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STUDY REPORT

RUBBERWAY

Study of a tool of risk
assessment to improve
the sustainability of
the natural rubber
value-chain

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2021

www.agrarian-systems.org

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Note to readers

This study report was written with the idea that it would be read by several actors interested in the Rubberway risk assessment tool and process. We are thinking here first and foremost of the Rubberway company, which is behind this initiative, the SNDI working group, CIRAD and CIFOR researchers interested in these issues, the founders of Rubberway at Michelin, joined by Continental, as well as the members of the GPSNR, in particular the «millers» who implemented this approach, especially SAPH in the Republic of Côte d'Ivoire, a member of the SIFCA group, which made this study possible. This study has also been supported by the «CST Forêt», who has an interest in understanding the potentials of Rubberway.

01

Rubberway A contribution to the sustainability objectives of the natural rubber industry

This first section provides some background to understand where Rubberway fits in with initiatives to improve the sustainability of the global natural rubber industry. Various initiatives such as the GPSNR or SNR-i are mentioned and the alignment of their concerns with the issues addressed by Rubberway are discussed.



From top to bottom (Photographs: Hugo Lehoux)

- Downward tapping with a knife
- Coagulated latex in a cup
- Weighing of the rubber before transport to the weighbridge

On the road towards sustainable rubber

Following in the footsteps of the oil palm and timber industries, the natural rubber sector has taken up the theme of sustainable development and adapted it to the specificities of the rubber industry.

The creation of the Global Platform on Sustainable Natural Rubber (GPSNR) in 2018 at the initiative of the Tire Industry Project is a major witness to the concerns of the sector and the interest that is being shown in these issues (particularly by the private sector). The Sustainable Natural Rubber initiative (SNR-i) led by the International Rubber Study Group (IRSG) since its pilot phase in 2015 also shows the growing concerns on the various sustainability issues of the sector by the major producing countries. Since 2019, the World Rubber Summit, organized by the same institution, has devoted most of its conference programs to this topic. Finally, CIFOR's Forest, Trees and Agroforestry (FTA) program, which is part of this study, shows the growing involvement of international research institutes in this topic.

Reflections on sustainability have been emerging for a long time within the sector's companies, which have materialized through the creation of sustainable development and CSR departments. Some companies, starting with Michelin in 2016-2017, have undertaken to adopt purchasing policies for their rubber that directly incorporate these principles. As early as 2015, Michelin collaborated with WWF as well as the Barrito Pacific Group to launch «eco-natural», or «responsible» rubber plantation projects.

Another «sustainability injunction» comes from the growing concern about deforestation, with France in particular showing a desire to reduce its ecological footprint by adopting strategies to combat imported

deforestation. The SNDI (Stratégie Nationale de Lutte contre la Déforestation Importée) adopted by the French government in 2018 enjoins all French companies to achieve results to ensure the production of «zero deforestation» products. With the significant expansion of rubber trees over the past 30 years in several countries around the world (especially during the 2011 price boom), this industry is also being watched for its expansion on former forest areas.

The genesis of Rubberway within Michelin's CSR department is part of this movement. This process-tool, which was inaugurated in July 2017 in Singapore, was initially conceived as a Risk Diagnostic tool to identify, assess and prioritize a variety of risks along the supply chain of Michelin's plants.

Turning to the various actors involved in the supply chain of the tire manufacturer's factories, Rubberway (later co-founded by Michelin and Continental) hopes to be able to make a relatively exhaustive diagnosis of the risks that could compromise the achievement of the sustainability objectives desired by the various actors in the chain. Rubberway addresses a range of relatively diverse issues, covering economic concerns, environmental issues such as forest protection and social issues such as the fight against child labor. By questioning millers, industrial plantations, intermediate buyers and small-scale planters, this tool and its methodology aim to cover all the actors in the value-chain.

Risk management as a means of contributing to the sustainability of the rubber industry

Hugo Lehoux & Corentin Lucas

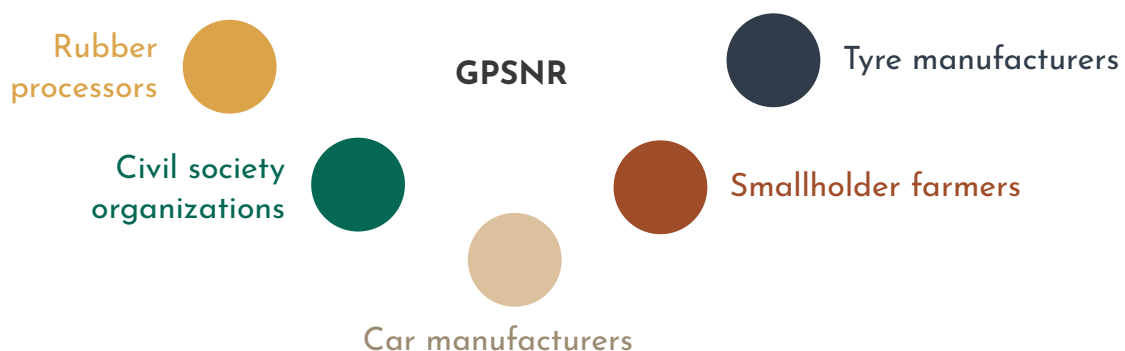
2021

Rubberway is positioned as the initial link in a risk management approach. This tool-process is designed to establish a risk assessment and, in part, to analyze these risks. The risk-management paradigm has largely conquered managerial thinking for a number of years. This approach, which initially originated in industrial circles, has found an articulation with the concerns of sustainable development, which is concretized in an approach such as Rubberway's.

Rubberway aims to establish a risk diagnosis, developing a very practical vision of what can be understood as sustainability at the level of each link in the chain.

The risk-management paradigm has become an integral part of the toolkit of project managers in all areas of the economy. This approach has found a fruitful combination with the sustainability concerns surrounding agricultural value chains.

The history of the GPSNR also concretely shows this articulation between sustainability and risk management. This platform is an initiative that brings together 57 so-called «ordinary» members (November 2021), grouped into 5 colleges representing different actors in the sector:



What would a fair, equitable and environmentally friendly global natural rubber supply chain look like?

This is the first question that the members of the GPSNR sought to answer. They have provided a benchmark answer to this question in a document called «Desired state» structured around the three common pillars of sustainable development.

By joining this organisation, its members sign a commitment based on 12 principles for «sustainable natural rubber». On 30 September 2020, the GPSNR adopted a policy framework that translates these 12 principles into 8 specific commitments by members to contribute to the

sustainability of the industry. This policy framework is also based on two clearly stated management principles, namely :

- Continuous improvement
- Risk-based approach.

It is this last element that allows us to understand the interest that GPSNR members may have in the Rubberway approach.



GPSNR POLICY FRAMEWORK

For Sustainable Natural Rubber Production and Sourcing
(GPSNR Ordinary Member Companies)

Specifically, the seventh commitment of the GPSNR policy framework «Commitment to supply chain assessment, traceability and management» has a first component called «Conducting supply chain mapping and assessing supplier for social and environmental risk to prioritise risk mitigation actions». Rubberway's potential contribution lies at this point in the GPSNR policy framework.

A report by Hubert de Bonafos for the GPSNR in 2020 reviews transparency and traceability tools and solutions for the rubber industry. It states that «Rubberway could represent a good environmental and social risk assessment solution at the level of the GPSNR natural rubber industry».

An assessment process of the risks on the natural rubber supply chain

02

Rubberway is an original approach initiated by Michelin to «map risks along the natural rubber supply chain».

By defining itself in this way, Rubberway is not a traceability tool, but rather a risk analysis tool and possibly a transparency tool. It is not a plantation, factory or territorial certification approach.

It is thus positioned as a diagnostic tool located upstream of risk management approaches, by identifying, evaluating and prioritizing the risks that may exist at the various links in the chain.

Mapping risks along the natural rubber value-chain

Rubberway is an approach that was conceived as a diagnosis of risks along the natural rubber supply chain. It is part of the risk management paradigm, which has been widely adopted in the field of business strategy and project management.

Definition of a risk




In the case of Rubberway, a risk or level of risk can be thought of as a combination of a *subjective probability of occurrence of undesired phenomena* and the *subjective severity of that phenomenon*.

The term subjective should not be seen as pejorative. It reflects the fact that an opinion is given («opinionated») on a subject. This opinion can be seen as the concrete translation of the «value system», «norm system» or «normative background» of the entity that qualifies the risk.



For example, the Rubberway team-as well as the GPSNR members-consider that the presence of underage labor on a rubber plantation most likely implies a negative impact on their schooling, either because they miss school, or because they are too tired from working in the fields, or because the money they earn may distract them from schooling, etc.

In this example we could name the elements as follows:

-  **Risk factor** Presence of minor labor on the plantation
-  **Undesirable phenomenon (or danger)** Children do not go to school
-  **Risk (or risk level)** Subjective probability of occurrence of the undesirable phenomenon x Subjective severity of the consequences

The way to assess risk is to detect the presence, absence and possibly the proportion of each of the risk factors. Some risk factors may be positive and will tend to decrease the risk, while negative risk factors will tend to increase the level of risk.

Positive risk factors are sometimes referred to as «good practices», again revealing their subjective nature. Conversely, the presence of child labor on the plantation is considered a « bad practice ».

Acceptable thresholds and trade-offs

Behind the notion of risk level, there is necessarily the question of acceptable thresholds, which could also be described as *tolerance levels*. It is very common that such thresholds are not clearly defined.

Moreover, some practices may be considered both positive risk factors on certain issues and negative on others. The question of acceptable or unacceptable trade-offs therefore necessarily arises.

