

1 **Forgotten children: A socio-technical systems analysis of the 2004 and 2015 forced child labour**  
2 **reports from Indian cottonseed farms**

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11

12 **Abstract**

13 Using a systems analysis approach, the authors analyse forced child labour incidents in Indian  
14 cottonseed farms in the years 2003/04 and 2014/15, and explores the role played by human  
15 factors in contributing to the illegal use of child labour in the Indian agri-food sector. National  
16 policies on labour welfare and rights are reviewed through the case studies used as a lens to  
17 explore wider issues associated with forced child labour in supply chains. The study highlights  
18 the evolution of organised crime in India with regards to the reliance on forced child labour,  
19 using the four conceptual dimensions of modern slavery established by the UK Home Office in  
20 2017. The study does identify limitations and flaws associated with designing policies based on  
21 a “work-as-imagined” philosophy and demonstrates how the use of maturity modelling can  
22 explore how exploitation, corruption and organised crime is framed and can become more  
23 formalised over time.

## 24        **1. Introduction**

25    Labour standards and welfare of people working in food or textile supply chains is an extrinsic  
26    attribute associated with any product. Forced and trafficked child labour has attracted  
27    significant global attention (Antonopoulos, Shen and Papanicolaou, 2013) due to increasing  
28    consumer interest in appropriate norms and verification measures to ensure that the supply  
29    chain consistently meets expected standards. One such verification measure that consumers rely  
30    on is the United Nations' (UN) 17 Sustainable Development Goals (SDGs) (United Nations  
31    General Assembly, 2015), of which seven have a direct impact on child labour and welfare  
32    standards – (1) no poverty; (2) zero hunger; (3) good health and wellbeing; (4) quality  
33    education; (5) decent work and economic growth; (6) peace and justice strong institutions; and  
34    (7) responsible consumption and production.

35    A significant number of children work within food, textile and feed supply chains in developing  
36    countries (Rena, 2009; Nepal and Nepal, 2012; International Programme on the Elimination of  
37    Child Labour, 2013). Child labour is defined as “work that deprives children (any person under  
38    18) of their childhood, their potential and their dignity, and that is harmful to their physical  
39    and/or mental development” (Hilowitz *et al.*, 2004, p. 16). The very existence of child labour  
40    not only hinders the individual child's educational achievements, but also the quality of the  
41    education system available to children in a particular geography (town/village) (Grimsrud,  
42    2003; Nepal and Nepal, 2012). Child labour refers to work that: is mentally, physically, socially  
43    or morally dangerous and harmful to children; interferes with children's schooling by depriving  
44    them of the opportunity to attend school, obliging them to leave school prematurely, or  
45    requiring them to attempt to combine school work and excessively long and manual forms of  
46    labour (International Labour Organization, 1999, no date; Hilowitz *et al.*, 2004). Hence, in this  
47    definition, it is not the activity [the action], but the effect of the activity on the child [the

48 consequence] that defines child labour, i.e., whether or not the activity impacts the child's health  
49 or their access to education (Grimsrud, 2003).

50 Despite public and private policies to the contrary, national and international reports  
51 and studies identify a wide range of factors contributing to the occurrence of child labour.  
52 Firstly, policies against child trafficking rarely focus on the labour exploitation dimension, i.e.,  
53 although most countries have a legal framework to prosecute (child) labour traffickers,  
54 successfully prosecuting traffickers is quite often difficult to achieve (Smit, 2011). The overall  
55 aim of this paper is to analyse the child labour incidents in Indian cottonseed farms in the years  
56 2003-04 and 2014-15 and explore the contributing factors to the use of child labour in the Indian  
57 agriculture sector and the role of organised crime groups (OCGs) in the illegal use of child  
58 labour. To achieve this, the study has two main objectives:

- 59 1. To apply a systems approach to the 2004 and 2015 reports on the illegal use of child  
60 labour and use the Accimap method of systems analysis to analyse the human and  
61 systemic issues involved in the use of child labour.
- 62 2. To reflect on the similarities and differences in terms of human and systemic factors  
63 that led up to these incidents and shed further light on flaws in private/public policy  
64 adoption in India, the role of OCGs, the appropriate countermeasures to mitigate risk  
65 and potential ways forward to improve public and private policy design in the  
66 agriculture labour sector.

67 The paper is structured as follows: Section 1 provides an introduction and Section 2 gives  
68 more background on organised crime groups and their engagement with child labour. Section  
69 3 provides geographic context in considering child labour issues in India. Section 4 defines the  
70 methodology and section 5 outlines the findings. Section 6 provides the discussion and the  
71 paper closes with the conclusion (Section 7).

## 72        **2. Agricultural labour in India**

73        Being a less economically developed country (LEDC), foreign trade is the centre of India's  
74        growth strategy with a plan for contributing towards 3.5% of the world's exports (Directorate  
75        General of Foreign Trade, 2015). Agriculture contributes to approximately 17.5% of the GDP  
76        (Deshpande, 2017) and 13.6% of total exports (Directorate General of Foreign Trade, 2015).  
77        India's focus on the production of food grains has led to it being a top producer of several crops  
78        such as cotton, wheat, sugarcane, rice, and pulses. In 2013 India accounted for 25% of the total  
79        quantity of cotton produced in the world, and as a result, is the second highest exporter of cotton  
80        (Deshpande, 2017).

81        The agriculture sector not only provides food and raw materials, but also employs nearly half  
82        of the country's workforce (Sharath, 2019). In 2009-10, the agriculture sector employed 53%  
83        of India's total workforce (Labour Employment and Manpower Division, 2011). From the 2016  
84        Farming Statistics report and the 2011 LEM report, it can be inferred that agricultural labourers  
85        are employees who work on other's lands for a portion of the year in return for wages for the  
86        works performed. The 1955 report by the Government of India classified agricultural labourers  
87        into two categories (applicable to-date): (1) attached labourers – labourers who are either  
88        verbally contracted or contracted through writing, to work on other farmer households. These  
89        labourers are not allowed to work on other farms and are contracted to work in both, the homes  
90        and farms of their employers. Attached labourers are usually paid in kind (e.g., accommodation  
91        and food), and there is a higher prevalence of female and child labour under this category than  
92        male . The second category is casual labourers – labourers who are free to work on any farm  
93        upon receiving payment for their work. Casual labourers may include small farmers owning  
94        small land holdings, landless labourers, tenant labourers, and sharecroppers (Government of  
95        India, 1955), that are looking for additional supplementary work.

96 The agricultural labour sector in India is largely unorganised and socio-economically exploited.  
97 This can be witnessed by the government's response to the labour crisis during the first wave  
98 of the recent Covid-19 pandemic. Ghosh (2020) states that the most destructive effect of the  
99 pandemic is not the result of the disease, but the poverty and hunger it has forced millions of  
100 labourers (including agricultural labourers) into as the economy has slowed down across the  
101 country.

102 In recent years, the rural labour market has been undergoing significant changes due to a  
103 structural transformation from reliance on traditional sectors (e.g., informal – agriculture) to  
104 modern sectors (e.g., formal – industrial) (Chand and Srivastava, 2014). Key reasons for  
105 agricultural labour to be looking for work outside the agriculture sector is the low wage rate  
106 and the lack of support (especially for women) from the government (Chand and Srivastava,  
107 2014; Ghosh, 2020). Gulati *et al.* (2013) suggest that schemes such as the *Mahatma Gandhi*  
108 *National Rural Employment Guarantee Scheme (MGNREGS)* have led to issues such as scarcity  
109 and non-availability of hired labour for agricultural operations in India as the focus of such  
110 schemes is to provide employability in formal sectors. Although providing jobs is not  
111 necessarily a negative outcome for the nation's economy, there needs to be a revised scheme in  
112 place that ensures steady flow of resource (including labour) to the agriculture sector.

113 While being a nation that relies on agricultural output, policy makers and legislators have  
114 seldom included the agriculture sector and its labourers in the design of its policies and laws  
115 (Morgan and Olsen, 2015). This has led to the steady weakening of the position for smallholders  
116 and agricultural labourers. Archaic and often confusing laws and national policies (as  
117 highlighted in Table 1) and lack of support for women and child labour has led to a lack of  
118 transparency and accountability within the agricultural labour market, leading to increased  
119 instances of forced labour in the Indian agriculture sector (Morgan and Olsen, 2015).

### 120        **3. Organised Crime Groups and their engagement with child labour**

121        An organised criminal group (OCG) is defined by the United Nations Convention against  
122        Transnational Organized Crime (UNTOC, 2003) as being “a structured group of three or more  
123        persons, existing for a period of time and acting in concert with the aim of committing one or  
124        more serious crimes or offences ... in order to obtain, directly or indirectly, a financial or other  
125        material benefit.” Le (2012) determines that organized crime models in the literature can be  
126        differentiated in terms of those that consider (a) physical structure and mode of operation (b)  
127        those models that focus on illicit activities, economics and enterprise and (c) those models that  
128        consider the historical, cultural and social framing of organised crime or alternatively a  
129        combination of these factors. Some groups operate through historical, cultural, kinship and  
130        ethnic connections (Albanese, 2011; Ianni, 1972; Le 2012); with collective values, language  
131        and modes of operation (Le 2012). Delap (2001) highlights that household poverty and income  
132        instability are factors that influence societies where child work occurs. Child trafficking in itself  
133        is an organised activity with financial payments or foregoing of debts often forming a  
134        transaction in return for the child as a unit of labour (Schrage & Ewing, 2005). Children who  
135        are “trafficked” for forced labour, via intermediaries and agents often known to their families  
136        are “placed” in exploitative situations (Fitzgibbon, 2003). The United Nations (UN) sustainable  
137        development goal (SDG) No.8 is to provide decent work and economic growth for workers all  
138        over the world and SDG No.4 provision of quality education for all children (United Nations  
139        General Assembly, 2015). Studies link better education systems to lower rates of child labour  
140        (Rena, 2009; Venkateswarlu, 2015), so child labour challenges delivery of both SDGs.

