

# RISK ASSESSMENT METHODOLOGY



**RUBBER**WAY





# CONTENTS

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<b>INTRODUCTION</b>	<b>3</b>
Development of The RubberWay Framework	5
The 4 Key Upstream Actors	5
The RubberWay Approach	6
<b>QUESTIONNAIRE STRUCTURE</b>	<b>7</b>
Question Types	7
Scoring of Answer Options Based on Potential Risks	8
Calculation Rules	9
Single Choice	9
Qmin – Greatest Possible Risk	9
Qmax 100 – Accumulation of Good Practices	10
<b>UNDERSTANDING RISK</b>	<b>11</b>
The 5 Levels of Risk	11
Risk vs. Bad Practices	11
<b>AGGREGATION OF RISK LEVELS</b>	<b>12</b>
Applicability of Sub-Themes to Each Actor	13
How Questions Are Aggregated To Sub-Theme and Theme Levels	14
From Question to Sub-theme	15
From Sub-Theme to Theme	16
Display of Risk Level Results	17
<b>PUTTING THE RESULTS INTO ACTION</b>	<b>18</b>
Prioritising Actions	18
Creating Impact	18



## ● INTRODUCTION

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RubberWay is a digital risk-mapping solution that aims to increase transparency in the natural rubber industry by evaluating social and environmental practices of upstream supply chain actors. The RubberWay solution is used by buyers of natural rubber to monitor the risks in their supply chain. Smallholders, intermediaries and factories are interviewed on the field using a series of questions developed by RubberWay. Responses to the RubberWay questionnaires are aggregated and analysed to return a report that highlights the types of risks found. These results are viewable by the buyers of natural rubber and the processors whom they buy from.

The RubberWay solution strives to enhance visibility of the risks related to production within the highly complex natural rubber supply chain and encourage the wider adoption of sustainable practices. RubberWay's mission to promote supply chain transparency should not be confused with pure traceability nor a sustainability certification scheme for natural rubber. Instead, RubberWay presents itself as a supplier engagement tool to raise awareness of supply chain practices.

A defining feature of the RubberWay tool is its ability to translate qualitative questionnaire responses into quantifiable values of risk. The publication of the RubberWay Risk Assessment Methodology seeks to bring greater clarity to the philosophy and calculation methods of how RubberWay determines risk levels.





## Development of The RubberWay Framework

The RubberWay framework consists of the RubberWay questionnaires and the risk calculation methodology. Conceptualisation of the RubberWay framework began in 2016 between Michelin and Business for Social Responsibility (BSR), a global non-profit consultancy. WWF France also provided input on certain environmental aspects. The framework was then published in 2017.

Following its initial creation, the RubberWay framework underwent an update in 2019 to better capture supply chain practices occurring in the field. The latest revision to the framework was conducted in 2021 with the purpose of aligning with the Global Platform for Sustainable Natural Rubber (GPSNR) Policy Requirements. WWF France also provided inputs which contributed to expanding the questionnaire. RubberWay remains open to conducting future revisions to the questionnaires in collaboration with other stakeholders.

## The 4 Key Upstream Actors

RubberWay has identified 4 key actors in the upstream natural rubber supply chain to whom the solution has been tailored: Factories, Intermediaries, Smallholders and Estates. A total of 4 unique questionnaires have been developed by RubberWay, each specific to one of the defined actors.



### Factories

**Processor of natural rubber**



### Estates

**Farms larger than 50 hectares**

**4**

Questionnaires



### Intermediaries

**Entities between the farm and factory level**

(Also referred to as a dealer, middlemen, cooperative/farmer groups)



