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Supplementary Materials

Supplementary Material 1. Game description

Here we provide two different formats of game description. Video S1 details over 13 minutes the game components and steps. Text below gives written detail of the game.

Player: Karbi Jhum Farmer, **main objective:** Feed your family, and improve your life.

You are a local Jhum farmer, living in a small bamboo hut with your children and parents. You're part of a small Karbi village that has community forest available for agriculture. The constitution of India protects the traditional land use rights of your tribe. This means you are allowed to chop down a piece of forest of your choice, burn it and start farming without having to pay for the land. You do not receive any money at the start of the game.

Your landscape (next page) has 4 basic elements. Jhum fields, planted bamboo, wild bamboo and forest. The number shown on the tile is the number of years that passed since the last time that tile was used for Jhum. Wild bamboo grows back after a Jhum field is abandoned, and natural succession will change bamboo into forest after 18 years.



At the start of each turn you can choose which and how many landscape tiles you convert into Jhum land. Beware though, you need to protect your fields from wildlife, and it is better to choose your land close to your fellow jhum farmers. This makes guarding at night a lot easier. Land converted to agriculture belongs to you, and ownership normally remains in your family till everyone forgets that it was actually yours. However, to assist your memory, we use ownership rings to mark the ownership of each tile.

On your newly created field you can choose to grow 3 types of crops, (Jhum Rice, Vegetables and Cash Crops), which can be planted using seed packages. The packages do not cost anything. Each Jhum field supports up to 4 seed packages. The yield of each seed package is dependent on the soil quality of the field. A reused Jhum field has low fertility (red clay colour shown above), a short fallow of bamboo allows for average fertility (white colour), and long fallows and forest provide high fertility (light green).



Seed packages



When planting rice in a good soil you'll receive 5 mon rice per seed package. 1 mon is 40kg of milled rice. A large rice token represents 5 mon, a small rice token 1 mon. **Your family needs 38 mon rice to have enough food for the year.** Rice can also be bought at the market, and you can decide to sell rice to your fellow players, or keep it for the next round. 1 Seed package of vegetables yields 2 vegetable tokens when planted on good soil. You decide how many vegetable tokens are kept for home consumption, and how many you sell at the market. When you grow cash crops, you are given a receipt, which can be exchanged for money at the market.



Rice token



Vegetable token



Labour tokens



Bamboo token

However, producing food also requires you to invest labour. Each family has 7 labour tokens. You can also hire labour or sell your labour at the market. Labour can be invested in Jhum farming (2 labour tokens per tile), in harvesting planted bamboo (0.5 labour token per bamboo token), managing a tea garden (0.5 labour token per tea garden) or managing a rubber garden (1.5 token per rubber garden). Rubber and tea gardens can be bought, more information about growing rubber or tea can be obtained at the rubber/tea board (information on this is found further below).

Planted bamboo produces 1 token each round, and 1 tile can grow a maximum of two tokens. Harvested planted bamboo tokens can be sold at the market.

The four different players have access to the hills and forests that belong to their village.

In this landscape they can choose which tiles to convert into agricultural production. A landscape tile is the size of 2 bigha, a local land measurement unit. An average Karbi family has just enough labour to farm around 6 bigha each year. This is deemed enough to ensure their food requirements are met. This game only explores the agricultural activities that can be deployed in the Jhum lands, and excludes other activities that could take place in the valleys or village.



The starting landscape of the game's first round has the starting position of the Jhum fields predefined, along with 1 wild bamboo and 2 planted bamboo tiles for each player, with 1 bamboo token ready for harvest on each tile. This initial start-up is used to facilitate getting the players used

to the game dynamics. By turning a bamboo or forest tile over, it is turned into a Jhum field, and an ownership ring is placed on top. The research team monitors the soil quality of the freshly created Jhum fields.

Labour tokens are then allocated to the tiles, labour allocated to Jhum fields is used for growing crops, labour allocated to a tile with a bamboo token is used for harvesting that bamboo. Once plantations are established, they also require labour for maintenance and harvesting.

With labour tokens placed, farmers plant their seed packages. As soon as all fields are planted, the harvest phase starts. The farmers are given the tokens and cash crop receipt for their Jhum crops, and the bamboo tokens. These can be kept at home, or sold at the market. Once all harvests are done, players can start selling and buying items at the market. Details on the yields and prices of different items are provided in tables S1–3)

Improving your living standards can be done by buying ‘improve life’ tokens. These are sold at the market. You can decide in which category you want to invest these tokens.

If you put the token on the health (ok pran) category, you show that you like to invest in making sure you have medicines, can cover doctor visits, hospital stays, operations, accidents, and everything you need to keep your family healthy. If you invest more, your family is healthier.



Improve
life token

If you put the token on the house (hem) category, you show you like to invest in a better house and living conditions like electricity, furniture, a motorbike, television. If you invest more here, your life is more comfortable.

If you put the token on the education (loh kacharli) category, you show you like to invest in education of the children in your family. This includes school fees, books, hostel stay, transportation, university fees, etc. If you invest more here, your children get better degrees.