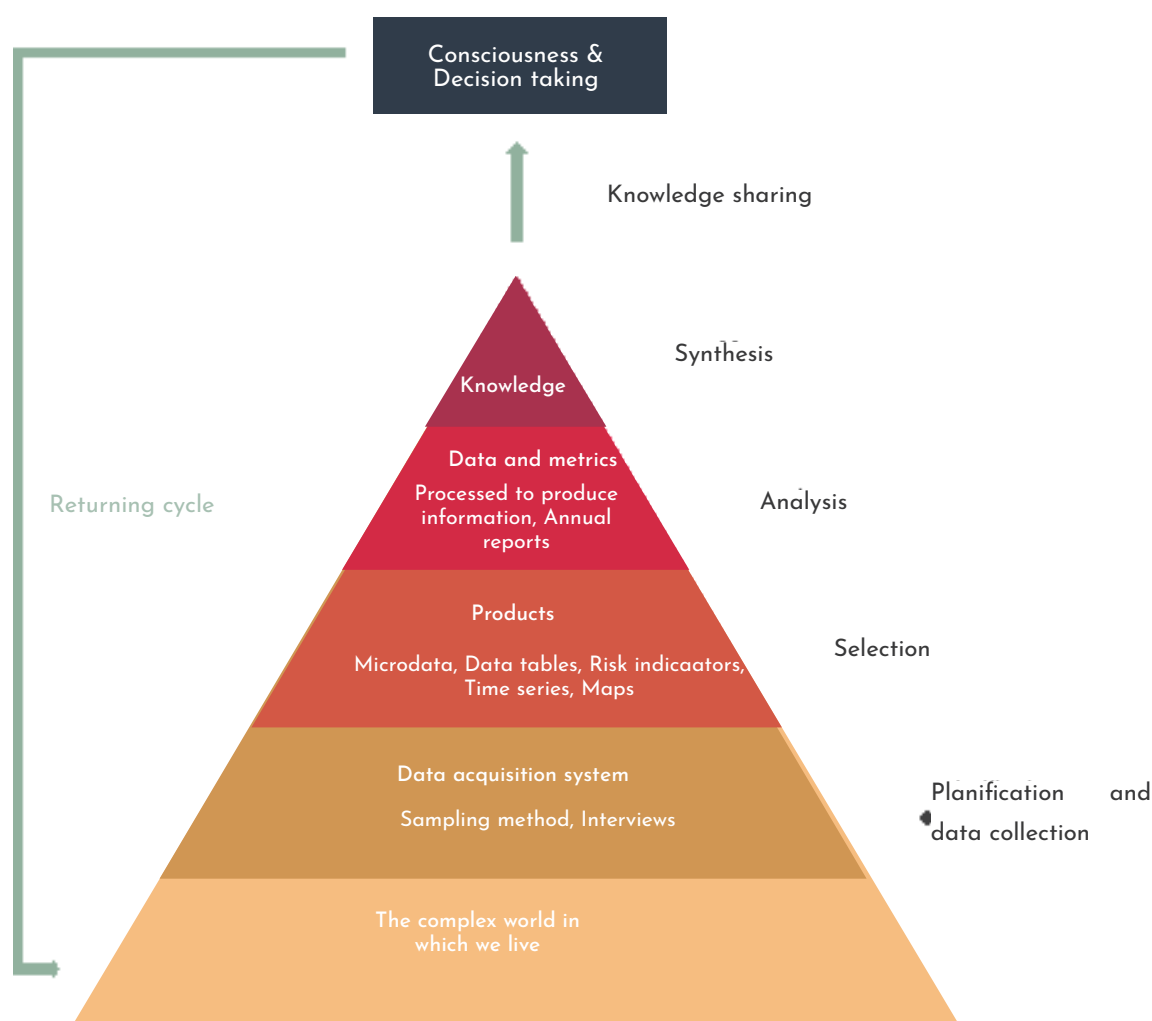
Like the establishment of thresholds, the question of trade-offs is not always clear in risk management systems and is assessed on a case-by-case basis.

An initial building block for risk management

Rubberway is part of risk management thinking, but not risk management *per se*. Rubberway is not a risk management tool in the sense that its mandate is limited to identifying, assessing and prioritizing risks.

Rubberway is not in the business of addressing risks.

Rubberway takes care of the planning, data collection, data analysis and knowledge synthesis in the form of a dashboard and annual report.



Decision-making process based on field survey data collection

Through its method and tools, Rubberway provides data and information on risk levels, and eventually proposes what is called «corrective actions». There are no plans to support the actors in managing these risks. The stakeholder who receives the results of the Rubberway diagnostic can then look for the best ways to deal with these risks (risk prevention, reduction, transfer, bypass/removal, acceptance etc.).

A complementary tool but not a traceability tool

Rubberway was not designed to be a traceability tool. It is obviously not concerned with the traceability of volumes, sales, product quality, deforested areas, etc. It is also not intended to evaluate the «level of sustainability» of each individual grower and to monitor it over time, although its objective is to promote the sustainability of practices.

However, it could rely on a system to identify rubber farmers and their rubber deliveries to help interpret the levels of risk detected by Rubberway. It would be possible to interpret the risk levels obtained, even to the point of detecting *risk profiles*. This could allow for better targeting of support that could be put in place when «treating» the risk (targeted training program, provision of targeted equipment etc.).

It is also envisaged to seek to accompany the certification of the most «at risk» areas. Indeed, as they cannot consider individual certification of all their growers, some millers are considering the use of Rubberway to detect «at risk» areas, in order to deploy reinforced support, which could go as far as the implementation of a certification process. In the Republic of Côte d'Ivoire, some actors are also considering setting up satellite monitoring of deforestation in areas identified by Rubberway on this topic.

Neither a private standard nor a certification

Rubberway was not established as a label, certification or private standard. It does not currently have a set of specifications as labels and standards can have. A certification is primarily a «positive social sanction», and Rubberway was not designed to be one. A misinterpretation of risk levels into «scores», and public communication of such a score could lead one to believe this. It seems important that this be clarified for everyone, in order to avoid discrediting the whole process.

One of the main risks for industrial companies in any sector is customer sanction, which is sometimes called «reputational risk». Companies in the sector may fear being publicly singled out as participating in the production of «tires that deforest» or «tires that exploit child labor». Certification is often a way to mitigate this reputational risk by seeking to provide assurances to customers. Rubberway is not one of them. Especially since the surveys are conducted by millers as a «self-assessment» of their growers, thus not providing any guarantee in the context of certification.

Rubberway may be a step upstream from a certification process. There is no real sustainable rubber certification to date, apart from a few initiatives for FSC certification of rubber plantations (BMW and the first FSC tire) and PEFC (mainly for the production of solid wood panels, glued laminated timber etc.). As mentioned above, Rubberway could help identify high-risk areas or types of operations to initiate risk management processes. It could therefore be used in parallel with, or even before, any certification.

For the moment, Rubberway is not a tool for putting factories in competition with each other, allowing pressure to be put on plants with poor «grades», as may exist in other sectors. But it could eventually be a way for manufacturers to differentiate themselves from other tire manufacturers.

A tool that could do impact assessment

Under certain conditions, Rubberway can be considered as a tool for «monitoring, evaluating & learning» (MEL). If the surveys are conducted in the form of a campaign, they can constitute baselines that can be replicated later in the hope of detecting desired changes in certain indicators.

Such time series could also be based on a network of reference farms, as can exist in agricultural observatories around the world.

A green-washing tool for the general public?

The production of an «overall risk level» necessarily causes the temptation to use this value (if it is «good») to communicate it with the general public. In our view, this is the major danger that Rubberway can face today.

This value is improperly understood as a sustainability rating, which it is not. It results from a process that includes 4 aggregations of data described below (target population > theme > pillar > overall rating) that completely drowns the wealth produced in Rubberway. Some low levels of risk balance and potentially erase significant levels of risk on other topics. Rubberway is also a «self-assessment» approach, and therefore gives no guarantee to the general public about the proper conduct of the investigation. In addition, we will see that the issue of sampling is major and can significantly influence the results produced by Rubberway.

Finally, the orientation of the risk scale ranging from 0 for a significant risk, up to 100 for a zero risk level, largely promotes this confusion. We think it is important to reverse this scale. It is important that a zero risk level corresponds to a numerical value of 0, which would further induce the idea that this value is the estimate of a «risk probability».

By displaying this so-called «score», or even worse a possible «ranking» between factories or countries thanks to this score will necessarily lead to an outcry. The approach would then be disqualified as a new «green-washing» tool.

Tool for internal discussions

Rubberway seems to us to have an important role to play in the discussion within the milling teams, between millers, with producers' representatives and all other stakeholders in the rubber industry in the participating countries. The analyses produced need to be reinterpreted and deepened in order to be better understood, and this can only be done with the various stakeholders in the sector. The case study conducted in the Republic of Côte d'Ivoire summarized in this document is a perfect illustration. Rubberway is probably not an external communication tool, but it is certainly a good internal communication tool for the sector.

How Rubberway works in detail

03

This section provides an in-depth look at how Rubberway works. From the details of the questionnaire to the risk rating methods, and including the presentation of the mobile application and the web platform, it provides a better understanding of Rubberway.

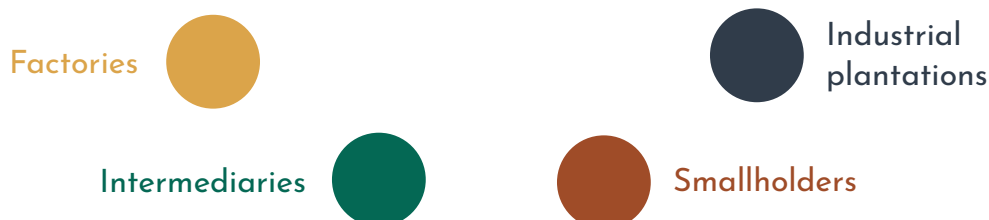
The last section is important as it deals with sampling strategies, based on the case study conducted in Côte d'Ivoire.

From questionnaire to risk rating

The following description concerns the version of Rubberway that was used during the first phase of data collection in the Republic of Côte d'Ivoire, but also in the other countries that can be considered as pilot territories. Changes in forms and calculation methods have led to improvements since this version.

4 types of forms

The Rubberway approach is based on four survey forms aimed at four types of stakeholders in the rubber industry.



These questionnaires are composed primarily of closed-ended, single- or multiple-choice questions. The vast majority of the surveys are conducted among «smallholders,» defined in Rubberway as owners of plantations with less than 50 ha of rubber trees. The study will focus primarily on this «smallholder» form in the remainder of this report.

49 questions can be asked to the «smallholders»

Almost all of the questions are closed questions. They can be single choice or multiple choice questions.