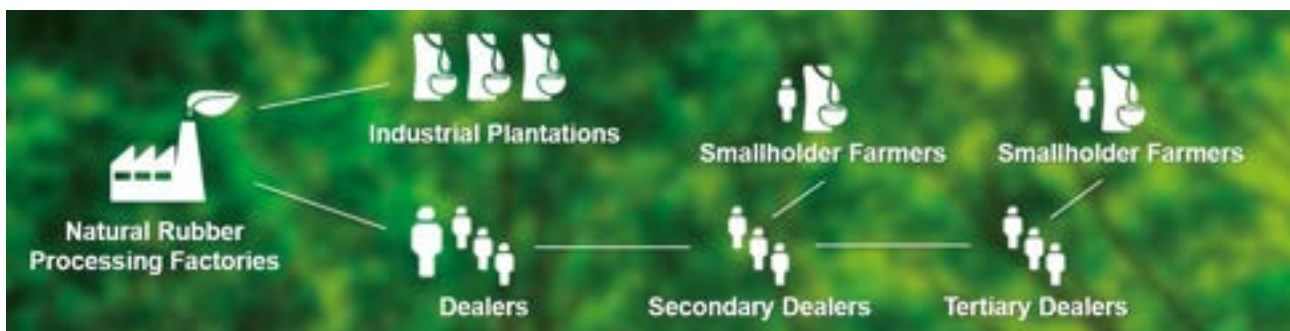
### Smallholders

**Farms smaller than 50 hectares**



## The RubberWay Approach

The RubberWay solution assesses risk throughout the entire natural rubber supply chain by interviewing actors at each supply chain stage. Deployment of the RubberWay solution is initiated at the factory level<sup>1</sup>, at which the RubberWay Factory Questionnaire is conducted between RubberWay and the factory. From this stage onwards, the RubberWay Smallholder, Intermediary and Estate Questionnaires are facilitated by staff from the factory using a mobile application and are conducted on an anonymous basis. At the end of each questionnaire, the GPS point of the interview location is recorded to allow for jurisdictional analysis of risk results.



**Figure 1.** RubberWay questionnaires are conducted by factory personnel and are relayed upstream along the factory's own supply chain.

RubberWay issues an analysis report upon completion of the interviews. The report defines the themes of risks detected and calls attention to jurisdictions where risks are situated. The RubberWay risks levels do not indicate a performance ranking but serve as guidelines for targeted risk mitigation. The presence of high risk denotes the increased possibility of unwanted practices occurring on the ground. Therefore, geographical areas or themes with higher risk levels should be prioritised for further study and subsequent mitigative action. The ultimate objective of RubberWay is to bring to light existing supply chain practices and drive progressive action towards the responsible farming and processing of natural rubber.

<sup>1</sup> Alternatively, the RubberWay questionnaires may be initiated by public agencies or private entities who interview smallholders or intermediaries directly. However, the intended use case for RubberWay data collection is via sequential flow along a factory's supply chain.

