

ORIGIN ISSUE ASSESSMENT

INDIA - COFFEE



India's coffee production has steadily been on the rise over the past few decades covering nearly 460,000 hectares of land primarily in the districts of Karnataka (53.3%), Kerala (18.7%) and Tamil Nadu (7.7%) (Coffee Board of India, 2020). The cultivation of Robusta and Arabica are alike in acreage although Robusta rises in popularity, now taking a 70% share in production. A share of 70% is also attributed to India's coffee produced by smallholders with land up to 10ha (Finnwatch, 2016). Over 600,000 workers were employed on coffee plantations on a daily average in 2019 (Statista, 2020).

In India, legislation pertaining to the safety of workers has recently been cut, and trainings provided to farmers and workers leave room for improvement (**Occupational Health and Safety**). Indian coffee farmers usually supply personal safety equipment to laborers although their use remains infrequent due to their uncomfortable wear; the new Pesticide Management Bill should further improve registration and promote better practices (**Agrochemical Handling**). Although the National Mission for Sustainable Agriculture (NMSA) promotes Integrated Nutrient Management practices, we see a rise in use of agrochemicals and occurrence of landslides due to opening of canopies (**Soil Fertility Management**).

Further details per topic are provided in a separate annex.

TOP ISSUES

The top issues identified are:

- **Occupational Health and Safety (Safe Working Environment - risk score 3.6/5)**,
- **Agrochemical Handling (risk score 3.5/5)**
- **Soil Fertility Management (risk score 3.5/5)**.



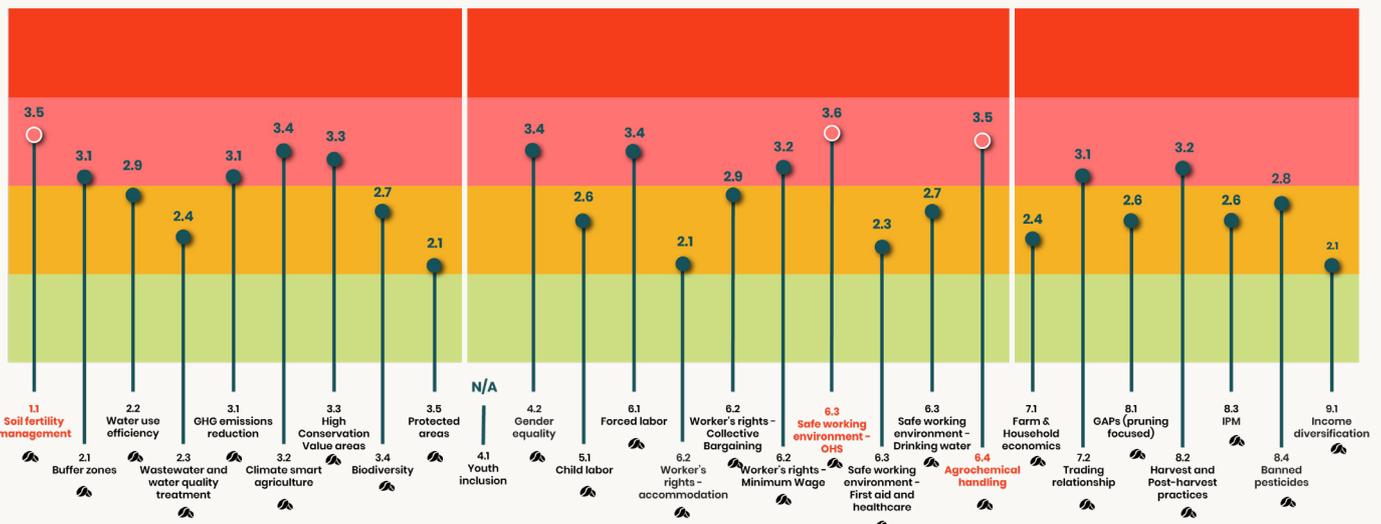
Sustainability of Land



Equality of People



Prosperity of Farmers



Range	Probability of the issue's occurrence
4.1 - 5.0	High probability: Known to occur frequently
3.1 - 4.0	Medium-high probability: Known to occur
2.1 - 3.0	Medium-low probability: Could occur
1.0 - 2.0	Low probability: Not expected to occur



Common Grounds

ORIGIN ISSUE ASSESSMENT METHOD SUMMARY

This Origin Issue Assessment (OIA) is compiled by the Rainforest Alliance as part of the JDE Common Grounds Initiative. The OIA is a desk-based 'early warning system' identifying potential issues related to coffee production in a country for each of the 23 JDE Common Grounds Responsible Sourcing principles. It focuses on the probability of occurrence, not necessarily on the severity of impacts. Three different data sources are used: i) country-specific law and legislation, (ii) recent evidence (media, reports, papers, UTZ audit results*), (iii) expert opinions survey**. The overall score is calculated based on these three types, however evidence is weighted higher (3x), than expert opinion (2x) and the law and legislation score (1x). The weighted scores are added up and divided by 6 to get the overall weighted risk score for each of the 23 issues.

In case insufficient coffee specific information is found, other evidence related to the country's agriculture sector will be considered.

 This icon indicates the evidence is coffee specific.

The OIA covers the overall coffee sector, making no distinction between, e.g. (i) smallholders and estates, (ii) sun-dried and washed-coffee, (iii) sun- and shade-grown coffee.