The answer to some questions can lead to the opening of additional questions. We will call them «conditional questions».

The majority of the questions are «evaluative», in the sense that they seek to assess a level of risk. The others are «informative questions», which do not have an associated level of risk, but are intended to help interpret or clarify the evaluative questions.

Rubberway's criteria as a practical definition of sustainability

The questions asked to farmers in Rubberway are categorised into themes, which in turn are grouped into four pillars.

Rubberway has identified 14 themes, which could be called sustainability assessment criteria, which are practical definitions of sustainability. Each of these criteria is based on one or more indicators that seek to identify and assess levels of risk in relation to these themes.

RESPECTING PEOPLE

Employment status
Decent wage and minimum wage
Working hours
Workers entitlement to rest
Worker's benefits
Migrant workers
Child labour
Health and safety
Grievances systems
Local communities

PROTECTING THE ENVIRONMENT

Environmental management
Biodiversity and Deforestation
Land ownership

AGRICULTURAL PRACTICES

Agricultural training

SUPPLY CHAIN TRACEABILITY & TRANSPARENCY

Traceability and transparency




Each answer has a numerical value

Responses to the evaluative questions generally seek to identify farmer practices (desirable or undesirable), elements of plantation structure or functioning.

Each response to the evaluative questions is associated with a value between 0 and 100. These individual values can be 0, 20, 25, 30, 50, 75 or 100.

The nature of this value is difficult to determine and changes from question to question. This value is primarily a subjective assessment, determined by the Rubberway team in consultation with some of its partners.

One could think of this value as a *Desirability Level* (0 = not desirable, 100 = desirable) but it is not that simple. The assessment of this desirability level includes a mixture of :

-  **Severity**, which relates to the more or less adverse consequences that are likely to be encountered if this element is detected on the plantation (e.g. the detection of the use of a highly toxic pesticide may result in adverse effects on human health, soil health, water quality etc.);
-  **Probability of exposure** to more or less desired consequences (Example: The more personal protective equipment is used, the less likely it is that there will be cut injuries on the plantation);
-  **Weighting** related to the method of calculating the risk level of the question (Reason why some questions cannot reach a risk level of 0).

This value is commonly referred to as a «score» in Rubberway's vocabulary. This may also tend to induce the idea of a «score» as mentioned above, which can cause confusion about the true meaning of these values. It could possibly be called a risk value, which would fit well with the idea of the risk factor contributing to increasing or decreasing the level of risk on the question being asked.

Risk rating by question

Once all risk factors are identified within the question, a risk scoring process follows. This rating corresponds to the method of estimating the level of risk associated with the question, which may be derived from a calculation taking into account all the practices identified by the question. Concretely, this translates into a method for calculating the level of risk.

Simple Choice Questions	Multiple Choice Questions	
« Single choice »	« Qmin »	« Qmax 100 »
These questions usually have yes/no (Boolean) answers, or can be answers that cannot overlap (6 to 8 hours a day or 8 to 10 hours a day).	This method is generally used for the detection of «the least desirable practice». These are questions that are sometimes referred to as «detection of bad practices.»	Conversely, this method is rather used to detect an «accumulation of good practices», which should lead to a decrease in the level of risk. This method contains a notion of accumulation, which does not exist for bad practices.
It is the single risk value of the chosen answer that is directly used as the risk level of the question.	This is the lowest individual value among the selected answers, which corresponds to the risk level of the question.	The individual risk values of the selected responses are added, with a ceiling of 100 (zero risk).
<p>Example :</p> <p>Does your family work on the plantation with you?</p> <p>Yes : 25 No : 75</p> <p>Risk level = 25</p>	<p>Example :</p> <p>For which activities do you use subcontractors on your plan (temporary or seasonal workers)?</p> <p>Application of phyto-sanitary products (herbicide...): 25 Planting maintenance: 50 Other: 50 I have no subcontractors: 100</p> <p>Risk level = 25</p>	<p>Example :</p> <p>How do you inform your employees about the method of calculating their wage?</p> <p>By providing pay slips in the language of the country : 75 For foreign workers, by providing pay slips in the workers' mother tongue :100 Oral explanation : 50 We don't really do that : 0</p> <p>Risk level = 100</p>
<p>It must be understood here that the subjective probability of occurrence of unwanted phenomena is 75/100.</p> <p>With the value of 25, it must be understood that this is a high risk, although the value is low on a scale from 0 to 100. It should therefore be understood that it is a scale that goes from 100 to 0, which can be counterintuitive.</p> <p>It can be noted in this example that it is not possible to have a value of 0 or 100. We will come back to that.</p>	<p>The riskiest application is that of application of phytosanitary products.</p> <p>It can be noted in this example that it is not possible to have a value of 0. We will come back to that.</p>	<p>It must be understood here that the estimated risk is zero, this may seem counterintuitive when we say that the risk level is 100.</p>

Risk aggregation for a target population

This conceptual step is important to understand. Rubberway does not show a risk level of each question for each survey. The software performs this risk rating for each survey as an intermediate calculation step but never shows it on Rubberway's user interfaces.

Risk scoring is performed only for a target population. It is possible to constitute target populations by choosing:

- A country
- A group of factories
- A factory
- An administrative region

For each question, the average level of risk of the investigations is calculated. This aggregation is the main method of anonymizing individual data collected from producers.

At this stage, there is currently a lack of the possibility of doing so for a specific investigator or group of investigators, which would allow to be better aligned with the scales of plant management. Buying platforms, for example, correspond to a set of buyers who carry out the surveys. Factory entry is not suitable since several platforms deliver to the same factory. Neither does the entry into administrative territory since the purchasing areas straddle several administrative zones and several platforms supply themselves on the same administrative area. We'll come back to this later when we talk about two-way reporting.

Aggregation of a risk level by theme

The questions are grouped by theme, which can be likened to evaluation criteria. 14 themes bring together the 49 possible questions. A risk level of the theme is calculated by averaging the risk levels of the questions, weighted by the number of respondents to each of the questions.

The objective of this new aggregation is to reduce the number of risk levels displayed in the user's dashboard and to allow for the early detection of priority issues, with higher levels of risk than others.

3

Aggregation of a risk level by pillar

A third aggregation brings together the different themes into 4 pillars.

Each of the 14 themes has a weighting coefficient that allows a weighted average to be achieved again. This reduces the number of risk levels displayed to 4.

Respecting people	
Employment status	10%
Decent wage & minimum wage	10%
Working hours	15%
Workers entitlement to rest	10%
Workers' benefits	0%*
Migrant workers	20%
Child labour	20%
Health & safety	10%
Grievances systems	5%
Local communities	0%*

*This theme is at 0% as it only contains «informative» questions

Protecting the environment	
Environmental management	20%
Biodiversity & deforestation	50%
Land ownership	30%

Agricultural practices	
Agricultural training	100%

Supply chain traceability & transp.	
Traceability & transparency	100%

4

Aggregation of an overall risk level

A fourth and final aggregation should make it possible to obtain an overall level of risk for the target population. The overall risk level out of 100 is calculated by achieving a weighted average of the risk levels of the 4 sustainability pillars.

It may be intended to allow comparison between several target groups (countries, factories, territories, etc.) with all the precautions mentioned in the previous chapter.

Respecting people	10%
Protecting the environment	10%
Agricultural practices	15%
Supply chain traceability & transparency	10%

From mobile offline data collection to online risk visualization

This technical part has been reduced to a minimum to focus on a few points of interest to understand the course of a Rubberway survey and how the data is made accessible to users. One paragraph also deals with data visualization, which will mainly be of interest to the Ruberway team.

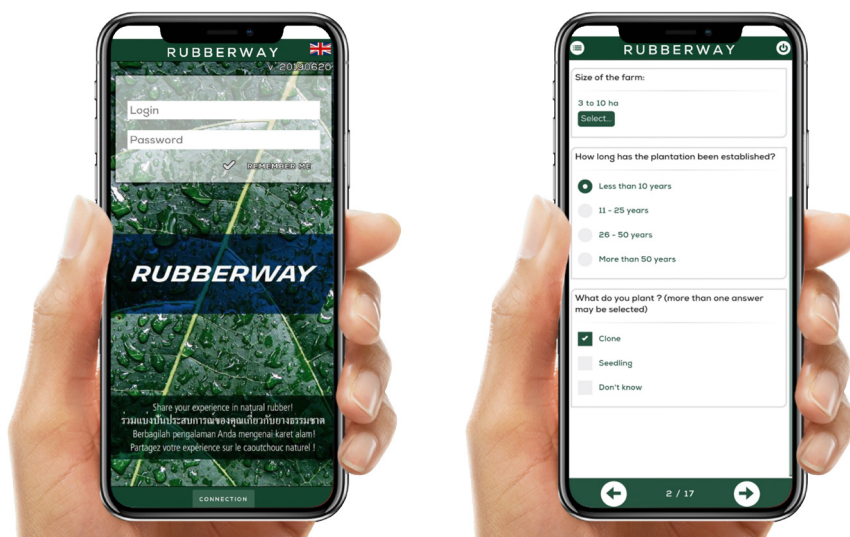
A mobile application for offline data collection

The software publisher SMAG based in Montpellier, has partnered with Michelin and Continental to ensure the IT part of the project. Based on their Agreo technology stack, they have developed a suite of IT tools that allow Rubberway to collect data offline and share it on an online platform.

The Rubberway app is a Progressive Web App, which has been encapsulated to run on Android. It uses Service Workers technology to keep data offline and synchronize with the online platform as soon as it returns to the Internet (offline sync). There is currently no version for other operating systems.

Each user has a unique identifier to identify the author of each form and to manage access rights on the online platform.

Questions appear as pages, which can contain multiple questions.



Notes on the mobile app

Unlike the tools of the ODK suite such as KoboToolbox, the Rubberway application does not allow you to save a form being entered and complete it later.

Some questions are currently optional, resulting in some questions not being answered in the database. It might be a good idea to make all questions mandatory, always adding an answer such as 'Don't wish to answer'. This would facilitate the analysis of data per planter, or when studying the distribution of answers to the same question.