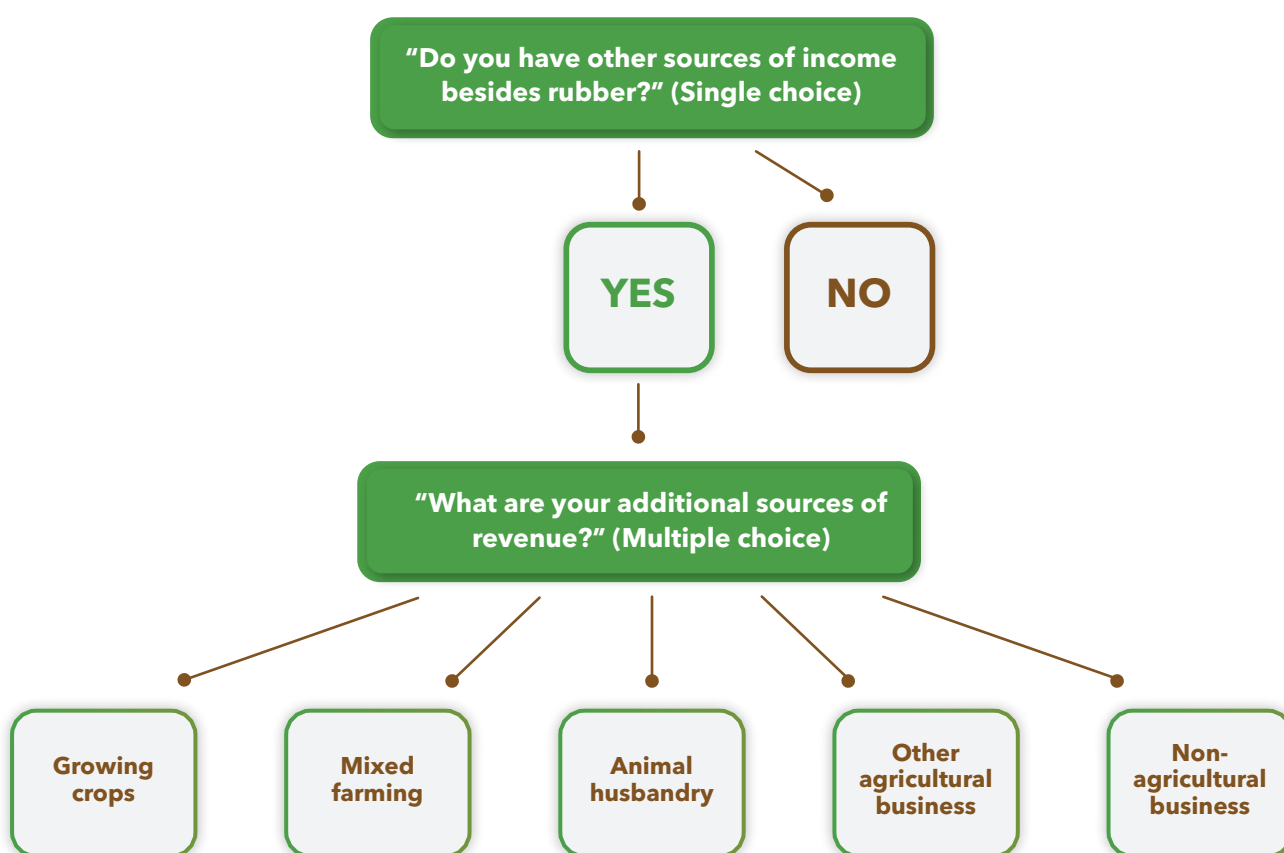


## QUESTIONNAIRE STRUCTURE

### Question Types

Respondents are assessed using close-ended questions. These questions include single-choice and multiple-choice question types. Certain responses may trigger the activation of supplemental conditional questions which provide deeper insight into the respondents' practices.

*Refer to the question assessing smallholders on diversified income sources as an example: Only smallholders who answer "Yes" to having other sources of income apart from the natural rubber plantation will be prompted with the conditional question that asks about the nature of their additional sources of income. Smallholder respondents can select numerous options for their additional sources of revenue as this is a multiple choice questions.*



**Figure 2.** Example of a single-choice question leading into a multiple-choice conditional question.

The 4 RubberWay questionnaires are primarily composed of evaluative questions, which are questions that seek to assess risks. A number of informative questions are also included to obtain general information on the respondents' profiles and plantation background. Unlike evaluative questions, informative questions have no associated level of risk and are excluded from risk level calculations.

*For example, smallholders are asked about the planting material they use on their farm ("What do you plant?"). As this is an informative question, the responses do not count towards the calculation of risk levels. This question provides users with insight into the proportion of smallholders who plant clones or seedlings.*



## Scoring of Answer Options Based on Potential Risks

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Risk levels in RubberWay are determined from the responses to evaluative questions only. Each answer option of an evaluative question is associated with a score from 0-100 that is assigned based on the preferability of the scenario occurring. Higher scores indicate scenarios with greater potential risk. The descriptions of the possible scores are shown below:

**100** **High risk practices**  
*E.g. Selecting the answer 'More than 14 hours' to the question "How many hours do your workers work per day?", as this indicates high probability that workers do not get sufficient daily rest.*

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**75** **Insufficient measures in place, leading to moderately high risks.**  
*E.g. Selecting the answer 'Once in the past 3 years' to the question "How often do you receive agricultural training?", as this indicates low frequency of training.*

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**50** **Practices partially mitigate risks but could be improved**  
*E.g. Selecting the answer 'Regular interactions' to the question "What are the processes in place to allow workers to express their complaints?". Frequent discussions provide opportunity for workers to provide feedback, however the practice could be improved to allow for anonymized feedback through a complaint box system.*