If you put the tokens on the religion (dhorom) category, you show you like to invest in your soul, this includes donations, offerings, charity, costs related to festivals, contributions. If you invest more here, your family has a better afterlife.

If you put the tokens on the family (hemtun) category, you show you like to invest in your family. This includes covering family needs, having nicer weddings and funerals, good food and meat, nice clothes, cosmetics and gifts and loans to family members and leisure activities like traveling. If you invest more here, your family will be happier.



The game will have multiple round, with time steps of 3 years. Each round has the following phases:

- 1) Choose Jhum land location, turn/burn the vegetation and add the ownership ring to the Jhum land.
- 2) Hire/sell labour and allocate labour on the landscape.
- 3) Plant seeds on the Jhum land.
- Harvest phase –
- 4) Receive your production.
- 5) Sell your production at the market, and buy rice/vegetables/'improve life' tokens/plantations.
- 6) Pay plantation maintenance costs.
- 7) Fulfil family food needs and allocate 'improve life' tokens.
- 8) Decide what happens with the Jhum field at the end of the growing season (turn that season's Jhum fields in either a natural fallow of wild bamboo, planting bamboo to sell in later rounds, planting tea or planting rubber).

At the end of each turn the labour tokens are returned to the players, and the ages of all the tiles are increased by 3 years, by turning the ownership rings. Bamboo tiles that were 15 years old are replaced by forest tiles in the landscape. The planted bamboo tiles that have less than 2 tokens are given 1 extra bamboo for the farmers to harvest.

Then the next turn starts.

Assam Rubber and Tea board (managed by one of the research team).

Main goal: Facilitate the game, making sure the game runs smooth and with minimum delays.

You are playing the government board for Tea and Rubber, and run a program for promoting tea and rubber growth in the state of Assam. However, the state is big, and resources are limited. Hence, you are not always able to provide adequate information to all the farmers that might be interested. Another problem, you don't speak Karbi, so farmers might not be able to understand everything you tell them. Local farmers have very limited knowledge on how to grow Rubber and Tea, however, the farmers are also convinced that planting Tea/Rubber is very good money making opportunity (and if not, you have to convince them). The high initial investment costs could be a barrier, as well as the threat of wildlife destroying the expensive investment.

Alongside promoting Tea and Rubber, you also sell the seedlings, and provide the materials for maintenance of a Tea/Rubber plantation. This means that farmers have to come to you to buy the seedlings (plantation tiles), and need to pay you for maintenance to make sure the plantation is able to produce.

For sake of the game you will also have to keep an eye on who has been paying for maintenance and who has not. Once a player has a Tea or Rubber garden well established (and has paid all investments) they will receive their returns from you, so you will be 'buying' their production.

Rules for planting rubber

The player **buys the rubber tile** for **60 Karbi Tangka** per tile. However, the tile cannot be planted on the landscape straight away. The seedlings are not strong enough yet, so the player has to keep the plantation at his/her home for 1 turn, to water and nurture the seedlings. The rubber tile can be planted at the end of the next turn, replacing the jhumland that was farmed earlier that turn. Planting the saplings **costs** extra money, another **150 Karbi Tangka** per tile. Once planted 1.5 Labour Token has to be allocated to the tile each turn.

It is your task to make sure the player pays the 150 Karbi Tangka 1 turn after he/she bought the rubber plantation tile. For this you're provided the table, which will be explained separately. Players that paid the 150 Karbi Tangka are **given a receipt**, which they have to show the game master before planting the saplings on the old jhum field.

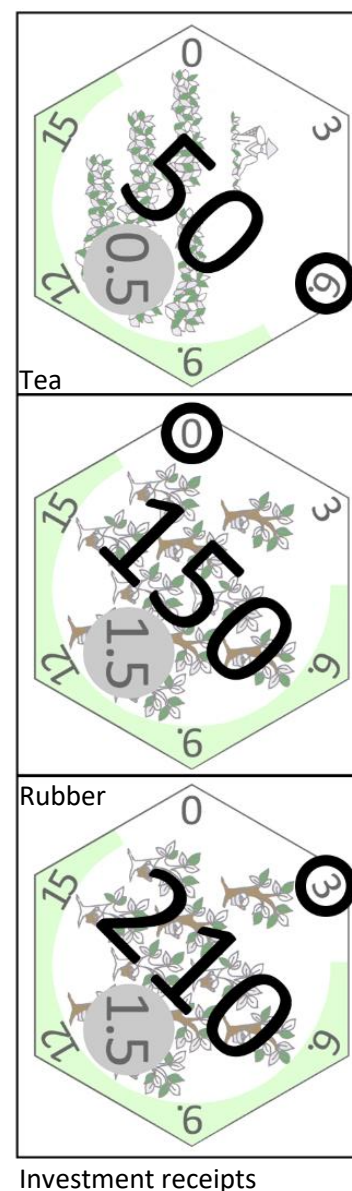
At the next turn the planted rubber will turn 3 years old. Now the big investments are required. The player will have to pay for chemical sprays, fences, collection cups, fertilizer, and many other costs. This will **cost** another **210 KT** per tile. If this is not paid, it will mean that the rubber does not become productive the next turn. Upon receiving the 210 Karbi Tangka from a player, **another receipt is issued**. If the money is not paid, the ownership ring will not be turned and the rubber will not age or produce. Rubber plantation still require 1.5 Labour token each turn.