Each survey normally has a GPS point. However, the latter is optional and is commonly avoided by investigators as shown by the spatial representation of the data in the case study in Ivory Coast.

The survey form currently asks for the day, month and year of birth of the producer. This data is not currently used for risk analyses or for their interpretation. This data could be more simply replaced by an age, or an age group. The investigators pointed out that this question could bother the surveyed planters formulated in this way. In addition, there is the question of the legal framework that governs the collection of this data on the individuals surveyed. Each country has different legislation, so it may be appropriate to revise this field.

During the pilot phase, the investigators had the opportunity to add the initials of the planter as well as a possible factory planter code. These fields are interesting in several ways. Rubberway currently argues that anonymity is more engaging for planters. However, the fact of entering some of their personal data means that the investigation is not anonymous in fact.

However it is important to understand that the data is then anonymized by aggregation as explained above and this is what is most important.

Moreover, the non-anonymous side is rather a strength of the Rubberway system. Indeed, the persons in charge of investigations may have a follow-up from the planters who have been investigated or not. This also makes it possible to find the planters in the event that one wishes to make studies in the form of time series. It could also be a way to anticipate traceability to the plots.

We believe it is important that this point be clarified. Instead of initials, some investigators entered full names to avoid duplicates they wouldn't be able to recognize. Each country and factory has a separate code system, so this probably involves different fields for each Rubberway users group.

It would be ideal to be able to accurately assess the duration of each survey by recording a datetime at the beginning of the survey and during its final validation, as KoboToolbox does.

Dashboard and data visualization

Once the data is synchronized with SMAG's servers, the data is made available to Rubberway users through an online dashboard.

It is at this stage that risk levels are calculated according to the chosen target population. The dashboard presented below is based on SMAG's Agreo technology and is currently migrating to Microsoft BI technologies.

Data visualization tools will therefore probably be able to evolve significantly in the near future. In anticipation of such a change, we have added a few notes below on potential recommendations for the evolution of this dashboard.



Reversing the scale of risk

To facilitate the understanding of the notion of risk level, it would seem appropriate to reverse the current scale which currently ranges from low risk = 100 to very risky = 0. It currently induces an idea of a «score», which serves the message that Rubberway wants to deliver.

The gauge graphic representation, with a needle representing the risk value, visually conveys this confusion. On such a gauge, the use of a Turin scale in 4 to 5 risk classes could also be more suitable than the three classes Red, Orange and Green. We could thus have classes of the type: Very low, low, moderate, strong, very strong risk for example.



Better visualize the distribution of answers to questions

Graphical representation of questions

At the level of a question, the most important thing should be to know the importance of the answers that have been chosen by the respondents. Only a few single-choice questions are represented in this way in the dashboard. One could imagine that each question (including multiple-choice ones) could be represented graphically in several ways:

- Simple Barchart, a bar graph with the number and proportions of respondents ;
- Stacked Barchart, the same graph, but in which we could differentiate the respondents according to another criterion (for example one color per cooperative). This could lead to better analyze data.

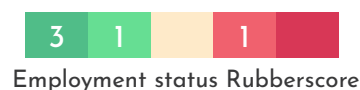
Spatial representation at all levels of aggregation

- Map, the spatial distribution of data should be considered for each question. On the other hand, this requires that all forms have a GPS point or a selected value representing a known administrative territory or a determined collection area.

This representation could theoretically be extended to all levels of aggregation (theme, pillar, global).

Graphical representation at the pillar level

- The representation of risk scores for each theme and pillar is a representation that seems very relevant (the one seen in the center of the image at the beginning of this chapter). It would be possible to extend this matrix representation to the pillar level. One could thus envisage a graphical representation that highlights the number of questions for each risk class (very strong; strong, moderate, weak, very weak). In the following example, we could quickly identify that a question of the theme has a high level of risk, while the average level of risk of the theme is likely to be low, and erase this singularity since the other 4 questions have low and very low levels of risk.



Facilitate navigation between the 4 levels of aggregation

To facilitate data visualization, it would be ideal for users to be able to easily navigate between different levels of risk aggregation.

- Overall risk
- Risk of the 4 pillars
- Risk of the themes of the selected pillar
- Risk of each question of the selected theme
- Distribution of responses and risk levels to the selected question.

The weighting of risk levels could also be explained to the user at this location.

Better understand the distribution of risk levels

Visualize the distribution of risk levels

It should be possible to visualize how much of the target planters achieved what level of risk at each level of aggregation. This will make it possible to know which part of the population is at a very high, high, moderate, low or very low risk level.

Analyze risk levels

By cross-referencing this table with other criteria, it would allow a better understanding of the results obtained. Responses to informative questions could be highlighted to better inform evaluative questions.

In addition, it would theoretically be possible to discriminate between groups of planters according to their risk profiles, for example by using a hierarchical bottom-up classification, to identify populations of planters «at risk».

Compare risk levels

With a view to helping to interpret the results, a way to compare two target populations on different levels of risk could be considered. This could make it possible to better highlight certain phenomena detected by Rubberway.

Risk levels per question are not weighted

The two previous proposals highlight an important limitation of the quotation system. Indeed, the risk levels are not weighted by the surface, or the volume of rubber produced. Nor are they weighted by the number of employees. This means that there can be a significant distortion, which puts at the same level a small planter on half a hectare and a planter on 50ha.

This observation leads to highlight again the interest of better understanding the distribution of risk levels, and to be able to analyze them by crossing them with other factors (size, number of employees etc.). In addition, it would seem that any analysis produced by the scoreboard should be accompanied by descriptive statistics of the population studied (in particular on the rubber area at least).

Summary of the Case study in Côte d'Ivoire

04

This penultimate section briefly presents the methodology and results of the field study conducted in Côte d'Ivoire in October 2021.

In particular, there is a contextualized reflection on representativeness and sampling, data collection with a new form and several contextual elements on the structure of the rubber sector and its dynamics that allow us to better understand the role that Rubberway can play in this particular ecosystem.

Note to readers

This summary is taken from a document that accompanies this report. It presents in more detail the questioning, the hypotheses and the methodology used. All the results are present and additional discussions can be found there.

After the presentation of the operation of Rubberway in the previous part, here is a part that summarizes the reflections conducted by CIRAD on this basis.

In this part, we will begin by summarizing CIRAD's initial questioning of Rubberway. These questions were formulated at the very beginning of the project and were later developed and generated new questions as information accumulated. We will try to retrace in a succinct but complete way the evolution of this questioning. For each of the initial questions, the researchers had made their own hypotheses. It was then a question of building a study methodology that could validate, invalidate or complete these hypotheses. The research methodology is therefore presented very quickly in this section. The precise course of the study is not included and neither are the quantified results.

This chapter therefore focuses on the presentation of the main results and discusses them before starting with the next chapter which will address the main lessons of this study, and some opening elements that may be of interest to the readers of this report.

Background to the launch of the study

Rubberway has been tested in its first version in several countries, including Côte d'Ivoire. Rubberway found the relay of the SAPH of the SIFCA group, SOCFIN and CHC to implement its investigations. Some investigators have been trained by the Michelin team with the mission of training their colleagues.

The various partners in Côte d'Ivoire were responsible for deploying the system to planters. In all, more than 16,000 «smallholders» were surveyed in a very short time. And that number is still evolving today.

This country was chosen for this study, especially for the large amount of data available in the Rubberway database and because it is the largest producer of natural rubber on the

African continent.

The Rubberway team gave us all the data from the 16,000 surveys, which represents more than 119,000 different answer lines. Each survey contains potentially 49 questions, some of which are multiple choice, with each answer selected corresponding to one line.

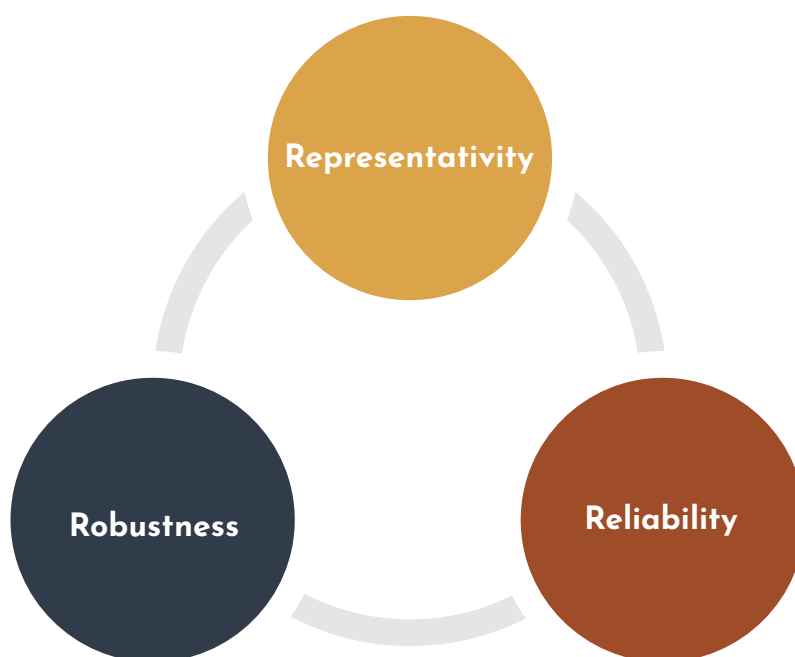
The first exchanges with the Rubberway team and the observation of this database formed the basis of CIRAD's initial questioning. This questioning has evolved during the study and we will try to translate these questions in this part.

Research questions

At the launch of this study, three research themes were imagined by CIRAD researchers. Several research questions and hypotheses were formulated in the terms of reference of this study.

- The representativeness of the samples of the planters surveyed ;
- The reliability of the form and the data collection process ;
- The robustness of the risk scoring method.

Are the farmers surveyed representative of all farmers of interest? Is there a major selection bias related to the sampling method? Does Rubberway have major "blind spots" ?



Do risk rating methods and data aggregations allow for robust risk mapping (Rating bias)?

Are the visual representations of risk levels relevant (Representation bias)?

Are the possible questions and answers relevant to be able to establish a risk diagnosis (Form bias)?

Can we identify any auditor biases (voluntary or not)?

Are there any biases related to the farmers surveyed (voluntary or not)?