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**25** **Measures are in place to mitigate risks, but the outcome of implementation cannot be assessed**  
*E.g. Selecting the answer 'Yes' to the question "Have you conducted HCV assessment". RubberWay identifies lower risks since there is the presence of a good practice. However, the outcome of the HCV assessment cannot be evaluated to ensure there is absolutely no risk.*

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**0** **Low Risk due to good practices that mitigate risks properly**  
*E.g. Selecting the answer 'For foreign workers, provide wage slips in workers' mother language' to the question "How do you inform your workers about how their wage is calculated?". This shows that workers are provided with proof of salary in a manner that can be understood fully even by workers who speak a different language.*

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# CALCULATION RULES

To derive risk levels, RubberWay applies calculation rules on the answers to evaluative questions. There are 3 calculation rules which are implemented depending on the question type and nature. The table below and subsequent examples illustrate these calculation rules in action:

Rule	Single choice	Qmin	Qmax 100
Question type	Single-choice	Multiple-choice	
Nature of question	Boolean answers, or answers that cannot overlap (e.g. income range, year of plantation establishment)	Detection of high risk practices	Detection of good practices (e.g. wide range of protective equipment made available to factory workers)

## Single Choice

This rule applies to single-choice questions. As only one answer option can be selected, the risk level directly corresponds to the integer value of the chosen answer.

*Smallholder Questionnaire: "On average, do you earn at least the minimum wage from the revenues generated by the rubber plantation?"*

Answer	Score	Selected
Yes, above minimum wage	25	X
No, below minimum wage	50	
Don't know	75	

**Calculated risk level for the question = 25**

## Qmin - Greatest Possible Risk

This rule applies to questions that permit the selection of multiple answer options. Respondents may engage in a range of practices with varying levels of risk. As the intention is to capture the greatest possible risk, the risk level will correspond to only the highest integer value among all answer options that have been selected.

*Factory Questionnaire: "How do you calculate your workers' wage? (multiple choices permitted)"*

Answer Options	Score	Selected
a. Day	25	
b. Task	50	X
c. Volume	75	X
d. Monthly fixed	0	
e. Other	75	

**Calculated risk level for the question = 75**

Although the respondent has selected both options (b) and (c), only the answer option with the larger integer value, option (c), will be selected to calculate the risk level.



## Qmax 100 - Accumulation of Good Practices

This rule applies to questions that permit the selection of multiple answer options. The accumulation of multiple good practices can help to reduce total risk. This rule intends to measure the addition of all good practices in place. The calculation begins with a value of 100, from which the integer values of all selected answer options will be deducted. The final risk level will correspond to the remaining value after all deductions, with a maximum deduction to 0. Hence, when there is a greater degree of good practices occurring, the resulting risk level will be lower.

Factory Questionnaire: *“Do your workers have access to the following worker well-being facilities/benefits?” (Multiple choice permitted)*

Answer Options	Score	Selected
a. Recreational area for breaks	25	X
b. Fresh / potable drinking water station	25	X
c. Infirmary	25	X
d. Canteen	25	X
e. Changing room / shower	25	X
f. Toilets	25	
g. Prayer room	25	
h. Other	25	
i. No well-being facility available	0	

**Calculated risk level for the question = 0**

*The respondent has selected options (a) to (e), leading to a total deduction of 125. Since there is a maximum deduction value of 100, the respondent’s answer results in a risk level of 0.*



## ● UNDERSTANDING RISK

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In RubberWay, risk is defined as a combination of the consequence and the occurrence of a scenario. Risks are detected when the scenario could lead to adverse outcomes (e.g. severe consequences or irreversible damage) and is common among respondents.

$$\text{Risk} = \text{Consequence} \times \text{Occurrence}$$

### The 5 Levels of Risk

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After the application of the respective calculation rules, a risk value between 0-100 is returned. Larger integer values indicate increased supply chain risks. There are 5 possible tiers of risk in RubberWay: Minimum Risk, Low Risk, Risk Under Control, Medium Risk and High Risk.