141        Hazardous labour standards and forced labour received public attention in 2000, when  
142        a report on child trafficking was published in the UK (Hütz-Adams, 2010). Following public  
143        demands for social responsibility, food businesses (such as Nestlé) invested heavily in  
144        redesigning company policies and signing the Harkin-Engel Protocol in order to prohibit the

145 worst forms of child labour and child trafficking by 2005 (Chocolate Manufacturers  
146 Association, 2001; Hütz-Adams, 2010; Ruehle *et al.*, 2017). Once signed, the agreement  
147 deadline was extended to 2008 then to 2010, questioning commitment to the policy. An  
148 investigation carried out by Tulane University in 2009 highlighted that less than 5% of the  
149 children working in cocoa farms (supplying to Nestlé) had benefited from the agreement  
150 (O’Keefe, 2016). Further, a documentary by Mistrati (2010) titled “The Dark Side of  
151 Chocolate” evidenced continuing existence of child trafficking and forced child labour in cocoa  
152 farms supplying Nestlé (Hütz-Adams, 2010; Mistrati and Romano, 2010). This case illustrates  
153 the dilemmas involved between policy design and regulation enforcement, market promotion  
154 and labour protection, public authority and public opinion and the failings of an inadequately  
155 designed policy drafted by the Chocolate Manufacturers Association (CMA). The sequence of  
156 events which lead to continued child labour despite organisations agreeing to national policies  
157 and implementing their own private policies reveals a contested complex sociotechnical  
158 dynamic. This includes factors in the local work environments, local cultures, organisations and  
159 governments (Hütz-Adams, 2010; Mistrati and Romano, 2010; Ruehle *et al.*, 2017).

160 As well as a lack of vertical interaction (Kirlik, 2011), factors such poverty, inadequate  
161 audits, poor communication between stakeholders, inadequate constraints, and value chain  
162 complexity influences the use of illegal child labour (International Labour Organization, n.d.;  
163 Gayi & Tsowou, 2016; Ruehle *et al.*, 2017; Bureau of International Labor Affairs, 2018) leading  
164 to a negative supply chain culture (Nayak & Waterson, 2016; Pennington, 2009). In India, 40  
165 million children are suggested to be working in conditions where they cannot refuse their labour  
166 and these children are often trafficked or traded (Srivastava, 2019). There have been studies  
167 on organised crime in India but they do not focus on child labour (Sharma, 1999; Charles, 2001;  
168 Martin & Michelutti, 2017). Child labour in India is now considered in more detail.

#### 169        **4. Child Labour in India**

170            There are ambiguities in India in employment terms of what constitutes a “child” and  
171 “adolescence”. The Child Labor Act (1986) dictates that children above the age of 14 can work  
172 in family businesses, but not in hazardous industries. However, the Plantations Labor Act  
173 (1951) simply defines a child as one younger than 15 years. Adolescence is defined as the age  
174 between 15 and 18 in India (Seth, 2013), but between 10 and 19 by the World Health  
175 Organisation (United Nations General Assembly, 1989). This ambiguity creates a policy  
176 challenge when comparing national and international standards and considering in terms of  
177 being *a child* in the Indian context.

178            Child labour influences the local, national and global job market. Non-compliant businesses  
179 prefer hiring child labour as: they are paid lesser than adult labourers or are made to work for  
180 free; are easier to control and bully; are easier to traffic to work illegally; work longer hours;  
181 and are deemed to be protected through the existence of faulty policies (Venkateswarlu, 2004,  
182 2015) i.e. they are easier to exploit. Indeed, poorly designed policies aimed at increasing adult  
183 participation in labour markets can generate greater demand for child labour (Dammert *et al.*,  
184 2018). Utilising child labour reduces adult employment opportunities and associated poverty  
185 drives children, especially girls, being sent to work instead of attending school. Unsafe working  
186 and living conditions for children on farms impedes physical, social and intellectual growth  
187 (Bureau of International Labor Affairs, 2018; Grimsrud, 2003). Further, uneducated children  
188 remain trapped in poverty, and this cycle perpetuates with their children as well (Ruehle *et al.*,  
189 2017), becoming a vicious cycle.

#### 190        **4.1 Regulatory approaches to child labour**

191            The Government of India (GoI) is divided into 52 ministries/departments, including the  
192 Ministry of Agriculture and Farmers’ Welfare (GoI, 2020) which is sub- divided as: the  
193 Department of Agriculture, Cooperation & Farmers’ Welfare (DAC&FW); Department of

194 Agriculture, Research & Education (DARE); and Department of Animal Husbandry, Dairying  
195 & Fisheries (DAHD&F). DAC&FW deals with the development and implementation of  
196 policies related to agriculture and farmers' welfare in India. The administrative head of the  
197 department is the Secretary who is supported by multiple advisors. The DAC&FW has a further  
198 27 divisions of which, the Vigilance Division plays a key role in ensuring compliance with  
199 policies and protocols in a wide array of policies within the agriculture sector. The Division is  
200 involved in: collecting intelligence about corrupt practices committed or likely to be committed  
201 by employees of the department; investigating or initiating an investigation into verifiable  
202 allegations; processing investigation reports for further consideration of the concerned  
203 disciplinary authority; referring matters to the Commission for advice where necessary;  
204 introducing barriers to help prevent improper practices and misconduct; examining audits; and  
205 carrying out inspections from a vigilance perspective. The Vigilance Division works in tandem  
206 with the Central Vigilance Commission (CVC) and the Central Bureau of Investigation (CBI).  
207 (DAC&FW, 2019).

208 Another key ministry within the GoI responsible for child welfare and rights of child  
209 labour is the "Ministry of Labour & Employment". Its main objective is to protect and safeguard  
210 the interests of two types of workers: general labourers; and those who constitute the poor,  
211 deprived and disadvantaged sections of society. Another objective is to promote the labour  
212 force's welfare and social security in both organised and unorganised sectors, in tandem with  
213 the process of labour liberalisation. To achieve these objectives, the department enacts and  
214 implements various labour laws that regulate the terms and conditions of service and  
215 employment for labourers (GoI, 2016).

216 The Constitution of India clearly states that any form of forced labour is prohibited, and  
217 that any contravention of this provision is an offence punishable by law (GoI, 2015). There are  
218 44 labour-related statutes enacted by the "Ministry of Labour & Employment" addressing

219 topics such as: minimum wage; accidental and social security benefits; occupational health and  
220 safety; conditions of employment; disciplinary action; formation of trade unions; and industrial  
221 relations.

222 The work sector in India is divided into two categories: unorganised; and organised.  
223 The unorganised work sector comprises of “all unincorporated private enterprises owned by  
224 individuals or households engaged in the sale and production of goods and services operated  
225 on a proprietary or partnership basis and with less than ten total workers” (Sengupta *et al.*, 2007,  
226 p. 2), of which the agriculture sector is a part. Table 1 highlights statutes enacted by the Central  
227 GoI that are relevant to child labour welfare and rights in the agriculture sector. A survey carried  
228 out by the “National Sample Survey Organization”, India in 2017-18 highlighted that the total  
229 employment in the unorganised sector amounted to approximately 437 million workers, of  
230 which 56.3% worked as labourers in the agriculture sector (National Statistical Office, 2019).

### 231 **Take in Table 1**

232 The “Ministry of Labour & Employment” and the “Vigilance Division” within the  
233 DAC&FW should work in tandem to address labour standards in the agriculture sector, and  
234 farmers/contractors comply with various statutes and policies at a meso (business) and micro  
235 (individual) level. It is the duty of the vigilance officers and labour inspectors to inspect  
236 workplaces relating to conditions of work and protection of workers and provide  
237 feedback/advice on how any non-compliance could be avoided in the future. In addition, they  
238 also must specify if such advised action is simply good practice or a legal obligation. Inspectors  
239 have the authority to inspect records, write informally to correct non-compliance or close a site  
240 due to breach of regulations. In serious cases, inspectors can recommend prosecution of  
241 concerned violators (International Labour Organization, 1947; DAC&FW, 2019).

242 Indian labour welfare public and private policies have considerable design flaws  
243 (Venkateswarlu, 2015; Bureau of International Labor Affairs 2018). Changes in Indian  
244 agriculture and farming policies have coincided with two major institutional changes:  
245 globalisation of the food industry (Nayak and Waterson, 2019); and international trade  
246 liberalisation. Further, economic volatility (International Programme on the Elimination of  
247 Child Labour, 2013); strong competition between transnational and national corporations  
248 (Venkateswarlu, 2004, 2015); a lack of regard for, and non-compliance with, public and private  
249 child labour policies, as well as inadequate reporting/systems, frame exploitation of child labour  
250 in agri-food value chains.

251 Additionally, policy makers have an idealistic view of formal tasks leading to a disregard of the  
252 need to adjust work to match the constantly evolving conditions of work. This leads to the  
253 design of policies based a “work-as-imagined” philosophy – this philosophy describes what  
254 *should be happening* under normal working conditions. This philosophy is based on the success  
255 of ‘Taylor’s Principles’ as described in the monograph, *Scientific Management Theory* (Taylor,  
256 1911) which prescribes to a detailed breakdown of tasks and activities to improve work  
257 efficiency. Safety and welfare were not considered as issues in the monograph. However, it is  
258 important for policy makers to design policies based on how work unfolds over time under the  
259 pressures of the environment, i.e., a “work-as-done” philosophy (Hollnagel *et al.*, 2013).  
260 Intractable work environments and pressures of globalisation (Aas, 2007; Nayak and Waterson,  
261 2019) have made it difficult for there to be alignment between “work-as-done” and “work-as-  
262 imagined”. Policies (including labour policies) which are designed a “work-as-done”  
263 philosophy are of reflective flexible and adaptive systems (Eurocontrol, 2013). Such systems  
264 allow stakeholders to work around the everyday challenges that they face, while ensuring their  
265 welfare and safety.