The initial questions concerned the sampling method of the planters surveyed :

- How many planters were interviewed? Who are they?
- How were they chosen?
- Are they representative? But representative of what exactly, of which reference population?
- Does this diagnosis therefore make it possible to have a representative image of the risks due to this sampling method ?

Context

The planters surveyed are not obliged to respond to this form. This is why Rubberway describes this approach as «voluntary» on the part of the planters. The Rubberway team also guarantees anonymization of the data collected, which would be a guarantee not to «scare away» «risky» planters. The third argument is the total number of investigations which would be sufficiently high to have results equivalent to those obtained with random and representative sampling.

Sampling and selection bias

Unable to survey the total number of natural rubber planters in the country, it is necessary to select only a small fraction of them. The researchers wondered if this sampling did not contain selection bias that would distort Rubberway's risk diagnosis .

Hypothesis 1.1 was that Rubberway's current sampling methodology, based on a voluntary approach by producers, could «scare away» certain categories of producers, particularly those with potentially «risky» practices. This could be called a «selection bias».

Diverse collection strategies

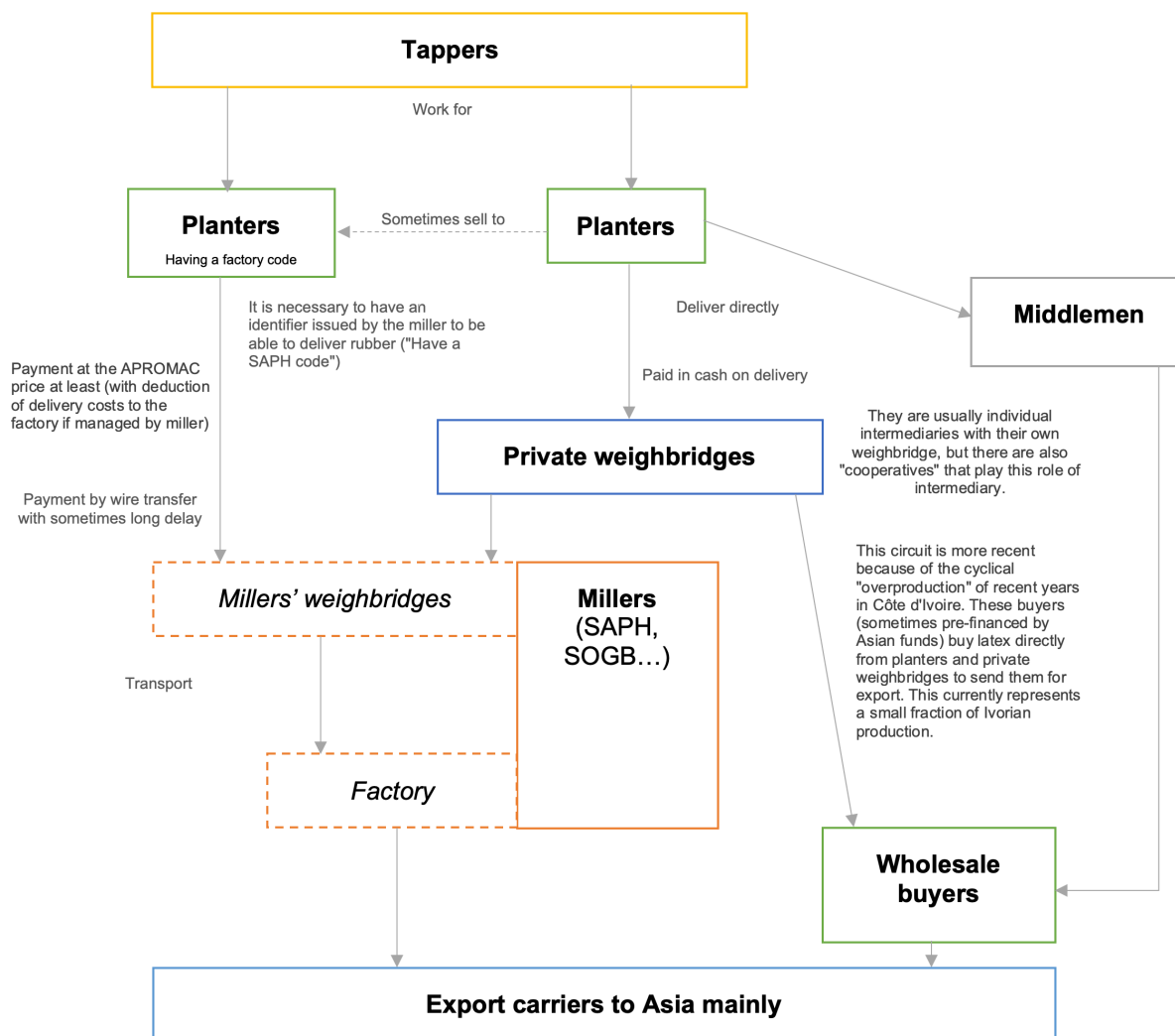
After spending a few days in Côte d'Ivoire, there were at least two very different data collection strategies :

- The SAPH has indeed chosen to carry out surveys among some of the planters who have delivered natural rubber to it in the last 12 months. The surveys were therefore carried out by its buyers-collectors, without indication of the type of planter to be investigated. They know well the majority of planters with some important exceptions that we will discuss later.
- SOCFIN, which carried out surveys of some of the producers identified in a territory defined for their technical support strategy. Indeed, the national territory is divided into «batches», some factories of which have the responsibility to provide regular technical support thanks to «monitors», who support these planters at least once every three months. We couldn't get any details on how they selected the planters.

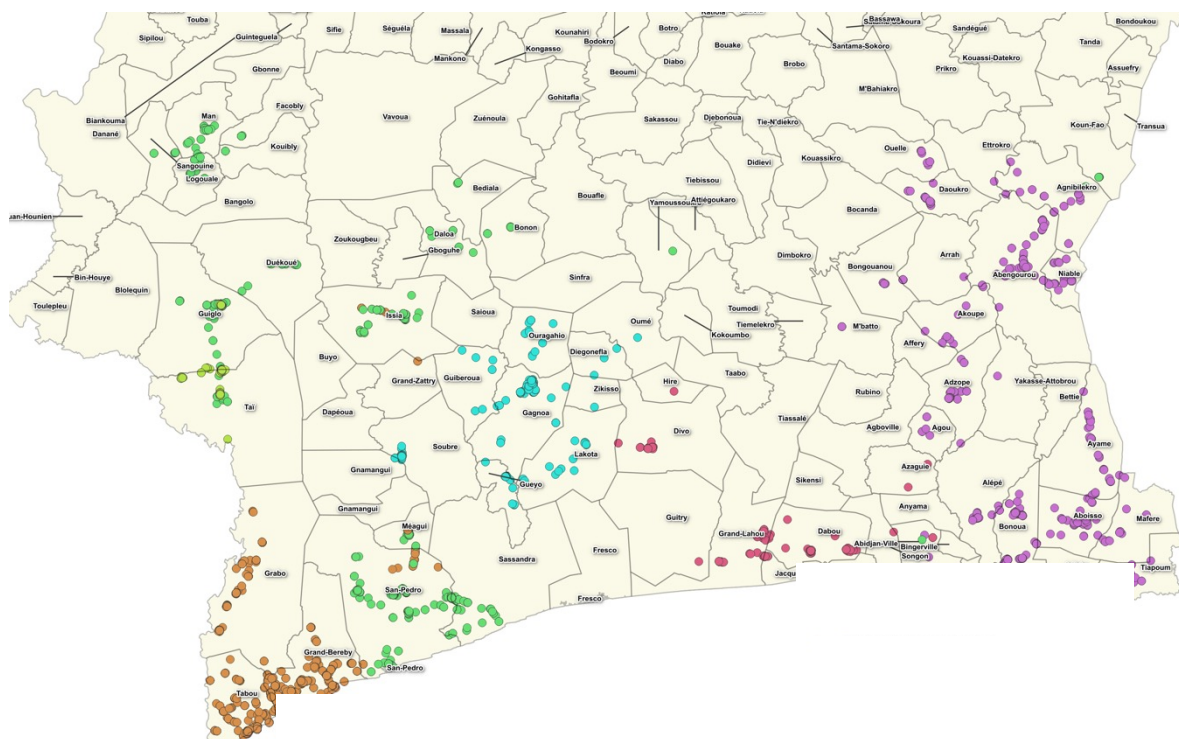
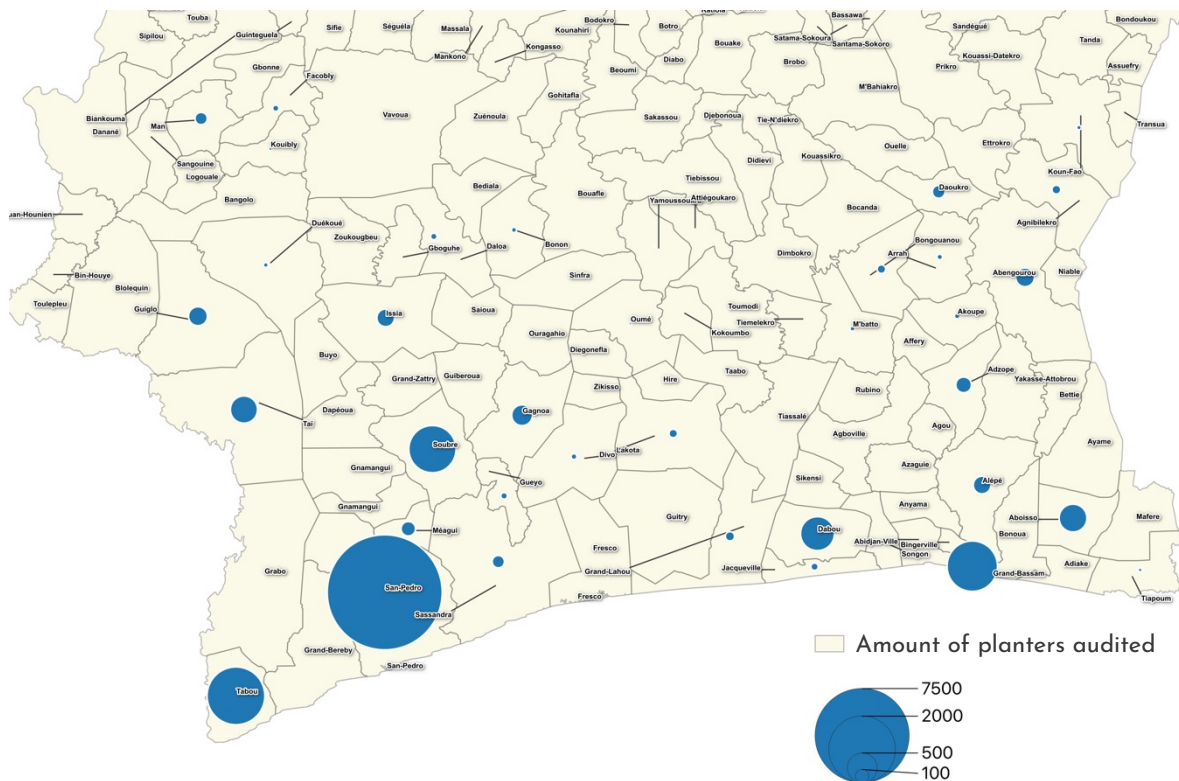
It is therefore understandable that these two methods involve different reference populations. Both methods make sense but do not assess the risks for the same planters.

