Report on
Bangladesh Disaster-related Statistics 2021
Climate Change and Natural Disaster Perspectives

Strengthening Environment, Climate Change
and Disaster Statistics (ECDS) Project
Bangladesh Bureau of Statistics
Statistics and Informatics Division
Ministry of Planning
Government of the People's Republic of Bangladesh

Ninth Meeting of the Expert Group on Environment Statistics
(Virtual)
New York, 25-28 October 2022

Climate Change-related Statistics

An Example of Bangladesh

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Outlines

Institutionalization of Environmental Stats. (in brief)

Methodology of the BDRS 2015 & 2021

Concepts, Definitions and Hazards Classifications

Glimpses of the BDRS 2015 and 2021 results

Generated SDGs and SFDRR Indicators from the BDRS 2015 & 2021

Vulnerability Assessment based on Quintile Income Group

Lessons Learned from the BDRS 2015 & 2021

Challenge, Lessons Learned, Way Forward and References

Institutionalization of Environmental Stats. (in brief)

The main objectives of the ECDS Project: to generate environment, natural resources, bio-diversity, climate change and disaster-related statistics for institutionalization of environmental statistics in Bangladesh

SPECIFIC OBJECTIVES:

1) To conduct the climate change and natural disaster-related statistical survey to monitor the impacts of climate change and disastrous events;

2) To develop natural resource accounts [Land, Forest and Eco-system Accounts (EEA)] align with "System of Environmental Economic Accounting (SEEA)" and BESF 2016-2030.

3) To conduct Environmental Protection Expenditure, Resource and Municipal Waste Management Survey2022.

4) To assess the damage and loss of agricultural production, equipment/machineries, land and soil, residence, infrastructure etc. due to climate change and natural disaster;

5) To assess or measure the affected population with area, deaths and missing population due to climate change and natural disasters with multi-sectoral GIS integration;

6) To collect and compile data and information from secondary sources of the "Compilation of Bangladesh Environmental Statistics 2020 & 2023.

MAIN OUTPUTS

1) Bangladesh Disaster-related Statistics (BDRS) 2021: Climate Change and Natural Disaster Perspectives

2) Compilation of Bangladesh Environmental Statistics 2020

3) Bangladesh Environmental Protection, Expenditure, Resource and Waste Management Survey 2022

4) Natural Resource: Land, Forest, and Ecosystem Accounts/ Statistics in Bangladesh 2023

5) Multi-sectoral GIS integration of the affected population with area, deaths and missing population due to climate change and natural disasters

6) Compilation of Bangladesh Environmental Statistics 2023

The BDRS 2021 Fulfill the SDGs Indicators:

- ■ Directly: 1.5.1, 1.5.2, 11.5.1, 11.5.2, 13.1.1, 15.3.1 and
- ■ Partially: 11 Indicators as Data Source;

Fulfill the Targets 4 of the SFDRR, as Data Source;

The ECDS Project is providing guidance and training on SDG's Env. Data to Ministries/ Divisions/ org. and members of the NDCC Sub-committee

Methodology of the BDRS 2015 & 2021

A) OBJECTIVES: To collect data and information of ….

1) Socio-economic characteristics of Household in disaster prone area
2) Disaster-induced agricultural production losses (Crops, Livestock, Poultries), Damage and loss of cultivable land and useable land;
3) Damage and loss of residence (dwelling), cowshed, kitchen and Forestry;
4) Health and sanitation condition from the natural disaster prone area;
5) Vulnerability of the women, children, aged persons and person with disability; and
6) Perception and knowledge about climate , environment, and disasters.

B) SAMPLING FRAME

1) Survey Frame: A mauza/mahalla list of containing the dominant mauzas in terms of natural disaster prone mauzas under 64 district.

2) Two-Stage Sampling Frame with Kish Allocation formula: Followed a systematic sampling of 30 Households from each of the selected Primary Sampling Unit (PSUs).

C) SCOPE AND COVERAGE

1) Geographically, covering the entire country.

2) To capture various data from the sample households pertaining to their livelihood activities in relation to the direct and indirect impacts of climate change and natural disaster.

3) It will not attempt to collect information on the climate parameters or components like temperature, rainfall or anything in relation to carbon emission, greenhouse gas etc.

D) The New Features of BDRS 2021 Questionnaire:
1) Aligned with SDGs, SFDRR, Nat. Five Year Plan and Other Successive Plans; 2) Based on UNESCAP' DRSF and Bangladesh Disaster Management Act 2012 and Standing Order on Disaster (SOD) 2019; 3) Added new elements: a) Deaths b) Injured c) Disabilities d) Missing e) Climate Induced Migration f) unemployment g) Gender Integration h) GIS Integration etc.; and 4) Using Mobile and Web Application using MDM Software for data collection.