<b>High Risk</b>	<b>75-100</b>	Many risky practices, widespread among respondents
<b>Medium Risk</b>	<b>50-74</b>	Several risky practices occurring among several respondents
<b>Risk Under Control</b>	<b>33-49</b>	Some risky practices occurring among a few respondents
<b>Low Risk</b>	<b>16-32</b>	Generally good practices, with low occurrence of risky practices
<b>Minimum Risk</b>	<b>0-15</b>	<u>Largely good practices</u> , with <u>minimal</u> presence of risky practices

### Risk vs. Bad Practices

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It is crucial to note that the detection of high risk levels in RubberWay does not directly conclude the reality of bad practices in the field. The presence of high risk levels in RubberWay signifies a higher probability of unpreferred actions occurring. This cautions users of the more vulnerable segments of their supply chain and indicates them as priority areas requiring closer investigation.

*Take for example, the practice of a smallholder conducting plantation expansion. While increasing the size of the farm is not an inherently negative scenario, plantation expansion does bring about higher risks to deforestation and unwanted land clearing practices like slash-and-burn. Hence, RubberWay allocates greater risks when plantation expansion has occurred recently due to the increased possibility of these unpreferred practices.*



## ● AGGREGATION OF RISK LEVELS

The calculation of risk levels in RubberWay is conducted separately for each of the 4 supply chain actors. RubberWay displays risk levels according to thematic categories of risk. The questions in the RubberWay questionnaires are grouped according to 4 risk themes:

**Respecting People:** Social risks, pertaining to labour and employment practices on the plantation.

**Protecting The Environment:** Environmental risks arising from the agricultural practices of rubber cultivation.

**Agricultural Training:** Source and frequency of agricultural training received by growers of natural rubber.

**Commercial Transparency:** Ability to monitor natural rubber prices and have access to transactional history.

As the themes of Respecting People and Protecting The Environment cover a broad range of risks, RubberWay has further distinguished these risks into 13 Sub-themes. Agricultural Training and Commercial Transparency are specific themes, hence do not contain any Sub-themes.

*It is important to note that not every Theme and Sub-Theme applies to all actors.*

- *The Sub-theme "Worker's Benefits" does not apply to smallholders. This is because smallholders typically employ a small workforce, hence it is less expected that workers would be provided with employee benefits.*
- *The Theme "Agricultural Training" does not apply to factories as they do not grow natural rubber, therefore training on agricultural techniques is not applicable.*