Beyond the scientific aspect of the representation of the sample and the potential impact on diagnosis, this question is of an important political nature. If we assess the risks of supplying a plant, the SAPH method seems to be the most consistent, while in the other case, it is probably not up to the millers to carry out this investigation but more to the monitors and therefore directly to the APROMAC.

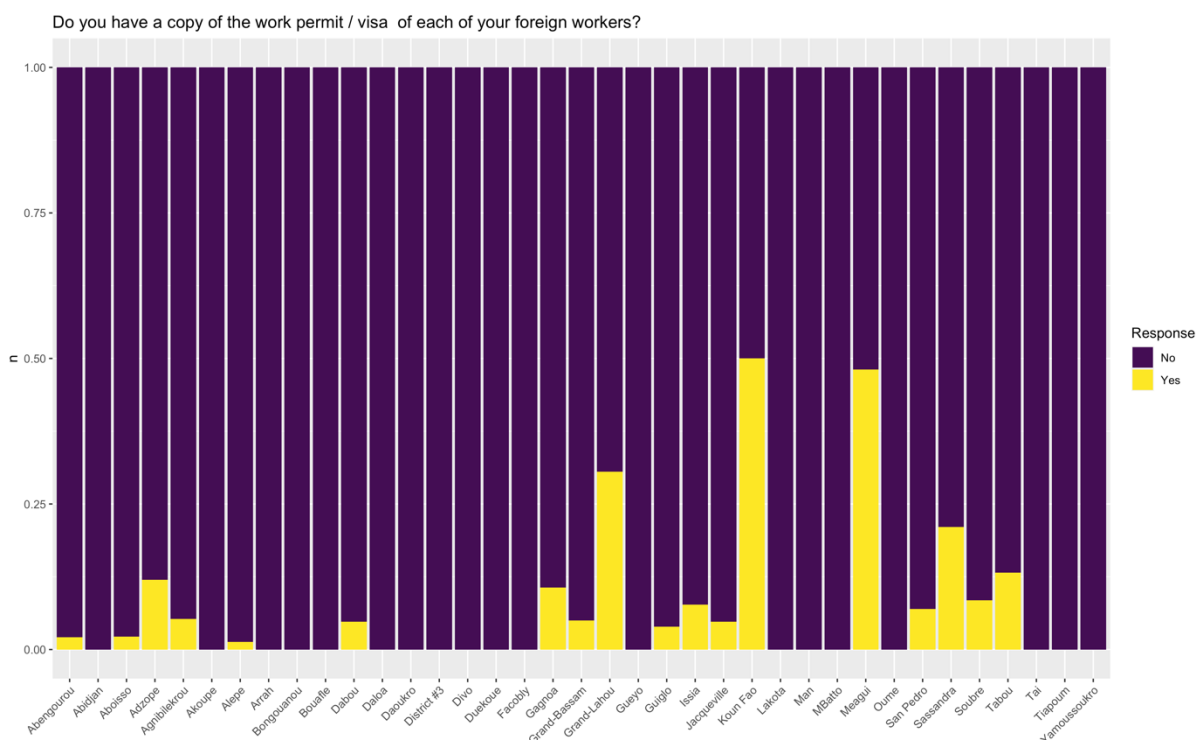
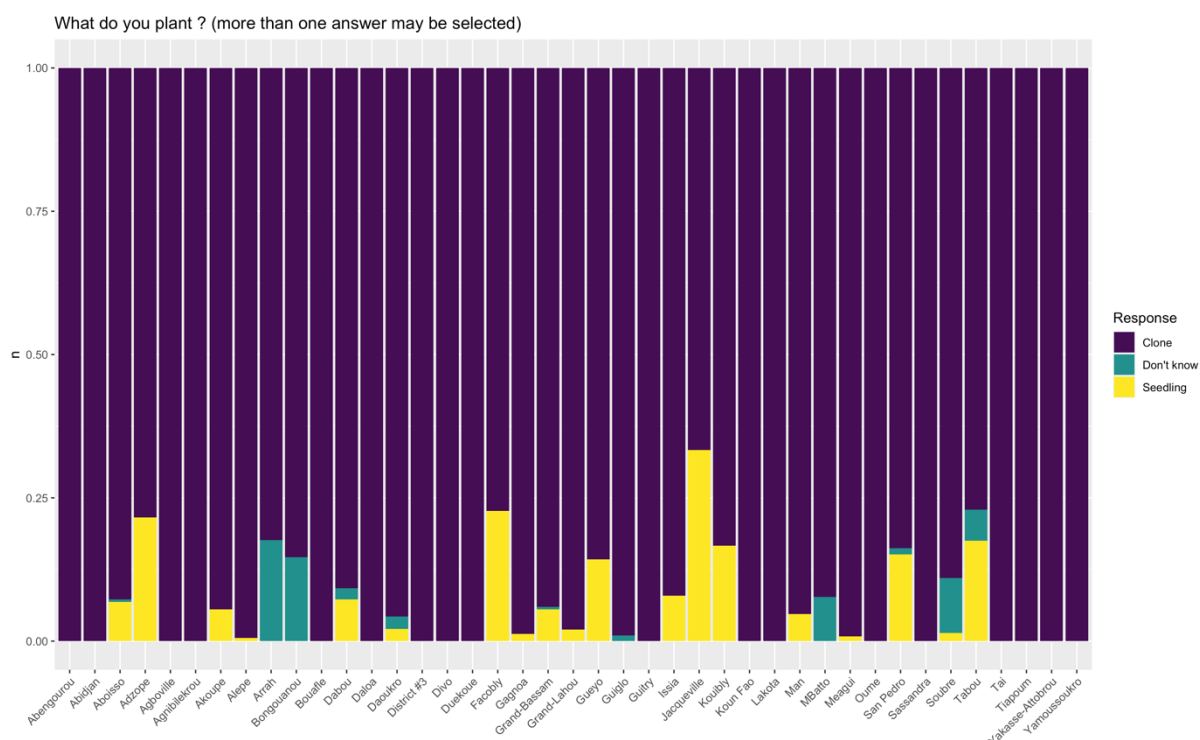
Here is a somewhat simplified vision of the production, processing and purchasing circuits in the Republic of Ivory Coast. There are obviously many other cases, with purchases between planters, with various intermediaries, independent rubber deliverers not represented here. In addition, the terms of purchase and payment are very different depending on the buyer. SAPH has internalized the collection and purchasing process, buying directly from the planters, with its own teams of buyers when other operators outsource this step by relying on intermediaries. This leads to the fact that the SAPH knows the vast majority of the planters it collects unlike other operators.



In order to be able to select areas of interest for the study, it seemed important to us to study the spatial distribution of the surveys carried out by Rubberway and its partners. A first map shows the number of surveys carried out by district.



All the data of the Rubberway's database have been analysed by district and factory to be able to select an area where we could test several sampling methods, new questions, and a form dedicated to tappers.



All of these comparison charts are available at:

<https://1drv.ms/u/s!AnIHIEiDsMBohKgqV0iq9zCnn4WcUA?e=wm57KD>

They exist in representation of the proportions of responses as here, but also in representation of absolute values. Much more detail is given in the case-study report.

The SAPH supplying area in Galébré to test different sampling strategies

A SAPH collection territory was chosen to compare the different collection methods and discuss the topic of data representation. Thanks to additional field surveys, we were able to compile three sets of data to compare:

1. Surveys carried out by SAPH buyers among planters who deliver their rubber to the SAPH without indication of the planters to be surveyed («Convenience» sample, the SAPH method);
2. Surveys carried out by independent investigators of planters who deliver to the SAPH, with a «stratified sampling», in an attempt to be «representative» of the diversity of the population of SAPH planters who have delivered in the last 12 months;
3. Surveys carried out among rubber planters in the same territory, whether they deliver to the SAPH or not.

Details of the three data collection strategies compared in the case study in the Republic of Côte d'Ivoire

Sampling strategy	Convenience sample, chosen by collector buyers without precise instruction	Random stratified sample, based on data from the database of planters delivering to the SAPH	Random stratified sample, based on APROMAC census data provided by the area monitor
Reference population	Planters with a SAPH delivery code who have delivered within the last 12 months	Planters with a SAPH delivery code who have delivered within the last 12 months	All planters registered by APROMAC and accompanied by SAPH monitors
Size of reference population	465	465	1200
Number of individuals surveyed	150	150	150
Surveyors	SAPH Buyers	Independent surveyors	Independent surveyors

Random stratified sampling to be representative?

To test a potential selection bias related to convenience sampling, our survey relied on random stratified sampling. Indeed, the SAPH has an exhaustive database of planters who deliver natural rubber on its weighbridges. All planters are identified with a planter code and the database contains information on rubber surfaces, the part of rubber tapped etc. We wanted to add a third parameter that seemed very important when we were in the field: the fact of being present on the farm, or having put the farm in management when people are absentee owners. These owners usually delegate the management of their plantation to a «manager». We collected this data one by one thanks to the collector buyers and the secretary of the SAPH who manages the deliveries.