Climate Change and Disaster-related concepts and definitions have been taken in the following national and International evidences and documents:

Glimpses of BDRS 2015 and 2021

Percentage Distribution: Level of Education in Disaster Prone Area

	No Education	Primary	Secondary	SSC/HSC	Graduate/Masters	Others
2015	38.34	32.58	18.56	9.23	1.29	
2021	23.5	34.18	23.67	14.48	3.26	0.91

2015   2021

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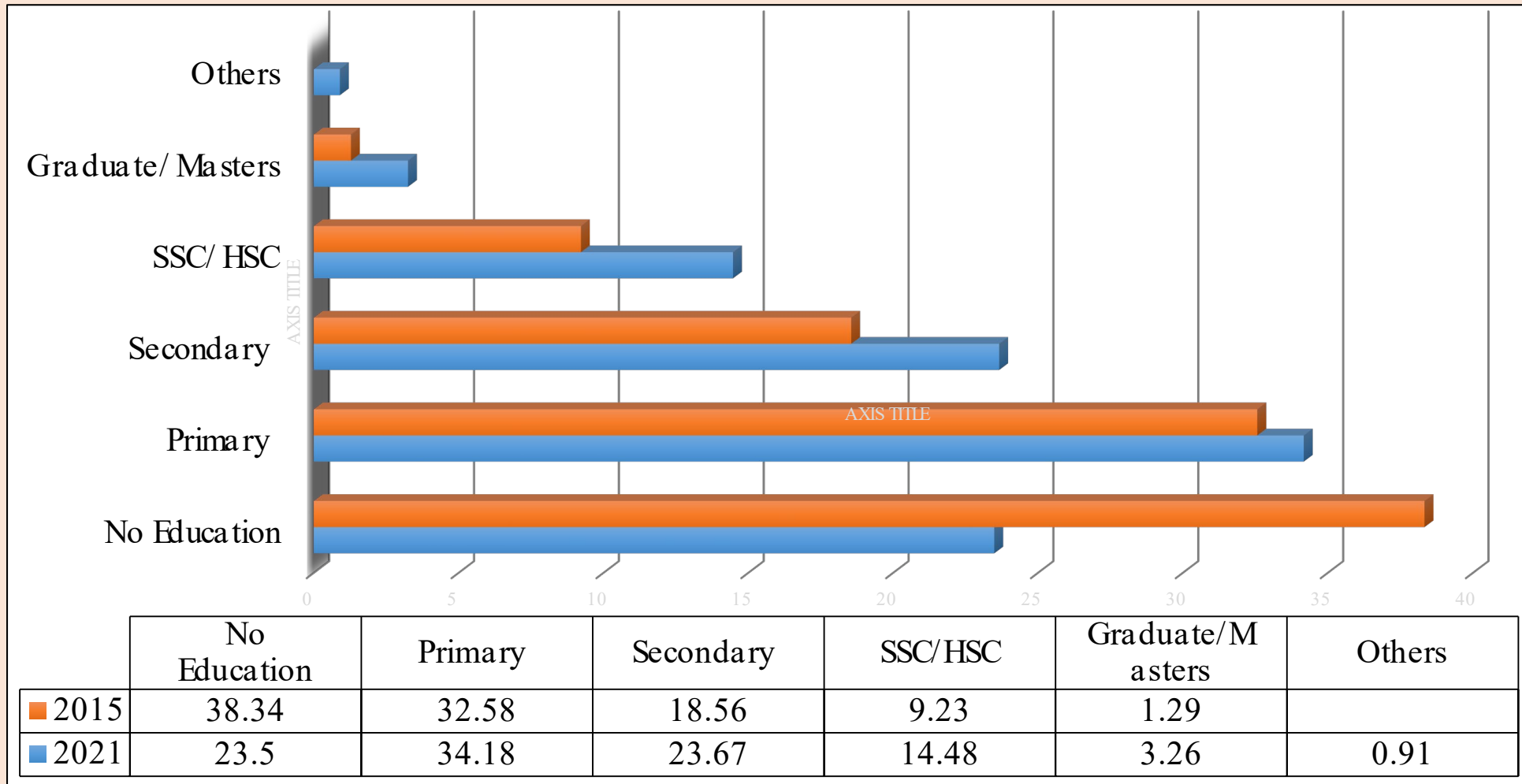
Percentage of Disaster Affected Household by Type of Disaster
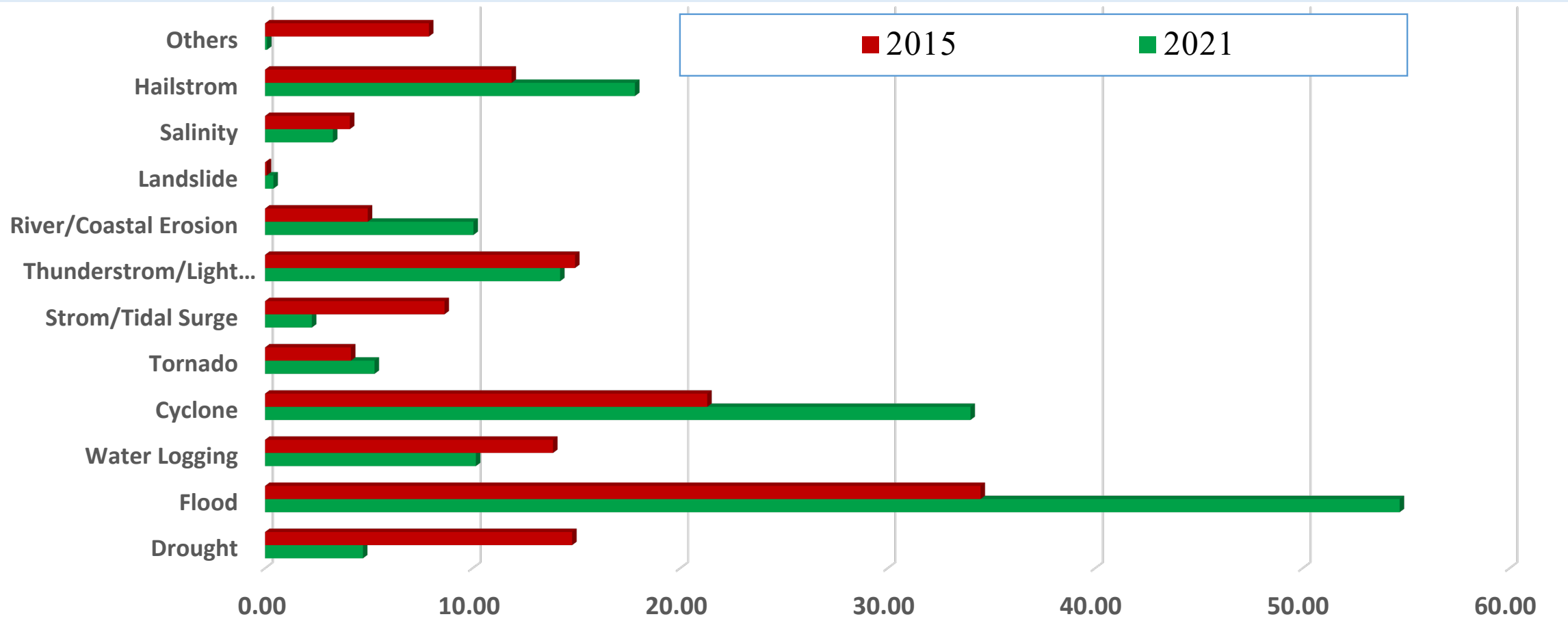
	Drought	Flood	Water Logging	Cyclone	Tornado	Strom/Tidal Surge	Thunderstrom/Lightening	River/Coastal Erosion	Landslide	Salinity	Hailstrom	Others
2015	14.8	34.48	13.88	21.31	4.14	8.65	14.94	4.95	0.08	4.09	11.88	7.9
2021	4.72	54.69	10.16	34.00	5.28	2.26	14.22	10.04	0.40	3.27	17.83	0.09