The data presented is accurate at the time of publication based on the information collected from the above sources. Neither RA nor JDE will be liable for damage as a result of inaccuracies in the information. For more information about the OIA's method, sources and expert surveys, please contact us at OIA@ra.org. OIA@ra.org.

* Through 3rd party audits producer's compliance is evaluated against the UTZ Certification Standard (owned by the Rainforest Alliance). Audit reports provide insights on certification gaps for the analysis."

** Rainforest Alliance experts (country representative, thematic and coffee experts) and external expert(s) (e.g. National Coffee Platform representative) are surveyed.



SOIL FERTILITY MANAGEMENT		JDE Sourcing principle 1.1
Score	3.5	
Law	The National Mission for Sustainable Agriculture (NMSA) outlines the government’s commitment to a farming system that is more productive, sustainable, remunerative and climate resilient by promoting Integrated Nutrient Management practices. In a move to assess the current status of soils, the department of Agriculture, Cooperation and Farmers Welfare has introduced a Soil Health Card scheme in all States and Union Territories.	
Evidence	In a study in Kodagu district, the majority of coffee farmers were found to have increased the use of agrochemicals in a move to counter declining soil fertility (Chengappa et al., 2017). The mixed-tree canopy in coffee plantations is steadily in decline leading to more open spaces and soils being susceptible to erosive forces, with landslides occurring over the recent years (Media, 2016). A shift from organic manure and compost to synthetic NPK-fertilizers is witnessed following subsidies for fertilizers and ease of application. This indiscriminate use of fertilizers leads to soil nutrient depletion (Media, 2019). Nonetheless, in response to perceived increasing demands for organic coffee, some Indian producers have reverted to organic production (Nesper et al., 2017). Soil reports that farmers receive are inaccurate, hard to interpret and not delivered on time, limiting their intended effects for need-based application of fertilizers. Leading organization do add nutrients based on yield parameters and soil availability (JDE regional insights, 2020).	
Prevailing expert opinion	Highly discrepant risk opinions*: experts indicating high risk scores state that soils are neglected, and fertility is falling - only compensated by applying [synthetic] fertilizers. Experts indicating low risk suggest that farmers generally follow the advice on soil management provided by the Coffee Board or Supplier companies (Expert survey, 2020). * The averaged risk score does not sufficiently reflect the wide discrepancy in expert opinion, ranging from low to high risk.	

BUFFER ZONES		JDE Sourcing principle 2.1
Score	3.1	
Law	India has adopted the Environment Protection Act 1986 including a clause on hazardous waste rules for management and handling (ILO). Additionally, Agrotech Paris (2011) found that some buffer zones are created around protected areas consisting of 5-10 km of wooded lands.	
Evidence	It has been reported that farmers in Western Ghats use many agrochemicals for coffee cultivation. Where pesticides are used, it is estimated that more than 99% ends up contaminating the surroundings while only a minute fraction reaches the target (Ganapathy et al., 2019). Such phenomena have also been reported by media (2019) and research (Hegde et al., 2019). Regarding coffee produced under Rainforest Alliance certification or under the umbrella of Tata Coffee, a non-application zone is enforced along rivers, streams and protected areas (Media, 2016; Tata Coffee). Mithöfer (2018) underscores the sustainability in India’s coffee farming practices.	
Prevailing expert opinion	Medium-high risk: "When looking at the country’s coffee producing regions, it is unlikely that farmers maintain a pesticide and fertilizer non-application zone or buffer zone"; "The little land that is available to small farmers is usually used for productive purposes though certified farmers consider buffer zones as an important activity" (Expert survey, 2020).	

WATER USE EFFICIENCY		JDE Sourcing principle 2.2
Score	2.9	
Law	In 2017, the Coffee Board announced a plan for a sustainable coffee sector through an Integrated Coffee Development Project. sub-component 2.1.2 on water augmentation provides subsidies for irrigation and water harvesting structure (India Coffee, 2018). Moreover, the National Mission for Sustainable Agriculture will cater to key dimensions of water use efficiency through sustainable development pathways. However, generous government subsidies have contributed to over-irrigation and groundwater depletion (Media, 2019).	
Evidence	Research in Kodagu District by Chengappa et al. (2017) found that almost 60% of the growers observed a decrease in water sources due to over-drawing of irrigation water and decline in the area under wetlands. Water resources are supplemented by constructing rainwater harvesting tanks and deepening borewells, though mostly by large producers since small and medium farmers cannot afford the infrastructural investments (Media, 2019). Although periods without rainfall can be bridged by means of irrigation, the World Bank Group (2018) sees a somber future since subsidized submersible solar pumps bring the cost of irrigation close to zero, exacerbating the problem in the country.	
Prevailing expert opinion	Medium-low risk: "Water availability is an issue in the dry season"; "Monsoons have become erratic recently - rains are either too heavy, or too intense, or too scarce. This leads to the strange situation of flood threats in one season, but water scarcity in the dry season" (Expert survey, 2020).	