The stratification of the population consists in trying to make surveys in the population of planters, trying to have a number of surveys proportional to the number of planters that we will find in each category that we have created. For example, if we have to do 100 surveys and we know that of the 1000 planters, there are 50% who have an area of less than one ha, 40% between 1 and 3 and 10% more than 3ha, we will carry out 50 surveys with those who have less than one ha, 40 between 1 and 3 and 10 sup to 3.

This method is used when the structure of the reference population is known. The criteria used for this study were reported surface area, tapping rate, and being a local resident or absenteeist. By crossing these three criteria, we divide the population into 32 strata. Here is what the population of planters delivered to the SAPH in the last 12 months according to these criteria gives.

	Non resident		Non resident, living nearby		Local resident		Don't know	
	< 75% mature	75-100%	< 75% mature	75-100%	< 75% mature	75-100%	< 75% mature	75-100%
0 - 2.5 ha of Natural Rubber (NR)	7	26	3	16	41	105	13	25
2.51 - 5 ha of NR	2	9	1	14	17	41	2	6
5.01 - 10 ha of NR	2	4	0	3	12	21	7	0
10,01 - 50 ha of NR	3	6	1	3	3	15	1	1

Random surveys of these strata were then conducted. Lists of planters were produced and provided to investigators. Although the number of individuals is not balanced between the different strata, many boxes have an important value that underlines the interest of the three criteria used for stratification.

Each of these criteria comes with its share of hypotheses that link it to potential risks. For example, absentee owners have a significant probability of mobilizing many «tappers» on their farm. All the risks associated with tapping are mechanically increased compared to small farms that would mobilize family labour (which is not proven), and the little ones are more likely to mobilize their children under 16 on the farm than absentees (which is also not proven). This is just one example of one of many hypotheses that can be formulated. By classifying farms in this way, it would be possible to test such hypotheses, but this is not the subject of our study.

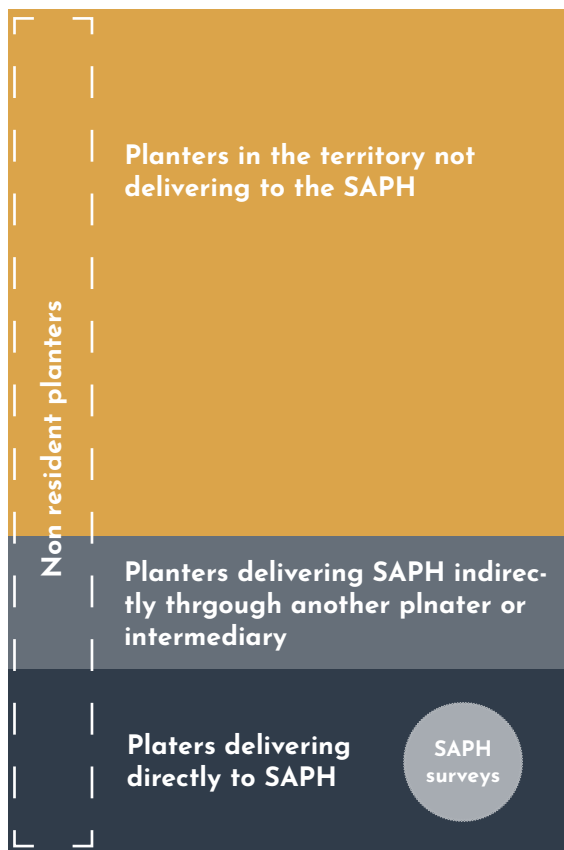


■
SADRCI Team of surveyors
during the training in the use of
KoboToolbox (Photograph: Hugo
Lehoucq)

Key results

In the survey forms we added a question on the total rubber area and a question on the immature part. It turns out that the values present in the SAPH database are not aligned with the values given by our surveys. The areas reported to the SAPH are almost twice as small as what is reported in our surveys.

As a result, the stratification we had built is not fully valid. This may seem disappointing at first glance, but it is an important result. This calls into question the feasibility of random stratified sampling based on surface data reported to the factory.



■ The SAPH surveys concerned only a part of the population of all the planters in the territory. The proportions shown here are not the right ones.

Many more detailed results are presented in the case study. On a large majority of questions, no major bias could be detected. However on some questions, it is possible to say that the Rubberway sampling contains selection biases and that its sampling cannot be considered fully representative. The most pressing question is the choice of the reference population to be investigated. We effectively differentiate the SAPH strategy by buyers, from the SOCFIN strategy by monitors. The SAPH has a target given by Rubberway of 20% of planters, however it has chosen to cover 80% of its planters. The ideal would be to use a statistical analysis to know if a sample of convenience to 20% of the planters is representative of the 80% who will have been surveyed.

In addition, it is important to note that a producer traceability system as robust as that existing at SAPH in Côte d'Ivoire does not exist among the majority of millers and would be very difficult to implement in other countries. For example, the CHC, which also operates in Côte d'Ivoire, uses intermediate collectors to purchase its rubber. Obtaining a representative risk diagnosis is impossible under these conditions. It is important to have these elements in mind to be able to comment on the representativeness of the Rubberway sample, which currently represents 50% of the planters who deliver their rubber directly to the SAPH nationwide. This already substantial figure continues to increase with ongoing surveys and is fast approaching a sample that would cover practically the entire population.

Not knowing the structure of the population, our tests comparing the surveys carried out by the SAPH to the total population of planters delivering rubber no longer have the same validity. That said, the field study revealed many identical results but also several factors of bias.

The assumption made by SAPH staff is that the majority of those surveyed are primarily residents. This excludes a large part of the population, who can be called «absentee planters.» There are 59 planters among the 410 of the reference population for example.

In addition, many planters who deliver currently, buy and resell from other producers. It is difficult to evaluate what this represents in terms of number of people or volume.

The figure on the left illustrates the positioning of the surveys carried out by the SAPH. The proportions are not correct, as planters delivering through planters with SAPH codes are unknown and planters who do not deliver to SAPH are much larger in number.

The initial questions concerned the reliability of the data collection process :

- Does the form cover the different types of known risks?
- Do the possible answers cover all possible situations?
- Are there biases induced by investigators during investigations, whether voluntary or not?
- Are there any biases induced by the planters during the survey, whether voluntary or not?
- Can the results of the survey be considered to reflect a reliable picture of the situation of planters and associated risks ?

Context

The same form is deployed to all «smallholders» around the world. This could suggest that the genericity of the solution could miss the specificities of each territory. Moreover, the very wording of the questions and answers can lead to confusion in certain situations (such as the notion of «migrants» in Côte d'Ivoire, which cannot be used so simply in view of the historical, political and social context). The question of the training given to investigators was also part of the reflections of CIRAD researchers. In addition, experience shows that a closed-question form still needs to be explained by the investigators to the planters. Do the reformulations remain in line with the needs of the question? Are all the answers presented to the planters before they respond? Are there any difficult questions to address, or for which the reliability of the producer's answer is not guaranteed? So many questions that were answered completely or partially during this field mission

Exchange with SAPH Rubberway investigators

We were able to meet the SAPH surveyors at the very beginning of the mission. After discussing the technical topics concerning the mobile application, we were able to discuss the concrete progress of the investigations. Several important elements emerge:

- None of the surveyors present was trained directly by Michelin or Rubberway. One of their colleagues had been trained and was in charge of transmitting the information but he left the center a long time ago and many of the buyers present never knew him.
- There is a user guide but it does not answer the questions that investigators ask themselves. These are indeed part of the contextualization of certain issues (on land rights, on the issue of migrants etc.).
- The surveyors do not know how to present this investigation to the planters, («what will it be used for?»). As a result, to convince the planters, they tell them that at the very end of the questionnaire, there is a question to identify their training needs and that following this study, training will be put in place. Since the beginning of the investigations no training has been set up following the Rubberway investigations and none is planned to our knowledge.
- Together, they agree that some questions are difficult to ask: date of birth and income essentially. Some planters are put off by these questions and leave the survey at that time. They add that if these investigations are not completed, there is no possibility to save the work in progress and resume it later. There is now a module in Rubberway that asks if the person has already been investigated or not, however planters sometimes realize this in the middle of an interview, because they think it's a new form.
- Turnover is high among buyer-collectors and there is no precise follow-up of the planters who have been surveyed or not. This is an important point that goes back to the issue of data anonymization. Indeed,

to be able to follow the progress of the investigations, it requires not to be anonymous. The SAPH has therefore created a file parallel to Rubberway, which investigators fill out regularly to identify which planters have been investigated. This has been set up at the initiative of the head of sector since the beginning of 2021. This is in line with the anonymization of risk levels (by aggregation), but to have a non-anonymous view of the people surveyed or not. In addition, the heads of sectors told us of the lack of vision on the progress of the work of their investigators and the completion of the planter surveys. The Rubberway platform does not currently allow extractions of the names of the persons investigated for a specific group of investigators. As explained above, the areas of purchase of millers do not correspond to Rubberway extractions from a factory or administrative territory, but to groups of investigators for whom they are responsible. As Rubberway is a field reporting system whose annual extractions are intended for central offices in Abidjan, the notion of bidirectional reporting would like the central offices to be able to give a clear vision of the daily progress of the surveys carried out on each collection center.

Detailed methodological study of the form

We have reviewed in detail all possible questions and answers. Essentially, these cover a wide variety of topics. However, the form does not have an additional document that explains the risk scenarios. The assignment of numerical values to each response is not explicit and may seem counterintuitive in some respects. We tried to reconstruct these risk scenarios that would explain such values, as if we were doing reverse-engineering. It would be useful for the Rubberway team to be able to write this work to explain the scenarios they have considered to understand the attribution of values to risk factors.