6 years after planting the rubber starts to **produce**. The yield paid to the player is **400 KT** per tile.

9 years after planting one tile of rubber will **produce 1200 KT**, which you pay to the player.

12 years after planting one tile of rubber will **produce 1320 KT**, which you pay to the player.

The green colour indicates at what turn after planting (not buying) the rubber starts to generate income.



It is up to you, as a player, to decide how much of this information you'll give to each player, though persistent players should be able to receive all the information in the end.

Rules for planting tea

A tea plantation **costs 210 Karbi Tangka**. Players can directly plant the tea on a cleared Jhum field at the end of that turn (the Jhum field still produces during that turn).

3 years after planting there will not be any significant production, **tea costs 0 maintenance** and but requires 0.5 Labour Token for weeding.

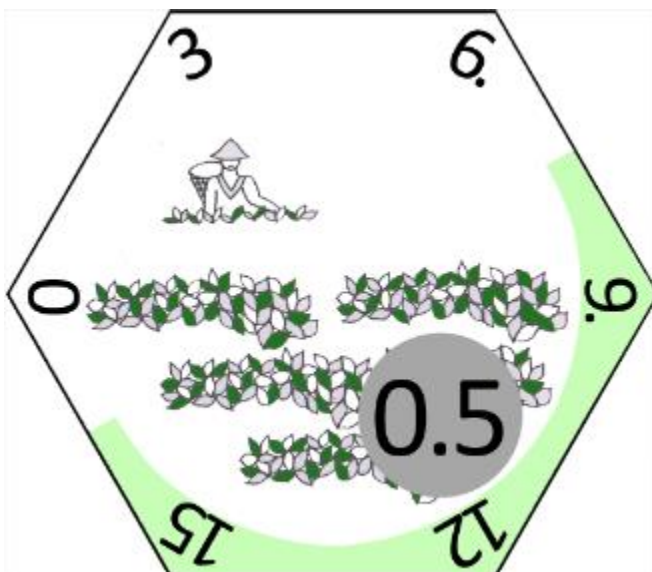
6 years after planting the tea **costs 50 Karbi Tangka** for maintenance like sprays, fertilizer and equipment for harvesting. The Labour costs are 0.5 LT per tile. After the player paid the 50 Karbi Tangka you **give a receipt**. If the 50 KT is not paid the ownership ring is not rotated and the production does not yet start. Once the 50 KT is paid the field goes into production the next turn.

9 years after planting the tea **produces 230 KT** and the Labour costs are 0.5 LT per tile. Production remains at 230 KT per tile the rest of the game.

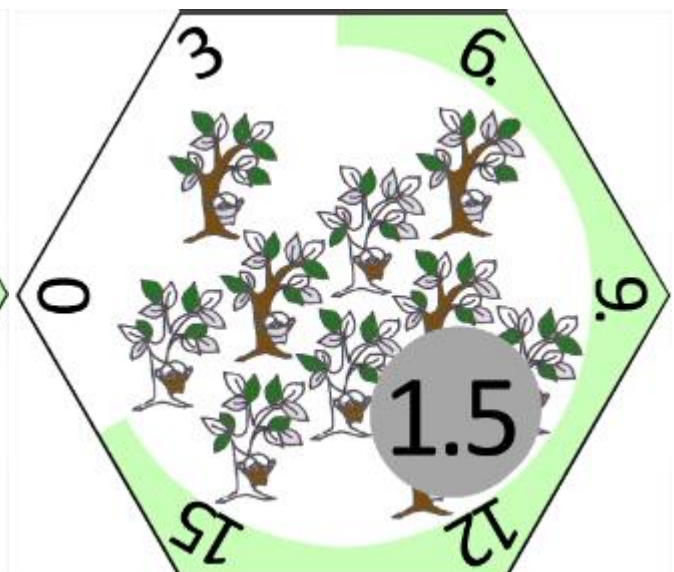
The green colour indicates at what turn after planting the tea starts to generate income.

Each round has the following player phases. The phases you'll be active are made **bold**:

- 1) Choose Jhum land location, turn/burn the vegetation and add the ownership ring to the Jhum land.
- 2) Hire/sell labour and allocate labour on the landscape.
- 3) Plant seeds on the Jhum land.
- Harvest phase -
- 4) Receive your production.
- 5) Sell production at the market, and **buy rice/vegetables/livelihood tokens/plantations**.
- 6) **Pay plantation maintenance costs**.
- 7) Fulfil family food needs and allocate livelihood tokens.
- 8) **Decide what happens with the Jhum field at the end of the growing season.** (This is the moment some players might realize it is possible to plant tea/rubber, so quickly try to buy them from you, which is fine. However, don't take a lot of time explaining them the details, just sell the plantation and 'close the office').