## 266 *4.2 Summary*

267 The global consumer base that the Indian agriculture sector supplies are sensitive to issues  
268 such as modern-day slavery and the employment of child labour on farms. However, multi-  
269 level regulations, core disputes about public agricultural and labour policies, and the shifting  
270 balance between various public and private policies are multiple issues where flaws in Indian  
271 food and agricultural policies seem evident. Although labour welfare and rights is an important  
272 and a highly salient policy arena, it has been brought into sharp relief in modern-day India  
273 (Hilowitz et al., 2004; League of Arab States et al., 2019; Seth, 2013; Srivastava, 2019;  
274 Venkateswarlu, 2015). Despite the design of policies that prescribe to an ethical approach of  
275 “work-as-imagined” by stakeholders (government, business, non-governmental organisations  
276 (NGOs) etc.) who are not involved in the day-to-day functioning of the Indian agriculture  
277 sector, there is an ethical and operational conflict as these stakeholders may not understand or  
278 observe the reality of “work-as-done”. Reports on the 2003-04 and 2014-15 child labour  
279 occurrences in Indian cottonseed farms show weak regard not only for the International Labour  
280 Organisation’s (ILO) policy on child labour; but also the Indian regulation and policy on  
281 employing child labour (Child and Adolescent Labour (Prohibition and Regulation) Act, 1986<sup>1</sup>)  
282 and owning large pieces of land (Urban Land (Ceiling and Regulation) Act, 1976<sup>2</sup>)  
283 (Venkateswarlu, 2004a, 2004b, 2015). The 2004 study reported that 67.2% of the labourers on  
284 cottonseed farms in Gujarat (GJ)<sup>3</sup> were aged between 8 and 18. In comparison, the 2015 study  
285 reported 52.7% of labourers on cottonseed farms in GJ were between the ages of 8 and 18  
286 (Venkateswarlu, 2015). The use of child labour in this context presents an opportunity for  
287 labour exploitation and supply chain corruption worthy of further investigation.

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<sup>1</sup> Amended as the CLPR Act, 2016.

<sup>2</sup> Repealed in various states in India.

<sup>3</sup> Gujarat is a state on the western coast of India.

## 288       **5. Methodology**

### 289       **5.1. The Accimap approach**

290       The Accimap approach (Rasmussen, 1997) is used in this study to analyse reported incidents  
291 of child labour. This approach involves the construction of a multi-layered graphical  
292 representation in which the causes of the incidents are arranged according to their causal  
293 remoteness from the outcome (Branford, Naikar and Hopkins, 2009). Accimaps adopt a control-  
294 theory based approach to incident analysis within the context of a socio-technical system  
295 (Rasmussen, 1997; Svedung and Rasmussen, 2002). According to this theory, accidents are a  
296 result of unexpected, uncontrolled relationships between a system's constituent parts where  
297 systems are analysed as whole entities instead of considering them as various parts in isolation  
298 (Underwood and Waterson, 2014; Nayak and Waterson, 2016b). Stakeholders of a complex  
299 system interact with a range of factors in their environment, which eventually influences the  
300 way they behave. The Accimap method has been used previously to analyse individual  
301 accidents such as the Überlingen mid-air collision (Branford, 2011) and the 1996 and 2005  
302 *E.coli* outbreaks in the UK (Nayak and Waterson, 2016b). All work situations leave varying  
303 degrees of freedom to the actors so they have the ability to choose the means and times of action  
304 even when there is a set of instructions or policies in place to follow (Rasmussen, 1997).

305       The agriculture sector consists of transnational as well as local businesses, and farms – both of  
306 which are required to have private policies and standard operating procedures in place for every  
307 task – this helps achieve maximum efficiency and makes stakeholders responsible for their  
308 actions. However, failure to follow regulations and policies to the letter leads to the occurrence  
309 of negative events (Hollnagel, 2014). The Accimap model for food systems highlighted in  
310 Figure 1 depicts the control of sociotechnical systems over six basic systemic levels:

- 311       • *Level 1 - Government level:* Laws and public policies are developed to control the  
312       practice of illegal labour practices.

- 313 • *Level 2 - Regulatory bodies and associations:* Legislation and public policies are  
314 adapted at the local ministerial and non-ministerial enforcement body level into industry  
315 rules and guidelines.
- 316 • *Level 3 - Organisational level:* Regulatory body rules and public policies are translated  
317 into private policies. Organisational protocols and governance structures are organised  
318 according to these policies.
- 319 • *Level 4 - Management level:* Management ensures that the organisation’s policy is  
320 implemented, and that there is a high level of compliance with the policies and  
321 protocols. In this study management includes large farm owners and middle-men who  
322 supply labour and contracts to farmers.
- 323 • *Level 5 - Labour level:* The labour in the case of this study are tribal and migrant  
324 labourers who are brought to work seasonally on cotton farms, or are made to work on  
325 their own loaned-farms as subsistence farmers.
- 326 • *Level 6 - Work, equipment and the environment:* The organisation and farm’s protocols  
327 are performed in these environments by labourers. Policies and regulations are  
328 applicable at every element within this level.

329 **Take in Figure 1**

330 There are several advantages of adopting the Accimap approach. By making use of graphical  
331 representation, the Accimap approach provides the context for gaining a comprehensive  
332 understanding of how and why an incident occurred (Branford, Naikar and Hopkins, 2009).  
333 The graphical representation helps analysts compile large amounts of information into one  
334 comprehensive diagram by highlighting the multiple causal factors leading to negative events  
335 (Jenkins *et al.*, 2010; Nayak and Waterson, 2016a). The Accimap approach aids analysts and  
336 incident investigators uncover a diverse set of ‘negative incident enabling’ factors across the  
337 system. This approach highlights that immediate causes of events (e.g., human errors) are the

338 result of *higher level factors*, thereby, promoting Reason's (2000) systems approach. This  
339 approach not only identifies the root cause that led to the incident, but also progressively  
340 identifies the causes of each of the factors. By doing so, the Accimap approach helps to identify  
341 the decisions, events and conditions that created the environment in which the incident occurred  
342 (Branford, 2011). Links between causal factors also helps analysts and investigators evaluate  
343 complex interactions between various factors, and design holistic interventions with the  
344 potential to have an impact across the entire system under investigation. The term causal factors  
345 is used by Branford and so for accuracy has been used in this paper. The term causal is used in  
346 the context of being a necessary or contributory factor of influence in a given accident or  
347 incident but not to imply causality (Branford et al., 2009).

## 348 **5.2. Construction of Accimaps**

349 The steps for Accimap analyses in this study were adapted from the Branford *et al.* (2009,  
350 pp.205-212). The Accimap analyses of the incidents were performed by the first author. The  
351 analyses and their interpretive findings were then reviewed by the second author. While both  
352 individuals are food policy researchers, the first researcher has experience in applying human  
353 factors methods to complex sociotechnical systems, and the second researcher has experience  
354 of applying socio-economic and cultural theory in agri-food supply chains. Upon completion  
355 of the analyses, the researchers exchanged and reviewed outputs, and any anomalies were  
356 resolved through discussion until a consensus was reached in a similar to the approach described  
357 in Underwood and Waterson (2014). In addition to the standardised approach prescribed by  
358 Branford *et al.* (2009), the modified classification of causal factors recommended by Nayak  
359 and Waterson (2016) was used i.e., causal factors were classified as “pre-conditions”, “direct  
360 causes”, “indirect causes”, “complex causes”, and “outcomes.” Preconditions are events which  
361 either lead to a direct or an indirect cause, but are not causes themselves; direct causes are  
362 serious events, which if avoided, would have completely prevented an outcome; indirect causes

363 do not have a straightforward role to play in the consequent outcome, i.e., other causes also  
364 contribute to the same outcome; and finally, a complex cause indicates that a cause can be  
365 classified as direct as well as indirect as it has had multiple roles to play in the occurrence of a  
366 given negative incident e.g. use of illegal child labour.

367 An in-depth review of The India Committee of the Netherlands reports from 2004 and 2015  
368 was carried out independently by both authors utilising the following approach: construction of  
369 a timeline of the events involved in the child labour incidents; identifying causal factors that  
370 led to the incidents; identification of the human factors of influence; and considering the  
371 systemic levels at which the human factors have influence (see Figure 1). Table 2 highlights  
372 the coding used to construct the Accimap and the resulting Accimaps are presented in Figures  
373 2 and 3.

#### 374 **Take in Table 2**

375 Implications of the Accimaps developed in this research are presented under subheadings  
376 adapted from the conceptual dimensions stated in Cooper *et al.* (2017): recruitment; profit;  
377 organisation; and control. Table 3 provides an overview of the four conceptual dimensions,  
378 their sub-factors and the maturity stages of each of the dimensions in the 2003/04 and 2014/15  
379 illegal child labour incidents.

#### 380 **Take in Table 3**

381 Tables 4 and 5 describe in detail the causal factors identified in Figures 2 and 3 respectively. A  
382 comparison of the similarities and differences between the two incidents is provided in the  
383 discussion in this paper along with a detailed analysis of the inadequacies of current and past  
384 labour policy design in India to provide recommendations for policy.

385 **6. Findings**

386 Results are considered in terms of each report (Venkateswarlu, 2004; 2015) and findings are  
387 highlighted singularly and then compared in Section 6. The maturity of various causal factors  
388 for both incidents are highlighted in detail in Table 3.

389 **6.1. The 2003/04 Gujarat child labour incidents**

390 Children were used in highly labour-intensive plantations to carry out cross pollination, vital in  
391 cottonseed production, accounting for approximately 90% of total labour required, and 45% of  
392 cultivation costs (Venkateswarlu, 2004). Most farmers relied on hired labour for carrying out  
393 daily activities (86.5%), 82.5% being migrant labourers belonging to communities from GJ and  
394 Rajasthan and family labour less than 10% of the total. Workers came to find work in GJ due  
395 to perennial droughts in Rajasthan. Out of the total hired labour force, two thirds of those  
396 working in cottonseed farms were between the ages of 8 and 18; children below the age of 14  
397 accounting for 34.9% of the total labour force. The number of girls working was higher than  
398 the number of boys (60.9% and 39.1% respectively) as farmers preferred girl children due to  
399 their “delicate fingers (nimble fingers)” (Assan & Hill, 2011; Singh, 2017; Venkateswarlu,  
400 2015, p. 9). The rate of pay was between £0.27 and £0.43 per day. The rate of pay for child  
401 labour being at the lower end of the spectrum and paid directly to their parents. These findings  
402 are consistent with a study on Asian children working as hidden labour in lesser developed  
403 areas (Webbink *et al.*, 2012).

404 **Take in Figure 2 and Table 4**

405 The Accimap analysis is presented in Figure 2. Events such as ‘families of migrant labourers  
406 forcing their children to work’ arising from the ‘promise of additional wages’, acted as  
407 reference points to begin analysis at the ‘operational management’ and ‘organisational’ levels.  
408 The causal factors show gradual deterioration and failure at various points across the value

409 chain. Factors were assimilated in order to analyse individual factors, factors within a system,  
410 and the interactions between various factors throughout the whole system (Nayak and  
411 Waterson, 2016b). Iterative analysis meant that the Rasmussen's 1997 model was further  
412 divided into two sub-levels at the 'operational management' level – farmers and middle-  
413 men/labour contractors. Sixteen causal factors (one indirect factor - access to limited resources  
414 for farmers) were identified across the operational management level, the most for any level in  
415 the Accimap.

### 416 ***6.1.1. Recruitment***

417 The Accimap reveals that illegal use of child labour was not an outcome of individual non-  
418 compliances with public and private policies or the inadequacies of public policies alone, but  
419 was instead attributable to an accumulation of major factors across multiple systemic levels  
420 such as the government's commitment to export, and market demand for illegally produced GM  
421 crops. Of all the causal factors identified, 8.7% were recruitment-related factors. Four causal  
422 factors were attributable to the recruitment of forced child labour through coercion and deceit.  
423 These factors were located primarily within the 'operational management' level; three factors  
424 identified at 'middle-men providing labour' level, while only one factor was identified at the  
425 'labourers' level. No other recruitment-related causal factors were identified in the 2003/04  
426 incident.

### 427 ***6.1.2 Profiteering***

428 Of the causal factors, 26.1% were profiteering-related. Twelve causal factors located across the  
429 sociotechnical system were attributable to stakeholders' need for profit. While only one of these  
430 factors was at the 'Central Government' level, two were at the 'State Government' level, and  
431 three at the 'organisational' level. Five causal factors were identified across the 'operational  
432 management' levels; four at the 'farm' level, and one at the 'middle-men providing labour'

433 level. One factor, which can also be classified as an outcome, was attributable to the ‘labourers’  
434 level.

435 At the government levels (Central and State), 25% of causal factors were linked to the need for  
436 the nation to generate profits. Out of a total of 12 factors across the two government levels, only  
437 50% had been identified in the 2004 report, the remaining 50% (marked as orange boxes) had  
438 to be inferred from other reports (as these were gaps identified through the Accimap analysis),  
439 while 75% of the identified factors were categorised as indirect causal factors. Causal factors,  
440 that could not be classified into one of the four conceptual dimensions of forced labour, were  
441 identified as indirect causes. The missing causal factors were mostly linked to the quality of  
442 inspections by government inspectors (failure to audit labour agreements, farms and public  
443 schools; inadequate and poor quality of public schools). Another indirect causal factor linked  
444 to profiteering was the reallocation of budgets due to monetary restraints at the ‘State  
445 government’ level. The other indirect causal factors identified at the government levels (open  
446 competition between states; the Indian Ceiling Act; and inadequate policies) were mentioned  
447 in the 2004 report as distant causes that could have played a minor contextual role.

448 At the ‘organisational’ level 43% of factors such as demand for illegally produced GM hybrids  
449 and relocation of business to GJ were attributable to the drive for profits, 28.5% associated with  
450 OCGs connected to child labour, while a further 28.5% such as dependency on local labour;  
451 were classified as indirect causes. 31% of the factors e.g. illegal production of GM hybrids and  
452 reliance on migrant labour identified at the ‘operational management’ level were linked to  
453 profiteering, with a majority (80%) at the ‘farming operational management’ level.

### 454 ***6.1.3 Organisation of criminal activity***

455 Of the causal factors identified, 10.9% were organised criminality-related. Four causal factors  
456 were attributable to the involvement of OCGs in child labour exploitation focussed across the

457 'organisational' and 'operational management' (at the farm) levels. Casual factors at the  
458 organisational level such as agreements with middle-men for hiring farmers were attributable  
459 to exploitation while only 12.5% of the factors (need for assured supply of labour; and advanced  
460 agreements with labour contractors) were at the 'operational management' farmer level.

#### 461 ***6.1.4 Control and coercion***

462 Around one fifth (19.6%) of causal factors were control-related. Nine causal factors were  
463 attributable to stakeholders' need to control and labour exploitation. Five causal factors were  
464 located across the 'operational management' levels: (one 'farm' level, and four 'middle-men  
465 providing labour' level); and four causal factors were attributable to the 'labourers' level  
466 (unregulated working hours; signed generic contracts; sleeping with farm equipment; and no  
467 holidays) highlighting failings across the system. The 'labourers' level is similar to the  
468 'outcomes' level in Rasmussen's 1997 model. It has been reworded for the purposes of this  
469 research as all the final negative outcomes were present at this level. Out of the nine outcomes  
470 identified, 44% of the outcomes were control-related, one outcome (families force children to  
471 work) was OCG related, another (regular absences from school) was recruitment related, and  
472 one outcome (illegal use of child labour), profit related. The remaining two outcomes (illiteracy;  
473 and no access to own homes) could not be classified into any of the conceptual dimensions of  
474 forced labour.

#### 475 ***6.2. The 2014/15 Gujarat child labour incidents***

476 The 2015 report on child labour incidents in GJ was an outcome of media as well as multiple  
477 international reports on the continual use of child labour in cottonseed farms in India, and the  
478 poor work conditions they work in. The report was produced as an outcome of a collaborative  
479 project between: an independent NGO, "The Indian Committee of Netherlands"; a coalition,  
480 "Stop Child Labour"; and a multi-disciplinary research and consultancy service, "Global  
481 Research". The following details about the incident are adapted from Venkateswarlu (2015).

482 The research highlighted that children under the age of 14 accounted for 25% of the total  
483 workforce in cottonseed farms in India in 2014/15. As in 2003/04, GJ was the country's largest  
484 regional producer of cottonseeds and employed 110,000 children (55% of India's child labour  
485 on cottonseed farms). The number of children (ages 15-18) working on such farms in GJ was  
486 281,200, which was an increase of nearly a half from the number in 2006/07. The report  
487 highlighted that cross-pollinators were paid between 6.6% and 16.6% below the national  
488 minimum wage in GJ. In addition to working long hours, children working in cottonseed fields  
489 were exposed to pesticides which were used in high quantities in cottonseed cultivation.  
490 Venkateswarlu (2015) highlights that the governments of GJ (where children were trafficked  
491 to) and Rajasthan (where children were trafficked from) were in denial about the existence of,  
492 and increase in, labour exploitation (between 55% and 58% of the total child workforce in GJ  
493 were truant from school). Dropping out of school to migrate with families in search of work is  
494 a major survival strategy for many impoverished families in India (Roy *et al.*, 2015). Despite  
495 widespread acknowledgement within the seed industry about the existence and exploitation of  
496 child labour, only a few multinationals and local seed companies had taken efforts, through  
497 private policies, to help eradicate child labour. The Accimap resulting from the review is  
498 presented in Figure 3.

499 **Take in Figure 3 and Table 5**

500 Events such as 'subsistence farmers, funded by seed companies, forcing their children to work'  
501 acted as reference points to begin analysis at the 'labourers' and 'organisational' levels. Similar  
502 to the analysis carried out in Section 4.1, this analysis highlighted the impact of a complex set  
503 of interactions between multiple causal factors distributed across systemic levels leading to the  
504 illegal use of child labour in 2014/15 in GJ. The analysis presented in Figure 3 underlines  
505 failures at multiple points. Here the farmers' level also consisted of additional stakeholders in  
506 the form of local seed producers whose actions caused negative impacts on labourers and their

507 families. Fourteen causal factors were identified across the operational management levels. One  
508 indirect factor was identified at this level. A key difference between the Accimaps resulting  
509 from both the analyses is that while the 2003/04 incidents had a majority of profiteering-related  
510 factors, OCG activity was the most recurring causal factor in the 2014/15 illegal child labour  
511 incidents.

### 512 ***6.2.1 Organisation of criminal activity***

513 The Accimap (Figure 3) reveals that the illegal use of child labour was not just an outcome of  
514 individual non-compliances with public and private policies or the inadequacies of public  
515 policies alone, but was instead attributable to an accumulation of events. These included the  
516 state government's denial of the existence of child labour; intentional miscommunication about  
517 the role of child labour by organisations and the state government; trafficking of migrants; and  
518 the lack of duty of care for labourers' families. Of all the causal factors identified, 30.8% were  
519 attributable to illicit activities. These factors were distributed across the 'Central Government',  
520 'State Government', 'organisational', and 'operational management' (labour middle-men)  
521 levels. 62.5% of the factors at the 'State Government' level were attributable to OCG activity,  
522 while only one factor (inadequately designed national policies) at the 'Central Government'  
523 level was associated with the presence of organised crime. The common theme across both  
524 government levels was the inadequacy of public policies and a lack of commitment to eliminate  
525 child labour creating a compromised environment where organised crime could flourish (Shaw,  
526 2019). Intentional miscommunication was a causal factor at both, the 'State Government' as  
527 well as the 'Organisational' levels; both stakeholders intentionally and falsely reported that  
528 children working on family-run subsistence farms to help their parents either during school  
529 holidays or around school hours. Furthermore, seed companies also made false promises  
530 regarding the design of detailed private policies to help eliminate child labour in India. In  
531 comparison to the other levels, only 21.4% of the factors at the 'operational management' levels

532 were attributable to organised exploitative behaviour and all of these factors were identified at  
533 the labour middle-men level. At the ‘farmers and local seed producers’ (operational  
534 management) level, control and coercion were the predominant causal factors. One outcome at  
535 the ‘labourers’ level was as identified as a form of highly organised OCG activity. Arslan (2020)  
536 argues that power inequality is the foundation for such labour exploitation driven by distance  
537 (especially for migrant workers), profiteering and oppression.

### 538 **6.2.2 Profiteering**

539 Similar to the 2004 report, only one causal factor (33.3%) attributable to profiteering was  
540 identified at the ‘Central Government’ level. However, unlike the 2004 report, one profiteering-  
541 related causal factor (16.7%) was also found at the ‘external’ level. Around a quarter (23.1%)  
542 of the causal factors identified in the 2015 illegal child labour report were attributable to  
543 profiteering and were located all across the sociotechnical system. At the ‘State Government’  
544 level there was one causal factor attributable to profiteering. A further two causal factors were  
545 identified at the ‘organisational’ level. Around a third of causal factors (35.7%) attributable to  
546 profiteering were identified at the ‘operational management’ levels: one at ‘farmers/local seed  
547 producers’ level, while three were located at the ‘labour middle-men’ level. A further three  
548 outcomes (20%) identified at the ‘labourers’ levels were also profit-related.

### 549 **6.2.3 Control and coercion**

550 Of the causal factors, 12.8% were attributable to control and coercion. One control-related  
551 causal factor (12.5%) was at the ‘organisational’ level; four causal factors (35.7%) at the  
552 ‘operational management’ levels; (two at the ‘farmers/local seed producers’ level, and two at  
553 the ‘labour middle-men’ level). A further third of outcomes at the ‘labourers’ level were related  
554 to control and coercion. Subsistence farming as a causal factor was unique to the 2014/15 child  
555 labour incidents where organisations (seed companies) relocated to specific areas to avoid  
556 constant media attention related to child labour as well as loaning farmland to subsistence

557 farmers. Further, local seed producers also loaned out seeds to subsistence farmers with loan  
558 agreements that included high interest rates and repayment schemes in the form of product and  
559 monetary outputs. Subsistence farmers in-turn had to over-rely on their family (including  
560 children) to meet loan terms and produce the desired output. These show examples of supply  
561 chain oppression (Arslan, 2020).

#### 562 **6.2.4 Recruitment**

563 In the 2014/15 illegal child labour incidents in GJ, only one causal factor (2.5%) was  
564 attributable to recruitment, and it was located at the ‘labour middle-men’ (within the  
565 ‘operational management’) level. However, three (20%) of the outcomes at the ‘labourers’ level  
566 were recruitment-related. Unlike the 2003/04 child labour incidents, causal factors attributable  
567 to recruitment in the 2014/15 child labour incidents were mostly focussed at the ‘labourers’  
568 level.

### 569 **7. Discussion**

570 A range of stakeholders play a role in ensuring that the agri-food value chain is compliant with  
571 the ILO’s policy on child labour (*C182 - Worst Forms of Child Labour Convention, 1999 (No.*  
572 *182)*). Stakeholders of interest here include central and local governments; regulators; senior  
573 leaders, board of directors and managers of transnational, national and local businesses;  
574 farmers; middle-men such as labour suppliers; and labourers. Human factors and by extension,  
575 a systems approach, emphasizes interactions between people and their environment, and its  
576 effect on performance, compliance, degree of safety, quality of work life, services offered, and  
577 the means adopted to offer services and products (Carayon *et al.*, 2006). The importance of  
578 considering social constructs and interactions between the various elements of complex systems  
579 while designing policies has also been recommended in the healthcare, political, nuclear and  
580 transportation sectors (Branford, 2011; Holden et al., 2013; Nayak & Waterson, 2016;  
581 Schneider & Sidney, 2009). Although policies and guidelines are important in developing

582 normative standards, designing a large number of guidelines from multiple sources makes it  
583 impossible for stakeholders to comply with them (Carthey et al., 2011). The use of Accimap  
584 analysis in this case study has shown the complexity of the causal factors leading to multiple  
585 negative outcomes associated with child labour. Similar to the 2003/04 child labour incidents,  
586 the causal factors in 2014/15 were linked in linear and downstream patterns. However, the  
587 complexity of the factors in the 2014/15 incidents was much greater. The analysis has not only  
588 highlighted multiple factors lead to the illegal use of child labour between 2014 and 2015, but  
589 also the presence of multiple secondary negative outcomes. These include lack of knowledge;  
590 unregulated working hours; increased rates of poverty; violation of national and international  
591 conventions; no provision of holidays; and non-functioning Workers' Unions. Although these  
592 outcomes indirectly lead to the illegal use of child labour, they also have a bigger role in either  
593 leading to the overall failure of the system, and also public and private policies meant to protect  
594 labour and child welfare and rights.

595 The Accimap analysis further establishes that although multiple public and private policies  
596 were designed as reactive measures post the 2003/04 child labour incidents, not only did illegal  
597 child labour continue, but also that the system and its stakeholders adapted their illegal activities  
598 around the findings of the 2004 report. For example, seed companies relocated to remote areas  
599 potentially to: avoid media and NGO attention; and bind tribal and poverty-stricken labourers  
600 into subsistence farming in return for cheap and bonded labour. This is an example of supply  
601 chain oppression and labour exploitation underpinned by an organised approach to the use of  
602 child labour. Le (2012) determines that organized crime models have a physical structure and  
603 mode of operation that focus on illicit activities, economics and enterprise and they are framed  
604 by cultural and social factors. It is reported that seed companies exploited poverty-stricken  
605 households that relied heavily on child labour (Dammert *et al.*, 2018). Whilst governments, and

606 seed companies designed multiple anti-trafficking policies (based on ‘work-as-imagined’), in  
607 reality there were poor rates of compliance (with regards to work-as-done).

### 608 **7.1. Comparing the maturity of the child labour incidents**

609 In order to conceptualise the findings of this study, maturity models (Figures 4 and 5) have been  
610 developed based on the findings from the Accimaps (Figures 2 and 3), and the dimensions of  
611 modern slavery (Cooper *et al.*, 2017). The four dimensions of modern slavery are in the inner-  
612 most circle, while the penultimate circle highlights the maturity descriptors for each of the  
613 dimensions. Each dimension is represented by a different colour: recruitment (orange); control  
614 and coercion (yellow); organisation of criminal activity (blue); and profiteering (green). The  
615 outermost circle illustrates the number of causal factors and outcomes identified at each of the  
616 systemic levels, this is then categorised into the relevant maturity stages. The higher the number  
617 of causal factors and outcomes under each maturity descriptor, the larger the rectangle for each  
618 systemic level in the outermost circle.

#### 619 **Take in Figures 4 and 5**

620 The maturity of both complex systems shows recruitment was between *victims approaching*  
621 *offenders to offenders targeting very vulnerable victims*; profiteering occurs between *limited*  
622 *financial gain to running like a business*; OCG activity sits between *minimal organisational to*  
623 *highly organised criminal activity*; and control and coercion lies between *threats and*  
624 *occasional violence to social isolation* with the exception of *substance-related coercion*.  
625 Overall, the cottonseed sector in GJ had matured between 2003 and 2015 with regards to the  
626 level of maturity of exploitation and corruption, a cause for concern.

627 The causal factors associated with the 2003/04 illegal child labour incidents appear more  
628 opportunistic and less coordinated in terms of criminal activity (Manning, Smith & Soon, 2016)  
629 when compared to the 2014/15 illegal child labour incidents. Stakeholders designed policy

630 based on national and international regulations and conventions (legally compliant) without  
631 necessarily seeing how to operationalise them in real-world scenarios where it was impractical  
632 to implement or inactivate. The 2014/15 illegal child labour incidents, as has been shown in  
633 this paper, had an even distribution of causal factors and outcomes between two maturity stages:  
634 (1) limited financial gain; and (2) run like a business. Much like the longitudinal study by  
635 Levison *et al.* (2007), farm operators preferred child labour over adult labour for the reasons  
636 outlined previously in the paper. The pressure to be profitable starts high up the hierarchical  
637 value chain and creates a systematic interaction of influencers that directly, or indirectly,  
638 promotes the use of child labour to increase profit and return. Additionally, limited financial  
639 resources at the organisational level also enabled the reliance on child labour. India being a  
640 Less Economically Developed Country (LEDC) focusses on income generation via export of  
641 goods (United Nations, 2014). Thus, Central Government is committed to export, leading to a  
642 public policy agenda of open competition between states to attract businesses. Consequently,  
643 GJ, among other states, sanctioned large areas of land for cottonseed production at low  
644 production costs. Financial constraints in LEDCs also have a negative impact on labour rights  
645 laws and policies (Blanton, Blanton and Peksen, 2015). Coercion and control took the forms of  
646 emotional control and social isolation. Working long hours in isolated locations perpetuates  
647 these forms of control as does the absence of a functional workers' union resulting in limited  
648 abilities to protect rights, and create fairer work environments (Tyler, 2015).

649 When child exploitation is identified, the focus is on establishing the root cause and redesigning  
650 normative standards in public and private policies. However, it is important to note that root  
651 cause analysis alone and the reactive processes associated with it will not address system level  
652 faults in socio-political economies (Lebaron *et al.*, 2018). In order to design effective policies  
653 that are based on a 'work as done' philosophy (Hollnagel, 2014) it is the important to assess  
654 agri-food value chains and the associated regulatory framing as a whole and in a holistic,

655 proactive manner. A better understanding of the mediating role of stakeholder attitudes in global  
656 food supply chains is needed alongside discrete audit tools to assess labour welfare in  
657 agriculture value chains. As a result of situational and organisational factors such as time  
658 pressure, availability of resources, workload, incentives/motivation and competition,  
659 stakeholders demonstrate varying degrees of policy compliance in complex sociotechnical  
660 systems (Bates & Holroyd, 2012; Manning et al. 2017; Humaidi & Balakrishnan, 2018). As has  
661 been shown in these case studies, external influences such as political and financial factors  
662 destabilise these systems leading to adaption and change. Maintaining control and delivering  
663 compliance during continual changes is thus a dynamic process involving the entire  
664 sociotechnical system (Svedung and Rasmussen, 2002).

665 The study highlights the impact of human interactions with their internal and external  
666 environments. The findings suggest that it is vital to analyse human, organisational and  
667 government factors leading to the use of illegal and forced child labour from a systems lens  
668 while designing public and private policies. Adopting such an approach helps to identify the  
669 multiple causal factors and gain an in-depth insight into the functioning of agri-food value  
670 chains. A strong ‘compliance and vigilance’ culture combining system standards, audits, legal  
671 actions, formation of vigilance committees and strengthening of grievance committees is  
672 needed to reduce and eliminate the illegal practices and child labour incidents (Mishra, 2001;  
673 Skrivankova, 2014). However, whether a strict “citizenship oriented” model of regulatory  
674 compliance (Feldman, 2011) would be a plausible and reliable approach in maintaining  
675 compliance by stakeholders amidst multiple socio-political pressures across hierarchical levels  
676 is still open to debate.

## 677 **8. Conclusion**

678 Systematic analysis of the 2003/04 and 2014/15 illegal child labour incidents and comparison  
679 with Rasmussen’s framework highlights the complexity of causal factors and the importance of

680 designing relevant policies based on ‘work-as-done’ rather than ‘work-as-imagined’ when  
681 developing public and private normative standards especially where there is a motive to protect  
682 multi-stakeholder self-interest in the exploitation of child labour. Non-compliance with  
683 normative standards with a focus on generating profit, was a major issue identified at the  
684 operational management and organisational levels. This combined with a lack of opacity,  
685 transparency, and integrity within the governance of labour supply chain across government,  
686 organisational and operational management levels. Indeed, external factors such as commercial  
687 pressures and NGOs focussing on different State Governments and locations put the entire  
688 system in the state of GJ under greater pressure, leading to wider exploitation. A lack of  
689 positively orientated shared values, attitudes, perceptions and behaviours of stakeholders  
690 combined with a lack of motivation to protect labour standards at the level of “work as done”  
691 means such exploitative practices will continue, even proliferate. The work described in this  
692 paper describes one methodological approach to assessing this issue, however, more empirical  
693 research needs to be carried out in this field of enquiry. The authors also acknowledge that the  
694 methodology adopted in this paper has several limitations, one of which is the dangers  
695 associated with hindsight bias, which is the tendency to exaggerate the predictability of  
696 outcomes after they have become known (Fessel, Epstude and Roese, 2009). Knowing the  
697 outcome of events can distort any predictive judgements made on historic data and, the authors  
698 have been careful to not make any such predictions in the paper. The study does identify  
699 limitations and flaws associated with designing policies based on a “work-as-imagined”  
700 philosophy and demonstrates how the use of maturity modelling can explore how exploitation,  
701 corruption and organised crime is framed, and becomes more formalised over time.

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938

939 **Table 1: Statutes within the Constitution of India that are designed to protect child labour and their welfare**

940 Adapted from Department of Agriculture, Cooperation & Farmers Welfare (2020)

<b>Act</b>	<b>Objective</b>
The Payment of Wages Act, 1936	Avoid unnecessary delay in payment of wages, and prevent unauthorised deductions from wages (Government of India, 1936).
The Employees State Insurance Act, 1948	Provide details regarding self-financing social security and health insurance for Indian workers (Employees' State Insurance Corporation, 1948).
The Minimum Wages Act, 1948	Indian labour law that sets the minimum living wage for skilled and unskilled labourers (Government of India, 1948).
The Contract Labour (Regulation and Abolition) Act, 1970	Prevent exploitation of contract labour and introduce better conditions of work. Contract labour hired through a contractor (middle-man) is considered to be 'indirect employees (Government of India, 1970).
The Bonded Labour System (Abolition) Act, 1976	Prohibit the practice of forced labour and human trafficking (Government of India, 1976a).
The Equal Remuneration Act, 1976	Payment of equal rates of remuneration to men and women workers (Government of India, 1976b).
The Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979	Regulate the condition of service of inter-state labourers and protect workers whose services are required outside their native states in India (Government of India, 1979).
The Child Labour (Prohibition and Regulation) Act, 1986	Detailed regulations and guidance regarding working conditions and requirements (number of hours, health and safety requirements, log books, holiday entitlement) for children under 15 in certain employment fields (Government of India, 1986).
The Unorganised Workers Social Security Act, 2008	Provides social security and welfare to workers of the unorganised sectors, i.e., daily-wage workers, self-employed workers or home-based workers) (Ministry of Law and Justice, 2008).

941

942 **Table 2: Steps used to construct the Accimaps**

943 Adapted from Branford *et al.* (2009)

<b>Step number</b>	<b>Details</b>
1	Large sheet of paper divided into multiple sections, with the headings of the various levels on the left-hand side.
2	Each incident analysed separately and the negative outcomes to be analysed are identified. Outcomes inserted into 'Labourers' level of the Accimap.
3	List of causal factors drawn out. Causal factors are those factors, which if prevented, would have avoided the negative event.
4	Appropriate level for each causal factor identified based on guidelines provided by Branford <i>et al.</i> (2009).
5	Identified causal factors were written down on a sticky note and placed at the appropriate level on the sheet of paper.
6	Causal links were inserted, linking factors and demonstrating systemic errors.
7	Using Microsoft Visio, the factors were rearranged such that causes leading to the same outcome(s) in the 'Labourers' level were placed close to each other.

944

945

946 **Table 3: Conceptual dimensions central to understanding how modern slavery offences**  
 947 **manifest**

948 Adapted from Cooper et al. (2017)

<b>Dimension</b>	<b>Maturity descriptor (Stage)</b>	<b>Factor/Outcome Identification Number for 2003/04 incidents</b>	<b>Factor/Outcome Identification Number for 2014/15 incidents</b>
<u>Recruitment</u> Refers to methods which coerce or deceive victims into forced labour and slavery.	Offenders target very vulnerable victims (1.1)	30	36; O6; O7; O9
	Offenders offer opportunities to victims (1.2)	32; 37	36; O6
	Victims approach offenders (1.3)	O7	36
<u>Profit</u> Extent of profit driven exploitation of slavery.	No financial gain (2.1)		
	Limited financial gain (2.2)	27	22; 24; 27; 31; 32; O5; O15
	Run like a business (2.3)	3; 6; 8; 15; 16; 20; 22; 23; 29; 33; O9	6; 8; 16; 22; 31; 32; 37; O5; O15
<u>Organisation of criminal activity</u> Extent of involvement of organised crime in the exploitation of slaves.	No/minimal organisation (3.1)	25	
	Some organisation (3.2)	19; 21; 24	7; 10; 11; 12; 13; 14; 19; 33; 35
	Highly organised (3.3)	25; O6	13; 14; 18; 20; 34; O13
<u>Control &amp; Coercion</u> Methods of control used by offenders during the exploitation of victims.	Repeated violence (4.1)		
	Threats and occasional violence (4.2)	34; O1	23; 28; 29; 38; O1; O12; O14
	Substance (4.3)		
	Financial (4.4)	31; 35; 36; O1; O2; O5	23; 28; 29; 38; 39; O12; O8
	Emotional (4.5)	26; 31; 34; 35; O2; O5	23; 28; O8
	Social isolation (4.6)	O1; O4	O1; O11; O14

949

**Table 4: Explanation of the numbered factors in Figure 2.**

<b>Factor identification number</b>	<b>Interpretation</b>
1	Commercial pressure to produce influenced stakeholders across two levels – organisational and central government. While the central government had made a commitment to improve national economy, seed companies had been awarded contracts by national and central governments to deliver output. There is also the added risk of the contract being rescinded and being awarded to a rival business.
2	Global news on the extensive use of child labour in Andhra Pradesh led to local NGOs focussing their attention solely on one state.
3	In an attempt to improve the national economy, the central government had made a commitment to export.
4	The central government let local governments compete with each other to get transnational and national seed companies to establish in their states.
5	The Indian Ceiling Act prohibits companies and individuals from owning large pieces of land.
6	In order to tempt seed businesses to establish themselves in GJ (and to outcompete other states), large pieces of land were sanctioned for seed production.
7	Inadequate policies regarding farm operational procedures and sales of public seeds.
8	Cheaper labour, energy and higher subsidies were offered to tempt businesses to establish themselves in GJ.
9	Inspectors from the state government failed to carry out audits of labour agreements signed by labourers and middle-men.
10	Inspectors from the state government failed to carry out audits of farms and working conditions.
11, 12 and 13	The government did not ensure that there were an adequate number of high-quality schools providing education to children.
14	Budget was re-allocated to other departments which were deemed to be more important.
15	Illegally produced GM crops generated higher income due to cheaper resourced that went in growing them.
16	Seed businesses relocated to GJ due to favourable conditions for businesses.
17	Seed businesses contracted their work out to local farmers and local labour, who they were dependent on to successfully compete in the value chain.
18	Seed businesses provided limited economic, raw material and training resources to farmers.
19	Seed businesses made agreements with middle-men to hire farmers who would grow cotton seeds and supply seeds back to the businesses.
20	Seed businesses did not want to negotiate the price they would pay for seeds (which they would purchase from the farmers), or the price of raw materials provided to farmers (to grow seeds).
21	Seed businesses provided an advance to middle-men to be able to hire farmers who could in-turn hire labourers.
22	The demand for illegally produced GM crops from seed companies meant that farmers felt the need to grow such crops.
23	Farmers relied on migrant labour due to the unavailability of labour within the farm.
24	The seasonality of the work meant that farmers needed access to assured continued supply of labour to meet the high demand.
25	Farmers made agreements with ‘labour middle-men’ to provide cheap labour that would help produce cottonseeds.
26	According to the contract signed by the labourers, farmers had the right to call labourers to work at any point during the season.
27	Farmers were meant to provide adequate housing for labourers who lived on their farms. However, they did not do so.
28	Farmers had access to limited resources (financial and raw materials).
29	Farmers preferred child labour as easy to control (make them carry out multiple tasks with minimal resistance), and their smaller and gentler hands.
30	Middle-men targeted under-privileged families as it was easier to make them sign unfavourable contracts.
31	Through pre-signed agreements, middle-men made agreements in advance with labourers about pay, and obtain illegal commission from labourers’ pay.
32	Middle-men hired labourers from the same village that they were from.
33	Based on earlier illegal agreements, middle-men collected a commission from the labourers’ pay.
34	Middle-men were given the authority to supervise labour on farms (although they had no training to do so).
35	As most labourers were illiterate, agreements were signed by middle-men.
36	Middle-men withheld labourers’ wages if they did not do as they were told (i.e., work over time/send their children to work).
37	Families were promised extra wages for making their children go to work as labourers.

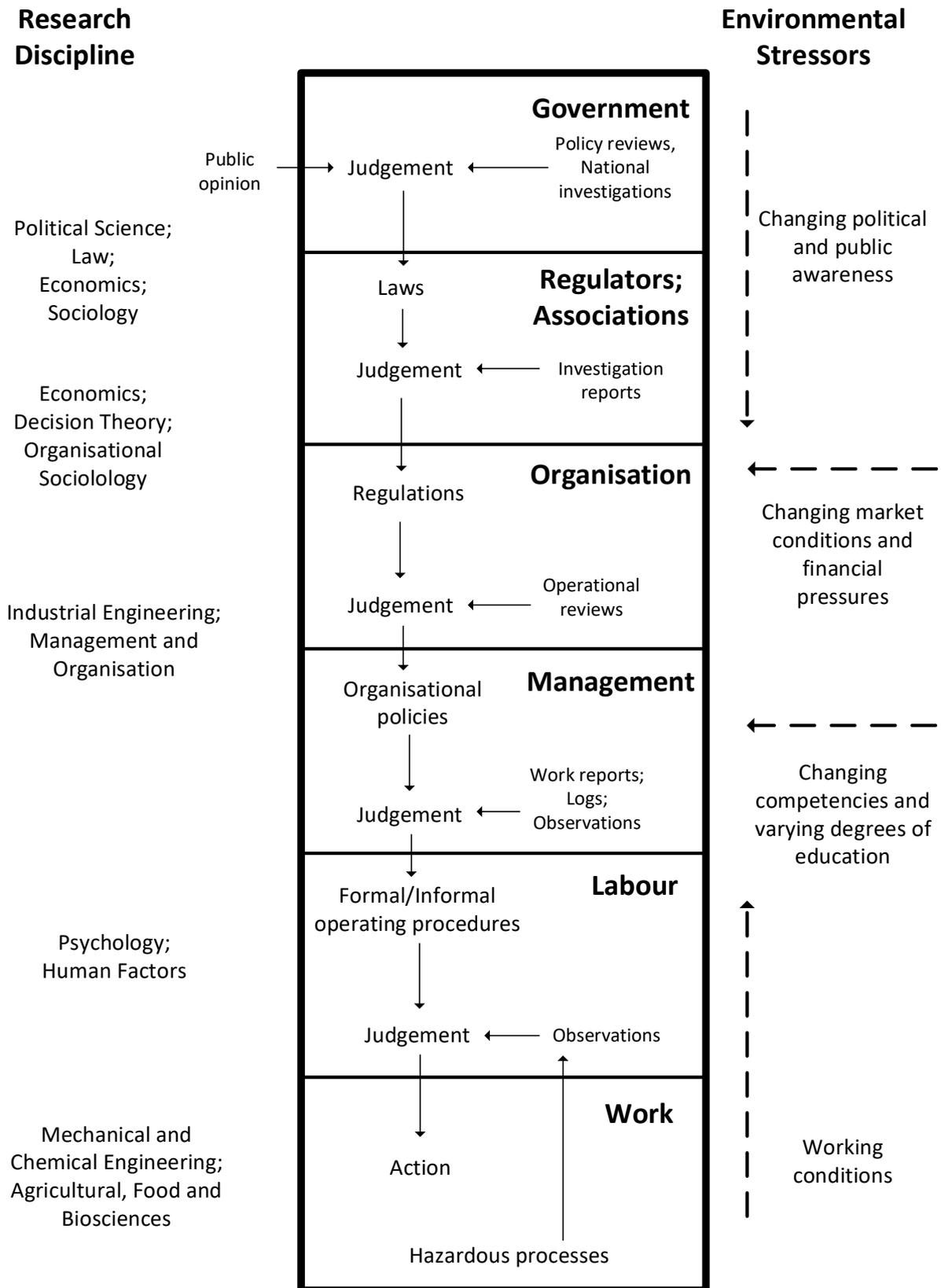
**Table 5: Explanation of the numbered causal factors in Figure 3.**

<b>Factor identification number</b>	<b>Interpretation</b>
1, 2 and 3	The system and its stakeholders over-relied on NGOs, the media and social investors to identify and eliminate occurrences of child labour. This led to a culture of complacency and denial by various stakeholders when external stakeholders did not highlight occurrences of child labour.
4	Lack of unity towards what should have been a common goal of abolishing child labour. Most stakeholders shared common goal of generating profits (for a multitude of reasons) generating profit the expense of labour and child welfare was deemed the preferred route.
5	Over-reliance on media by the entire country (India) as a means of helping identify occurrences of illegal child labour meant that various media outlets were unable to focus on a couple of cases in detail.
6, 8 and 16	Governments as well as the private sector had a common goal of generating profits this was the leading and sole driver behind their operations.
7, 10, 11, 12 and 18	Public policies at the government levels and private policies at the organisational level all mentioned statement and principles of actions to mitigate the use of child labour on farms and within supply chains. However, these policies were designed based on 'work-as-imagined' instead of considering what actually happens within supply chains.
9	Central government let local governments compete with each other to get transnational and national seed companies to establish in their states.
13, 14 and 19	Existence of illegal child labour was largely denied at the government level. A reason given when proof of child labour was provided was that children often worked around school hours or during holidays to help out their parents. However, this would still be a violation of international and national conventions as this action would hinder the child's ability to develop social skills and meet their educational needs.
15 and 25	Inspectors from the state government and private auditors failed to carry out audits of farms and working conditions.
17	State Government failed to provide adequate support to labourers and seed producers due to inadequate resources and denial of the existence of child labour.
20 and 21	Large transnational and national seed companies promised to not use child labour within their supply chains. However, by loaning farms to poverty-stricken labourers, and by making them sign contracts they indirectly forced them to use their own children as a source of labour. They also designed policies that were ambiguous to help achieve their goals through any means necessary.
22	Transnationals relocated to tribal areas to avoid media pressure and then migrant and tribal labourers signed unscrupulous deals.
23, 28, 29 and 38	TNCs and local seed producers worked together to make poverty-stricken, migrant and tribal labourers sign unscrupulous deals whereby they would be bonded to work for these stakeholders for a long time with no option to opt-out, making the most of these labourers being illiterate.
26	In an attempt to generate greater profits, labourers who worked on farmers' farms were forced to work under conditions that would have been illegal under The Contract Labour (Regulation and Abolition) Act, 1970.
27	As in the 2003/04 incidents, farmers preferred employing children as they were: cheaper to hire; easier to control; and had finer, small hands for carrying out the jobs required in cottonseed farms.
30	Farmers, local seed producers and labourers lacked knowledge about various legal rights, the existence of unions, and conditions that needed to be met to be able to hire workers. The acts carried out at this level were mostly due to what stakeholders higher up the hierarchical chain had advised.
31, 32 and 35	The sole goal of labour contractors was to earn money through both legal and illegal means. Lack of audits and resources, coupled with labourers' lack of knowledge made it easier for labour contractors to carry out illegal tasks such as not provide adults their minimum wage, leading to employment of child labour.
33, 37 and 39	Labour contractors were motivated to hire child labour due to the above-mentioned incentives, and also because it was easier to withhold their wages and collect illegal commissions from children.
34 and 36	Labour contractors trafficked migrants to work on farms (not subsistence farms) and targeted underprivileged families as it was easier to carry out unethical practices such as manipulation into working for pre-signed contracts and withholding of wages.

953 **Figure 1: The structure of a sociotechnical food/feed system**

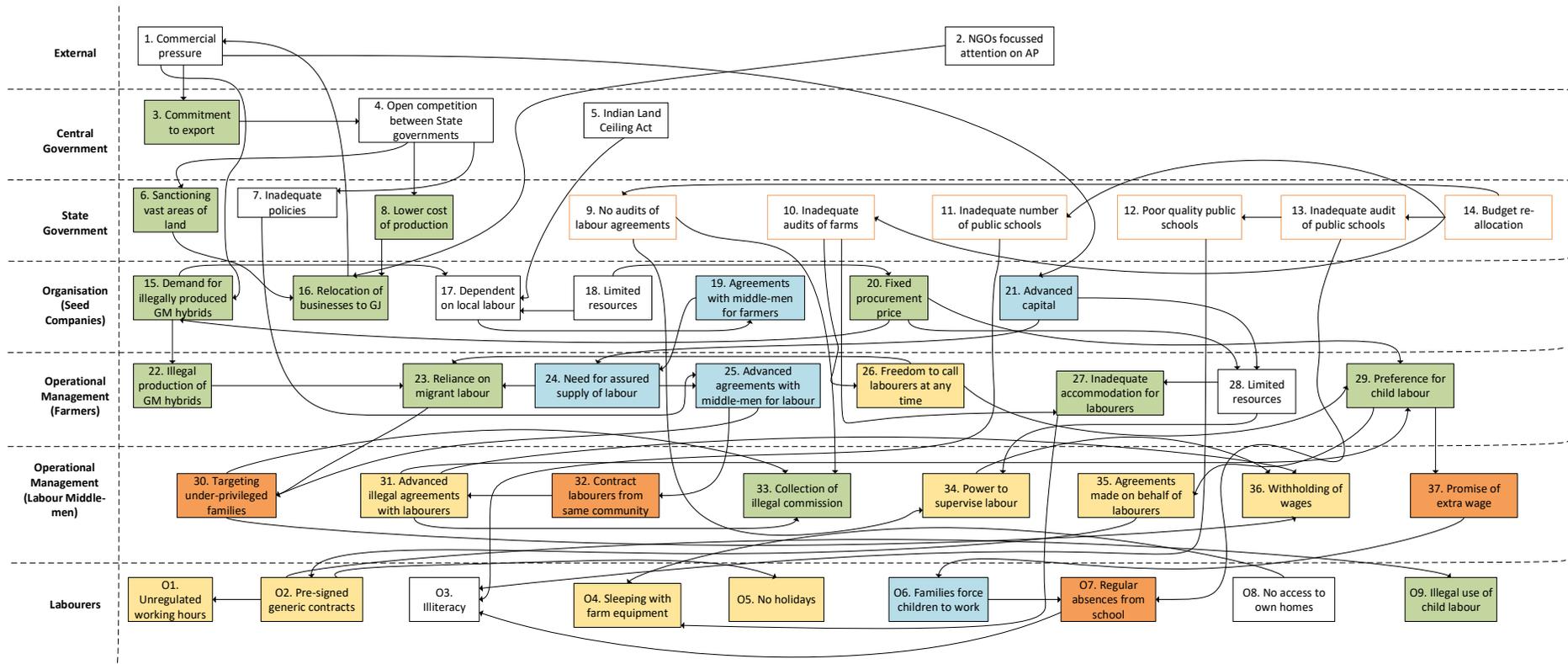
954 Adapted from Rasmussen (1997)

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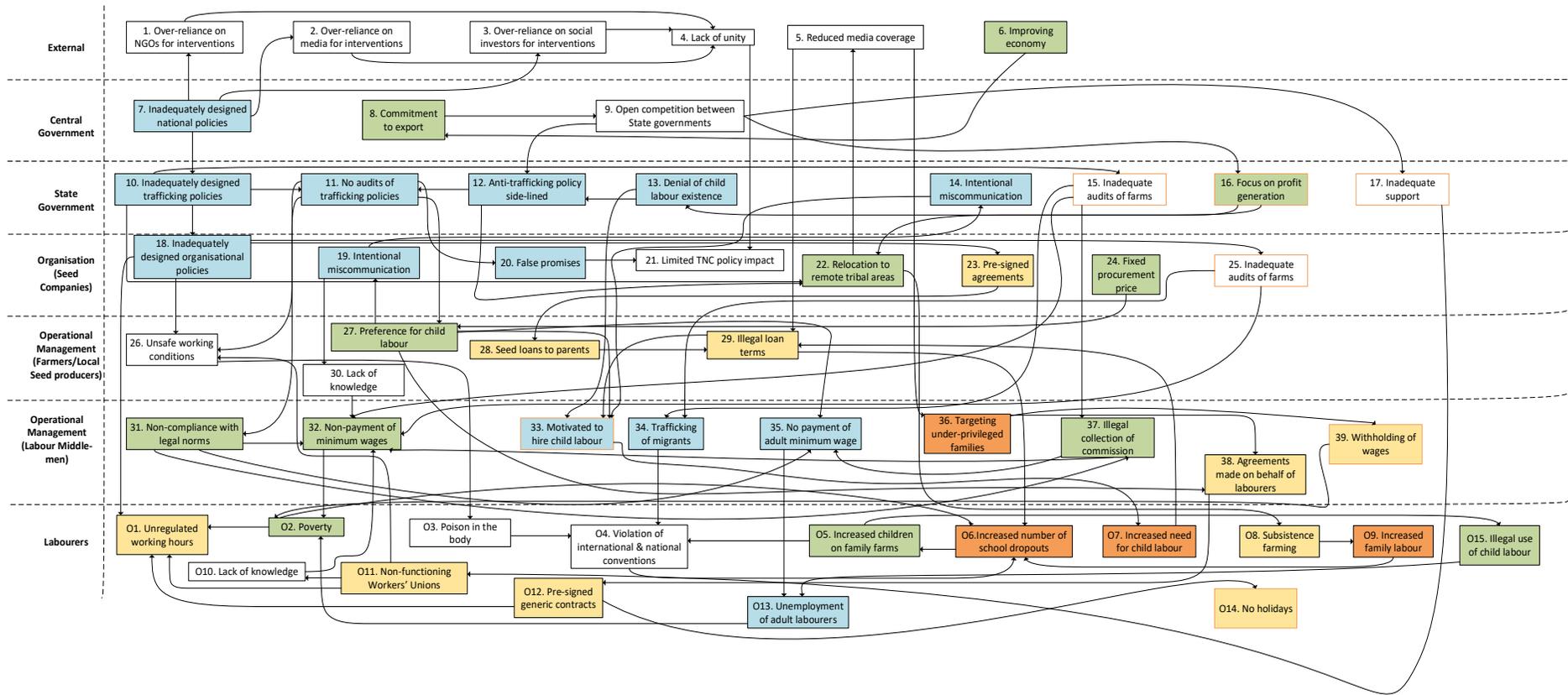
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Figure 2: Accimap diagram of the 2003/04 Gujarat child labour incidents



959 **Figure 3: Accimap diagram of the 2014/15 Gujarat child labour incidents**

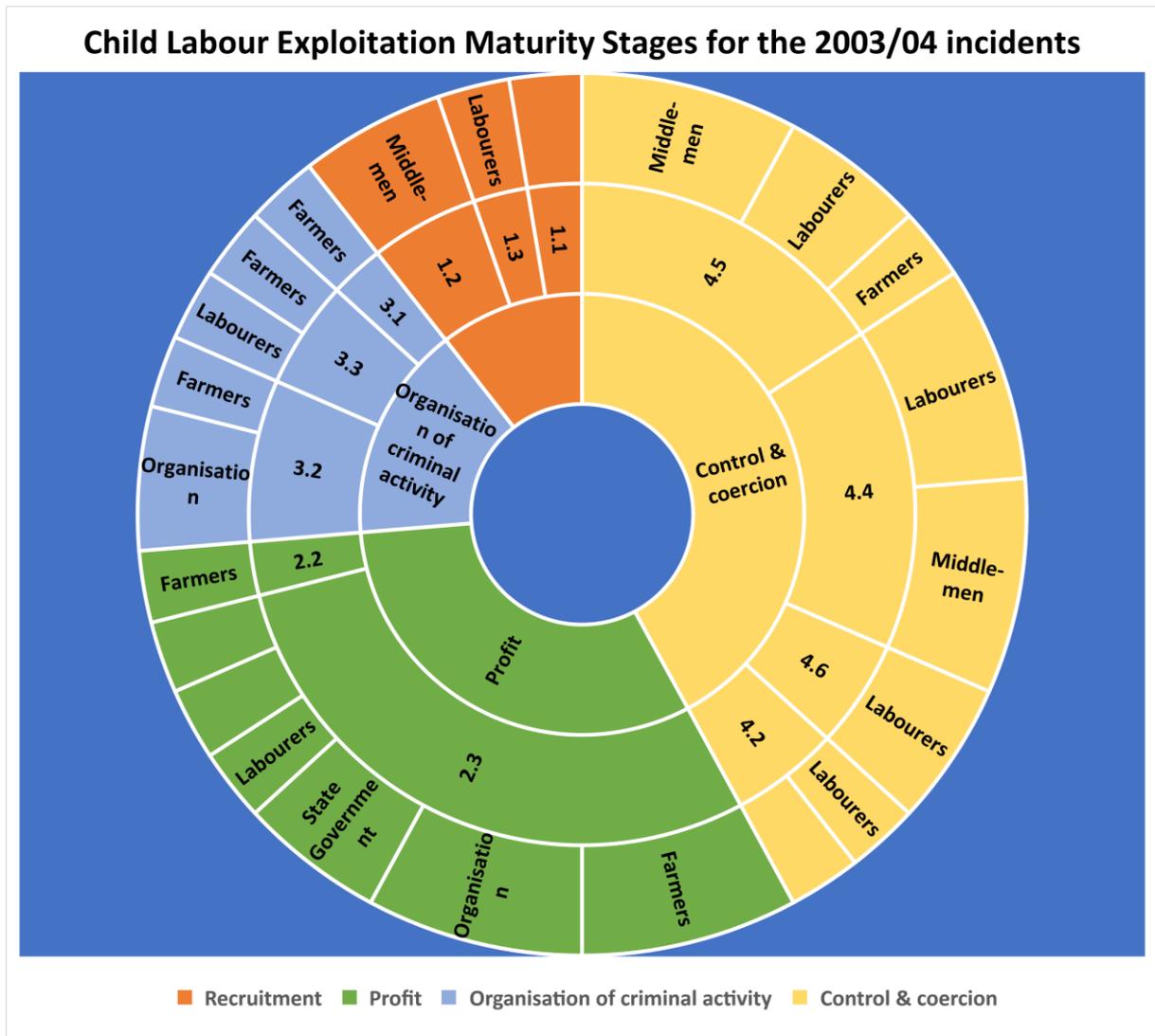
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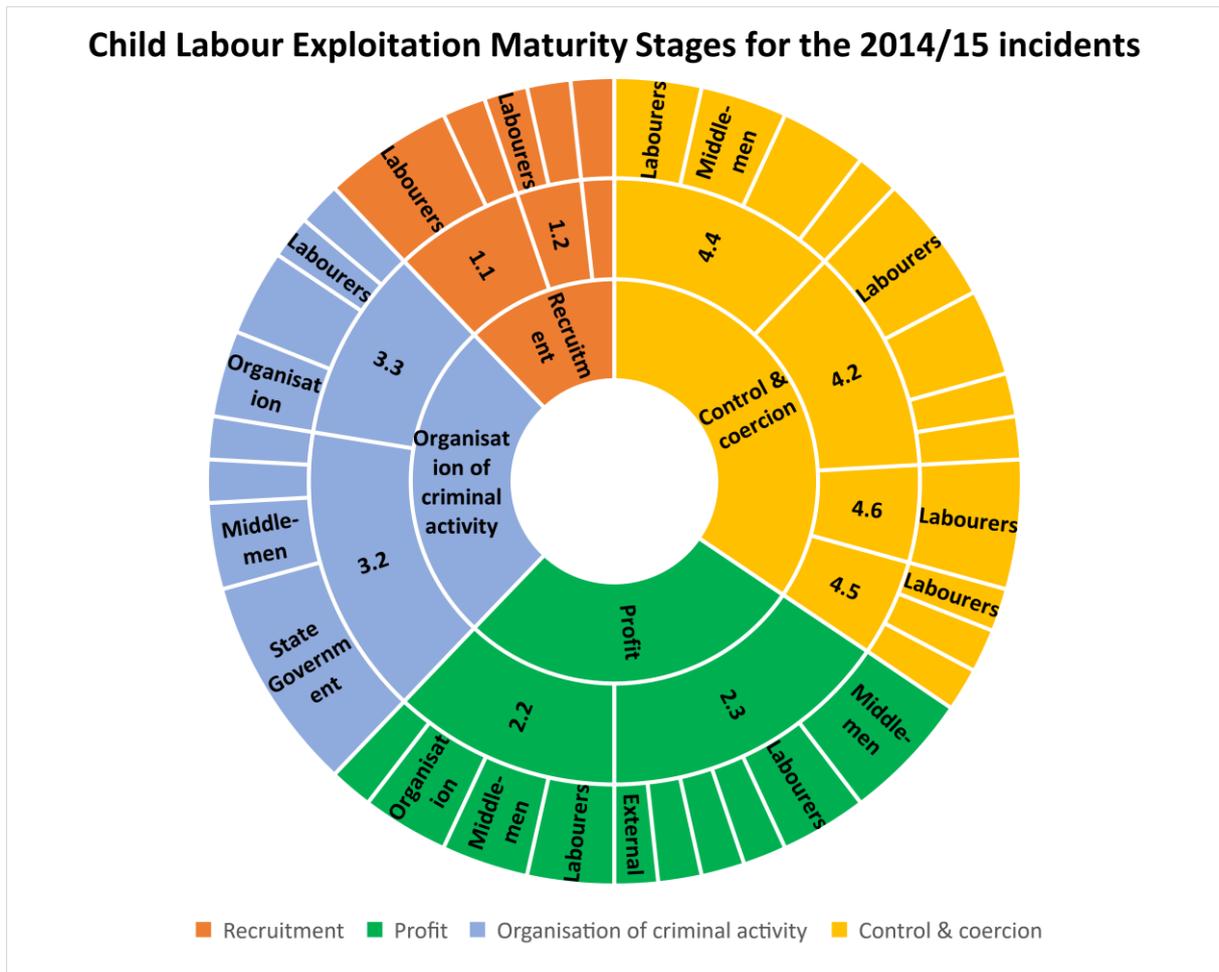
**Figure 4: Maturity stages of the causal factors and outcomes related to the 2003/04 illegal child labour incidents in Gujarat**



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**Figure 5: Maturity stages of the causal factors and outcomes related to the 2014/15 illegal child labour incidents in Gujarat**



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