Non- working days due to Last Natural Disaster

Percentage Distribution

	Drought	Flood	Water Logging	Cyclone	Tornado	Strom/Tidal Surge	Thunderstrom/Lightening	River/Coastal Erosion	Landslide	Salinity	Hailstrom	Others
2021	1.63	42.68	6.07	21.23	2.52	1.55	6.55	3.87	0.26	0.94	6.50	0.02
2015	12.09	17.63	14.85	9.33	5.72	10.8	7.6	16.86	5.67	6.8	5.3	7.15
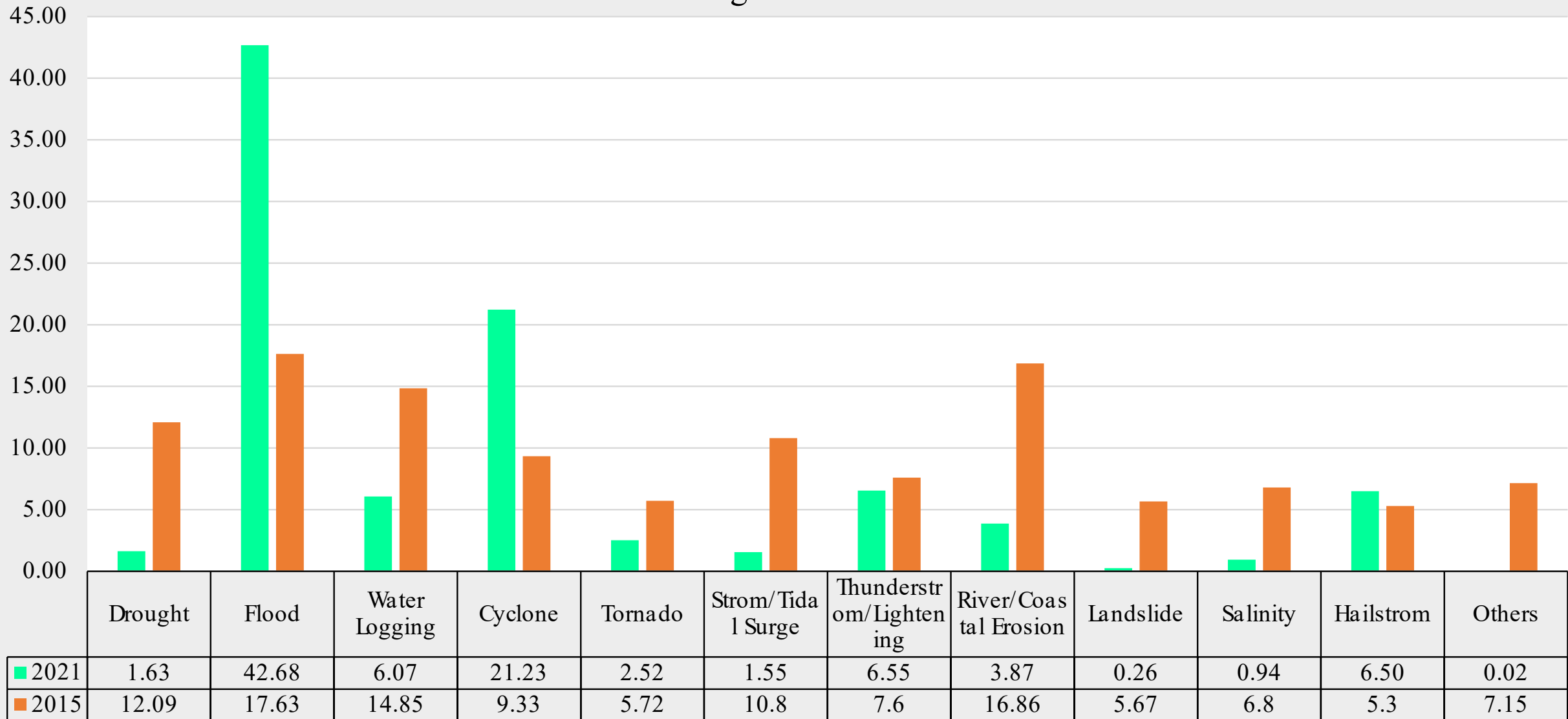
Damage and Loss by Disaster Types and Sector (2015-2020)