Tea Garden, planted in the round of purchase



Rubber Garden, kept in a nursery at home for 1 turn

| | Red | | | | | | Green | | | | | | Yellow | | | | | | Blue | | | | | | Example | | | | | |
|------|--------|----|-------|-----|----|-------|--------|----|-------|-----|----|-------|--------|----|-------|-----|----|-------|--------|----|-------|-----|----|-------|---------|----|-------|-----|----|-------|
| | Rubber | | | Tea | | | Rubber | | | Tea | | | Rubber | | | Tea | | | Rubber | | | Tea | | | Rubber | | | Tea | | |
| Turn | # | MC | Paid? | # | MC | Paid? | # | MC | Paid? | # | MC | Paid? | # | MC | Paid? | # | MC | Paid? | # | MC | Paid? | # | MC | Paid? | # | MC | Paid? | # | MC | Paid? |
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| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | |
|--------|------|
| Rubber | -60 |
| | -150 |
| | -210 |
| | 400 |
| | 1200 |
| | 1320 |

| | |
|-----|------|
| Tea | -210 |
| | 0 |
| | -50 |
| | 230 |
| | 230 |
| | 230 |

Guide for filling in the maintenance cost and player returns table.

Each turn you record how many (#) tea and rubber plantations each player bought. This then allows you to note down the costs and returns for that player for the coming rounds. If the player buys another plantation in the next round, you just add those numbers to the list, as shown in the example. You can tick the 'paid? Box' of the players that paid their maintenance costs (MC), or that received their plantation returns. If a player did not pay that round, you can ask them to do so, or face the consequences (the plantation does not grow).

Supplementary Material 2. Yields and prices of game resources

Table S1. Market prices of different items that can be sold to the farmers, or bought from the farmers

| Item | Sells for | Buys for |
|---------------------------------|---------------|---------------|
| Rice* | 10 KT /token | - |
| Vegetables | 23 KT /token | 23 KT /token |
| Living standards | 300 KT /token | - |
| Small labour token (0.5 labour) | 60 KT /token | 60 KT /token |
| Large labour token (1.0 labour) | 120 KT /token | 120 KT /token |
| Planted bamboo | - | 135KT /token |
| Tea plantation | 210 KT /tile | - |
| Rubber plantation | 60 KT /tile | |

*Farmers report not to sell their rice at the market, and only buy rice if there is not enough to feed their family. Rice produced one round can be saved for the next.

Table S2. The yields of the different Jhum crop type, for different Jhum field soil fertility conditions per planted seed package

| Crop type | Jhum Fertility | Return | Labour requirement |
|------------|----------------|----------|--------------------|
| Rice | High | 5 tokens | 0.5 |
| | Mid | 3 tokens | 0.5 |
| | Low | 2 tokens | 0.5 |
| Vegetables | High | 2 tokens | 0.5 |
| | Mid | 1 token | 0.5 |
| | Low | 0 tokens | 0.5 |
| Cash crops | High | 135 KT | 0.5 |
| | Mid | 72 KT | 0.5 |
| | Low | 36 KT | 0.5 |

Table S3. Plantation crop investments and returns

| Plantation | Age | Labour costs | Net return (KT)* | Remarks |
|------------|-----|--------------|------------------|--|
| Tea | 0 | 0 | -230 | Planted at the end of the turn |
| | 3 | 0.5 | 0 | No production yet, no financial costs, just labour for maintenance |
| | 6 | 0.5 | -50 | Additional costs for maintenance outweigh production |
| | 9 | 0.5 | +230 | Maximum production |
| | 12 | 0.5 | +230 | |
| | 15 | 0.5 | +230 | |
| Rubber | 0 | 0 | -60 | The seedlings are purchased at the market |
| | 0 | 0 | -150 | The seedlings are kept in plastic bags and given fertilizers etc. in a nursery at the farm for 1 round to grow, before transplanting the saplings in the field at the end of the turn. |
| | 3 | 1.5 | -210 | The saplings need fencing etc. investments related to establishing the plantation. No latex production yet. |
| | 6 | 1.5 | +400 | The rubber trees start to produce latex |
| | 9 | 1.5 | +1200 | |
| | 12 | 1.5 | +1320 | Maximum production |

*The amount of tea/rubber plantations and their age owned by each player was tracked by the research assistants managing the market. The players were asked to pay the extra investment costs each year, and provided KT from the market once the plantations started generating money.

Supplementary Material 3. Game workshop introduction script

This script was used in local language to ensure standardization of workshop introduction (ensuring that all players received the same information).

-- Start of script --

WELCOME TO ALL PARTICIPANTS

Introduce yourself and every one of the team, and ask the farmers to introduce themselves.