WASTEWATER AND WATER QUALITY TREATMENT AT PROCESSING UNITS		JDE Sourcing principle 2.3
Score	2.4	
Law	Raw coffee processing wastewater standards are set by the Central Pollution Control Board (Sahana et al., 2018). As such, in the state of Karnataka, coffee estates are obliged to treat their wastewater (Sarette Joylin Dsouza, 2019). Checks are carried out and closely monitored by the Karnataka State Pollution Control Board, especially during the coffee growing period from November to April.	
Evidence	Indian coffee is both dry and wet processed (Media, 2018). Countrywide, wastewater treatment is low and water quality is a recurring issue. In the coffee sector, Chengappa et al. (2019) observe limited wastewater management and opt for better machinery for efficient processing. Though reportedly, a state-wide pollution control board keeps tabs on untreated wastewater discharge through officer check-ups and accounts by the general public (Sarette Joylin Dsouza, 2019).	
Prevailing expert opinion	Low risk: "Coffee production is a mix of dry and wet processing"; "When looking at the country's coffee producing regions it is (very) likely that, at processing units, wastewater is treated and is of good quality before it is discharged into aquatic ecosystems or drainage systems"; "The Pollution Board is very firm in regulating the discharge of effluents into water bodies" (Expert survey, 2020).	

GHG EMISSIONS REDUCTION		JDE Sourcing principle 3.1
Score	3.1	
Law	The Indian renewable energy sector has made large leaps forward and is now among the most attractive renewable energy markets in the world (IBEF, 2020). India has set ambitious targets regarding expansion of renewable energy capacity (Media, 2020). As such, the Government of India's ambitious KUSUM Scheme funds and supports farmers to set up stand-alone solar pumps and grid-connected solar irrigation facilities (The World Bank, 2020). The National Mission for Sustainable Agriculture also targets the adoption of energy efficient equipment.	
Evidence	India's coffee farming is hailed in media (2016) as exemplary for sustainable coffee production since berries are shade-grown, hand-picked and sun-dried in most coffee estates. Though, many states heavily subsidize power for agricultural purposes, increasing the attractiveness of using pumps for irrigation. The low costs result in farmers running pumps non-stop. With the onset of subsidized solar pumps, costs can be reduced further. In a move to reduce wasteful energy use, the state of Karnataka experiments with a scheme for farmers to sell surplus energy back to the grid (Media 2015).	
Prevailing expert opinion	Medium-high risk: "When looking at the country's coffee producing regions, it remains contested whether farmers use energy efficiently and unlikely that they use renewable energy sources"; "Efficient use of energy is not easy for smallholders due to lack of resources. Although the government encourages the use of renewable energy, this practice will also be seen more with large farmers when compared to smallholders" (Expert survey, 2020).	

CLIMATE SMART AGRICULTURE		JDE Sourcing principle 3.2
Score	3.4	
Law	The strategy of the National Mission for Sustainable Agriculture includes popularizing resource conservation technologies and introducing mitigation practices to buffer climate impacts (NMSA, 2019). Likewise, the National Action Plan on Climate Change also promotes climate smart interventions in agriculture (CGIAR India).	
Evidence	Coffee in India is generally grown under a canopy of thick natural shade (India Coffee 2020), acting as a buffer against temperature increase and erratic rainfall. Untimely, erratic rainfall and increasing temperatures lead to high infestation of the white stem borer pest. Coffee growers are continuously replacing Arabica with Robusta as the former is more prone to these pests. With Robusta more tolerable to higher temperatures, the canopies in coffee estates are opened to allow for more sunlight to come in (Media 2016). A reduced shade cover along with substitution of native trees by silver oak reduces litter quality, depleting soil nutrients and altering the microclimate (JDE regional insights, 2020). Certification is sometimes seen as a means to cushion the impacts of climate change (Media, 2016).	
Prevailing expert opinion	High risk: "Climate change seems to have a negative impact on coffee production and farmers are not able to adapt quickly enough"; "Some aspects of Climate Smart Agriculture have been adopted or are maintained, but CSA is not implemented as a system"; "Where large farms have the knowhow and access to technology, smallholders often do not" (Expert survey, 2020).	

FOREST AND HIGH CONSERVATION VALUE AREAS (HCVS)		JDE Sourcing principle 3.3
Score	2.4	
Law	The National Forest Policy 1988 was established to ensure compensatory afforestation, essential environmental safeguards, sustainable utilization, maintenance, restoration, and enhancement of forest areas (Forest Legality Initiative, 2014). Through Joint Forest Management schemes, villages manage forests in collaboration with Forest Departments, minimizing pressure on existing forests covering over 17.3 million ha. Though, the Forest Governance and Legality (2018) rates India's forest governance as weak overall with failing and weak legal and institutional frameworks.	
Evidence	Coffee grown in the Western Ghats, a world UNESCO heritage site and a global biodiversity hotspot, is often grown under a thick canopy layer (Media, 2018). Coffee expansion, especially at the end of the last century, have taken place at the expense of tree cover in Karnataka and Kodagu districts (Ramachandra et al., 2019; Guillemot et al., 2018). Although tree cover is still reducing in India (Global Forest Watch, 2020), the rate at which deforestation took place has drastically decreased.	
Prevailing expert opinion	Low risk: "When looking at the country's coffee producing regions, it is very unlikely that farmers have converted High Conservation Value areas to agricultural production or other land uses since January 1st 2014"; "HCVs are well defined and no land is cleared for coffee cultivation" (Expert survey, 2020).	