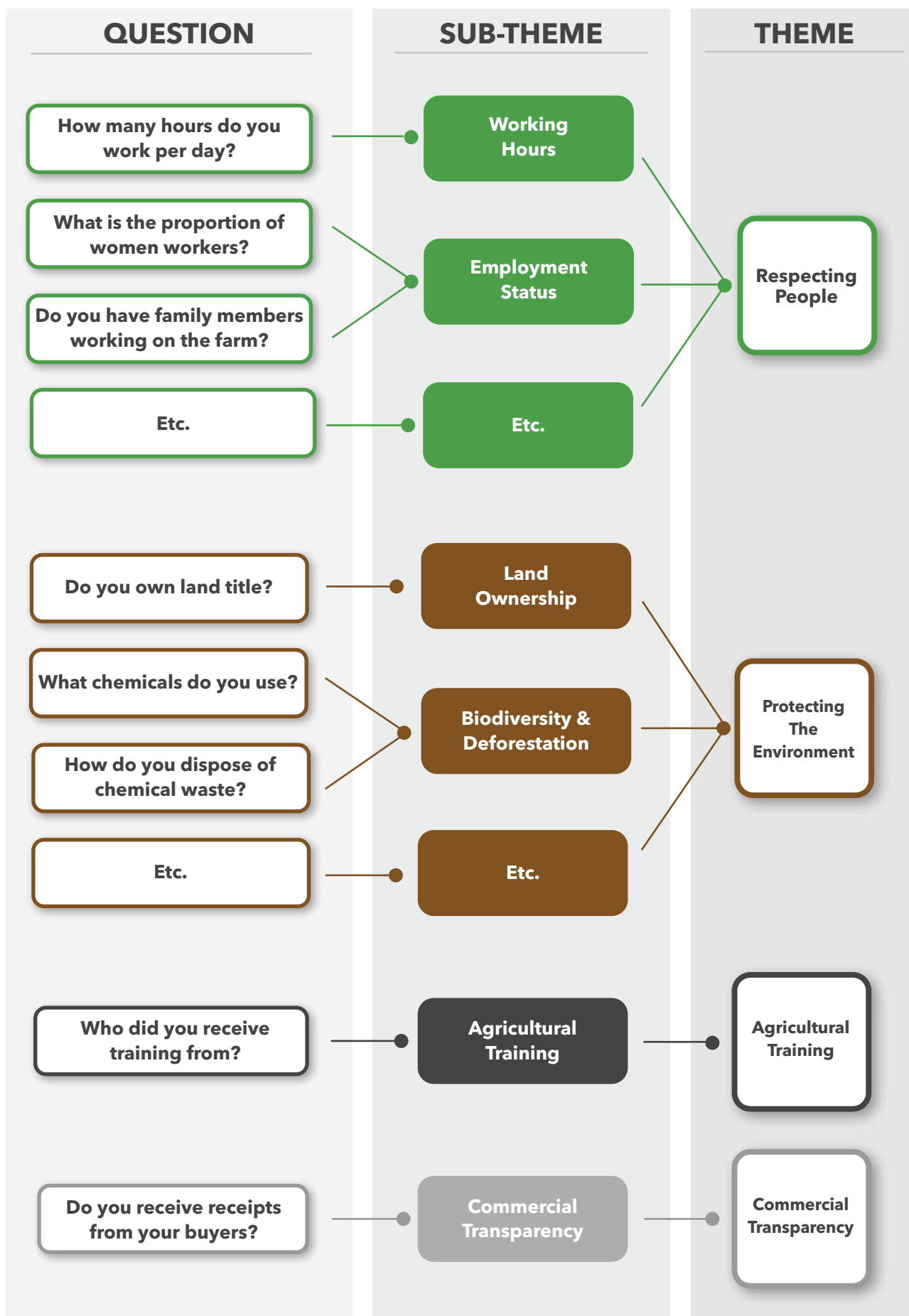
## Applicability of Sub-Themes to Each Actor

- √ Applies to actor  
 — Does not apply to actor

	Smallholders	Intermediaries	Factories	Estates
<b>RESPECTING PEOPLE</b>				
EMPLOYMENT STATUS	√	√	√	√
DECENT WAGE & MINIMUM WAGE	√	√	√	√
WORKING HOURS	√	√	√	√
WORKERS ENTITLEMENT TO REST	√	√	√	√
WORKERS' BENEFITS	—	—	√	√
MIGRANT WORKERS	√	√	√	√
CHILD LABOUR	√	√	√	√
HEALTH & SAFETY	√	√	√	√
GRIEVANCES SYSTEMS	√	√	√	√
LOCAL COMMUNITIES	—	—	√	√
<b>PROTECTING THE ENVIRONMENT</b>				
ENVIRONMENTAL MANAGEMENT	√	√	√	√
BIODIVERSITY AND DEFORESTATION	√	√	√	√
LAND OWNERSHIP	√	—	—	√
<b>AGRICULTURAL TRAINING</b>				
AGRICULTURAL TRAINING	√	—	—	√
<b>COMMERCIAL TRANSPARENCY</b>				
COMMERCIAL TRANSPARENCY	√	√	√	√



## How Questions Are Aggregated To Sub-theme and Theme Levels





## From Question to Sub-theme

A Sub-theme considers a group of questions which concern the same topic. For instance, the Sub-theme “Workers Entitlement to Rest” comprises all questions on the weekly rest days and annual vacation days received by hired workers.

Due to the presence of conditional questions, not every question receives the same number of respondents. Hence, the aggregation of risk level values at Sub-theme level is weighted upon the total number of respondents to the Sub-theme.