DESCRIBE THE PROJECT

We try to understand how farmers try to make a living, and what drives their decisions, and what limitations the farmers experience. We would like to see what the impacts of these decisions are on the lives of the farmers, and on the long-term viability of agriculture in this landscape. We try to understand this via this game, that we build together with Jhum farmers in your village. We also want to share this information with other scientists later.

DESCRIBE THE FILMING, AUDIO RECORDING AND PHOTO TAKING

We would like to learn as much as possible from you, for this we would like to make recordings. We are also making a small movie about this project, and how to play the game, so other people can also use them for similar work in Karbi Anglong or in other places. Is this okay by you?

EXPLAIN WE WILL DO A WORKSHOP

The workshop has 5 parts. First we will have a short interview to get to know a little bit of your background.

Then we will introduce the game to you, so you know what to do and how to play.

Then we will play the game with you, this will take about 2.5 hours.

Then we will discuss the game and results together.

At the end we will do another survey to find out what you think of the game, the results and what you learned from this workshop.

START WITH THE QUESTIONNAIRE (1 RA per farmer, after finishing the questionnaire prepare the livelihood papers for the players, filling in the name, date, etc.)

INTRODUCE THE LANDSCAPE and BAMBOO

Explain the landscape put on the table. This represents a village Jhum land, a village you all just moved to. Each person has already been given 3 tiles of Jhum land, each tile is 2 Bighas. Each farmer has 6 Bighas of Jhum land. The ownership rings correspond with the colour of the player.

You can also see 2 types of bamboo in the landscape. 1 is wild bamboo that is growing on old Jhum fields (point out the wild bamboo), and 1 is planted bamboo (show a planted bamboo token and put them on the tiles where they grow, 1 each). The village has recently been given access to a road (point out the road), and access to the market. This allows for selling of the planted bamboo tokens (show bamboo token again) for a good price. Each planted bamboo grows new bamboo that you can harvest. Wild bamboo cannot be sold.

There is also forest in the landscape, this is also where the animals live. This forest has been growing a long time, and the fertility of the soil is good. If the bamboo grows for a long time, it will also give a good soil for farming. If the landscape tile shows a green colour at the edge it means the soil is good. If it shows a white colour it means the soil is average, if it shows a red colour it means that the soil is bad.

In the game we play in steps of 3 years. Each time we start a new round it means that the landscape is 3 years older. Your family is an average size family and the age of the family members does not matter in the game.

INTRODUCE THE LABOUR TOKENS

Each family needs to allocate labour to different tasks so that the family is having enough food and money. A lot of work is already done by the family automatically in the game, like growing the rice in the paddy, gathering forest vegetables and firewood, cooking and cleaning, house construction and handicrafts. Each family has 7 labour (Hand out the labour tokens to the players). This means that you do not have to allocate all the labour one family normally has in real life, just the labour you would normally also devote to Jhum, daily wage labour and harvesting bamboo. One big token is 1 labour. 1 small token is 0.5 labour. 2 small tokens have the same value as one big token (show this clearly again).

If you want to do a certain job, you need to invest the labour of your family. To gather 1 bamboo, you need to invest 0.5 labour. To grow 2 Bighas of Jhum land, you need to invest 2 labour. You can also hire and sell labour. Hiring 1 labour costs 120 Karbi Tangka, hiring 0.5 labour costs 60 Karbi Tangka. You can also sell your labour at the market for the same prices. The more labour you have, the more Jhum land you can farm. If you do not want your family to work very hard, you can also leave labour at home, for relaxing.

GROWING CROPS ON THE JHUMLAND

On the Jhum land you can grow 3 types of crops. Jhum rice, vegetables and cash crops. You can plant these crops using seed packages. Each Jhum tile allows you to plant 4 seed packages. Planting seed packages is free.

Jhum rice will produce rice tokens. Each small white rice token is 1 Mon, each big white rice token is 5 Mon. 38 Mon is enough food for your family. You can also buy rice at the market. 1 Mon of rice costs 10 Karbi Tangka.

You can also grow vegetables. The vegetables are many, like pumpkin, bigger gourd, cucumber, ladies finger, and many more. Growing vegetables will give you money, as you sell some at the market, and vegetable tokens that you can use to give extra healthy food to your family.

You can also grow cash crops. These are chilli, ginger and sesame. When you grow cash crops you get money from the market.

Each Jhum tile can support a maximum of 4 seed packages, and if you want to grow more crops you need to have more Jhum land. However, cutting more Jhum land costs more labour. You can decide how much rice, vegetables and cash crops you want to grow.

INTRODUCE THE LIVELIHOOD TOKENS AND LIVELIHOOD BOARD

As a farmer you can improve your life by using the money (show the money) you get from selling your crops and bamboo, and buy and pay for things that make the life of you or your family better. To make this easy in the game, you can use your money to buy 'improve life' tokens. This is a 'improve life' token, you can see the rainbow. It says 'kereng avarsai'. You can buy these at the market. The price for 1 token is 300 Karbi Tangka.