NATIVE VEGETATION AND ON-FARM BIODIVERSITY		JDE Sourcing principle 3.4
Score	2.7	
Law	Government legislation around vegetation and biodiversity conservation has evolved over time for the better (Mithöfer, 2018). As such, the National Environmental Policy and National Biodiversity Action Plan aim to stimulate natural resource conservation through economic incentives. Moreover, the Green Agriculture Project addresses biodiversity conservation and sustainable forest management (FAO news, 2018). However, government policies allowing free harvest of exotic tree species disincentivize farmers to maintain native species since these require official permits for harvesting (Guillemot et al., 2018).	
Evidence	The ongoing intensification of coffee production along with the introduction of exotic silver oak tree species in coffee agroforestry systems in the Indian Western Ghats has led to loss of tree diversity (Bose et al., 2016; Media, 2019). Exotic species are often preferred due to their value as pepper stand and timber resource (Nesper et al, 2017) and thus replace native trees. However, the coffee agroforestry systems in regions such as Kodagu are still among the richest in the world in terms of biodiversity with over 270 varieties of shade tree (Deepika, 2018).	
Prevailing expert opinion	Medium-low risk: "When looking at the country's coffee producing regions, it is likely that farmers contribute to preservation of native vegetation and on-farm biodiversity"; "As coffee is grown under a mixed canopy of shade, biodiversity is ensured on most farms"; "Encouraging efforts by the forest department and NGOs to promote native tree planting for instance through price incentives and premiums" (Expert survey, 2020).	

PROTECTED AREAS		JDE Sourcing principle 3.5
Score	2.1	
Law	The conversion of protected areas into coffee estates has been addressed by the Wildlife Protection Act of India of 1972 (Mithöfer, 2018). Schemes such as payment for ecosystem services are being tried out in Kodagu district aiming to preserve forests and thereby water flow to account for downstream users in Tamil Nadu (Media, 2016).	
Evidence	Media (2020) report that protected areas are still invaded, with logging, shifting cultivation, fuelwood collection and farmland expansion leading to primary forest loss in for example Intanki National Park. Similar evidence of forest loss is reported by GMAP (2019) for tea expansion. Historically, coffee has also been linked to deforestation (Mithöfer, 2018), though current forest cover in coffee estates remains high in Kodagu district for example (Media, 2016).	
Prevailing expert opinion	Low risk: "When looking at the country's coffee producing regions, it is (very) unlikely that coffee is produced or processed in protected areas or their designated buffer zones"; "Only in hilly, isolated regions tribal communities sometimes grow coffee adjacent to forest land" (Expert survey, 2020).	

YOUTH INCLUSION		JDE Sourcing principle 4.1
Score	N/A	
	At the moment, information collected on Youth Inclusion does not allow us to draw specific conclusions. Prevailing expert opinion: Medium-low risk: "When looking at the country's coffee producing regions, it remains contested that participation of young farmers is promoted"; "Coffee farming is still usually handed over to the next generation, though seeking better education, youth also tend to move to urban areas" (Expert survey, 2020).	

GENDER EQUALITY		JDE Sourcing principle 4.2
Score	3.4	
Law	India has ratified the Equal Remuneration Convention, 1951 and the Discrimination (Employment and Occupation) Convention, 1958 (ILO). The US department of state's country report on human rights practices in India (2019) confirms legislation prohibiting discrimination in the formal sector exists but stresses that enforcement is limited. Moreover, such laws do not protect workers in the informal sector, which holds an estimated 90 percent of the workforce.	
Evidence	Multiple sources suggest that women experience discrimination in agricultural occupations regarding e.g. land ownership, wage and workplace position (Freedom House, 2020; ILO, 2017; World Bank, 2018). Incidences of debt bondage, a form of forced labor, are also prevalent specifically among women (US department of state Trafficking in Persons Report, 2019). Alternatively, the International Women's Coffee Alliance aims to empower women to achieve sustainable, meaningful lives through international coffee communities (The Borgen Project, 2019).	
Prevailing expert opinion	Highly discrepant risk opinions*: experts indicating high risk scores report that most coffee farms are owned and led by men; women have less access to information, services, trainings, credits and markets and are expected to perform activities in certain roles relatively linked to cultural norms and values. Experts indicating low risk specify that most field activities are carried out by women, automatically demanding their involvement. (Expert survey, 2020).	
	* The averaged risk score does not sufficiently reflect the wide discrepancy in expert opinion, ranging from low to high risk.	

CHILD LABOR		JDE Sourcing principle 5.1
Score	2.6	
Law	In 2017, India ratified the Worst Forms of Child Labor Convention, 1999, Minimum Age Convention, 1973 and the Minimum Age (Industry) Convention, 1919 (ILO). This advancement was accompanied with the launching of the Platform for Effective Enforcement for No Child Labor and a new national action plan. Although the employment of children between the ages of 14 and 18 in hazardous work is prohibited, law enforcement is limited and child labor remains widespread (US department of state, 2019; Freedom House, 2020) especially in agriculture (Finnwatch, 2016).	
Evidence	In 2017, the USDA did not find child labor activity in coffee production. Coffee is also not listed on the US Department of Labor's List of Goods Produced by Child Labor (2018) nor were non-conformities found in any UTZ audit of coffee farms in India between 2015-2019. Though, a medium-risk level of child labor is reported in Rainforest Alliance's risk map for coffee. Child labor remains a high risk in the agriculture sector (GMAP, 2019, Social Hotspot Database) and is reportedly still found in the form of forced and compulsory child labor (US department of State Country Report on Human Rights Practices: India, 2019).	
Prevailing expert opinion	Highly discrepant risk opinions*: experts indicating medium-high risk scores state that children do migrate with their parents to coffee growing areas where education in their own language may be more difficult to access, hence enlarging the risk of child labor especially for vulnerable families. Experts indicating low risk suggest that awareness and local law has seen complete removal of child labor from the coffee growing regions. (Expert survey, 2020).	
	* The averaged risk score does not sufficiently reflect the wide discrepancy in expert opinion, ranging from low to medium-high risk.	

FORCED LABOR		JDE Sourcing principle 6.1
Score	3.4	
Law	India has ratified the Forced Labor Convention, 1930 and the Abolition of Forced Labor Convention, 1957 (ILO). India's laws prohibit forced labor and bonded labor. However, the US State Department Trafficking in Persons Report (2020) indicates that the Government of India does not fully meet the minimum standards for the elimination of trafficking, though making significant efforts to do so. Forced labor and bonded labor continue to be widespread and prevalent (Media, 2017; Global Slavery Index, 2018).	
Evidence	Although coffee is not listed on the US Department of Labor's List of Goods Produced by Forced Labor (2020), several sources suggest that forced labor is still a high risk in the sector. For example, Finnwatch (2016) research indicates that high recruitment fees are a key issue identified by workers, which can lead to debt bondage. Many harvest workers in Karnataka's coffee sector are migrants from northern India, vulnerable to exploitation by the labor brokers and intermediaries that are heavily used in the sector (this information is from conversations with the India team). These workers often bring their whole family, exacerbating and complexifying issues related to child labor, gender equality, working conditions and other (JDE regional insights, 2020). Media (2017) describe bonded labor in the Coorg coffee district as hidden in layers of denial, custom, silence and fear.	
Prevailing expert opinion	Highly discrepant risk opinions*: experts indicating high risk scores state that the seasonal nature of the crop and the high levels of migration of workers from other regions into the coffee-growing regions makes workers vulnerable to exploitation by labor recruiters/intermediaries for example in the form of debt bondage. Experts indicating low risk say that forced labor is rare in the coffee growing regions (Expert survey, 2020).	
	* The averaged risk score does not sufficiently reflect the wide discrepancy in expert opinion, ranging from low to high risk.	

WORKERS' RIGHTS AND DUTIES		JDE Sourcing principle 6.2
Highest score	3.2	
ACCOMMODATION		
Score	2.1	
Law	India has not ratified the Plantations Convention, 1958 and the Migrant Workers (Supplementary Provisions) Convention, 1975, but it passed the Plantations Labor Act in 1951 which sought to provide for the welfare of laborers. Under this act, housing facilities for every worker and his / her family residing in the plantation should be provided by the employer (Shailashree, 2019).	
Evidence	Several sources indicate that accommodation is provided to workers and their families on coffee estates. These houses include clean drinking water in workers' living quarters, and toilets are shared between families (Finnwatch, 2016). Workers are generally happy with the Housing and Sanitary Subsidiary Scheme by the government and the coffee board (Shailashree, 2019). Housing is also provided to migrant workers.	
Prevailing expert opinion	Low risk: "Where accommodation is/ living quarters are provided, these are most likely safe, clean and decent"; "Workers' accommodation is usually available on the larger estates, and these are reasonable in quality as demanded by the Plantations Labor Act. Though, quality is generally better for permanent workers than for temporary workers, and in certified over non-certified estates" (Expert survey, 2020).	
COLLECTIVE BARGAINING		
Score	2.9	
Law	India has ratified the Right of Association (Agriculture) Convention, 1921, but not the Freedom of Association and Protection of the Right to Organize Convention, 1948 nor the Right to Organise and Collective Bargaining Convention, 1949 (ILO). National laws are meant to guarantee these rights, but the employer is not obligated to recognize a union or to engage in collective bargaining (Finnwatch, 2016), leading to a decrease in collective bargaining by trade unions (Wage Indicator, 2016). The ITUC Global Rights Index (2019) rates India worse in 2019 from 2018, now rating 5: no guarantee of rights.	
Evidence	Many employers of coffee estates reportedly bypass unions where they exist and negotiate instead with employer-established "yellow" unions or individual workers (Finnwatch, 2016). Harassment of trade union leaders and worker representatives is common, and strike actions are repressed (ITUC, 2019). Risk levels pertaining to the freedom of assembly remain high according to Social Hotspot Database and Freedom House (2020).	
Prevailing expert opinion	Highly discrepant risk opinions*: experts indicating high risk scores say that because agriculture is a largely unorganized sector, workers' knowledge of their rights might be inconsistent; "This is a grey area. The labor department of the Government is supposed to ensure that the rights of workers are protected. At times they may not be fully aware but are aware to a certain extent". Experts indicating low risk often link this to certified estates: "Certified estates make sure that the information on workers' rights are shared and discussed" (Expert survey, 2020). * The averaged risk score does not sufficiently reflect the wide discrepancy in expert opinion, ranging from low to medium-high risk.	
MINIMUM WAGE		
Score	3.2	
Law	Although India has not ratified the Minimum Wage Fixing Convention 1970 (ILO), it was one of the first developing countries to introduce a minimum wage law, however complicated its structure (Wage Indicator, 2016). Over 1,500 different minimum wages are set across the country by state governments, also in agriculture, but fail to cover all wage-earners. Effective enforcement of minimum wage law remains limited (US department of State, 2019).	
Evidence	Estate landlords in Kodagu district have been found to put local tribes to work at low or no wages (Media, 2017). Employers say a deduction in worker's wages are towards an unwritten loan, though reportedly never-ending. Finnwatch (2016) also report lower-than-minimum wages paid to coffee workers in Odisha. Poverty surrounding coffee estates in Karnataka's Coorg district has failed to be alleviated with in-kind benefits such as schools, hospitals and creches not offering sufficient value (Cividep India, 2020).	
Prevailing expert opinion	Low risk: "Most workers are paid the minimum wage or more"; "During harvest, and especially now with the COVID-19 pandemic, a shortage of skilled labor necessitates high wages being paid; than the minimum wage"; "Generally farmers are educated and aware of their rights. Some farmers do travel across the states as migrating labour, which could be some issue as specific min wage to the state is unknown. But generally, they are still aware. The government sets a minimum wage in the sector, revised every 3 months" (Expert survey, 2020).	

SAFE WORKING ENVIRONMENT		JDE Sourcing principle 6.3
Highest score	3.6	
OCCUPATIONAL HEALTH SAFETY		
Score	3.6	
Law	India has limitedly ratified international conventions regarding occupational health and safety (ILO). Furthermore, existing laws that ensure workers are represented, promoting their health and safety, guaranteeing coverage by social security, have been cut by the current government (ITUC, 2019). Along ineffective implementation of legislation and poor monitoring of compliance with regulations, the informal sector falls outside national laws on OHS (Finnwatch, 2016).	
Evidence	Awareness and experience with trainings on occupational health and safety varies greatly among workers interviewed at Tata Coffee (Finnwatch, 2016). Some indicated never to have received training, others recall a training when given a new task. Risk levels for work-related injuries are medium high for the agriculture sector according to Social Hotspot Database. As such, Pan India (2017) reports that pesticide poisoning can happen during farm work.	
Prevailing expert opinion	Medium-low risk: "When looking at the country's coffee producing regions, it remains contested whether workers enjoy a safe working environment, where adequate steps are taken to prevent work related injuries"; "OHS is an area for improvement in most areas of coffee production (safety equipment, training etc)" (Expert survey, 2020).	
FIRST AID AND EMERGENCY HEALTHCARE		
Score	2.3	
Law	According to ITUC (2018), the Indian government has recently taken steps to remove protections for working people, which exposes workers to exploitation by employers and potentially leading to greater risks to workers. State level regulation in for example Karnataka pertaining to welfare officers required per 300 workers on any plantation are not adhered to (Finnwatch, 2016).	
Evidence	Medical care seems to be well-included in a workers' package on Indian coffee estates as reported in two sources by Shailashree (2019 and 2017). Finnwatch (2016) research interviewees on Tata Coffee estates report that in case of injuries, workers are taken to a company hospital for treatment. However, hospital equipment across the country seems to be inadequate in case of pesticide poisonings (EPI, 2020).	
Prevailing expert opinion	Medium-low risk: "When looking at the country's coffee producing regions, it is likely that workers receive first aid and emergency health care for treatment of work-related injuries"; "Basic first aid is usually available on farm. Snake bite antidotes are available at government run health centers" (Expert survey, 2020).	
DRINKING WATER		
Score	2.7	
Law	According to the Plantations Labor Act, the employer should make effective arrangements to provide workers with drinking water and a sufficient number of toilets for both men and women (Finnwatch, 2016). WHO (2018) report national policies and plans on rural sanitation and drinking water supply are partially implemented.	
Evidence	Countrywide rural access to safe drinking water remains at a medium risk level, with India scoring 139/180 countries in Yale's Environmental Performance Index for drinking water (2020). On Coffee estates, workers are generally provided with clean drinking water at their accommodation (Shailashree et al., 2017), though not directly in the vicinity of the work area leading to workers carrying their own drinking water (Finnwatch, 2016).	
Prevailing expert opinion	Medium-low risk: "When looking at the country's coffee producing regions, it is likely that workers have convenient access to safe drinking water"; "Ground water is used for drinking purposes and is generally considered safe" (Expert survey, 2020).	

AGROCHEMICAL HANDLING		JDE Sourcing principle 6.4
Score	3.5	
Law	The Insecticide Rules stipulate the required clothing including respiratory devices to be used while working with pesticides, though manufacturers and distributors do not seem to arrange safety training for use and handling of agrochemicals (PAN India, 2017). However, in 2020 the new Pesticide Management Bill was passed. This bill intends to make pesticide data openly available, including compensatory measures in case of crop losses due to low quality pesticides. It also obligates manufacturers to be registered (Media, 2020).	
Evidence	PAN India (2017) report that the use of personal protective equipment is rarely used among farmers and workers handling pesticides. Media (2015) also report that safety rules are often ignored, and PPE is not used when working with the herbicide Paraquat. A change of habit in wearing appropriate PPE for operations is necessary (JDE regional insights, 2020). Research by Finnwatch (2016) on Tata Coffee estates found that permanent and temporary workers were given personal protective equipment such as masks, gloves, boots and hats by the company when working with pesticides.	
Prevailing expert opinion	Medium-low risk: "When looking at the country's coffee producing regions, it remains contested whether agrochemicals are handled in the right way"; "Handling of pesticides is a concern throughout Indian agriculture"; "On certified farms, supervisors are present on every plantation, there is a storage room, a mixing place, cleaning facilities, and decent and sufficient PPE available" (Expert survey, 2020).	

FARM & HOUSEHOLD ECONOMICS		JDE Sourcing principle 7.1
Score	2.4	
Law	In 2018, the Coffee Board launched a digital app for mobile phones, Coffee Krishi Taranga, to deliver information to farmers, including, for example, weather warnings and pest and disease incidence (India Coffee, 2018). Moreover, the National Mission for Sustainable Agriculture (NMSA) launched a Soil Health Card scheme in 2015 in a move to improve access to local agricultural information (Shawn Cole, 2018).	
Evidence	Although soil sampling is now being made available to coffee farmers, research suggests that the willingness to pay for soil tests among smallholder farmers is low (Shawn Cole, 2018). This research also indicates a large knowledge gap since study shows that over 90% of farmers using fertilizers at baseline believed that their practices were optimal. Regarding produce, research shows that most producers in Kodagu district timed the sale of their coffee beans according to their financial requirements, although the majority of smallholder producers sold their produce immediately after processing at farm (Chengappa et al., 2019).	
Prevailing expert opinion	Low risk: "Most coffee farmers are true entrepreneurs, but some are not sufficiently aware of the farm and household economics"; "Smallholders are sometimes less well informed, though under certification schemes, farmers have to maintain a farm-diary book"; "The profitability, because of the low prices, has put pressure on farmers to try and see how to work on household economics" (Expert survey, 2020).	

TRADING RELATIONSHIP		JDE Sourcing principle 7.2
Score	3.1	
Law	The Government of India has set a target of doubling farmer income by 2024. It is taking various measures and a multi-pronged approach to support farmers – right from sowing to harvest to sales (Media, 2020). An electronic trading platform called e-NAM has been introduced to connect sellers to wholesale markets across the country (World Bank, 2018). The Coffee Board has also implemented the "XII Plan Scheme: Integrated coffee Development Project" (2012-2017) including rainfall insurance for smallholders and subsidies for farm mechanization.	
Evidence	In 2017, the Coffee Board announced a plan for a sustainable coffee sector through an Integrated Coffee Development Project including market development and export promotion (India Coffee, 2018). Non-profit bodies such as the India Coffee Trust are also working towards fortifying and intensifying these efforts (Media, 2018). Nevertheless, USAID (2017) found that well-functioning aggregation points for farmers to the market are few and weak. This could explain why most coffee producers sell their coffee to a particular trader or a set of traders with whom they maintain a consistent trading relationship as research by Chengappa et al. (2019) shows. Small producers prefer working with local traders as they provide gunny bags, weighing facilities, transportation from the producer's doorstep, and immediate cash payment.	
Prevailing expert opinion	Medium-high risk: "When looking at the country's coffee producing regions, it is unlikely that coffee sourcing companies facilitate farmers to access key production inputs, such as plantlets, fertilizer and agrochemicals, and to services, such as credit and market information"; "Large trade houses do have formal programs where they help farmers with access to material, knowledge. However, this is mainly true for certified coffees, and perhaps a small volume of uncertified coffee" (Expert survey, 2020).	

GOOD AGRICULTURAL PRACTICES		JDE Sourcing principle 8.1
Score	2.6	
Law	The National Mission for Sustainable Agriculture (2019) encourage improved agronomic practices for higher farm productivity among other aspects. The Integrated Coffee Development Project led by the Coffee Board also supports efforts to enhance productivity by including replantation in their package. Alas, USAID (2017) found that funding remains limited for training extension service workers across the country as part of the Agricultural Sector Strategic Plan.	
Evidence	In 2017, USAID Bureau for Food Security reported a low adoption rate of GAP in India's coffee sector. Pruning of shade trees, for instance, is a risky and thus costly task which disincentivizes farmers to prune trees at the right time after monsoon season (Deepika, 2018), leading to yield reductions and heightened disease risks. Nevertheless, research in Kodagu district by Boreaux et al. (2016) shows positive results as evidence of pruning of coffee trees, weeding and shade tree density management is found. Moreover, Bose et al. (2016) emphasizes the uniqueness of the multi-storied coffee agroforestry systems being maintained in the Western Ghats. Other scholars also hail the Indian coffee agroforestry systems for their sustainability.	
Prevailing expert opinion	Low risk: "Between 50% and >75% of farmers in the coffee producing regions use Good Agricultural Practices"; "Coffee Board provides support in adopting good practices. Agronomists of the Board tour the coffee regions regularly to help and to advise" (Expert survey, 2020).	

HARVEST AND POST-HARVEST PRACTICES		JDE Sourcing principle 8.2
Score	3.2	
Law	The Integrated Coffee Development Project by the Coffee Board has as one of its main interventions the support of value addition in the form of improving production, productivity and quality of coffee (USDA, 2017). Coffee growers can also participate in the Rainfall Insurance Scheme which offers compensation for losses due to erratic rainfall.	
Evidence	Coffee produce is largely sold at the farm gate, where there is little incentive for maintaining a high quality (Media, 2018). Only medium and large farmers have their own storage and processing facilities in place and are better able to sell their produce according to market price (Sarette Joylin Dsouza, 2019). Media (2020) are positive about the changing coffee culture in India with the onset of gourmet coffee producers. Reportedly in these estates, beans are handpicked and immediately processed to ensure quality and freshness. Unfortunately, the coffee industry is experiencing an exodus of migrant labor due to Covid-19, exacerbating an already ongoing trend in availability of [skilled] labor (Media, 2020). Deepika (2018) adds to this a custom of hasty selling when prices are attractive to, mostly smallholder, farmers. Beans are hence not sufficiently dried, threatening the quality.	
Prevailing expert opinion	Medium-low risk: "Expert opinion remains contested on the percentage of farmers in the coffee producing regions that implement good harvest and post-harvest practices"; "Although people are broadly aware of good harvest practices, labor availability is a concern. Post-harvest processing is an area of improvement"; "Larger estates generally have facilities in place" (Expert survey, 2020).	

INTEGRATED PEST MANAGEMENT		JDE Sourcing principle 8.3
Score	2.6	
Law	Under the Ministry of Agriculture and Farmers Welfare, the National Research Centre for Integrated Pest Management has as their mission: "Adoption of IPM technologies to reduce the cost of production and minimizing environmental and public health hazards" (ICAR). Their approach includes promotion of IPM, as done in Shivamogga, Karnataka, where knowledge on coffee cultivation and critical inputs including bioagents were distributed.	
Evidence	Coffee in India is grown in agroforestry systems that have a higher ability of pest suppression because of the diversity and abundance of natural enemies of insect pests when compared to sun-exposed monocultures (Chengappa et al., 2017). However, climate change has brought about increased incidence of pests such as the white stem borer. The Coffee Board recommends farmers to uproot infested plants and replant the area, ideally after a gap of three years, though this remains an infeasible solution (Deepika, 2018). Farmers do choose to plant Robusta Coffee, now at 70% of total production, since it has a better pest resistance (Mithöfer, 2018). Through Rainforest Alliance certification, Tata Coffee now ensures good management practices for the ecosystem (Media, 2016).	
Prevailing expert opinion	Low risk: "Between 50% and >75% of farmers in the coffee producing regions apply Integrated Pest Management"; "Pest monitoring is commonplace, and farmers apply non-agrochemical techniques to manage pests, but not everything will be used" (Expert survey, 2020).	

BANNED PESTICIDES		JDE Sourcing principle 8.4
Score	2.8	
Law	In 2005, India ratified the Rotterdam Convention on the Prior Informed Consent Procedure for certain hazardous Chemicals and Pesticides in international trade (UNEP). Media (2018) report the Insecticides Act 1968 is expected to be replaced by proposed Pesticide Management Bill, though recent developments might imply that the ban on 27 harmful insecticides/pesticides is in the process of being watered down (Media, 2020). Several dangerous and toxic insecticides are already banned in India since 2016, including Methyl parathion / parathion-methy, Phorate and Disulfoton. The herbicide Paraquat Dichloride remains legal in India.	
Evidence	Pan India (2017) suggests that it is high time that toxic pesticides are banned across Indian agriculture since it is apparent that innocent farmers and farm workers are getting poisoned. The report on Paraquat Use in India finds that "rules and recommendations for paraquat use are often ignored, that users don't have the required information, nor do they have the means to protect themselves from exposure" (Media, 2015). During Utz audits, multiple non-conformities were found among coffee farms, indicating incidences of use of banned pesticides on coffee farms.	
Prevailing expert opinion	Medium-low risk: "When looking at the country's coffee producing regions, it remains contested whether banned pesticides are still used on farms"; "Used pesticides are usually approved"; "It is very unlikely for certified farms to use banned pesticides. Enforcement is made more difficult as sometimes agrochemicals are sold under a different name e.g. for Paraquat" (Expert survey, 2020).	

INCOME DIVERSIFICATION		JDE Sourcing principle 9.1
Score	2.1	
Law	One of the National Mission for Sustainable Agriculture key dimensions is 'Livelihood Diversification' through for instance integrated farming practices. Moreover, the national mission for Doubling Farmers Income also highlights the role non-farm employment plays (Singh, 2019).	
Evidence	Farmers maintain a multistoried coffee agroforestry system that enables them to produce timber, pepper and other commodities alongside coffee (Bose et al, 2016; Media, 2018; Media 2020). For instance, in Kodagu district, Coorg mandarin, citrus fruits, arecanut and banana can be found interspersed with coffee, as well as vanilla, palm oil and ginger cultivation to supplement income (Chengappa et al, 2017). Fairtrade (2017) also reports a large part of household income to consist of off-farm and in-kind income. The practice of renting out buildings within coffee estates in the form of homestays is becoming more popular (Deepika, 2018). Farmers in Kodagu are somewhat reluctant towards major diversification where labor requirements and high production costs are mentioned. Fruit crops and pisciculture, poultry, piggery, tree-based agriculture, goat keeping, and apiculture are gradually on the rise for sustenance of farmers income (JDE regional insights, 2020).	
Prevailing expert opinion	Medium-high risk: "An estimated 40% to 70% of the farmer's net income is generated from coffee production, with an average estimate of 62.5%"; "Pepper is a major intercrop with coffee in India and is a high value spice. In addition, timber and fruits help supplement income, as well as paddy for the larger estates" (Expert survey, 2020).	