Disaster	Damage and Loss by Type of Disaster	
1	2	3
	in Million Taka	%
All	1791988	100.00
Drought	27344	1.53
Flood	1010882	56.41
Water logging	93860	5.24
Cyclone	255382	14.25
Tornado	15226	0.85
Storm/Tidal Surge	15475	0.86
Thunderstorm	29195	1.63
River/Coastal Erosion	268703	14.99
Landslides	6082	0.34
Salinity	20756	1.16
Hailstorm	48945	2.73
Others	136	0.01

Sectors	Damage and Loss by Sector	
1	2	3
	in Million Taka	%
All	1791988	100.00
Crops	517961	28.90
Livestock	71373	3.98
Poultry	26976	1.51
Fishery	66460	3.71
Land Degradation	941843	52.56
Dwelling Houses & Infrastructure	132315	7.38
Homestead Forestry	35061	1.96

Treatment Cost (Medical Expenditure)

Treatment Cost 2015-2020 (Expenditure)			Treatment Cost 2015-2020 (Expenditure)		
Average Treatment Cost (in TK.) of All Ages due to Disaster	No. of HH. Members	Average Cost	Average Treatment Cost (in TK.) of Children (age 0 - 17 years) due to Disaster	No. of Children	Average Cost
	2412389	16341		1448498	17821
1 – 9999 Tk.	1333435	5368	1 – 9999 Tk.	705262	6728
10000 – 24999 Tk.	621077	16667	10000 – 24999 Tk.	419936	17647
25000 – 49999 Tk.	385316	38189	25000 – 49999 Tk.	298392	39146
50000 – 99999 Tk.	53135	61351	50000 – 99999 Tk.	21333	67530
100000 + Tk.	19427	202626	100000 + Tk.	3575	150225

Damage of Land including reduced valuation by type of Disaster

Damage of Land by Disaster including reduced valuation 2015-2020 (Measurement Unit: (In Acres)	868206
Drought	28548
Flood	404501
Water Logging	92120
Storm/Tidal Surge	7192
River/Coastal Erosion	317186
Landslide	6295
Salinity	12363

Percentage Distribution

	Drought	Flood	Water Logging	Strom/Tidal Surge	River/Coastal Erosion	Landslide	Salinity
2015	0.81	13.99	2.64	3.52	68.26	0.35	10.44
2021	3.29	46.59	10.61	0.83	36.53	0.73	1.42
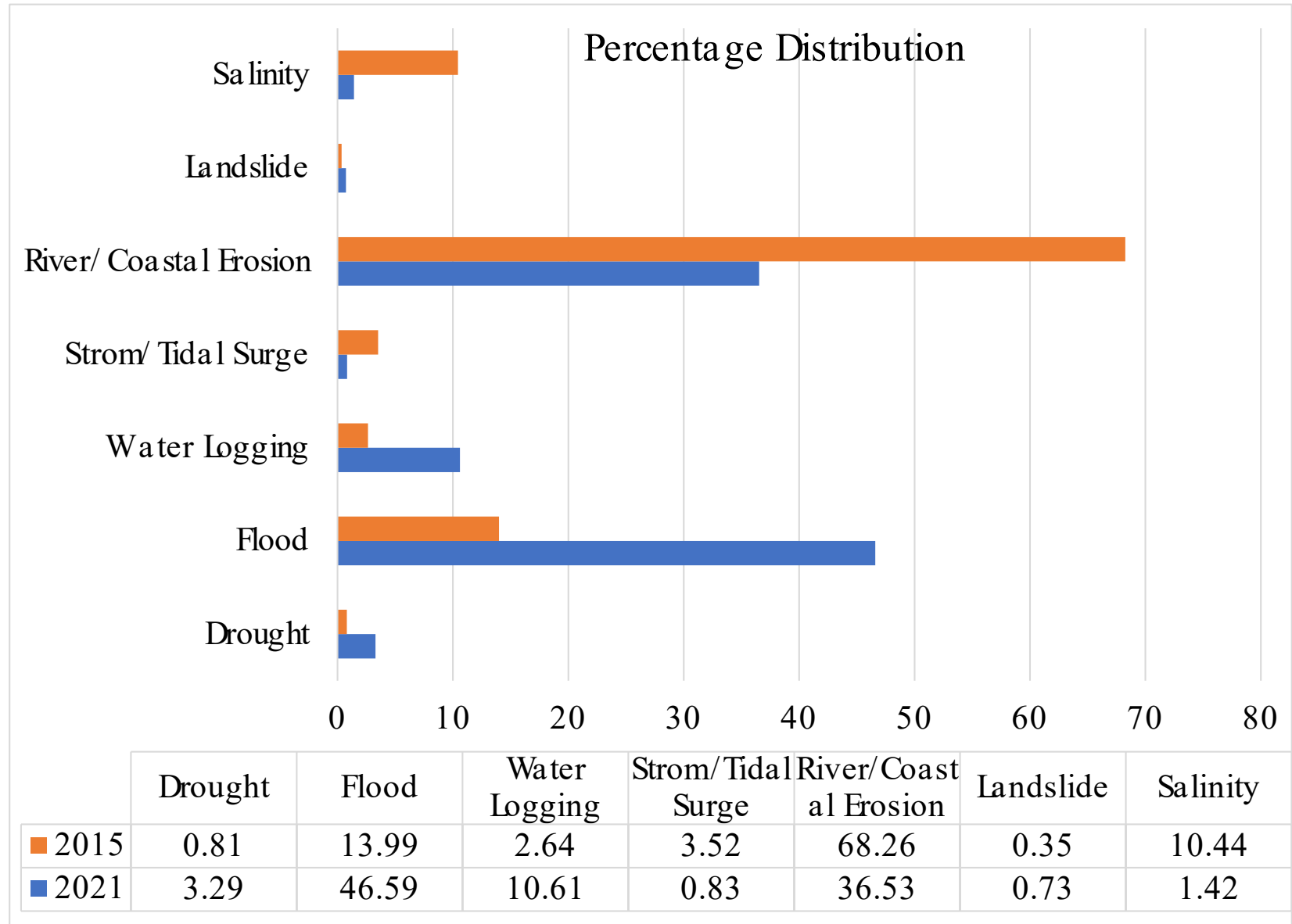
Received Early Warning by type of Media