On this rainbow sheet (hand out the sheet) you have different categories in which you can use the 'improve life' tokens. And you can choose which category to invest the improve life token.

If you put the token on the **health** (ok pran) category, you show that you like to invest in making sure you have medicines, doctor visits, hospital stays, operations, accidents, and everything you need to keep your family healthy. If you invest more, your family is more healthy.

If you put the token on the **house** (hem) category, you show you like to invest in a better house, electricity, furniture, a motorbike, television. If you invest more here, your life is more comfortable.

If you put the token on the **education** (loh kacharli) category, you show you like to invest in education of the children in your family. This includes school fees, books, hostel stay, transport. If you invest more here, your children get better degrees.

If you put the tokens on the **religion** (dhorom) category, you show you like to invest in your soul (?), this includes donations, offerings, charity, costs related to festivals, contributions. If you invest more here, your family has a better afterlife.

If you put the tokens on the **family** (hemtun) category, you show you like to invest in your family. This includes covering family needs, having nicer weddings and funerals, good food and meat, nice clothes, cosmetics and gifts and loans to family members and leisure activities like traveling. If you invest more here, your family will be happier.

You can decide how many livelihood tokens to buy, and where to invest them.

INTRODUCE TEA AND RUBBER PLANTATIONS

Because your village has now a road and access to the market, you can also grow new crops for the Indian national market. However, it costs money and time to start a plantation of rubber or tea. At the market you can buy a tile of rubber plantation or tea plantation. All the costs for the first year are included in the purchasing price. If you want to learn more about planting rubber or tea, ask the market vendor (introduce Ram as the market vendor).

INTRODUCE THE MARKET

At the market you can buy new plantations of rubber and tea, buy livelihood tokens, buy rice to feed your family and hire labour. At the market you can also sell your harvested bamboo and hire out your labour. The project team will also give you the money that you made growing crops on your Jhum land.

THE GAME TURNS

The game will be played in 6 rounds, and each round has the same steps.

1: Choosing Jhum land. You and your neighbours can decide where you want to do Jhum. (In the first turn we have already made a choice for you).

2: Hire/Sell/Allocate labour. You decide where to put your family labour, and if you want to hire extra labour, or sell your family labour

3: Plant Jhum crops. You decide which crops to grow on your Jhum fields.

4: Crop Production. The project team calculates how much rice, vegetables and cash crops you produced, and how many rice and vegetable tokens and how much money you will get from the production this year. The project team will give you your harvests and money.

5: Buy/Sell products at the market. Here you can sell your bamboo and buy extra rice if your family needs it. Your family needs 38 Mon of rice to survive. You can also buy new Tea or Rubber plantations and Livelihood tokens now.

6: Fulfilling the family needs. The project team takes 38 rice tokens from you, as this is the food you have eaten this year.

7: Livelihood improvements. If you bought livelihood improvement tokens, you can decide where to put them

8: Plant new plantations and bamboo. If you decide to plant Bamboo on your field, you can do so now. If you bought a tea plantation this round, you can plant it now. If you bought a rubber plantation you have to wait another round before you can plant it on a Jhum field. Now you also have to pay for maintaining plantations.

RECAP

You need to produce or buy enough rice to feed your family. You can choose to do Jhum and grow Rice, Vegetables and Cash crops here. You can also decide to plant bamboo and sell this on the market. You can hire labour to help your family, or sell family labour on the market. You can invest in rubber and tea or decide to take some time off work and use less labour.

You can buy livelihood tokens to improve your life, and decide in which categories these investments are done.

This is a Jhum rice token of 1 Mon, and this is a token of 5 Mon.

This is a vegetable token that you can use to keep your family extra healthy

This is a bamboo token that you can sell at the market.

This is a Livelihood token you can buy at the market and use to improve your family conditions

This is Karbi Tangka that you can use to buy things.

ANY QUESTIONS?

-- End of script --

Acknowledgements

We would like to give our sincere thanks to the research assistants that supported us during the intense fieldwork. Charlish Singnar, Lydia Ronghangpi, Nelson Deb, Moniram Teron, Franklin Rongphar and Serlibon Timungpi were instrumental in making this study a success. We would also like to thank the French Institute of Pondicherry and the Karbi Anglong Autonomous District Council for their administrative support in India. Last but not least we would like to thank all the participating farmers for their generous sharing of their knowledge and time. This study was funded by ETH Grants, ETH Research (Grant ETH-53 13-2) from ETH Zurich, Switzerland, as part of the PhD project of the first author. The study was given retro-active approval without reservations by the ETH Zurich Ethics Commission (EK 2019-N-73).

Author Contributions

Conceptualization, S.B. and C.G.; Methodology, S.B., A.D., P.W. and C.G.; Validation, A.D., P.W. and C.G.; Formal Analysis, S.B. and T.C.; Investigation, S.B.; Resources, S.B.; Data Curation, S.B. and T.C.; Writing – Original Draft Preparation, S.B., T.C.; Writing – Review & Editing, A.D., P.W. and C.G.; Visualization, S.B. and T.C.; Supervision, C.G.; Project Administration, S.B.; Funding Acquisition, S.B., P.W. and C.G.

Conflict of Interest

The authors declare no conflict of interest.

Ethical Approval

Local official approval, and ETH institutional ethics board approval (see attached documents).



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Office of Research
ethics@sl.ethz.ch

03 July 2019 schi

EK 2019-N-73

Karbi Anlong Corridor: Participatory modelling and integrated landscape approaches for conservation and development

Dear Mr Bos,

Your above proposal, submitted on 13 June 2019, has been reviewed by the ETH Zurich Ethics Commission:

| | | |
|-----------------------------------|---|----------|
| Prof. Dr. Lutz Wingert, Präsident | Professur für Philosophie | involved |
| Prof. Dr. Jörg Goldhahn | Institut für Translationale Medizin | involved |
| Prof. Dr. Otmar Hilliges | Institut für Pervasive Computing | absent |
| Prof. Dr. Christoph Hölscher | Professur Kognitionswissenschaften | absent |
| Dr. Julian Mausbach | Rechtswissenschaftliches Institut | absent |
| Dr. Marino Menozzi | Institut für Umweltentscheidungen | involved |
| Dr. Kai-Uwe Schmitt | AGU Zürich | absent |
| Prof. Dr. Michael Siegrist | Institut für Umweltentscheidungen | involved |
| Prof. Dr. William R. Taylor | Institute for Biomechanics | absent |
| Prof. Dr. Effy Vayena | Institut für Translationale Medizin | involved |
| Dr. Peter Wolf | Institut für Robotik und intelligente Systeme | involved |

Based on the commission's recommendation, the Executive Board of ETH Zurich has come to the following decision:

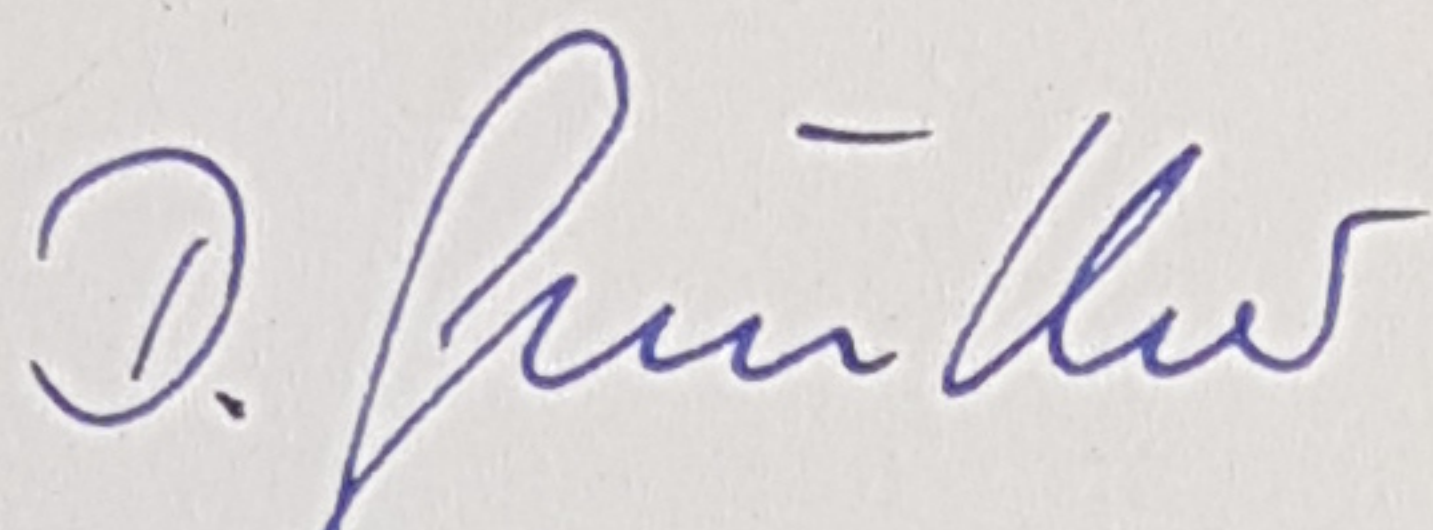
- ☒ Approval without reservation
- ☐ Approval with reservation
- ☐ Revise and reply
- ☐ Revise and resubmit
- ☐ Rejection
- ☐ Not evaluated

Final provisions

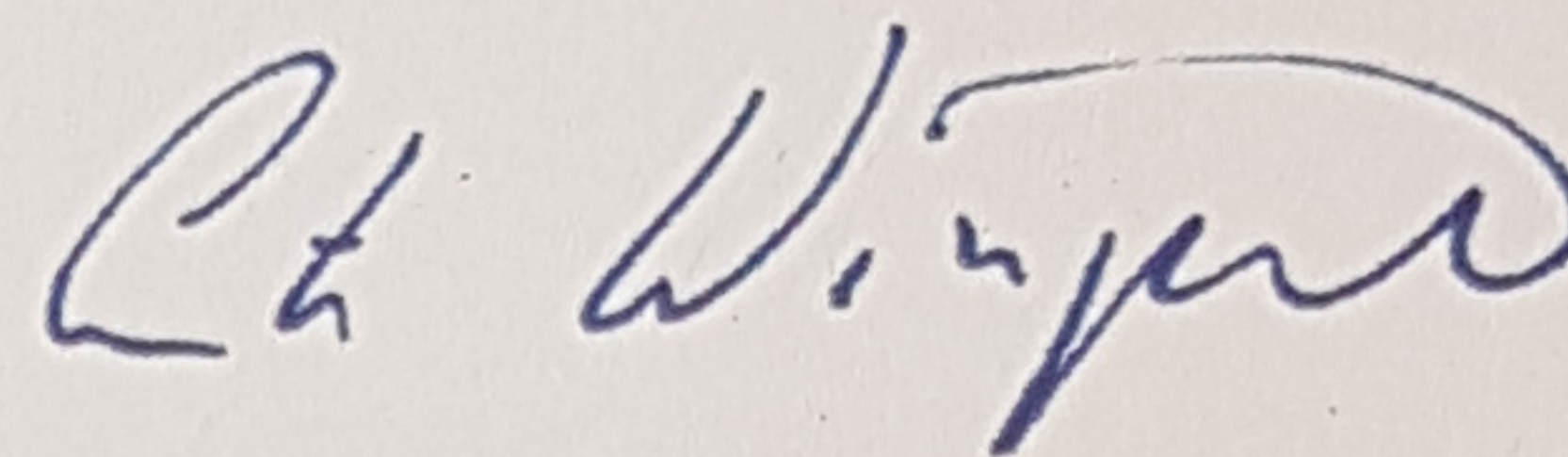
Please note that you are required to inform the Ethics Commission immediately on any of the following occasions:

- a) if an unexpected event occurs that has the potential to affect the safety of the participants or the continuation of the research project;
- b) if you wish to make changes to the research protocol or to extend the project; or
- c) if the study is prematurely terminated.

Kind regards,



Prof. Detlef Günther
Vice President for Research and
Corporate Relations



Prof. Lutz Wingert
Chair of the ETH Zurich
Ethics Commission

KARBI ANGLONG AUTONOMOUS COUNCIL
KAAC SECRETARIAT::DIPHU

No.KAAC/PS/Misc-NOC/2014-15/73

Date - 18/02/2015

From - Moloy Bora, ACS
Principal Secretary,
Karbi Anglong Autonomous Council,
Diphu.

To,
Dr.B.R. Ramesh,
Director of Research,
French institute of Pondicherry,
11 Saint Louis Street,
Pondicherry - 605001.

| | |
|--------------------------|------------|
| INSTITUT FRANÇAIS | |
| Date d'arrivée | 03/03/2015 |
| Numéro..... | 13 b |

Sub - Permission to conduct Research in Karbi Anglong District.

Ref. - Your letter Dated 4th February 2015.

Sir,

In reference to the above letter from your side seeking permission for conducting research by Ph.D student Mr.Swen Bos from ETH Zurich, I am directed to state that the Karbi Anglong Autonomous Council authority has No Objection for conducting such research subject to the following -

1. The Research Scholar and the sponsoring institution undertake all necessary protocols and permissions as required from Government of India and State Government from the concerned authorities.
2. The Police Report from the Superintendent of Police DSB states that "it is to be noted that the place of research selected by the said researcher, i.e The Valleys Surrounding the Kaziranga National Park falling under this district, are EXTREMIST PRONE AREAS, as such the researcher should be made aware of the fact and is also advised to seek necessary security from the district administration". This advice of the district Police Authority has to be adhered to.
3. The local Forest Authority headed by Additional Principal Chief Conservator Forests, is to be kept informed during the course of the research on a regular basis and share information generated. The researcher will take note of any protocols required as suggested by the local Forest and Revenue Authority.
4. At the conclusion of the research the findings and recommendations maybe made available to the Karbi Anglong Autonomous Council.

Yours faithfully,

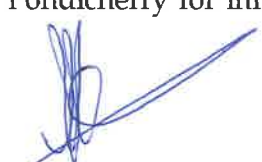

Principal Secretary,
Karbi Anglong Autonomous Council,
Diphu.

Memo No. KAAC/PS/Misc-NOC/2014-15/73

Date - 18/02/2015

Copy to -

1. The Deputy Commissioner, Karbi Anglong, Diphu for favour of information.
2. The Additional PCCF, Karbi Anglong Autonomous Council, Diphu.
3. The Superintendent of Police, Diphu for favour of information and necessary action in regard to his letter No.DSB/DPU/59-VISA/2015/C-3017 Dated Diphu the 11th February 2015.
- ✓ 4. Mr.Swen Bos, Ph.D student, French Institute of Pondicherry for information and necessary action.
5. Office file.


Principal Secretary,
Karbi Anglong Autonomous Council,
Diphu.