Watershed Game[1]

I. The Problem

A. Introduction

In the hydrographic basins, there are many different kinds of production systems that affect natural resources in different ways, in this case, different production systems have different water requirements. That is why it is necessary to carry out an analysis that captures the different perspectives of the actors located in the basin as well as addresses the diverse interests they have regarding the resource, as well as the difficulties and strengths that exist with respect to community cooperation for sustainable management of the basins.

B. Purpose of the Game

Demonstrate to the players the effects that their economic decisions related to the environment - the form of production, the use of agrochemicals, the use of water, the handling of waste - have on the people located in different parts of the basin. To recognize the effect that externally applied rules, those that seek to regulate the use of natural resources, have on players' decisions. This game was designed mainly to understand the decisions of the actors located in different parts of the basin (high, middle and low).

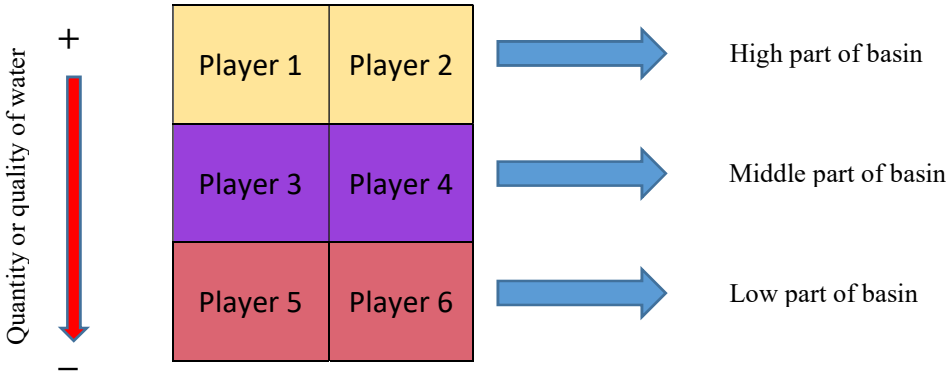
C. Model of Economic Analysis

The figure that we present below illustrates the spatial organization of the players in the lagoon basin (high, middle and low parts). According to this distribution, we start by noting that there is contamination by the use of agrochemicals and that the amount of water is decreasing due to the poor management of the producers. There is the possibility of opting for a minimum tillage production system (A) or continuing with the conventional system (B).

Players 1, 2, 3 and 4 in the diagram must decide what type of land use management they choose, A or B, which affects the wellbeing of the next players. Likewise, the players 3, 4, 5, and 6 must decide if they opt for a payment (P) or no payment (NP) to compensate the upper basin players so that they are incentivized to take more

[1] Translated from Juan-Camilo Cardenas and Pablos Andres Ramos (2006) Manual de juegos economicos para el analisis del uso colectivo de los recursos naturales, Centro Internacional de la Papa https://economia.uniandes.edu.co/files/profesores/juan_camilo_cardenas/docs/Archivos%20para%20descargar/MANUAL_JUEGOS_CARDENAS_RAMOS.pdf

sustainable actions and thus reduce the environmental impacts that affect the players in the lower part of the basin.



The equations for the pay tables of the players presented below constitute the analytical model that supports the design of the experiment.

In the model, each player decides on their activity, and in turn is affected by the decisions of others. The X expresses the decision of each player; And it is the payment function for each one.

The payment function of each player is related to the externalities or environmental effects that some players generate for others by their actions. The function of each player indicates that individual earnings depend not only on their individual decision, but also on the decision of the other members of the group. Thus, the entry of players from the top (1 and 2) depends on whether the four players from the middle and lower parts of the basin decide to pay (P) or not pay (nP) for players 1 and 2 to change their strategy; the income of players 3 and 4 depends on whether 1 and 2 choose a type A or a type B (the characteristics of both types will be explained later), and whether players 5 and 6 decide P or nP; Finally, the winnings of players 5 and 6 depend on whether 1, 2, 3 and 4 play for the type A farm or the type B farm.

Equation for players 1 and 2

In the design of the game, it is assumed that players 1 and 2 are mainly located in the upper part of the water basin. The payment function for players 1 and 2 is determined, initially, by the normal income generated by the activity (α) (average earnings), plus the decision of the players (X1-2) to opt for a type A or a type B farm. If the decision is type A, the factor which should be added would be 1; and if it were type B, the factor would be 0.

$$Y_{1\text{-}2} = \alpha + (X_{1\text{-}2})$$

The equation continues with the multiplication of the previous result by the sum of parameter 1 and the sum of (1 minus the decision between type A or type B farm [if the decision is type A,

1 would be subtracted, and if it is type B, 0 would be subtracted]). According to one of the assumptions of the model, there are more gains in the short and medium term when type B is used. This result is multiplied by β, which indicates the average income of a type B farm.

$$Y_{1\text{-}2} = \alpha + (X_{1\text{-}2})^* 1 + (1 - X_{1\text{-}2})^* \beta$$

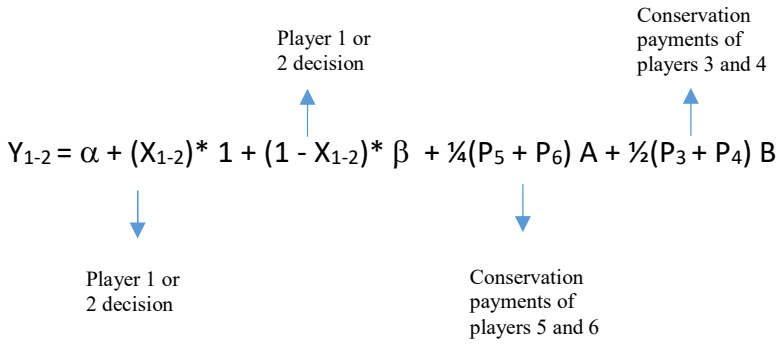
To the previous result a quarter of the payments made by the players 5 and 6 should be added for the conservation in the upper part of the basin, multiplied by the factor A, which indicates a percentage of positive gain for these players, given the payments made for conservation.

$$Y_{1\text{-}2} = \alpha + (X_{1\text{-}2})^* 1 + (1 - X_{1\text{-}2})^* \beta \ + ¼(P_5 + P_6)\ A$$

Then, to the payment formula for players 1 and 2, half of the payments made by the players to conserve the upper part of the basin is added, multiplied by the factor *B*, which indicates the second externality in the system and is the benefit or gain for the players 1 and 2, given the conservation payments made by the players 3 and 4.

$$Y_{1\text{-}2} = \alpha + (X_{1\text{-}2})^* 1 + (1 - X_{1\text{-}2})^* \beta \ + ¼(P_5 + P_6)\ A + ½(P_3 + P_4)\ B$$

Final Model of the Equation



Equation for players 3 and 4

Within the design of the game, it is assumed that players 3 and 4 are located in the middle part of the basin.

The payment function for players 3 and 4 is initially determined by the normal income generated by the activity (α [average earnings], plus the decision of the players [X -]) of type A or of type B farming. If the decision is type A, the factor that should be added would be 1, and if it were type B, the factor would be 0.

$$Y_{3\text{-}4} = \alpha + (X_{3\text{-}4})$$

The equation continues by multiplying the previous result by the sum of parameter 1 and the sum of (1 minus the decision between type A or type B [if the decision is farm type A, subtract 1, and if it is type B, 0] would be subtracted). According to one of the assumptions of the model, there is more gain in the short and medium term when the type B farm is used. This result is multiplied by β, which indicates the average income of a type B farm.

$$Y_{3\text{-}4} = \alpha + (X_{3\text{-}4})^* 1 + (1\text{-}X_{3\text{-}4}) * \beta$$

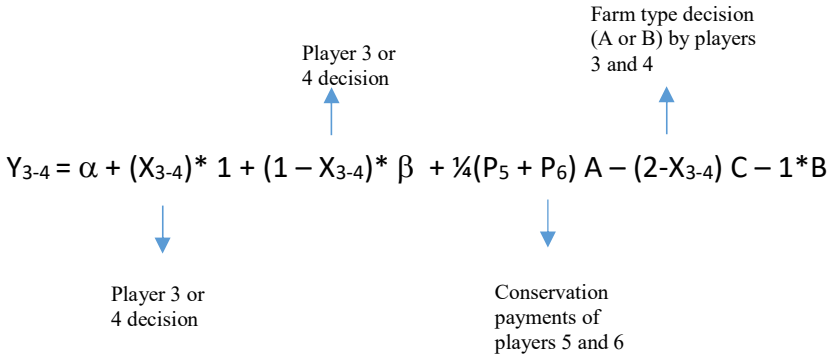
To the previous result is added a quarter of the payments made by players 5 and 6 for the conservation of the high part of the basin, multiplied by factor A, which indicates a percentage of the positive gain for these players, given the payments made for conservation.

