generations of Incomes by Ecotourism Increase in Consumption by Donation for Starting Researches Improvement of Transportation
(Rural/Local Communities)	Protection of Forest Resarve (Multiple Benefits from Conservation)

What/Who Affected	How Affected
Postgraduate Students	Opprtunities of Doctoral Programme
Experts of Host Organisation	Supply of Equipments Coverage of Business Trip
Firms	A number of Products
Both Users and Providers	Reduction of Transaction Costs (Costs themselves and Reduction of Discounting)

Case 1 in Country A

Target Resource	Beneficiary	Activities
Mushrooms	1. Research institution (counterpart) 2. Staff of the research institution 3. Local farmers	1. Collection and screening of mushrooms to try to find useful ingredients for functional food 2. Inviting staff for doctoral programme in the user country 3. Training of farmers (mushroom cultivation) 4. Payment of honorarium to farmers for collection of mushrooms

Story of Case 1

■A user of resource is a governmental research institute from a developed country.

■A provider is a governmental research institute.

■A main goal of PIC for MTA is to develop a new functional food from mushrooms.

Story of Case 1

■During this process, first of all, local farmers have opportunities to be trained for cultivation of mushrooms from which they can generate incomes.

■Secondly, some of the farmers are employed as an assistant of the research for collection of the mushrooms.

■For this, honorarium is paid.

■Thirdly, a researcher of the institute has an opportunity to be enrolled as a doctoral student at the provider country's university.

■Doctoral programme is unavailable in the provider country.

■The researcher is supposed to contribute to improvements in productivity of food industry, adapting technology obtained through the doctoral programme.

By these conditions above, conditions for simulation can be specified below.

Counrty A: Case 1

What/Who Affected	How Affected				Conditions for Simulation	
Farmers	Increase in Income through Training	Possible to produce mushrooms by training	Demand for mushrooms does exist.	Production and demand for mushrooms	Increase in demand by this amount — **US$200,000**	Hypothetical but adapted from actual cases
Rural/Local Communities	Temporal Increase in Income through Job Opportunities to Assist Researchers		Incomes of farmers increase.	Demand for R&D (service) sector increases.	Increase in demand by this amount — **US$800**	Hypothetical but adapted from actual cases
Postgraduate Students	Opprtunities of Doctoral Programme	Improvements in efficiency of production	Decrease in costs (prices) by better efficiency	Increase in demand by prices decreased	Increase in demand by this amount — **0.01% increase in special forest products**	Absolutely hypothetical

14

Case 2 in Country B

Target Resource	Beneficiary	Activities
Medicinal Plants	1. University 2. Local farmers	1. Collection and screening of medicinal plants for research 2. Instructing doctoral students 3. Training of farmers (medicinal plant cultivation) 4. Payment of honorarium to farmers for collection of medicinal plans 5. Infrastructure development so that further ecotourism is possible

Story of Case 2

■A user of resource is a governmental research institute from a developed country.

■A provider is a state university.

■A main goal of PIC for MTA is to develop new Chinese medicine from medicinal plants.

■The site for the activities is located adjacent to a national park where cultivation of medicinal plants is possible and where overexploitation of the medicinal plants is concerned unless the cultivation is limited to the sustainable amount and is regulated by appropriate ways.

Story of Case 2

■During this process, local farmers have opportunities to learn how to cultivate medicinal plants.

■They can sell them to markets under the regulation to avoid overexploitation.

■Secondly, some of the farmers are employed as an assistant of the research for collection of the medicinal plants.

■For this, honorarium is paid.

Story of Case 2

■Thirdly, the provider gives lectures for doctoral students or instructs them at the university. Giving lectuers results in technology transfer by which production of industry of "other food" increases.

■Fourthly, the provider carries out infrastructure construction so that tourists can visit places that contain beautiful landscapes and that are suitable for medicinal plant cultivation.

■Tourists favour eco-tourism from which the farmers can generate incomes such as an accommodation fee and a guide fee.

By these conditions above, conditions for simulation can be specified below.

Country B: Case 2

What/Who Affected	How Affected				Conditions for Simulation	
Farmers	Increase in Income through Training	Possible to produce medicinal plants by training →	Demand for medicinal plants does exist. →	Production and demand for medicinal plants →	Increase in demand by this amount **USD 5,000**	Hypothetical but adapted from actual cases
Rural/Local Communities	Temporal Increase in Income through Job Opportunities to Assist Researchers	→	Incomes of farmers increase. →	Demand for R&D (service) sector increases. →	Increase in demand by this amount **USD 2,000**	Hypothetical but adapted from actual cases
Rural/Local Communities	Generations of Incomes by Ecotourism	→	Incomes of farmers increase. →	Demand for tourism sector increases. →	Increase in demand by this amount **USD 34,500**	Hypothetical but adapted from actual cases
Postgraduate Students	Opprtunities of Doctoral Programme	Improvement in efficiency of production →	Decrease in costs (prices) by better efficiency →	Increase in demand by prices decreased →	Increase of demand by this amount **0.01% increase in other foods**	Absulutely hypothetical

19

Hypothetical Cases

Case 3 in Country C
(To be designed for the next stage of this research)

■ *Shall we move to the next presentation⋯.*

3 **Method of Simulating Ripple Effects by Input-Output Analysis**