On the other hand, it may seem surprising that some questions cannot have a risk level equal to 100 or 0. This is due to the fact that the score contains a weighting related to the method of calculating the risk of the theme. In order not to weigh too positively or negatively on this level of average risk of the theme, the ratings are slightly modified. This helped blur our understanding of what Rubberway was and the scenario assumptions that were made behind each answer to the questions. It would be conceivable that this weighting should be taken out of the value of the risk factor, and be clearly assigned to the level of the question. This adds a layer of complexity to the software, but would have the merit of clarifying this, and would make it scalable. Indeed, any addition of a question in a theme would require a review of each of the scores, whereas we could only review the weighting coefficient of each question. It is not certain that it is realistic to do so now, but at least this hidden weighting should be clearly displayed in a document.

Questions and answers to contextualize

Beyond these methodological aspects, the contents of the form is often adapted to the situation, but is necessarily reinterpreted by the investigators. Some issues could be clarified or even adapted to each context (country at least). We have created a complementary form to that of Rubberway to test new questions adapted to the Ivorian context. All the details of this form are presented in the complete Ivory Coast study case. Here we will take a single example to illustrate the need to adapt the questionnaire.

The issue of migrant workers is particularly complex in Côte d'Ivoire. Indeed, this country has a history closely linked to that of Burkina Faso. These two countries formed only one until 1958. Many Burkinabe workers came to work on land in present-day Côte d'Ivoire and were thus able to acquire land, at the time when it was still abundant. Many employers have used Burkinabe workforce, which has been established in Côte d'Ivoire for two or even three generations. The latter are still considered Burkinabés since they enjoy the blood rights of their country, although they were born and have always lived in Côte d'Ivoire. This story is the one that led to the use of the concept of «Ivory» as early as 1994, which participated in the deadly confrontations from 2002 to 2007. The question becomes more complex when we know that an Ivorian Senoufou, living in the Bété zone is considered by local people as a stranger.

To make the difference, people use the terms allochtones, allogènes and autochtones on a daily basis. This actually characterizes their family origin and not their place of birth and life. Our questionnaire therefore also includes the place of birth:

- Autochtones
- Allogènes born here
- Allogènes born in another country
- Allochtones born here
- Allochtones born in another region of the country

Following this question, Rubberway asks whether «migrants are paid the same wage as others for work of equal value». The assumption behind the question is that migrants are likely to be paid less than locals. It turns out that in this case, if we answer no in Côte d'Ivoire, it may be because they are better paid. Indeed, in the Gagnoa area it happens that «the Burkinabés are better paid, because they do a good job». We have therefore clarified this question as well. On the other hand, we wanted to evaluate possible costs that would be deducted from salaries, especially for transport from abroad to a planter's plantation, or the payment of rent if the planter hosts his tapping.

Another example of contextualization was useful when speaking about land titles. After a few days, we were able to add a little more detail to the questionnaire so that everyone would understand the possible answers, adapted to Côte d'Ivoire.

Rubberway	CIRAD	Rubberway		CIRAD		
Official land title		3	2%	4	2%	33%
	Certificate of planting of the cadaster			52	27%	
	Customary letter certified by the prefecture			8	4%	
Official letter from the community		10	7%	51	27%	27%
Traditional/Customary Oral Agreement		94	65%	35	18%	18%
No document	No document	37	26%		22%	22%
	Other			42		
		144		192		

Blind spot in Tappers, a dedicated form

In the Rubberway process, many actors are questioned from the factory to the planter. It seemed important to us to go all the way through the process by trying to carry out surveys of tappers. This additional form was built partly in mirror with that of the planters, to see if one could identify a major difference in declaration between planters and tapping.

A particularly fertile question in discussions is: «What do you think a good boss is?». It emerges in particular that a «good boss» is the one who pays two or three cleanings of plots. This allows the tappers to work in good conditions, to be productive, without taking risks of cutting, biting etc.

From whom did you receive your training to use chemicals ?

	Tappers		Owner/Manager			
		CIRAD	Rubberway		CIRAD	
Administration		0%	11	7%	7	5%
Buyer / Cooperative		0%	2	1%	6	4%
NGO, consultant		0%	94	64%	4	3%
Input seller		0%	9	6%		0%
Monitor	19	40%		0%	94	69%
Self-learning		0%	5	3%		0%
Family/Friends	2	4%		0%		0%
I don't use chemicals		0%	2	1%	25	18%
Never been trained	27	56%	25	17%		0%

In this very clear example, the tappers surveyed report having received less training in the use of chemicals than the planters surveyed. Similar results can be found on the issue of the use of protective equipment, the use of which is less important than the owners seem to say. We added a simple question to deepen a little bit this subject.

What are the equipments supplied by the owner ?

	Tappers	
Boots	26	54%
Gloves	3	6%
Goggles	2	4%
Mask	2	4%
Apron	0	0%
None	13	27%
I don't use any of these	22	46%

Adding that kind of question temporarily to Rubberway's questionnaire could give insights to how this risk could be reduced (in that example, by encouraging the owners to supply protective equipments to the tappers for example).

In many cases Rubberway and CIRAD planters have given the same answers. We're not showing them in this document, but all the results are available in the dedicated report for the readers who want to have further details.

The last type of bias that can be discussed lies on the relationship between the auditor and the planter. As the auditor is the one who delivers the receipts, it's hard for him or for the planter to say that the receipt is incomplete. The result is not very surprising but it's a good thing to confirm that such biais can influence the result.

	Rubberway		CIRAD	
All the information (Weight, Price etc.)	93	65%	44	28%
Some information with the price	16	11%	30	19%
Some information without the price	35	24%	81	52%

05

Summary of Discussions

Making good use of Rubberway

It seems important to make people understand what Rubberway is and what it is not. That is what we set out to do at the beginning of this report. It is first and foremost a diagnostic tool, to identify a whole range of potential risks.

The notion of score, and the orientation of the risk scale (0 high risk, 100 low risk), leads to some confusion. It is mishazardly understood by some as a score of the sustainability of the branches of the supply chain. The 4-step aggregation procedure reinforces this confusion.

It is compared to a scoring method such as EcoVadis, which can generate the idea of «ranking the best students» which does not correspond to the desired and desirable positioning for Rubberway.

The use of Rubberway as a tool to assess a sustainability score presents the major risk of being perceived as a green-washing tool.

Rubberway can find its place as an impact assessment tool. However, the sensitivity of his method will probably struggle to show impacts even in the medium term.

In addition, sampling strategies have shown that the variability of results can be significant depending on the people conducting the study, and the targeted reference population.

In addition, the results produced must above all be a support for discussion between the actors of the rubber sector direct or indirect stakeholders in this diagnosis.

In all cases, the results produced by Rubberway must be recontextualized in the country where the study is carried out. It is indeed a question of obtaining a more precise interpretation (especially on the high risks) which will sometimes require to descend into a finer grain at the scale of a region, or even a village.

If Rubberway is today a risk mapping tool, it has the potential to support real risk management processes in production basins and potentially contribute to improving the sustainability of this sector.

Risk diagnosis as a contribution to the sustainability of the sector

The Rubberway tool seems to occupy a place that was unexpected. It is original by its simplicity of implementation, by the wide coverage of subjects it embraces, but especially by its collection method. Rubberway thus has a unique business model that can collect large amounts of data at a lower cost, potentially leading to short-term effects.

The counterpart of this remains that to gain in simplicity, compromises had to be made on the depth of study of each of the subjects. The example of deforestation is very illustrative. This very important theme is addressed with two very general questions, which do not make it possible to understand whether deforestation is advancing, retreating or stagnating and what are the drivers. This would be the role of a sat imaging solution such as Global Forest Watch Pro or Satelligence solutions. But Rubberway can make it possible on a country-wide scale to detect areas where

farmers claim to have cut forest more heavily in the last ten years.

It can then lead to the implementation of a more precise deforestation monitoring process and to better calibrate the efforts to be made to contribute to the sustainability of the rubber sector. Although some elements of the questionnaire need to be changed, or there are blind spots in the Rubberway process, the potential is significant and deserves the full attention of those interested in the sustainability of this sector, or even other sectors such as cocoa.

But one should be careful not to believe that this tool is a tool for assessing sustainability, it would be to misunderstand its true nature.

At what scale should these risks be assessed?

Should we make a diagnosis that represents all rubber growers in a defined area, or should we assess the risks with the planters collected by the factories that use Rubberway? The two methods are possible and meet different needs. The second method is possible if the plant has a relatively precise knowledge of the planters who deliver rubber to it. A factory that has a business model that relies on buying from intermediaries may find it more difficult to use this same method.

This method itself has its limits as we have seen in Côte d'Ivoire. The population is never fully known, especially when there are buy-sell systems between planters. Behind a planter that has an official delivery code, there are potentially several other planters who supply natural rubber.

An approach by the diagnosis of a territory may be of interest to organizations such as APROMAC in Côte d'Ivoire, which is in charge of technical support to all rubber producers. The objective for this type of actor could be to

target support programs for planters with more sensitive practices with content for a dedicated training.

Whatever the scale of evaluation, the question of sampling remains a real subject. Although the use of a stratification sampling strategy with random drawing did not work in Côte d'Ivoire, it is possible to seek to have a spatial representativeness of the planters (spatial stratification). And a random draw within a list would also be of real interest. Indeed, the sampling of convenience used in Côte d'Ivoire misses all non-resident planters. We also suggested that the role of the respondent be included in the questionnaire (owner, manager). Among non-residents, much of the information requested is known only to the people they employ to manage their plantations.

It also seemed important to us to build a questionnaire dedicated to tappers. Their views on what good working conditions are is particularly rich, and much more accurate than what their employers have told us.

Taking into account local specificities in a system that addresses a global sector

An important methodological issue is the necessary adaptation of the data collection and processing process between countries. The structures of the sectors are different, the risk structures are also different in nature. Although many themes are shared, it might be relevant to have questions that are tailored to each country.

The set of «core indicators» could allow comparison between countries, but the specific questions will allow a better understanding of the issues at stake in the country.

In addition, we have seen that the wording of the questions is always retranslated by the investigators,

which they present in their own words. This underscores the importance of the time that must be devoted to the training of investigators.

It is also possible to couple or deepen rubberway diagnoses with complementary qualitative studies to understand the dynamics at work.

The debate on the results of the diagnosis is also an important step to take into account local specificities, as shown by the example of «migrants» in Côte d'Ivoire.

«Upward» tapping
(Photograph : Hugo Lehoux)



RUBBERWAY

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