Percentage Distribution
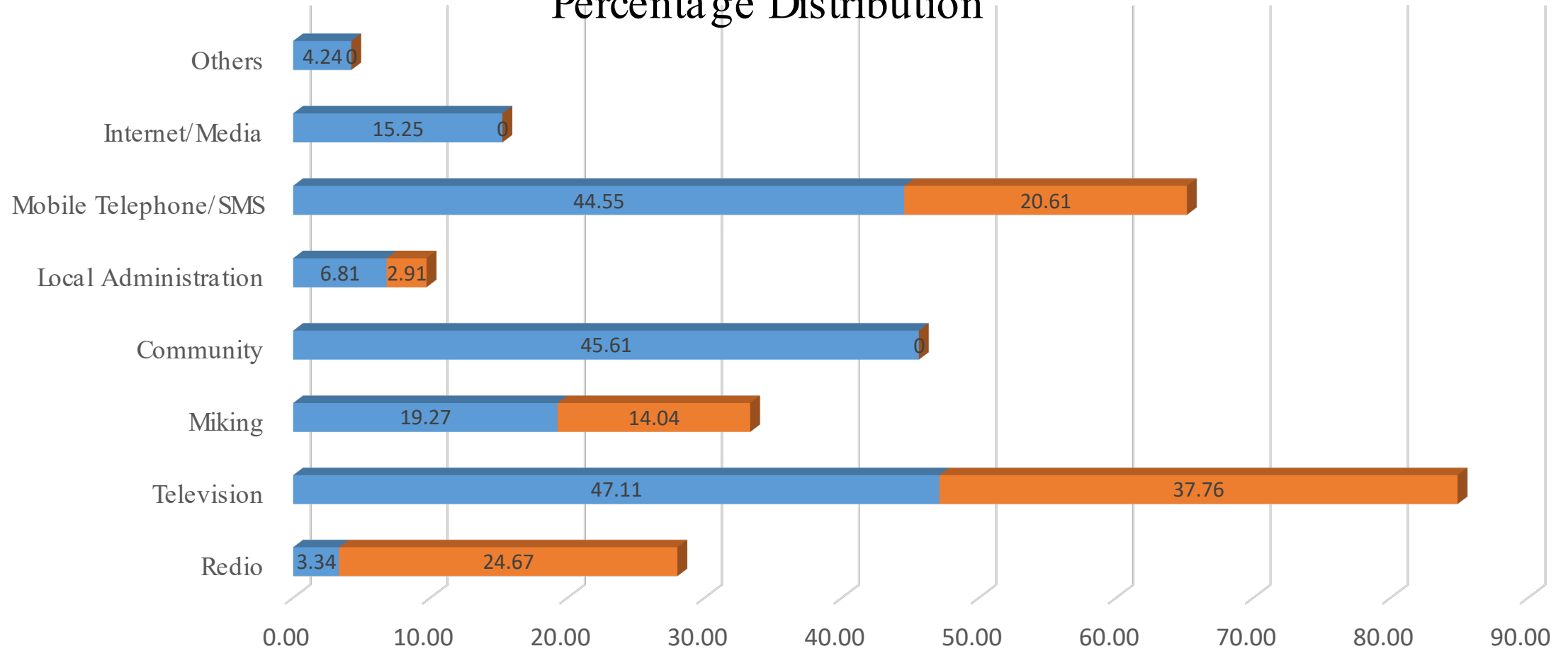
	Redio	Television	Miking	Community	Local Administration	Mobile Telephone/SMS	Internet/Media	Others
2021	3.34	47.11	19.27	45.61	6.81	44.55	15.25	4.24
2015	24.67	37.76	14.04	0	2.91	20.61	0	0

Household Received Financial Support by Organization

Percentage Distribution

	Goverment Organization	NGO's/INGOs	Elite Person/ Welfare/Cooparative Socieity	Business enterprises	Others
2015	73.74	14.6	7.18	2.63	1.85
2021	74.02	12.19	9.67	8.06	3.83
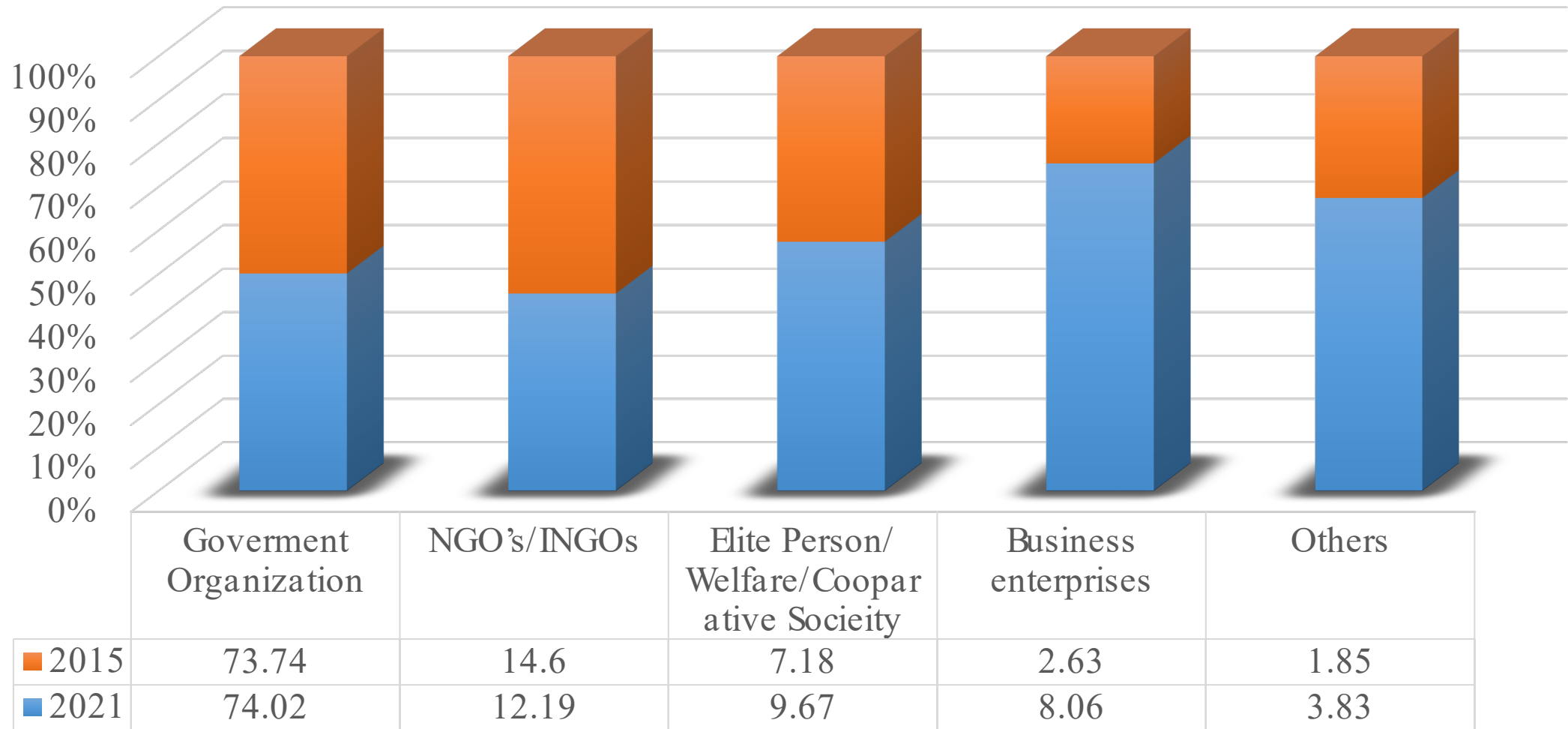
Main Disease due to insufficient Supply of Drinking Water

Percentage Distribution

	Diarrhea	Dysentery	Skin Disease	Cold/Cough	Fever	Jaundice	Others
2015	36.66	21.06	9.97	15.17	9.27	2.73	5.14
2021	44.14	20.22	31.47	40.37	23.70	11.10	5.57
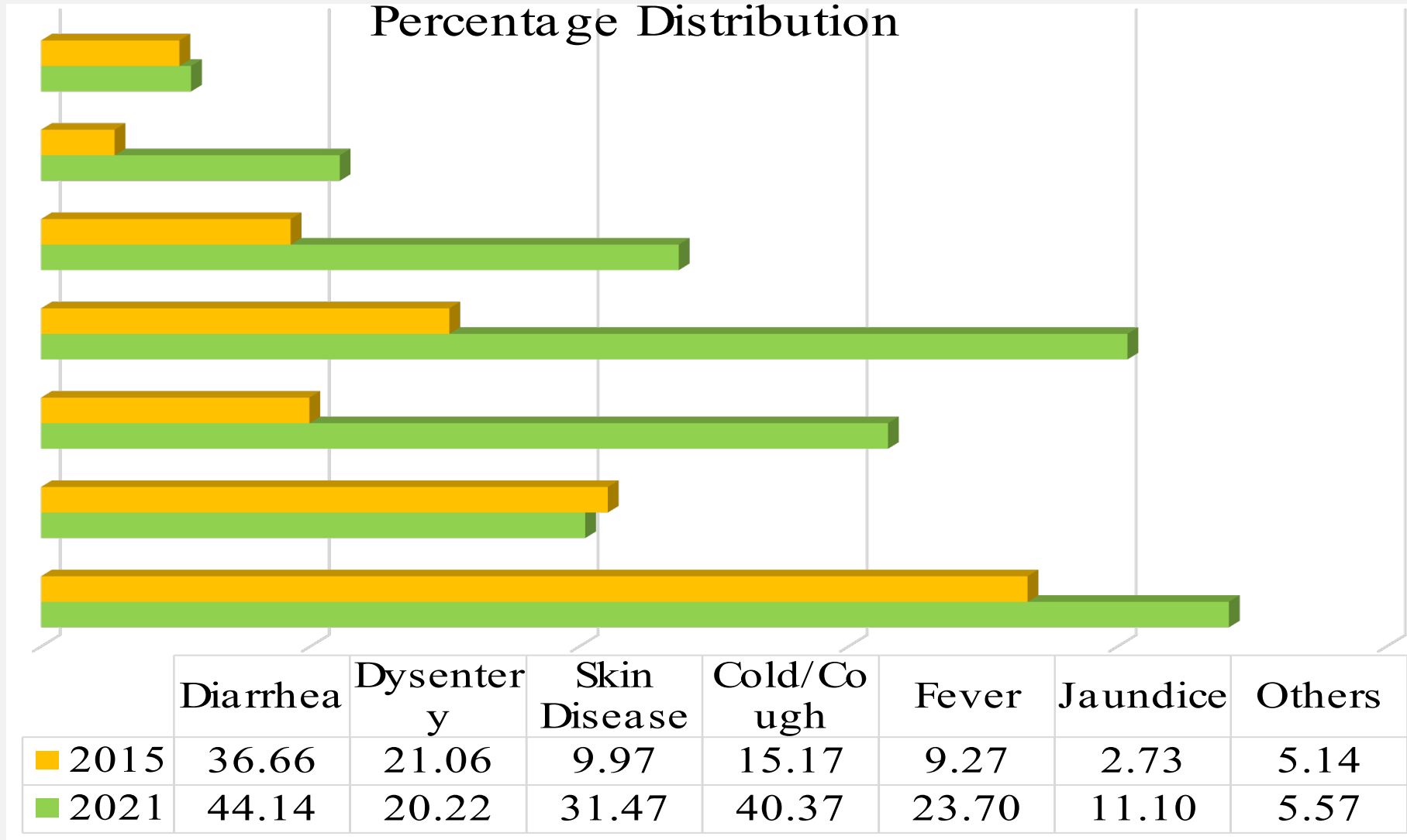
Cause of not attending School of Children due to Disaster

Percentage Distribution
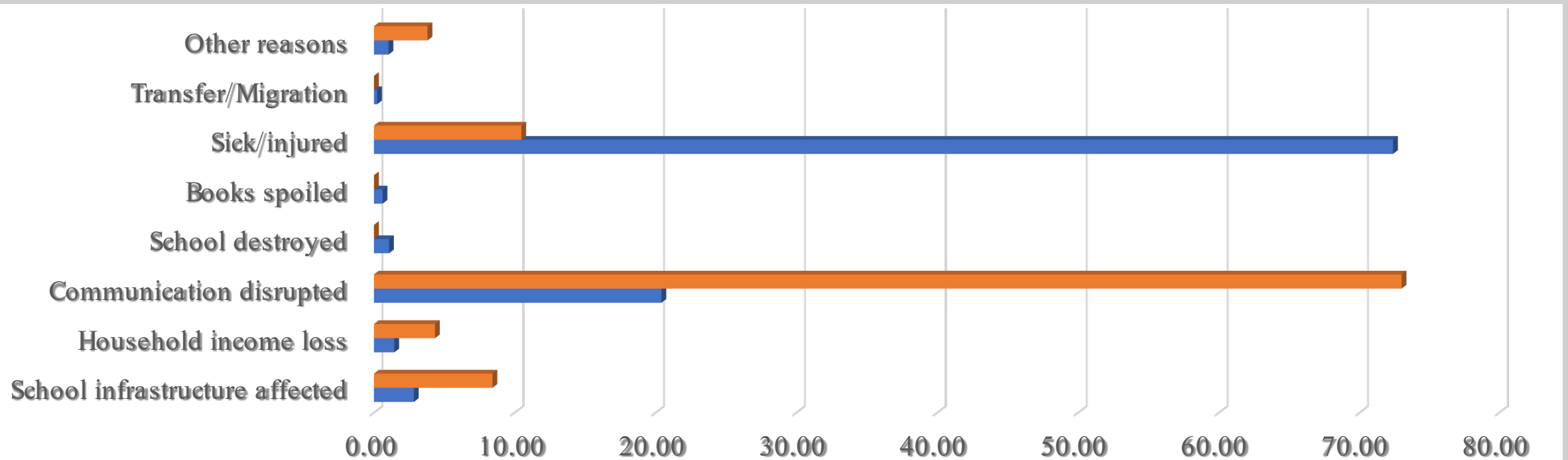
	School infrastructure affected	Household income loss	Communication disrupted	School destroyed	Books spoiled	Sick/injured	Transfer/Migration	Other reasons
2015	8.41	4.33	73.00	0.00	0.00	10.46	0.00	3.80
2021	2.83	1.44	20.41	1.07	0.61	72.39	0.22	1.03

SDGs and SFDRR Indicators from BDRS 2021 & 2015

SDGs Indicators & Sub-Indicators No.	Description of SDGs and SFDRR Indicators	SDGs & SFDRR Indicators 2020	Baseline of SDGs & SFDRR Indicators 2015
1.4.1	Proportion of Population Living in Households with Access to Basic Services [National: Sanitation 96.2%, Electricity 96.2%, (SRVRS 2020), Clean Fuel 19.0% (MICS 2019]		
	a) Sanitation	52.43	49.90
	b) Electricity	94.06	49.82
	c) Clean Fuel	12.61	1.73
1.5.1, 11.5.1, 13.1.1	Number of Deaths, Missing persons, Injured, Sickness and directly affected persons attributed to disasters per 100,000 population	**3765.80**	12881
1.5.1.1	a) Disaster Deaths	**0.85**	
1.5.1.2	b) Missing Persons	**0.03**	
1.5.1.3	c) Injured Persons	**18.09**	
1.5.1.4	d) Disaster Sickness	**167.77**	
1.5.1.5	e) Affected Persons	**3578.03**	

SDGs Indicators & Sub-Indicators No.	Description of SDGs and SFDRR Indicators	SDGs & SFDRR Indicators 2020	Baseline of SDGs & SFDRR Indicators 2015
1.5.2, 11.5.2	Direct Economic Loss attributed to Disasters in relation to Gross Domestic Product (GDP) damage to critical infrastructure and number of disruptions to basic services (Proportion of GDP)	1.32	1.30
1.5.2.1	Sector Wise Damage and Loss (% Share)	100.00	100.00
	Crops	28.90	36.20
	Livestock	3.98	4.76
	Poultry	1.51	1.21
	Fishery	3.71	5.82
	Land Degradation	52.56	26.72
	Dwelling & Others Infrastructures	7.38	17.19
	Homestead Forestry	1.96	8.10

SDGs Indicators & Sub-Indicators No.	Description of SDGs and SFDRR Indicators	SDGs & SFDRR Indicators 2020	Baseline of SDGs & SFDRR Indicators 2015
1.5.2, 11.5.2	Direct Economic Loss attributed to Disasters in relation to Gross Domestic Product (GDP) damage to critical infrastructure and number of disruptions to basic services (Proportion of GDP)	1.32	1.30
1.5.2.2	Damage and Loss by Disaster (% Share)	100.00	100.00
	Drought	1.53	5.74
	Flood	56.41	23.23
	Water Logging	5.24	8.72
	Cyclone	14.25	15.41
	Tornado	0.85	2.33
	Storm/Tidal Surge	0.86	6.88
	Thunderstorm/Lighting	1.63	5.94
	River/Coastal Erosion	14.99	19.76
	Landslide	0.34	0.14
	Salinity	1.16	3.30
	Hailstorm	2.73	6.23
	Others	0.01	2.34

SDGs Indicators & Sub-Indicators No.	Description of SDGs and SFDRR Indicators	SDGs & SFDRR Indicators 2020	Baseline of SDGs & SFDRR Indicators 2015
4.1.2	**Completion rate of Education (National: Primary: 82.6%; Lower Secondary: 64.7%; Upper Secondary: 29.4%[MICS 2019, BBS]**		
	Primary (Class I to V & Equivalent)	34.18	32.58
	Secondary (Class VI to IX & Equivalent)	23.67	18.56
	SSC/HSC/Equivalent/Diploma	14.48	9.23
4.3.1	**Participation Rate of Youth and Adults in Formal Education [National: a) Secondary 75.62% b) H. Secondary 48.39% c) *Tertiary* 20.07 % (BANBEIS, 2020)]**		
	(a) Secondary	23.67	18.56
	(b) Higher Secondary	14.48	9.23
	(c) *Tertiary*	3.26	1.29
7.1.1	**Proportion of Population with Access to Electricity [National 96.2% (2020) SVRS, BBS]**	**94.06**	**49.82**

Vulnerability Assessment based on Quintile Income Group

Lowest Income Group ↕ **Highest Income Group**

Household Group	Average Annual Income (Tk)	Average Annual Damage and Loss (Tk.) by BDRS 2021 Sample Survey								Proportion of damage and loss to total income
		Crops	Livestock & Feed	Poultry & Egg	Fishery	Land	Housing & Others	Homestead forestry	Total	
1	2	3	4	5	6	7	8	9	10	11
Q1	31001	7380	1334	423	456	17491	2642	399	30125	97.17
Q2	100628	7213	1290	453	603	16792	2981	517	29848	29.66
Q3	158014	8963	1390	484	762	18397	2921	629	33546	21.23
Q4	239275	12241	1437	569	1164	19737	2907	884	38938	16.27
Q5	722903	22142	2500	1081	4509	32506	3229	1493	67459	9.33
Total	246241	11486	1583	598	1474	20885	2934	777	39737	16.14

As high as 97.17% of income goes for damage and loss in bottom quintile. While it is only 9.33% for the top quintile. Bottom quintile is more vulnerable (10.4 times) than top quintile in exposure to damage and loss. Proportion of damage and loss decrease as income goes up.

Note: Quintiles are representative of 20% of a given population . Therefore, the first quintile (Q1) represents the lowest fifth of data and top quintile (Q5) represents the last 5th (20%) of a data. Here, we use household income for preparing the quintile

Lessons Learned from the BDRS 2015 and 2021

➢ Due to time constraints and adverse conditions caused by COVID-19 pandemic, some deficiencies and weaknesses remained in the questionnaires constructed for collecting data of the jobless of people, drop out student from educational institutions, reduced number of items in the meal, reduced intake of protein and reduced the number of meals per day, to cope with the loss in earnings and assets.

➢ Answers to the questions related to a person were taken from the proxy respondent. That may have caused bias in the answer. Proxy respondents should be avoided as far as possible. However, if the respondent is unable to answer for any reason, then proxy responses can be used. and

➢ In many cases, due to the weakness of the questionnaire design, collected data could not be tabulated based on more disaggregated level according to direction of SDGs guideline.

Thank You!

Questions? Comments? