

## Determinants of Household Decisions on Children's Schooling and Work: Evidence from the Sundarbans Coastal Region of Bangladesh

Md Abdul Gani Mina<sup>1</sup>, Mahamudul Hasan<sup>2</sup>, Rakibul Hasan\*<sup>3</sup>,  
Sk. Naimur Rahman<sup>4</sup>, Rabeya Khatun<sup>5</sup>.

<sup>1</sup> Joint Director (Admin & Finance), Rural Development Academy (RDA), Gopalganj, Bangladesh.

<sup>2</sup> Librarian, Rural Development Academy (RDA), Gopalganj, Bangladesh.

<sup>3</sup> Assistant Professor, Department of Economics, Gopalganj Science & Technology University, Bangladesh.

<sup>4</sup> Assistant Director, Rural Development Academy (RDA), Gopalganj, Bangladesh.

<sup>5</sup> Student, Department of Economics, Gopalganj Science & Technology University, Bangladesh

\*Corresponding author: (Rakibul Hasan, [jurakib99@yahoo.com](mailto:jurakib99@yahoo.com))

**ABSTRACT:** This study investigates the determinants of household decisions concerning children's engagement in work and schooling in coastal Bangladesh. Child labor remains a prevalent issue in this area as a result of a combination of economic, social, environmental and institutional weaknesses, but little empirical research brings these factors together. A cross-sectional quantitative design was used to gather data from 336 household and the data were analyzed using multinomial logistic regression as well as appropriate inferential statistical methods.

The findings of the paper show that factors of household decision are significantly associated with child activity. Multinomial logistic regression analysis revealed that economic, social and environmental factors are significantly influenced children's work relative to the 'Only School' reference group that means these factors were significantly higher likelihood of child participation in work. For the school-and-work group economic (OR = 13.385,  $p = .00$ ) and social factor (OR= 4.007,  $p < .05$ ) emerge as the significant predictor. Conversely, institutional factor showed a consistent negative trend both categories, though it did not reach statistically significant ( $P > .05$ ).

Further, child labor is also found to have a negative impact on child well-being, including higher school absence, low school performance, physical tiredness, and psychological stress ( $p < 0.001$ ).

Overall, the study concludes that household decisions regarding child activity in coastal Bangladesh are largely driven by multidimensional vulnerabilities, where economic hardship, social pressures and environmental shock remain the most dominant forces pushing children into labor, either exclusively or alongside schooling. Integrated policies focusing on income stabilization, improved access to education, and stronger enforcement of child labor laws are essential to reduce child labor and protect children's well-being as well as household.

**KEY WORDS:** Household decision, Child activity, Sundarbans, Coastal region, Bangladesh

### I. BACKGROUND OF THE STUDY

Around the world, child labor typically mostly concentrated in the agriculture sector which is significant global development challenges. According to the International Labor Organization (ILO), approximately 160 million children worldwide are involved in child labor, of which nearly 70% are employed in agriculture, including crop farming, livestock, fisheries, and forestry. In South Asia, unescapable poverty, low levels of parental education, and inadequate access to quality schooling continue to drive children into labor activities rather than school, particularly within rural economies dependent on subsistence farming (Bhalotra & Heady, 2001; Fors, 2007).

Any economic activity especially those involving children who are beyond the age of 10 are considered as child labor. This entails both domestic and outside work. (Hossain, Faruk, and Begum, 2025). Children in rural areas frequently participate in agricultural and informal economic activities from an early age, often at the

expense of their education (Kumar, 2015). The gender differences are also noticeable, as boys are more likely to be engaged in hard work on the farm whereas girls tend to carry out domestic tasks along with farm work, which, although less visible than hard work, is still as significant.

Although Bangladesh has made great efforts to improve the primary education system, child labor is a problem, especially in the rural and coastal areas. The country is falling short to achieve Target 8.7 of the UN Sustainable Development Goals, under which all forms of child labor are addressed. The national statistics reveal that a significant share of children (62%) aged 5-17 are in work, most of them in agriculture. Child labor is a coping mechanism for families to deal with irregular work, irregular income and unemployment. Child labor in rural is habitually informal and higher among older boys and girls have longer domestic work load (Hoque, 2024; Zohir et al., 2024). In Bangladesh, child agricultural laborers work for extended periods without getting paid or compensation, which helps the family to make ends meet (Haque et al., 2015).

The problem of child labor is particularly acute in the Sundarbans coastal region of southwest Bangladesh. This area is highly vulnerable to environmental shocks, including cyclones, salinity interruption, flooding, and river erosion. According to the Intergovernmental Panel on Climate Change, such climate-related risks significantly undermine agricultural productivity and livelihood security. As a result, households in these regions often rely on diversified but unstable income sources such as shrimp farming, fishing, and informal labor markets, where children's participation is common.

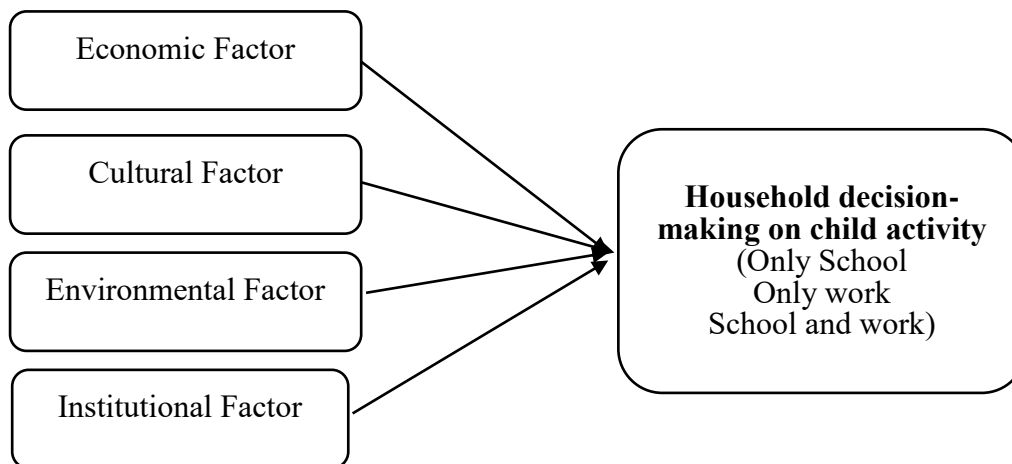
## II. LITERATURE REVIEW

Neoclassical household decision-making models are widely used in the discussion of child labor where models of household bargaining play an important role. In those models where children lack the bargaining power at home, parents will decide on matters that are beneficial to them and do not consider how the child will be affected (Brown et al., 2013). Household decision-making plays a central role in determining whether children attend school, engage in labor, or combine both activities. From the perspective of Human Capital Theory, education is viewed as an investment in future productivity. Considering children as household asset, children are often perceived as economic assets whose value depends on parental decisions regarding fertility and investment (Brown et al., 2013). Household Utility Maximization framework suggests that families allocate children's time between schooling and labor grounded on their costs and benefits under resource limitations. The household utility model argues that families maximize welfare by assigning labor across members with resource limitations (Basu & Van, 1998). The quality-quantity trade-off theory (Becker & Lewis, 1973) further suggests that lower investment on child education in larger family that increased the likelihood of child labor it also influences by income uncertainty, seasonal shortage of labor in rural area.

Sustainable Livelihoods Framework, emphasize that households respond to shocks such as crop loss, climate variability, and natural disasters by adjusting their livelihood strategies this factor also increased reliance on child labor (Ravetti et al., 2024). Social and cultural theories also play an important role. Social norms and community expectations may normalize children's involvement in agricultural work, as part of skill development or family responsibility rather than exploitation. These norms can sustain child labor even when economic conditions improve (Basu & Van, 1998; Bicchieri, 2005).

## III. EMPIRICAL EVIDENCE

This study focuses on family-controlled child labor taking place in the agriculture sector of coastal area Sundarbans. Numerous empirical studies demonstrate that children are forced to work as child laborers in the agriculture and fisheries industry because their families are unable to meet their fundamental necessities, including food, shelter, health care, and education, agricultural dependency (Roggero et al., 2007; Ersado, 2005; Ajah et al. 2018; Ray, 2002; Béné et al., 2010). According to (Basu & Van, 1998; Edmonds & Pavcnik, 2005) conclude that the household poverty either discourages educational investment or pushes child labor (for survival), or both. Intergenerational occupational continuity, traditional values of children working, Gender norms, has a strong effect on the labor participation of children, especially in the farming and fishing communities (Bourdieu, 1986; Emerson and Souza, 2003, (Edmonds, 2007; ILO, 2017). In climate-vulnerable coastal regions, livelihood insecurity exacerbated by environmental shocks further increases the likelihood of children entering labor markets as household risk-coping strategies (Saha et al. 2024; Allison and Ellis, 2001; Islam et al., 2014). According to (Baland & Robinson, 2000; North, 1990) conclude that lack of adequate infrastructure and quality of school lower the enrollment rate on the other hand conditional cash transfer and stipend schemes have been found to have great impact in reducing child labor. Musa, I., and Magaji, S. (2023); Parker, (1997) defined child labor as any kind of employment, which endangers the health of children or denies them access to education.



**Figure 1: Conceptual Framework**

While child labor is recognized as a complex phenomenon, existing research in Bangladesh is mostly based on national data, ignoring regional variations, especially in coastal regions. Furthermore, few studies explore the simultaneous impact of economic, social, environmental and institutional factors on household decision and their impacts on child education and health. Our research contributes to these knowledge gaps with a context-specific examination of the Sundarbans coastal area, and by incorporating and examining multiple determinants in a holistic manner to explore the causes and impact of child labor in a climate-vulnerable environment.

### Materials and Methods

This study employs a cross-sectional quantitative design using primary household data to examine how economic, social, institutional, and environmental factors influence children's engagement in schooling and labor activities. This study employed a multistage stratified sampling technique with proportionate allocation. In the first stage, three coastal districts Bagerhat, Satkhira, and Khulna were selected. In the second stage, the upazilas and villages were selected based on the prevalence of agricultural households and their location in coastal areas to ensure representativeness of the study population. In the final stage, households were selected proportionally from each village to ensure representativeness. The total population of agricultural households across the 10 selected villages is 3373 families (Agricultural Census 2019, BBS Report and information from the concerned Local agricultural Office). The sample size recommended was found out to be 345 households based on Cochran formula of finite population where the margin of error is 5%. Following data cleaning of a starting 345 families reaching the age of 6-17 years, the final 336 households were included in the final analysis where guardians reported on activities of children and the factors that influence them.

### Analytical Techniques

The analysis was performed with a multinomial logit model, chi-square tests, and an Influence Causing Index (ICI). The quality of the data was also checked before analysis and internal consistency of the measurement scales was measured through Cronbach alpha.

**Table 1: Result of Data Validation**

Construct	Items	Cronbach's Alpha	Status
Economic Factors	5	.707	good reliability
Social Factors	5	.638	Acceptable range
Environmental Factors	5	.678	Acceptable range
Institutional Factors	5	.722	good reliability

The independent variables are constructed as latent variable included in the model to investigate their influence on the probability of each category of outcomes. The Influencing Causes Index (ICI), a ranking system developed by Ahad et al. (2017 and 2021) and Pandit and Basak (2013), will be used to identify and rank the possible factors that influence a household's decision to engage in child labor or work. This technique includes three response level categories ("high influence=2", "Some influence=1", and no influence=0") for each identified variable. To capture the combined effect of these determinants in a single measurable construct, a Composite Influencing Causes Index (ICI) was developed which are widely used in development economics to summarize complex phenomena into a standardized metric (Nardo et al., 2008; OECD, 2008) by the

computation of the importance of Influence Causing Index (ICI) for each determinant using the following equation.

$$ICI = (P_n \times 0) + (P_1 \times 1) + (P_2 \times 2)$$

Where,  $P_0$  = Percentage of respondents selecting “no influence”  
 $P_1$  = Percentage selecting “Some influence”  
 $P_2$  = Percentage selecting “High influence”

**Table 2: Variable Measurement**

Variable Category	Variable Name	Measurement/ Coding Scheme	References
Dependent Variable	Children Activity	1= Only School (ref) 2= Only Work 3= Work and School	Ray, R. (2000). Shafiq, M. N. (2007). Jan, A. U. (2021),
Independent variable	Economic Factors	average of Likert-scale items	Basu, K., & Van, P. H. (1998).
	Social Factors		Bicchieri, C. (2005), Abdullah, et al., (2022)
	Environmental Factors		Islam et al., (2014), Eze et al., (2024).
	Institutional Factors		North, D. C. (1990), (1990); World Bank (2019)

To estimate categorical dependent variable, we used multinomial logistic model as follows. The multinomial logit model is specified as:

$$\ln\left(\frac{p(Y = j)}{P(Y = base)}\right) = \beta_{0j} + \beta_{1j}X + \beta_{2j}X_2 + \dots + \beta_{kj}X_{1k}$$

Where, Y = child activity category  
 base category = “Only School” and j=1, 2 representing “Only Work” and “School and Work”

The empirical model can be written as:

$$Child\ Activity = f(EF, SF, EnF, IF)$$

Or in econometric form:

$$y_i = \beta_0 + \beta_1EF + \beta_2SF + \beta_3EnF + \beta_4IF + \epsilon_i$$

**IV. RESULT AND DISCUSSION**

The descriptive statistics are initially applied to present the household decision about their children and socio-economic variable such as asset ownership, education, occupation which gives us overall idea on the population under study.

**Table 3: Descriptive Statistics of Child Activity and Work pattern**

	Categories	Frequency	Percent
<b>Child Activity</b>	Only school	58	17.3
	Only work	192	57.1
	School + Work	86	25.6
<b>Types of Work</b>	No work	58	17.3
	Agricultural Work	120	35.7
	Household work	88	26.2
	Both Work	70	20.8
<b>Nature of work</b>	No work	58	17.3
	Seasonal	144	42.9
	Regular	134	39.9

Sources: Authors’ Calculation Based on Field Survey

The pattern of child activities reveals that most children are only occupied in work (57.1%) in the coastal area, with a small proportion of children combining schooling with work (25.6%), schooling alone (17.3%) reflecting poor participation in full-time education. After excluding non-working respondents, most of the children

engaged in agricultural work (43.2%), whereas 31.7% of working children were involved in household activities. Regarding the nature of work, more than half (51.8%) of child workers were engaged in seasonal work, while a significant proportion (48.2%) worked on a regular basis.

### Socio-economic Status of family

The educational attainment of parents is an important socioeconomic indicator, as it influences household decision about their child activity, investment on education, family income and wealth stability. Table indicates that fathers are more educated than mothers. Although most of both parents are educated to primary level (49.7% of fathers, 44.0% of mothers), a greater percentage of mothers (39.0%) are not educated as opposed to fathers (30.7%). In secondary and higher education, fathers also slightly outpoint mothers (19.7 percent and 17.0 percent, respectively). This implies that there is a distinct gender disparity in education levels with mothers being more deprived of the same which could affect decisions made by the household and children. Child activity is statistically significant association is found with fathers' education ( $p = 0.032$ ) whereas mothers' education shows a borderline (or marginal) significant association with child activity at the 5% level ( $p = 0.050$ ).

**Table 4: Parents Education and Occupation Level**

Social Variable	Categories	Frequency	Percentage	p-Value
<b>Fathers' Education Level</b>	No education	103	30.7	<b>.032</b>
	Primary	167	49.7	
	Secondary	55	16.4	
	Higher	11	3.3	
<b>Mothers' Education Level</b>	No education	132	39.0	<b>.050</b>
	Primary	148	44.0	
	Secondary	47	14.0	
	Higher	9	3.0	
<b>Occupation of Father</b>	Agricultural Labor	237	70.5	<b>.192</b>
	Business	89	26.5	
	Job	10	3.0	
<b>Family Income Level</b>	Low Income	102	30.4	<b>.040</b>
	Middle Income	195	58.0	
	High Income	39	11.6	
<b>Housing Type</b>	Kacha	119	35.4	<b>.017</b>
	Semi-Paka	176	52.4	
	Paka	41	12.2	
<b>Agricultural Land</b>	No land	71	21.1	<b>.027</b>
	Small land (.01 – 2.49 acres)	217	64.6	
	Sufficient land ( $\geq 2.5$ acres)	48	14.3	
<b>Livestock Status</b>	No animal	108	32.1	<b>.000</b>
	1-5 animal	185	55.1	
	More than 5 animals	43	12.8	
<b>Fishing Gear Status</b>	No fishing kit	82	24.4	<b>.000</b>
	Some fishing kit	201	59.8	
	Own full boat + nets	53	15.8	

Sources: Authors calculation based on survey data.

Table shows that majority 70.5 % of household head occupied in agricultural work which indicates a lack of diversification of sources of income although no statistically significant association is observed between fathers' occupation and child activity. The majority of the households (61.0%) are in the middle-income category with 23.5% and 15.5% in the low-income and the high-income category respectively. The study outcome is significantly associated with household income ( $p = 0.040$ ). Likewise, the ownership of livestock and fishing gear are significantly associated with the dependent variable ( $p = 0.000$ ), which means that the two have strong correlations with livelihood assets. Type of housing ( $p = 0.017$ ) and ownership of agricultural land ( $p = 0.027$ ) also show statistically significant relationships with the study outcome.

**Ranking of Influence-Causing Factors:**

A total of 20 influencing factors of household decisions on child activity were considered and ranked based on the perception score. This measure reflects the strength of influence as perceived by the respondents, which are classified as no influence, low/some influence and high influence. Table X shows the index values and rankings that were calculated.

**Table 5: Child labor decision of Household Influence causing index (ICI)**

Variables Name	NI=0	SI=1	HI=2	Index Value	Total Score	Rank
Seasonal unemployment	87	138	111	0.536	360	1 <sup>st</sup>
Low Paternal Education	68	179	89	0.531	357	2 <sup>nd</sup>
Employment loss due to environmental shock	97	121	118	0.531	357	3 <sup>rd</sup>
Low household income	53	215	68	0.522	351	4 <sup>th</sup>
Lack of govt. financial support (safety net)	90	145	101	0.516	347	5 <sup>th</sup>
Large Family Size	114	105	117	0.504	339	6 <sup>th</sup>
Crop loss due to environmental shock	63	209	64	0.501	337	7 <sup>th</sup>
Peer child labor (community)	73	199	64	0.487	327	8 <sup>th</sup>
Loans/ debts	69	208	59	0.485	326	9 <sup>th</sup>
Cost of adult labor	93	167	75	0.473	317	10 <sup>th</sup>
Cultural beliefs (traditional work)	80	195	61	0.472	317	11 <sup>th</sup>
Income Loss due to environmental shock	72	214	50	0.467	314	12 <sup>th</sup>
Lack of other income opportunities	110	154	72	0.443	298	13 <sup>th</sup>
Limited NGO school programs	102	182	52	0.426	286	14 <sup>th</sup>
Asset loss due to environmental shock	125	145	66	0.412	277	15 <sup>th</sup>
Poor quality of local education	107	208	21	0.372	250	16 <sup>th</sup>
Migration due to environmental shock	151	138	47	0.345	232	17 <sup>th</sup>
Weak enforcement of child labor laws	144	153	39	0.344	231	18 <sup>th</sup>
Distance to school	118	206	12	0.342	230	19 <sup>th</sup>
Gender roles	172	106	58	0.330	222	20 <sup>th</sup>
Not influence=NI, Some/low Influence=SI and High Influence=HI						

Sources: Authors Calculation based on survey data

The table presents the ordered classification of impactful elements across twenty different variables. Among them top 5 most significant factors are seasonal unemployment (360), low paternal education (357), employment loss due to environmental shocks (357), low household income (351), lack of government financial support (347). On the other hand, lowest 5 influencing factors of household decision on child activity are role of gender (222), distance to school (230), weak enforcement of child labor laws (231), migration (232) and poor quality of local education (250). On the whole, the results indicate that the economic vulnerability and the environmental instability, along with the lack of institutional support, is a pivotal element in shaping the dynamics of child labor outcomes.

**Multiple Logistic Regression**

Multinomial logit regression was used to examine how household decision affected children's involvement in work or school, or both where consider "Only School" as the base category. Likelihood Ratio Test (LR test) was used to test the goodness of fit for the estimated model. The estimated  $\chi^2$  value is 109.157, and the associated p-value is 0.000, indicating that the combined effect of all the independent variables is statistically significant in explaining children involvement in work. The pseudo- $R^2$  (Nagelkerke = 0.324) suggests a moderate model fit, which is considered acceptable in social science research (Louviere et al., 2000; Menard, 2000).

Table 6: Multinomial Logistic Regression (MLR) Results

Child Activity		B	Std. Error	Sig.	Exp(B)
Only work	Intercept	-1.821	.385	.000	
	Economic Factor	1.412	.648	.029**	4.105
	Social Factor	2.125	.646	.001***	8.376
	Environmental Factor	1.357	.533	.011**	3.886
	Institutional Factor	-1.197	.664	.072*	.302
(School + Work)	Intercept	-2.081	.428	.000	
	Economic Factor	2.594	.691	.000***	13.385
	Social Factor	1.405	.705	.046**	4.077
	Environmental Factor	.243	.577	.674	1.275
	Institutional Factor	-1.253	.722	.083*	.286
Presudo-R <sup>2</sup> (Nagelkerke)	0.324				
Log likelihood	109.157***				
No. of Observations	336				
* Significant at 10% level, ** significant at 5% level and *** significant at 1% level					
a. The reference category is: Only school.					

Source: SPSS output based on survey data

The multinomial logit results (reference category: only school) indicate that economic, environmental and social factors significantly influence children's involvement in work. For the "only work" category, the composite scores of economic factors ( $B = 1.412$ ,  $p < 0.05$ ), social factors ( $B = 2.125$ ,  $p < 0.01$ ), and environmental factors ( $B = 1.357$ ,  $p < 0.05$ ) positively and significantly increase the likelihood of child labor, while institutional factors show a negative but marginally significant effect ( $B = -1.197$ ,  $p < 0.10$ ). Similarly, for the "school and work" category, economic factors ( $B = 2.594$ ,  $p < 0.01$ ) and social factors ( $B = 1.405$ ,  $p < 0.05$ ) significantly increase the odds of combined participation, whereas environmental factors are not statistically significant and institutional factors remain negatively associated at a marginal level ( $B = -1.253$ ,  $p < 0.10$ ).

Based on the result Similar results were reported by many literatures. Economic factors prove as a strong and significant determinant of both "only work" and "school and work" categories. This finding emphasizes the argument that family decision on child work induce by financial limitations and income instability that are consistent with the "luxury axiom" proposed by Kaushik Basu and Hoang Van Pham (1998), which suggests that children are sent to work when household income falls below subsistence levels. There is also empirical evidence in support of this, showing that poverty and income shocks are key factors behind the incidence of child labor in developing economies (World Bank, 2020, Chowdhury & Ghosh, 2024).

The social factors are noted as among the most important predictors, especially for the "only work" category. Social factor includes large family size, low parental education, gender role, peer child labor and traditional work as a cultural believe significantly outline children's labor participation rather than school. Low education level of parents lowers awareness of the long-term advantages of school and increases their dependence on child labor (Ranjan Ray, 2000; Edmonds, 2007, Ranjan Ray, 2000; Edmonds, 2007). Additionally, gender play a vital role for decision on child labor described by (Adisa, 2016, Jan, 2021). Traditional work as intergenerational transmission of labor practices often normalizes children's participation in work, especially in rural areas where tradition is rooted in the culture. Evidence from UNICEF (2019) also indicates that peer influence and community expectations are important factors affecting household decisions regarding child labor.

Parents decision making is significantly influenced by environmental factors. The result shows a positive and statistically significant effect on children's engagement in "only work," indicating that environmental shock increases the likelihood of child labor participation. These findings suggest that severe environmental stress pushes children out of school rather than allowing a combination of schooling and work. This is consistent with climate vulnerability literature, which shows that households adopt child labor as a coping mechanism during periods of economic and environmental volatility (Food and Agriculture Organization, 2021; Kosec et al., 2015).

Institutional factors, including access to education, government support, NGO activity, law enforcing and social protection programs, are negatively related but not statistically significant. This negative predictor suggests that stronger institutional support can reduce children's involvement in labor by improving access to schooling and providing financial security to households. Prior studies confirm that social safety nets and educational

interventions significantly reduce child labor (Paxson & Schady, 2010; World Bank, 2019). Fafchamps, et.al. 2006 reported that less distance from school is relate to probability is less involved in agricultural activities. In general, the results suggest that child labor is a complex issue, the result of a combination of economic pressures, social organization, environmental vulnerabilities and institutional capacity. Although economic and social drivers are most important, environmental shocks make things worse, and institutional support is a modifying factor, although limited. The findings underscore the importance of context-specific and integrated policy measures.

### Policy Implications

The results indicate that a policy intervention that is integrated and context-specific is needed to reduce any form of child labor. Government should increase their support and enhance poverty reduction measures for vulnerable households particularly in coastal regions where climate is an influence, to help alleviate economic dependance on child labor. To promote participation at school, increasing access to quality education, scholarship programs and school feeding programs can be promoted. There is a need for awareness campaigns aimed at communities and parents to alter traditional and social norms that promote child labor. Further, the effect of disaster is diminished by enhancing disaster resilience, livelihood diversification, and social protection. Greater institutional coordination, participation of NGOs and greater compliance with child protection laws is also required.

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