Sub-theme A		
Question	Number of Respondents	Risk Level
Q1	200	34
Q2	180	50
<b>Total</b>	<b>380</b>	<b>42</b>

Example: Sub-theme A contains 2 questions. Question 1 received 200 respondents while Question 2 only has 180 respondents due to its conditionality. Therefore, the final risk level of Sub-theme A is calculated by weighting the total risk value upon the total number of responses received across both questions.

$$\text{Risk Level of Sub-theme A} = \frac{(200 \times 34) + (180 \times 50)}{200 + 180} = 42$$

For Agricultural Training and Commercial Transparency which have no Sub-themes, the above calculation rule is applied to aggregate risk from Question to Theme level.





## From Sub-Theme to Theme

Risk levels are calculated for each of the 4 RubberWay Themes through a weighted average of their respective Sub-themes. The coefficients defined against each Sub-theme varies between the 4 questionnaire types.

For example, in the aggregation of the Theme “Respecting People”, the Sub-theme of “Grievance Systems” holds greater weightage for Factories and Estates than Smallholders and Intermediaries. This is because Factories and Estates hire larger numbers of workers which necessitates the establishment of systems to address workers’ complaints. Conversely, smallholders and intermediaries manage small workforces and hence are less expected to put in place formal grievance systems.

	Smallholders	Intermediaries	Factories	Estates
<b>RESPECTING PEOPLE</b>				
EMPLOYMENT STATUS	10%	10%	10%	10%
DECENT WAGE & MINIMUM WAGE	10%	10%	10%	10%
WORKING HOURS	15%	15%	10%	10%
WORKERS ENTITLEMENT TO REST	10%	10%	5%	5%
WORKERS’ BENEFITS	—	—	5%	5%
MIGRANT WORKERS	20%	20%	15%	15%
CHILD LABOUR	20%	10%	10%	15%
HEALTH & SAFETY	10%	15%	15%	10%
GRIEVANCES SYSTEMS	5%	10%	15%	15%
LOCAL COMMUNITIES	—	—	5%	5%
<b>PROTECTING THE ENVIRONMENT</b>				
ENVIRONMENTAL MANAGEMENT	20%	50%	50%	30%
BIODIVERSITY AND DEFORESTATION	50%	50%	50%	50%
LAND OWNERSHIP	30%	—	—	20%
<b>AGRICULTURAL TRAINING</b>				
AGRICULTURAL TRAINING	100%	—	—	100%
<b>COMMERCIAL TRANSPARENCY</b>				
COMMERCIAL TRANSPARENCY	100%	100%	100%	100%

Breakdown of the coefficients defined against each Sub-theme according to actor.





## Display of Risk Level Results

The final outputs of the RubberWay risk assessment calculation are the risk levels at Sub-theme and Theme level. These risk levels are displayed via an online dashboard and interactive map. As previously mentioned, results of the questionnaires are aggregated which ensures anonymity of the individual questionnaire submissions. All responses for a given actor are grouped according to geographical area or by the factory which the responses are linked to.



**Figure 3.** Online dashboard displaying risk levels per Sub-theme and Theme for all smallholder responses from a factory (Data for illustration purposes only).



**Figure 4.** Interactive map displaying risk levels for all intermediary responses in Thailand by province (Data for illustration purposes only)



## ● PUTTING THE RESULTS INTO ACTION

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### Prioritising Actions

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The RubberWay results allow users to rapidly sort through the different supply chain risk themes. This provides users with a quick way to establish risk management priorities that should be directed at themes with medium or high risk levels. By viewing the interactive map, users can centre in on jurisdictions with higher risks themes. As low risk does not equate to the absolute absence of risk, low risk themes should still be monitored to ward against future escalation of risk levels.

### Creating Impact

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In the RubberWay risk reports, RubberWay references data on a per question basis to provide recommendations on specific remediation actions that users can implement. Buyers of natural rubber and processors are advised to conduct additional studies into areas of medium or high risk to better understand risks contextually and be able to precise their risk management solutions.

RubberWay aims to equip users with data to support the development of targeted action plans for the natural rubber industry. Following the implementation of solutions to address the risks detected in the initial assessment, RubberWay encourages users to engage in a re-assessment to survey the impact of their risk management projects.



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