$$Y_{3\text{-}4} = \alpha + (X_{3\text{-}4})^* 1 + (1\text{-}X_{3\text{-}4}) * \beta + \tfrac{1}{4}(P_5 + P_6)\, A$$

Then, the formula of payments for players 3 and 4 is subtracted from the outcome of the payment decision of players 3 and 4, and multiplied by the effect it has on the payments of these players for opting for the type A or B farm, to receive better water quality.

$$Y_{3\text{-}4} = \alpha + (X_{3\text{-}4})^* 1 + (1\text{-}X_{3\text{-}4})\, \beta + \tfrac{1}{4}(P_5 + P_6)\, A - (2\text{-}X_{3\text{-}4})\, C - 1^* B$$

Final Model of the Equation



Equation for players 5 and 6

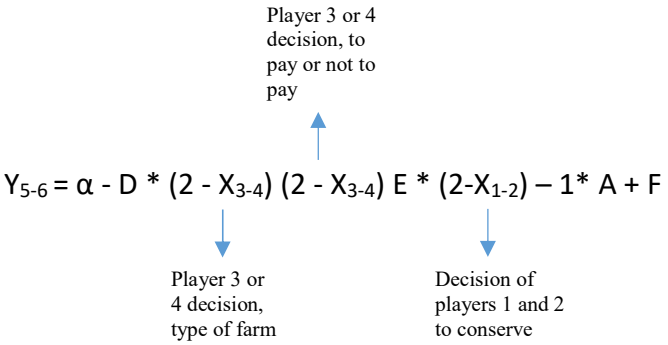
In the design of the game, it is assumed that players 5 and 6 are mainly located in the middle and lower parts of the lagoon basin. The payment function for players 5 and 6 is initially determined by an initial amount of money α, plus the effect on the quality or quantity of water the farm type decisions have; and for players 3 and 4 (E), the decision is to pay or not pay for conservation.

$$Y_{5\text{-}6} = \alpha - D * (2 - X_{3\text{-}4})\, (2 - X_{3\text{-}4})\, E$$

To the previous result, multiply the effect of the decision of players 1 and 2 on the type of farm A or B, minus the multiplication of the effect of players 1 and 2 on the earnings obtained by opting for the farm type A or type B by 1.

$$Y_{5\text{-}6} = \alpha - D * (2 - X_{3\text{-}4})\ (2 - X_{3\text{-}4})\ E * (2\text{-}X_{1\text{-}2}) - 1 * A + F$$

Final Model of the Equation



The symbols alpha (α) and beta (β) are constants determined by the average earnings per day. The letter *A* indicates a percentage of earning (positive externality) for the players 1, 2, 3, and 4 based on the conservation payment made by players 5 and 6.

The letter *B* indicates a percentage of gain (positive externality) for the players 1 and 2 for based on the conservation payments made by the players 3 and 4, at the same time, it generates a profit for the players 3 and 4 because they receive water of better quality according when players 1 and 2 opt for a type A farm (letter *C*).

The letters *D*, *E*, and *F* indicate, for players 5 and 6, earnings in quality or quantity of water according to the decision of players 1, 2, 3, and 4 to opt for a type A farm and the decisions of players 3 and 4 to pay for conservation of the basin.

II. Set up for the Game or Experiment

A. Experimental Design

The game has two parts. The first, called the baseline, is the same for all groups of participants; with this part we try to obtain a good amount of data that can be compared with the decisions of the second part.

The second part aims to collect data on the decisions of the people according to rules such as communication and external regulation (high versus low fine), to compare them with the decisions made by the players during the baseline.

B. Sample Size

The minimum suggested size for the application of this experiment is 15 groups (5 groups per rule).

C. Design of a session (N players, T rounds)

To hold a session, it is necessary to have a group of six participants (you can play at the same time with two or three groups, depending on the space and the number of people who make up the field team), which will be numbered from 1 to 6; This will be your player number during all rounds of the exercise.

The number of the player indicates their location in the basin: the players 1 and 2 will be located in the upper part of the basin, the players 3 and 4 in the middle part, and the players 5 and 6 in the lower part.

The total number of rounds of each exercise will be 20: 10 to be played during the first part of the game and 10 in the second part, in which a rule is introduced with which the group must play.

D. Type of Participants

Any person who lives in the basin or uses the water resource from it can play. The important thing is to assign the players the number that corresponds to their actual spatial location in the basin.

E. Estimating the payment incentives for players

This game was designed to make payments in Colombian pesos. In the study area, a daily wage is $12.00, the person who earns the most receives $18.60; On average, players receive between $15.00 and $17.00. A relation of payments in dollars (US) would consist of dividing the total number of points obtained by 200 and that would be the payment. For example, whoever earns 18.60 points would receive $9.30.

III. Tools, Logistics

A. Type of Place

For this game, it is important to have a large but closed room. You should also have a wall on which you can place the material used for the explanation. For best results, it is best to work simultaneously with three groups at the most.

B. Field Team (Functions)

To carry out this game it is necessary to have a moderator and a monitor. If in a game session there is more than one group, it is necessary to have an additional helper for each additional group.

Functions of the moderator are: The moderator is the person in charge of welcoming the participants, explaining the intent of the game and reading the instructions (that is, explaining the formats given to the players), giving an example of the exercise and answering the questions that the players have.

After clarifying any doubts that may arise, the first 10 rounds of the game will begin, the moderator will inform the group of the round number being played and the total number of people who chose type A, as well as the total number of people who opted to give payment (P) for conservation. Only the moderator knows the decision of each of the players, and no other person can find out.

At the end of the first 10 rounds, the second stage begins, in which the moderator explains to the group the new rule and the effects that it will have on the winnings of each player, according to the decisions they make.

In addition to reading the instructions to the group, the moderator is in charge of guiding the players during the exercise and answering their questions; For this, it is necessary to remain neutral and refrain from interfering with their responses or attitudes about the decisions of the players.

Frequently asked questions in this exercise are: "Can I always choose the same type of farm?" And "Can I choose in all rounds to not pay for conservation?". The moderator must respond to the entire group that each person can choose the extraction number they want in each round, and insist on privacy and autonomy when choosing the number to play with.

Functions of the monitor are: The monitor is the person in charge of recording the data of each of the players during each round in a monitor sheet that is shown later in the formats of the game. They are also in charge of supporting the moderator throughout the exercise, especially during the time when they are delivering all of the game materials to participants.

Like the moderator, the monitor must remain neutral during the exercise, to avoid influencing the decisions of the players.

As stated at the beginning, when playing with more than one group it is necessary to have assistants, they will be responsible for collecting and announcing the group's totals, and will also support people who cannot read or write. In the latter case, the assistant will limit him/herself to writing down the decisions made by the player, not his/her own decisions.

IV. The Materials needed to carry out a Game Session

A. To Explain the Instructions

Once the players have understood the intentions of the study and have organized themselves into groups, they should be made aware of the dynamics of the exercise and make sure they understand it. For this reason, it is important to have large samples of the formats that will be delivered later on; In these enlarged samples, the moderator will be able to write examples, so that the players become familiar with the formats and the explanation is more fluid.

Types of Farms

Farm Type A	Farm Type B
-Low use of agrochemicals -Minimal Tillage -Different types of crops -They don't use concentrates to feed livestock -They process manure -Better income in the mid to long-term	-High use of agrochemicals -Mechanized Tillage -Only one crop per farm -They use concentrates to feed livestock -They don't process manure -Better income in the short term

B. First Part of the Game

Decision Cards

Game Card	
Player Number	1 and 2
Round Number	
My Decision (A/B)	

Game Card	
Player Number	3 and 4
Round Number	
My Decision (A/B)	
Pay to support conservation in the high and mid-part of the basin (P/NP)	

Game Card	
Player Number	5 and 6
Round Number	
Pay to support conservation in the high and mid-part of the basin (P/NP)	

Accounting Cards

Player Number: (1 and 2) **Date: ___/___/___ Time: _____am/pm**
Place:_____

	A	B	C	D
Round	**My Decision (A/B)**	**Total number of A in the group (Monitor announces this)**	**Total number of P in the group (Monitor announces this)**	**My Earnings (Use the blue points table) Columns A and C**
Practice				
Practice				
Practice				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
Total				

Player Number: (3 and 4) **Date: ___/___/___ Time: _____am/pm**
Place:_____

	A	B	C	D	E
Round	**My Decision (A/B)**	**My payments for conservation (P/NP)**	**Total number of A in the group (Monitor announces this)**	**Total number of P in the group (Monitor announces this)**	**My Earnings (Use the blue points table) Columns A, B, C and D**
Practice					
Practice					
Practice					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
Total					

Player Number: (5 and 6) **Date: ___/___/___ Time: _____am/pm**
Place:_____

	A	B	C	D
Round	**My payments for conservation (P/NP)**	**Total number of A in the group (Monitor announces this)**	**Total number of P in the group (Monitor announces this)**	**My Earnings (Use the blue points table) Columns A and B**
Practice				
Practice				
Practice				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
Total				

Point Table

Jugadores 1 y 2

Decisiones de todos en el grupo	Mi decisión: A	Mi decisión: B
4 P	910	930
3 P	885	905
2 P	765	785
1 P	745	765
0 P	720	740

Jugadores 5 y 6

Decisiones de todos en el grupo	Mi decisión: P	Mi decisión: NP
4 A	820	920
3 A	670	770
2 A	520	620
1 A	370	470
0 A	220	320

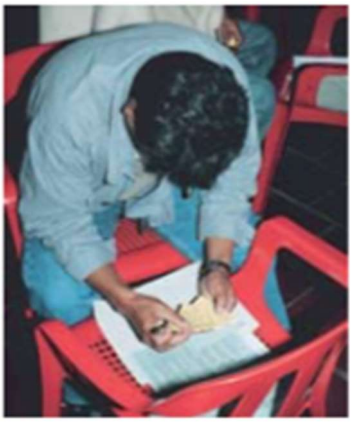
Jugadores 3 y 4

Decisiones de todos en el grupo	Mi decisión: A-P	Mi decisión: A-NP	Mi decisión: B-P	Mi decisión: B-NP
0 P + 0 A				740
0 P + 1 A		720		790
0 P + 2 A		770		840
0 P + 3 A		820		840
0 P + 4 A		820		
1 P + 0 A			700	765
1 P + 1 A	680	745	750	815
1 P + 2 A	730	795	790	815
1 P + 3 A	780	845	800	865
1 P + 4 A	780	845		
2 P + 0 A			725	790
2 P + 1 A	705	770	725	840
2 P + 2 A	755	800	825	890
2 P + 3 A	805	870	825	890
2 P + 4 A	870	870		
3 P + 0 A			750	790
3 P + 1 A	730	770	800	840
3 P + 2 A	780	820	850	890
3 P + 3 A	830	870	850	890
3 P + 4 A	830	870		
4 P + 0 A			750	
4 P + 1 A	730		800	
4 P + 2 A	780		850	
4 P + 3 A	830		850	
4 P + 4 A	830			

For each of the players

To each player – that is part of a group of six people – you should deliver the materials below

1. First part of the game:



Game Cards: When the game starts, each player receives the yellow cards, which are marked with the player number (from 1 to 6) and have the space to write down the round number and its decision. The player number will be the same in all rounds of the exercise, but the decision does not have to be the same in all rounds. During the first part 0 rounds are played, but before these three rounds of practice are performed.

Players 1 and 2 have the following game card:

Game Card	
Player Number	1 and 2
Round Number	
My Decision (A/B)	

On this card, players 1 and 2 must mark the round number, which is announced by the moderator, as well as their decision as to whether they choose type A or type B farms.

Players 3 and 4 have the following game card:

Game Card	
Player Number	3 and 4
Round Number	
My Decision (A/B)	
Pay to support conservation in the high and mid-part of the basin (P/NP)	

On this card, players 3 and 4 must mark the round number, which is announced by the moderator, and their decisions on two topics: whether they choose the type A or the type B farm, and whether they pay (P) or they do not pay (NP) for the conservation of the upper and middle parts of the basin.

Players 5 and 6 have the following game card:

Game Card	
Player Number	5 and 6
Round Number	
Pay to support conservation in the high and mid-part of the basin (P/NP)	

On this card, players 5 and 6 must mark the round number, which is announced by the moderator, and their decision to pay (P) or not pay (NP) for the conservation of the upper and middle parts of the basin.

Once each player finishes filling their game card according to their decision, they write it on the account sheet and hand the card over to the moderator.

Accounting Cards: The account sheet has spaces for each player to write down the date, time and place where the games are carried out; likewise, it will check that the number that is marked is the same as the game cards. At the moment in which the moderator informs the group of the total number of type A farms and of the people who decided to pay, each one must proceed to calculate their accounts and write them down on the account sheet.

Players 1 and 2 have the following accounting card:

Player Number: (1 and 2) **Date: ___/___/___ Time: _____am/pm**
Place:_____

	A	B	C	D
Round	**My Decision (A/B)**	**Total number of A in the group (Monitor announces this)**	**Total number of P in the group (Monitor announces this)**	**My Earnings (Use the blue points table) Columns A and C**
Practice				
Practice				
Practice				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
Total				

On this sheet, the first three spaces are used to record the results of practice rounds. Next, there are spaces to record the results of each of the 10 rounds of the initial stage, in which players 1 and 2 must write what decision they made regarding the choice between type A and type B farms, and calculate their accounts according to the total of P of the group.

Players 3 and 4 have the following accounting card:

Player Number: (3 and 4) **Date: ___/___/___ Time: _____am/pm**
Place:_____

	A	B	C	D	E
Round	**My Decision (A/B)**	**My payments for conservation (P/NP)**	**Total number of A in the group (Monitor announces this)**	**Total number of P in the group (Monitor announces this)**	**My Earnings (Use the blue points table) Columns A, B, C and D**
Practice					
Practice					
Practice					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
Total					

On this sheet, the first three spaces are used to record the results of practice rounds. Then there are spaces to write the results of each of the 10 rounds of the initial stage, in which the players 3 and 4 must record their decisions regarding whether they chose between type A or type B and pay (P) or not pay (NP) for the conservation of the basin, as well as calculate their accounts according to the total number of A and P of the group.

Players 5 and 6 have the following accounting card:

Player Number: (5 and 6) **Date: ___/___/___ Time: _____am/pm**
Place:_____

	A	B	C	D
Round	**My payments for conservation (P/NP)**	**Total number of A in the group (Monitor announces this)**	**Total number of P in the group (Monitor announces this)**	**My Earnings (Use the blue points table) Columns A and B**
Practice				
Practice				
Practice				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
Total				

On this sheet, the first three spaces are used to record the results of practice rounds. Then there are spaces to record the results of each of the 10 rounds of the initial stage, in which players 5 and 6 must write down their decision between paying (P) or not paying (NP) for the preservation of the high and middle of the basin, and calculate their accounts according to the total number of A of the group.

Point Table: The points table lets you know how much players earn in each round.

Players 1 and 2 have the following points table:

Players 1 and 2 have the option to choose between type A or type B farm, and their earnings are determined by the number of people in the group that choose to pay (P) for the conservation of the high and middle parts of the basin (players 3, 4, 5 and 6).

Players 1 and 2:

		My Decision	
		A	B
Decisions of all in the group	4 P	910	930
	3 P	885	905
	2 P	765	785
	1 P	745	765
	0 P	720	740

Players 3 and 4 have the following points table:

		My Decision			
		A-P	A-NP	B-P	B-NP
Decisions of all in the group	0P + 0A				740
	0P + 1A		720		790
	0P + 2A		770		840
	0P + 3A		820		840
	0P + 4A		820		
	1P + 0A			700	765
	1P + 1 A	680	745	750	815
	1P + 2A	730	795	790	815
	1P + 3A	780	845	800	865
	1P + 4A	780	845		
	2P + 0A			725	790
	2P + 1A	705	770	725	840
	2P + 2A	755	800	825	890
	2P + 3A	805	870	825	890
	2P + 4A	870	870		
	3P + 0A			750	790
	3P + 1A	730	770	800	840
	3P + 2A	780	820	850	890
	3P + 3A	830	870	850	890
	3P + 4A	830	870		
	4P + 0A			750	
	4P + 1A	730		800	
	4P + 2A	780		850	
	4P + 3A	830		850	
	4P + 4A	830			

Players 3 and 4 have the option to choose between type A or type B farm; In addition, they can choose between paying (P) and not paying (NP) for the conservation of the upper and middle parts of the basin. Their earnings are determined by the number of group members who choose type A (players 1, 2, 3 and 4) and by the number of people who choose to pay (P) (players 3, 4, 5 and 6).

Note that the table of players 3 and 4 has some blank cells. This is because those cases are not feasible within the possible moves of the other players. For example, in the first column, it is impossible for the total of Ps and As to be zero and in turn a player 3 or 4 to have chosen to play P and/or A.

The players 5 and 6 have the following point table:

		My Decision	
Decisions of all in the group		P	NP
	4 A	820	920
	3 A	670	770
	2 A	520	620
	1 A	370	470
	0 A	220	320

Instructions for those in charge of facilitating the game:

For the Moderator

Introducing the session: Thank you for being here. [Greeting and presentation of the group in charge. If necessary, talk about the general objective of the research and the funding agency, the general project, the working time, the relevance of the study, etc.].

The following exercise is a different and entertaining way to participate actively in a study about people's economic decisions. In accordance with the decisions you make today, you can earn an amount of money or prizes; that is why it is important that you pay close attention to these instructions.

You will wonder why money is used in these exercises. Money is used because the exercise requires people to make economic decisions; that is to say, they are decisions with consequences for the pocket, as it happens in the reality. At no time is money expected to be a payment for participating in the study nor the only reason to participate.

Explaining the game: This exercise tries to recreate the way people make decisions to take advantage of a natural resource. In this case, an example would be the use of water and soil in the basin _____

Each group consists of six people (two who live in the upper part of the basin, two who live in the middle and two who live in the lower part). The exercise that we are going to play today is different from others, so the comments you have heard from others are not necessarily related to this exercise.

Deliver the material to each participant:

Yellow game cards: Each card has the number of player that corresponds to each person, as well as spaces in which each one will write down their decisions in each round of the game.

Green Account Sheet: On this sheet, each player will record their decisions and their winnings. Everyone should write on this card the place, the date and their player number.

And the most important one is the *blue point table sheet*, where you will find several tabs. To make your decision and see what your winnings will be, look at the table that corresponds to your player number; In the same way, you can know what the profits of the other members of your group are.

Now we will explain how to use each of these tables and the decisions you will be making.

Players 1, 2, 3 and 4 are the people who live in the upper and middle parts of the basin, they have the option of choosing between a type A farm -where few agrochemicals are used, minimum tillage is done, there are several crops, livestock feed has low amounts of concentrates, manure is processed and manual milking is maintained; This farm obtains better income in the medium and long term, and maintains good soils and resources (show the poster of this farm) - and a type B farm -where there is high use of agrochemicals, the workers dedicate themselves to a single productive activity, pastures are mechanized, cattle are fed with concentrates, pastures are improved and milking is mechanical (show the poster of this type of farm) -.

In addition, players 3 and 4 have another option, in addition to choosing type A or type B, they can decide to pay (P) or not pay (NP) players 1 and 2, to motivate them (players 1 and 2) to conserve natural resources (water) in the upper part of the basin. The players 5 and 6 only decide if they pay or do not pay the other players (1, 2, 3 and 4) to conserve the basin.

Remember that the points that you all earn, that depend uniquely on your decisions, will be converted into money or prizes at the end of the game/exercise.

If the decisions which you can choose in the game (A or B and P or NP) are clearly understood, we will now explain how the yellow cards are used, the green account tables and the blue points table.

1. Check that all the yellow cards that you have been given have the same number; That will be, from now on, your player number (please count the cards, you should have 13). Note that each card has a line that says the number of the round (that will be announced by us, and you will write, in the corresponding space, the number of the round). The yellow cards of the players 1, 2, 3 and 4 have a box called "my decision"; you will write A or B, depending on the type of farm you choose. In the next line, players 3, 4 and 5 make the decision to pay (P) or not to pay (NP) in order to motivate others to conserve the basin.

Green Account Sheet: Before handing the yellow card to the monitor of each group, write down your decisions (A or B and P or NP), depending on your player number.

Then, also, the players 1 and 2 note their decision A or B in the first column of the green sheet. The players 3 and 4 write down A or B in the first column of the green sheet, and in the second column they note their decision of P or NP. The players 5 and 6 write down, in the first column, their decision of P or NP.

Remember to write down these decisions on your green sheet before giving the monitor the yellow card.

Note that the green account sheet has more columns - *Total A in the group*. In that space, all players must enter the number of A that the monitor says when they collect the six yellow cards from their group. In the other column the *Total of P of the group* is indicated; this figure will also be announced by the monitor and each one should write it on his/her green sheet.

Now, how does each one calculate his/her winnings for the first round? To do so, we have to go to the blue point chart; remember that, to calculate your winnings, you must use the table that corresponds to your player number.

First Practice Example/Round

Everyone takes a yellow card and in the round number box we put the practice P. First, we go with players 1, 2, 3 and 4 (please raise your hand). Suppose that players 1, 2, 3 and 4 opted for the type A farm; write that in the last box, called 'My decision.'

Game Card	
Player Number	1 or 2
Round Number	P
My Decision (A/B)	A

Game Card	
Player Number	3 or 4
Round Number	P
My Decision (A/B)	A
Pay to support conservation in the high and mid-part of the basin (P/NP)	

Now, suppose that players 3, 4, 5 and 6 decided to pay (P) to support the conservation of the upper and middle parts of the basin. We mark this on the card.

Game Card	
Player Number	3 or 4
Round Number	P
My Decision (A/B)	A
Pay to support conservation in the high and mid-part of the basin (P/NP)	P

Game Card	
Player Number	5 or 6
Round Number	P
Pay to support conservation in the high and mid-part of the basin (P/NP)	P

At this time, all players write their decision on the green tally sheet. The players 1, 2 ,3, and 4 write in the column A, that they opted for the type A farm. The players 3 and 4, in addition to this, write P (payment for the conservation) in column B of their account sheets. And players 5 and 6 write down their decision, P, in column A of their tally sheet.

After this, the moderator will collect the decision cards and announce to the group the total number of type A farms and the total number of payments for conservation: total of A, 4; and of P, also 4.

The players 1 and 2 will write, in columns B and C of their green account sheet, the number of type A farms and the amount of payments for the conservation. Given this information, they will be able to calculate how many points they won in this round: 910 points.

The players 3 and 4 will write, in columns C and D of their green account sheet, the number of type A farms and the amount of payments for conservation. Given this information, they will be able to calculate how many points they won in this round: 830 points.

Players 5 and 6 will write, in columns B and C of their green account sheet, the number of type A farms and the amount of payments for conservation. Given this information, they will be able to calculate how many points they won in this round: 820 points.

We must remember that players 1 and 2 earn their points considering the total number of payments for conservation; the players 3 and 4 earn their points considering the total number of selected type A farms and the total number of payments for conservation; and players 5 and 6 earn their points given the number of Type A farms.

In this moment, the accounting cards of the players should look like this:

Players 1 and 2:

	A	**B**	**C**	**D**
Round	**My Decision (A/B)**	**Total number of A in the group (Monitor announces this)**	**Total number of P in the group (Monitor announces this)**	**My Earnings (Use the blue points table) Columns A and C**
Practice	A	4	4	910
Practice				
Practice				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
Total				

Players 3 and 4:

	A	B	C	D	E
Round	**My Decision (A/B)**	**My payments for conservation (P/NP)**	**Total number of A in the group (Monitor announces this)**	**Total number of P in the group (Monitor announces this)**	**My Earnings (Use the blue points table) Columns A, B, C and D**
Practice	A	P	4	4	830
Practice					
Practice					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
Total					

Players 5 and 6:

	A	B	C	D
Round	**My payments for conservation (P/NP)**	**Total number of A in the group (Monitor announces this)**	**Total number of P in the group (Monitor announces this)**	**My Earnings (Use the blue points table) Columns A and B**
Practice	P	4	4	820
Practice				
Practice				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
Total				

Second Practice

We will all take a yellow card, and in the round number box we will write the P for practice. First, we go with the players 1 and 2, who chose the type A farm, while the players 3 and 4 chose the type B farm. They write the chosen letter in the box called 'My decision.'

Game Card	
Player Number	1 or 2
Round Number	P
My Decision (A/B)	A

Game Card	
Player Number	3 or 4
Round Number	P
My Decision (A/B)	B
Pay to support conservation in the high and mid-part of the basin (P/NP)	

Now, suppose that players 3, 4, 5 and 6 decided to pay (P) to support the conservation of the upper and middle parts of the basin and the players 5 and 6 decided not to pay (NP). We mark this on the card.

Game Card	
Player Number	3 or 4
Round Number	P
My Decision (A/B)	B
Pay to support conservation in the high and mid-part of the basin (P/NP)	P

Game Card	
Player Number	5 or 6
Round Number	P
Pay to support conservation in the high and mid-part of the basin (P/NP)	NP

At this time, all players write their decision on the green account sheet. The players 1 and 2 put, in column A, the type A farm; the players 3 and 4, in columns A and B, put the letter B and the letter P, respectively; and players 5 and 6 write down, in column A of their account sheet, their decision: NP.

After this, the moderator collects the decision cards and announces to the group the total numbers of type A farms and the payment option for the conservation: total of A, 2; and of P, also 2.

The players 1 and 2 will write, in columns B and C of their green account sheet, the number of of type A (2) and the amount of payments for conservation (2), and with this they will be able to calculate how many points they won in this round: 765 points.

The players 3 and 4 will write, in columns C and D of their green account sheet, the number of type A farms (2) and the amount of payments for conservation (2), and with this they will also be able to calculate how many points they won in this round: 825 points.

Players 5 and 6 will write, in columns B and C of their green account sheet, the number of type A farms (2) and the amount of payments for conservation (2), and with this they will be able to calculate how many points they won in this round: 620 points.

We must remember that players 1 and 2 earn their points from the total number of payments for conservation; the players 3 and 4 earn their points from the total of selected type A farms and the total payments for conservation; and players 5 and 6 calculate their points from the number of selected Type A farms.

In this moment, the accounting cards of the players should look like this:

Players 1 and 2:

	A	**B**	**C**	**D**
Round	**My Decision (A/B)**	**Total number of A in the group (Monitor announces this)**	**Total number of P in the group (Monitor announces this)**	**My Earnings (Use the blue points table) Columns A and C**
Practice	A	4	4	910
Practice	A	2	2	765
Practice				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
Total				

Players 3 and 4:

	A	B	C	D	E
Round	**My Decision (A/B)**	**My payments for conservation (P/NP)**	**Total number of A in the group (Monitor announces this)**	**Total number of P in the group (Monitor announces this)**	**My Earnings (Use the blue points table) Columns A, B, C and D**
Practice	A	P	4	4	830
Practice	B	P	2	2	825
Practice					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
Total					

Players 5 and 6:

	A	B	C	D
Round	**My payments for conservation (P/NP)**	**Total number of A in the group (Monitor announces this)**	**Total number of P in the group (Monitor announces this)**	**My Earnings (Use the blue points table) Columns A and B**
Practice	P	4	4	820
Practice	NP	2	2	620
Practice				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
Total				

Third Practice

In this third practice, each of you will make a private decision, as you will do throughout the exercise. Please arrange your chairs so that your backs are turned to the other members of your group.

Note: in this round, each person makes their decisions, notes on their account sheet and calculates their point; The monitor should review what each participant is doing, answer questions and announce that the game will begin soon.

Note: the moderator should remind the group that the points earned in the three practice rounds are not added to the end total.

Informed Consent

It is necessary that you, as participants, review the acceptance or informed consent form. In this document, we assure you that we will handle all the information collected in the exercises in a confidential manner; In addition, we point out that participating in these exercises does not present any risk. You signature says that you know what the project and the exercise will entail regarding your participation [read the informed consent to the whole group, aloud]. If you agree to participate, please fill in your acceptance form, and do not forget to write your player number on it.

Begin the Game!

For the monitor to register the decisions of the players (one per group)

Date:___/___/___ Time:_____am/pm Place:_____
Monitor:_____ Rule:_____ Group:_____

	Players						Total of A	Total of P
Round	1	2	3	4	5	6		
P1								
P2								
P3								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
Total								

2nd parte	Players						Total of A	Total of P	Penalty Fee
Round	1	2	3	4	5	6			
P1									
P2									
P3									
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
Total									

In this monitor chart, the decisions of each of the players in each round are recorded, and in the last box, the total of type A farms and payments for conservation announced by the monitor are written.

The Rules

All the necessary steps have been explained to carry out the first 10 rounds of the game. Now, we are going to concentrate on the second part of the game, in which there are some changes in the dynamics of the exercise because a new rule is introduced, which may be different for each of the groups.

The rules of the second part that can be implemented are:

1. Communication
2. High External Regulation
3. Low External Regulation

Rule 1: Communication

After finishing the first 10 rounds of the exercise, each player must calculate his/her winnings, and then the monitors collect the green score sheets of all the players, to calculate the group's profits.

Before starting this new stage of game, the moderator tells the members of the group that they can talk about what they want for five minutes: about the game, the winnings, about the ways of playing, how the game resembles reality, and so on. This conversation is only between the members of the group, it should not be directed by the moderator. The only thing that is not allowed during this time of conversation is that players make promises to one another about transfers of points during the exercise or after it.

Each player must be given 10 yellow cards to write their decision and a new accounting sheet similar to the one given in the first part of the game, but without the first three practice rounds on it (it is part of the photocopying material).

The Instructions that the Moderator should read are:

In addition to the rules described in the instructions that we have just explained, there is an additional rule for the participants of this group:

Please, make a circle or sit around the table.

Before making your next decision, you can have an open discussion, which will last a maximum of five minutes, with your group. You can talk about whatever you want about the game and the rules, but no player can make a promise or threat related to payments or transfers of points during or after the end of the exercise. It is simply an open discussion. The rest of the rules of the game are maintained. We will tell you when the time is over. Afterwards, you and your colleagues should suspend the discussion and each will make his or her individual decision for the next rounds. These decisions will remain private and confidential as in the other rounds, and may not be known by the rest of your group or by other people.

After the five minutes have elapsed, the moderator warns that the time has ended; all the players must return to their place so that their decisions remain private, and the game dynamics continue as in the first part. The monitor's accounting sheet, in which the decisions of the players are recorded, is the same as that presented in the first part of the game.

Rule 2: High External Regulation

For this rule, the exercise dynamic continues in the same way as in the first part of the game, but the moderator imposes an external penalty to one of the members of the group that has been selected at random.

The Instructions that the Moderator should read are:

This new rule serves to obtain the maximum points possible for the group. We are going to try to guarantee that each player chooses a type A farm and makes the conservation payments. However, since it is difficult to inspect the results of all of the group members, we will select at random one of the group members. Only those that are randomly selected must show – to the monitor – the decisions that they made and then the monitor will apply the fine if it is required.

For example:
If the players 1 or 2 make their choices and opt for farm type A, the fee will be $0; but if their decision was B, the fee that they would pay is $400.
If the players 3 or 4 make their choices and their decision was farm type A and to pay for conservation, the fee would be $0. If their decision was A-NP, their fee would be $75; if it was B-P, the fee would be $350; and if it was B-NP, the fee would be $400.
If the players 5 or 6 have made their choices and their decision was P, their fee would be $0; if their decision was NP, their fee would be $200.

This table of fines must be given to each participant, and in the large, demonstration samples the explanation is made. Along with the fines tables, each participant will be given 10 decision cards and a new green account sheet.

If the player 1 or 2 makes this decision:	B
The fine to be payed is:	$400

If the player 5 or 6 makes this decision:	NP
The fine to be payed is:	$200

If the player 3 or 4 makes this decision:	A-P	A-NP	B-P	B-NP
The fine to be payed is:	$0	$75	$350	$400

To select the person to be inspected in the group, it is recommended to place six ballots marked with the numbers of each player (1, 2, 3, 4, 5 and 6) inside a dark bag. In each round, after the players have made their decision, they have handed the decision card to the monitor, the monitor has announced the group total, and the players have calculated their points, the moderator invites one of the group members to draw a ballot from the bag; The player whose number has been chosen will be inspected. This is repeated during the 10 rounds of the second part.

To apply this fine, a new account sheet is used, different from the one used in the first part of the exercise. Examples should be given to illustrate how to do it. It is necessary to present these examples so that all the players identify the fines and become familiar with the new account sheet:

Example 1:

Suppose that we are in round 6 and the decisions of the group were the following:

Player 1: A
Player 2: B
Player 3: B and NP
Player 4: A and NP
Player 5: NP
Player 6: P

In this round, the total number of players that chose type A farms was 2 and one player paid for conservation.

As in the first part of the game, players 1 and 2 calculate their points from the total number of payments for conservation; the players 3 and 4 calculate their points from the total number of selected type A farms and the total number of payments for conservation; and the players 5 and 6 calculate their points based on the number of Type A farms.

The earnings of the players in this round would be the following:

Player 1: 745 points
Player 2: 865 points
Player 3: 815 points
Player 4: 795 points
Player 5: 520 points
Player 6: 620 points

Thus far, nothing is different regarding the rules of the first part of the game. Suppose that for this example the ballot marked with the number 5 was chosen. According to the table of fines, player 5 must have 200 points deducted because their choices were outside the norm; this is noted in column E of your new green account sheet. Before the inspection, Player 5 had 520 points; discounting the 200 points of the fine, 320 points remain, which are entered in column F of the same sheet of accounts. All this should be done by the moderator.

Player 5:

	A	B	C	D	E	F
Round	**My payments for conservation (P/NP)**	**Total number of A in the group (Monitor announces this)**	**Total number of P in the group (Monitor announces this)**	**My Earnings (Use the blue points table) Columns A and B**	**My Fine in this round**	**My Final Earnings (Columns D and E)**
Practice						
Practice						
Practice						
1						
2						
3						
4						
5						
6	NP	2	1	520	-200	320
7						
8						
9						
10						
Total						

It is necessary to clarify to the group that this is only applied to the inspected person, that has been chosen according to the random number/ballot drawn from the bag.

Rule 3: Low External Regulation

For this rule, the exercise dynamic continues in the same way as in the first part of the game, but the moderator imposes an external penalty to one of the members of the group.

The Instructions that the Moderator should read are:

In addition to the rules described in the instructions that we have just explained, there is an additional rule for the participants of this group:

This new rule serves to obtain as many points as possible for the group. We will try to guarantee that each player chooses farm type A and also makes the conservation payments. However, as it is very difficult to inspect all the members of the group, we will randomly select only one person. Only those who are selected will show (only to the monitor) what decision they took, and they will apply the fine if required.
For example:
If player 1 or 2 chooses farm type A, the fee will be $0; if they choose B, the fee is $200.
If player 3 or 4 chooses farm type A and chooses to pay for conservation, the fee will be $0; if they choose A-NP, the fee will be $50; if they choose B-P, the fee will be $150; if they choose B-NP, the fee will be $200.
If the players 5 or 6 choose P, their fine will be $0, but if they opt for NP their fee will be $100.

This table of fines must be given to each participant, and in the large, demonstration samples the explanation is made. Along with the fines tables, each participant will be given 10 decision cards and a new green account sheet.

If the player 1 or 2 makes this decision:	B
The fine to be payed is:	$200

If the player 5 or 6 makes this decision:	NP
The fine to be payed is:	$100

If the player 3 or 4 makes this decision:	A-P	A-NP	B-P	B-NP
The fine to be payed is:	$0	$50	$150	$200

To select the person to be inspected in the group, it is recommended to place six ballots marked with the numbers of each player (1, 2, 3, 4, 5 and 6) inside a dark bag. In each round, after the players have made their decision, they have handed the decision card to the monitor, the monitor has announced the group total, and the players have calculated their points, the moderator invites one of the group members to draw a ballot from the bag; The player whose number has been chosen will be inspected. This is repeated during the 10 rounds of the second part.

To apply this fine, a new account sheet is used, different from the one used in the first part of the exercise. Examples should be given to illustrate how to do it. It is necessary to present these examples so that all the players identify the fines and become familiar with the new account sheet:

Example 1:

Suppose that we are in round 4 and the decisions of the group were the following:

Player 1: A
Player 2: A
Player 3: A and P
Player 4: B and NP
Player 5: P
Player 6: P

In this round, the total number of players that chose type A farms was 3 and 3 players paid for conservation.

As in the first part of the game, players 1 and 2 calculate their points from the total number of payments for conservation; the players 3 and 4 calculate their points from the total number of selected type A farms and the total number of payments for conservation; and the players 5 and 6 calculate their points based on the number of Type A farms.

The earnings of the players in this round would be the following:

Player 1: 885 points
Player 2: 885 points
Player 3: 830 points
Player 4: 890 points
Player 5: 670 points
Player 6: 670 points

Thus far, nothing is different regarding the rules of the first part of the game. Suppose that for this example the ballot marked with the number 4 was chosen. According to the table of fines, player 4 must have 200 points deducted because their choices were outside the norm; this is noted in column F of your new green account sheet. Before the inspection, Player 4 had 890 points; discounting the 200 points of the fine, 690 points remain, which are entered in column G of the same sheet of accounts. All this should be done by the moderator.

Player 4:

	A	B	C	D	E	F	G
Round	**My Decision (A/B)**	**My payments for conservation (P/NP)**	**Total number of A in the group (Monitor announces this)**	**Total number of P in the group (Monitor announces this)**	**My Earnings (Use the blue points table) Columns A, B, C and D**	**My Fine in this Round**	**My Final Earnings (Column E and F)**
Practice							
Practice							
Practice							
1							
2							
3							
4	B	NP	3	3	890	-200	690
5							
6							
7							
8							
9							
10							
Total							

Sequence of the Experiment

1. Introduce the field team
2. Introduce the participants
3. Explain the instructions
4. Explain the experiment/game
5. Give Examples
6. Explain informed consent
7. Play the first part of the game (10 rounds)
8. Play the second part of the game (10 rounds with the rule)
9. Pay the participants

Digitally Capturing the Data

FICHA PARA EL MONITOR (UNA POR GRUPO)

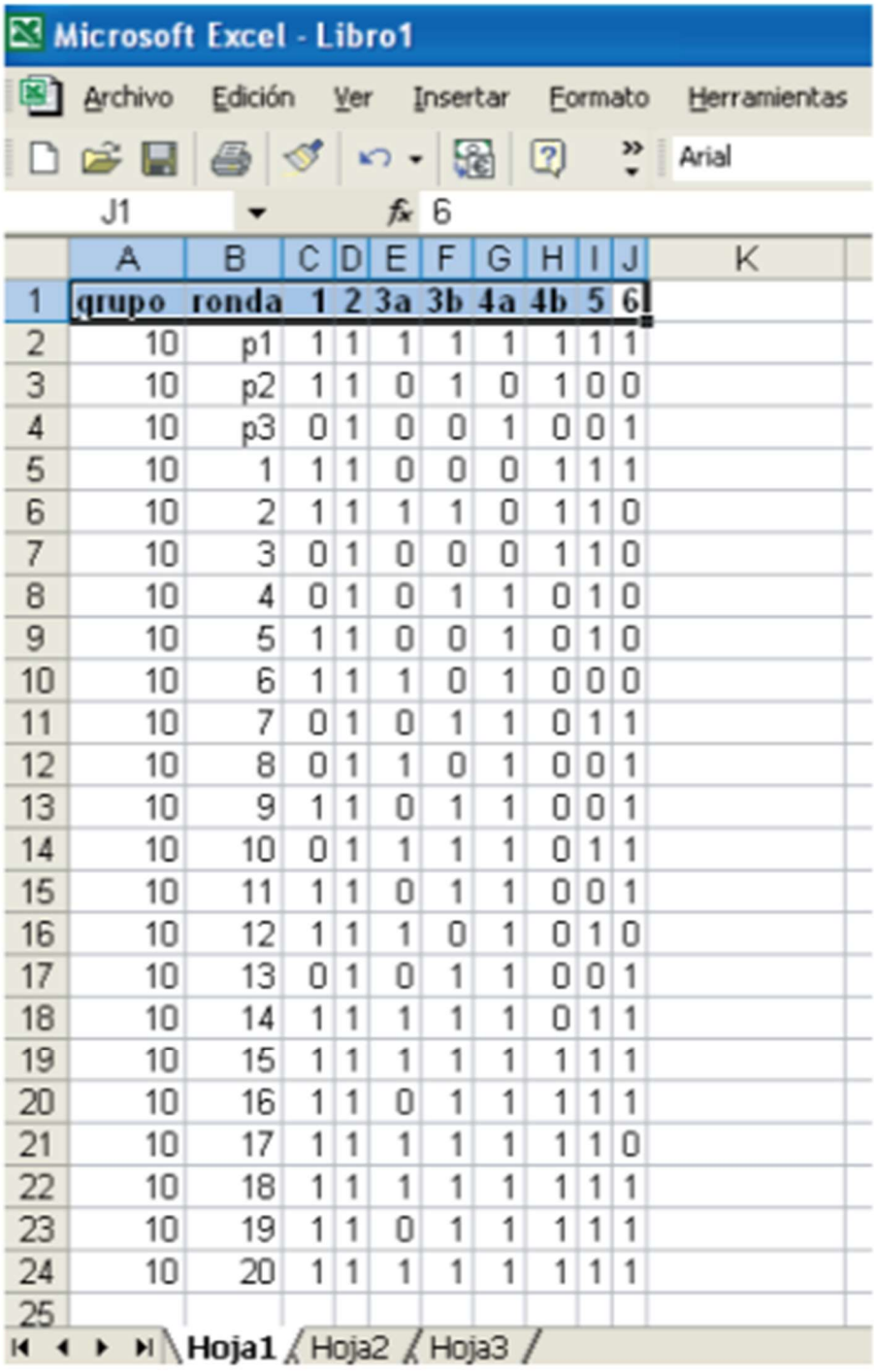
Fecha: 12/08/2009 Hora: 10 AM/PM Lugar: cuenca

Monitor: Pablo R Regla Comunicación Grupo: 10

Ronda	Jugadores 1	2	3	4	5	6	Total A	Total P
P1	A	A	A / P	A / P	P	P	4	4
P2	A	A	B / P	B / P	NP	NP	2	2
P3	B	A	B / NP	A / NP	NP	P	2	1
1	A	A	B / NP	B / P	P	P	2	3
2	A	A	A / P	B / P	P	NP	3	3
3	B	A	B / NP	B / P	P	NP	1	2
4	B	A	B / P	A / NP	P	NP	2	2
5	A	A	B / NP	A / NP	P	NP	3	1
6	A	A	A / NP	A / NP	NP	NP	4	0
7	B	A	B / P	A / NP	P	P	2	3
8	B	A	A / NP	A / NP	NP	P	3	1
9	A	A	B / P	A / NP	NP	P	3	2
10	B	A	A / P	A / NP	P	P	3	3
Total			/	/				

Ronda 2da E	Jugadores 1	2	3	4	5	6	Total A	Total P	Multa
11	A	A	B / P	A / NP	NP	P	3	2	
12	A	A	A / NP	A / NP	P	NP	4	1	
13	B	A	B / P	A / NP	NP	P	2	2	
14	A	A	A / P	A / NP	P	P	4	3	
15	A	A	A / P	A / P	P	P	4	4	
16	A	A	B / P	A / P	P	P	3	4	
17	A	A	A / P	A / P	P	NP	4	3	
18	A	A	A / P	A / P	P	P	4	4	
19	A	A	B / P	A / P	P	P	3	4	
20	A	A	A / P	A / P	P	P	4	4	
Total			/	/					

Example of how to digitize the game data



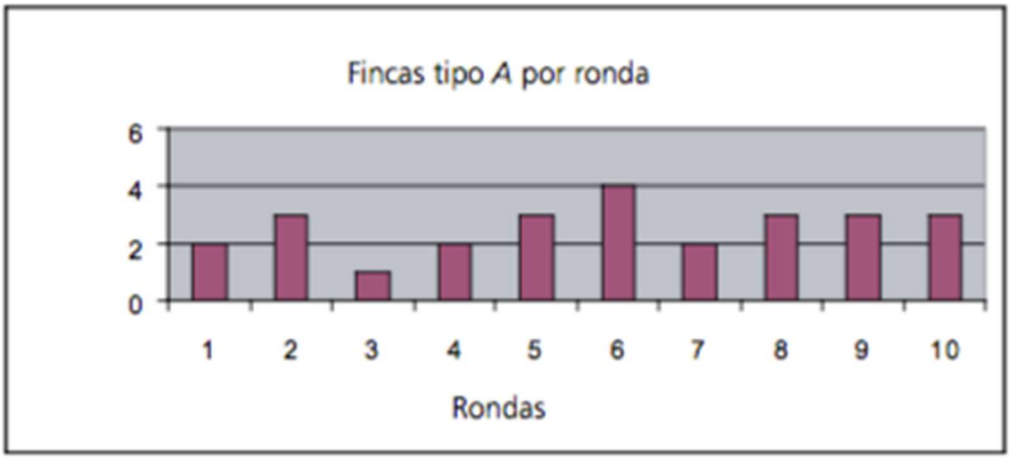
	A	B	C	D	E	F	G	H	I	J	K
1	**grupo**	**ronda**	**1**	**2**	**3a**	**3b**	**4a**	**4b**	**5**	**6**	
2	10	p1	1	1	1	1	1	1	1	1	
3	10	p2	1	1	0	1	0	1	0	0	
4	10	p3	0	1	0	0	1	0	0	1	
5	10	1	1	1	0	0	0	1	1	1	
6	10	2	1	1	1	1	0	1	1	0	
7	10	3	0	1	0	0	0	1	1	0	
8	10	4	0	1	0	1	1	0	1	0	
9	10	5	1	1	0	0	1	0	1	0	
10	10	6	1	1	1	0	1	0	0	0	
11	10	7	0	1	0	1	1	0	1	1	
12	10	8	0	1	1	0	1	0	0	1	
13	10	9	1	1	0	1	1	0	0	1	
14	10	10	0	1	1	1	1	0	1	1	
15	10	11	1	1	0	1	1	0	0	1	
16	10	12	1	1	1	0	1	0	1	0	
17	10	13	0	1	0	1	1	0	0	1	
18	10	14	1	1	1	1	1	0	1	1	
19	10	15	1	1	1	1	1	1	1	1	
20	10	16	1	1	0	1	1	1	1	1	
21	10	17	1	1	1	1	1	1	1	0	
22	10	18	1	1	1	1	1	1	1	1	
23	10	19	1	1	0	1	1	1	1	1	
24	10	20	1	1	1	1	1	1	1	1	
25											

Analysis of the data (with example)

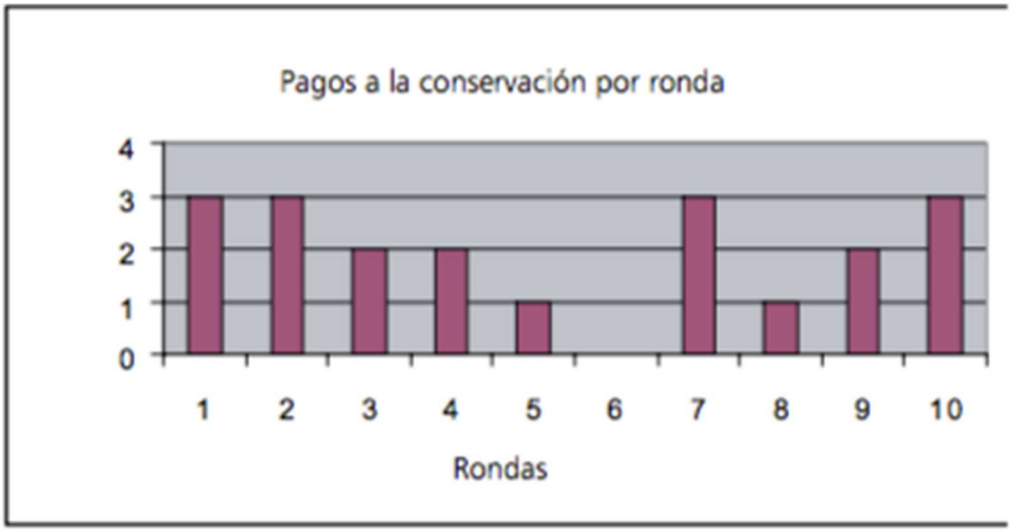
Analysis of the baseline:

It is necessary to analyze the results of the first part of all the exercises; in this part, we will show the analysis of the data presented previously.

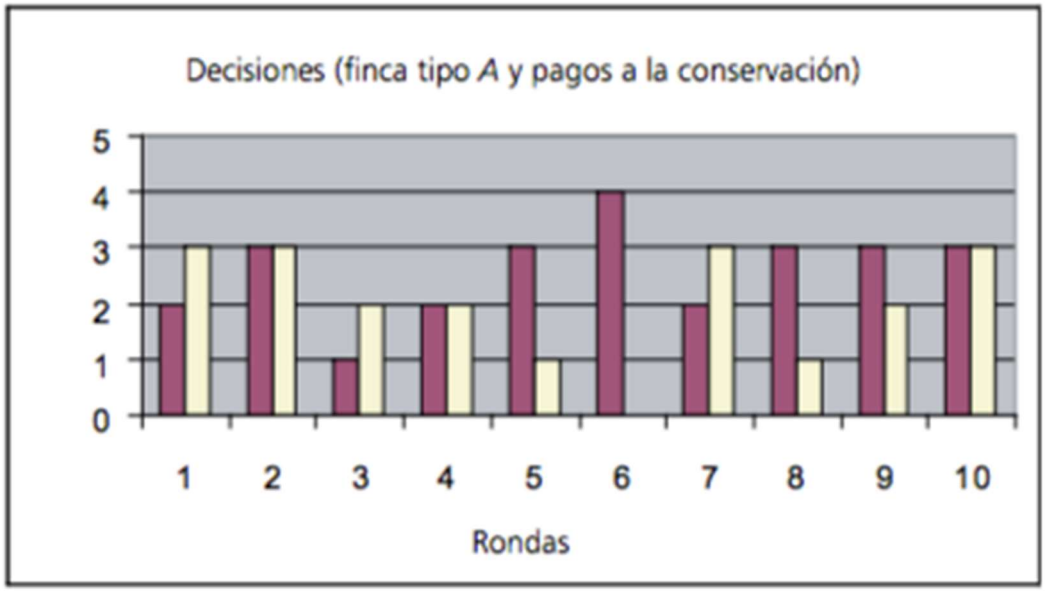
The social optimum of the game is that all players choose the type A farm and pay for conservation. Therefore, initially, we will analyze the amount of type A farms chosen in the different rounds of the game:



Then, we can analyze the total number of decisions to pay for conservation in the rounds of the game:

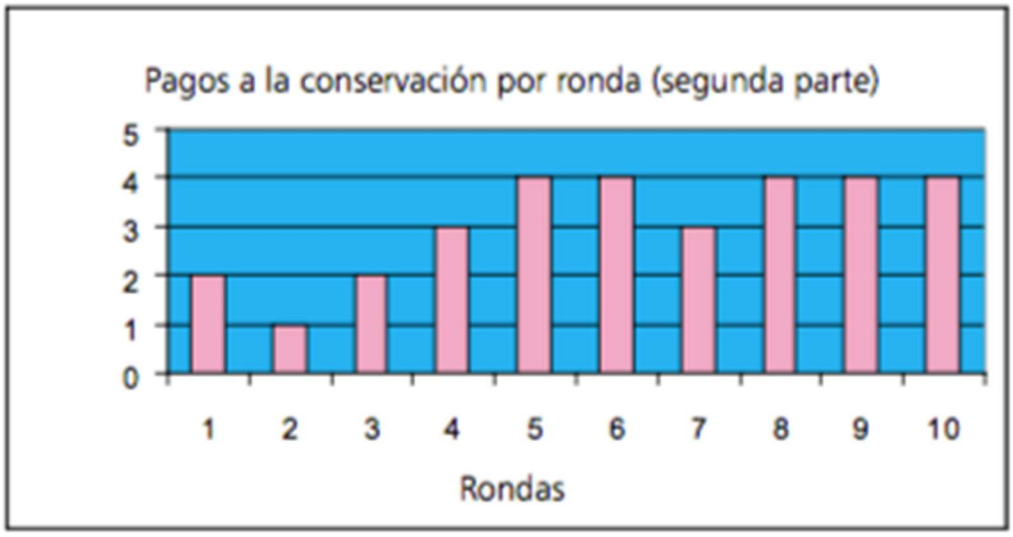


After, we observe the percentage of decisions for farm type and conservation payments:

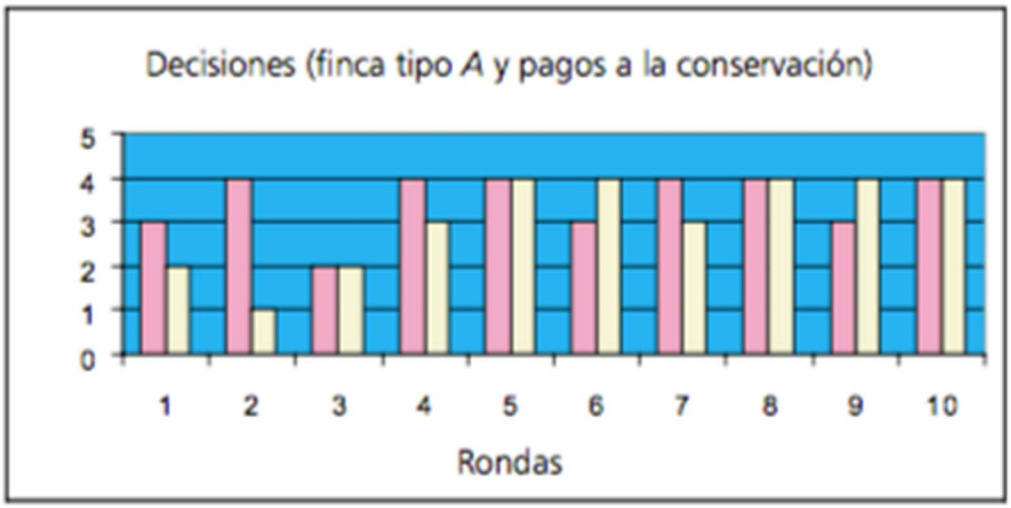


Now, let's analyze the data of the second part of the game. We will use the data from the example date entered previously, in which the presented rule was communication.

Comparing the results with the first part of the game, in general we can see that the communication rule increases the number of decisions of type A in most of the rounds.



Similarly, you can observe that, in general, after the participants discuss among themselves, there is an increase in the conservation payments.



The idea is to compare a good amount of data, from the baseline, with each of the rules. In this way, it is possible to analyze what type of rules are most efficient for the management of natural resources in river basins.

Presentation of the Results

Type of data presented to the whole group:

For the presentation of the results, it is necessary to have the data from a minimum of five groups for each rule.

The following data are presented in posters:
- The average number of decisions of type A for the players 1 and 2.
- The average number of decisions of type A and payments for conservation of the players 3 and 4.
- The average number of payments for conservation of players 5 and 6.

Also present the average winnings of all the players and the differences of the winnings in the groups according to the rules.

Material to Photocopy

The material that should be photocopied is the following:

1. Decision cards (they should be photocopied on yellow paper)
2. Accounting cards for the first part of the game (on green paper)
3. Accounting cards for the second part of the game for the communication rule (on green paper)
4. Accounting cards for the second part of the game for the rules with fines (on green paper)
5. Point Tables (on blue paper)

Paper of different colors is used in each format for easier facilitation and handling by the players; The colors of the decision cards, the account sheets and the points table do not necessarily have to be what we say in this manual.

Accounting cards for the first part of the game

Player Number: (1 and 2) **Date: ___/___/___ Time: _____am/pm**
Place:_____

	A	B	C	D
Round	**My Decision (A/B)**	**Total number of A in the group (Monitor announces this)**	**Total number of P in the group (Monitor announces this)**	**My Earnings (Use the blue points table) Columns A and C**
Practice				
Practice				
Practice				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
Total				

Player Number: (3 and 4) **Date: ___/___/___ Time: _____am/pm**
Place:_____

	A	B	C	D	E
Round	**My Decision (A/B)**	**My payments for conservation (P/NP)**	**Total number of A in the group (Monitor announces this)**	**Total number of P in the group (Monitor announces this)**	**My Earnings (Use the blue points table) Columns A, B, C and D**
Practice					
Practice					
Practice					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
Total					

Player Number: (5 and 6) **Date: ___/___/___ Time: _____am/pm**
Place:_____

	A	B	C	D
Round	**My payments for conservation (P/NP)**	**Total number of A in the group (Monitor announces this)**	**Total number of P in the group (Monitor announces this)**	**My Earnings (Use the blue points table) Columns A and B**
Practice				
Practice				
Practice				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
Total				

Accounting Cards for the second part of the game

Note: for the Communication Rule, the same accounting cards used for the first part of the game will be used, the following are for rules 2 and 3

	A	B	C	D	E	F
Round	**My payments for conservation (P/NP)**	**Total number of A in the group (Monitor announces this)**	**Total number of P in the group (Monitor announces this)**	**My Earnings (Use the blue points table) Columns A and B**	**My Fine in this round**	**My Final Earnings (Columns D and E)**
Practice						
Practice						
Practice						
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
Total						

	A	B	C	D	E	F	G
Round	**My Decision (A/B)**	**My payments for conservation (P/NP)**	**Total number of A in the group (Monitor announces this)**	**Total number of P in the group (Monitor announces this)**	**My Earnings (Use the blue points table) Columns A, B, C and D**	**My Fine in this Round**	**My Final Earnings (Column E and F)**
Practice							
Practice							
Practice							
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
Total							

Point Table

Players 1 and 2:

		My Decision	
		A	B
Decisions of all in the group	4 P	910	930
	3 P	885	905
	2 P	765	785
	1 P	745	765
	0 P	720	740

Players 3 and 4:

		My Decision			
		A-P	A-NP	B-P	B-NP
Decisions of all in the group	0P + 0A				740
	0P + 1A		720		790
	0P + 2A		770		840
	0P + 3A		820		840
	0P + 4A		820		
	1P + 0A			700	765
	1P + 1 A	680	745	750	815
	1P + 2A	730	795	790	815
	1P + 3A	780	845	800	865
	1P + 4A	780	845		
	2P + 0A			725	790
	2P + 1A	705	770	725	840
	2P + 2A	755	800	825	890
	2P + 3A	805	870	825	890
	2P + 4A	870	870		
	3P + 0A			750	790
	3P + 1A	730	770	800	840
	3P + 2A	780	820	850	890
	3P + 3A	830	870	850	890
	3P + 4A	830	870		
	4P + 0A			750	
	4P + 1A	730		800	
	4P + 2A	780		850	
	4P + 3A	830		850	
	4P + 4A	830			

The players 5 and 6:

		My Decision	
Decisions of all in the group		P	NP
	4 A	820	920
	3 A	670	770
	2 A	520	620
	1 A	370	470
	0 A	220	320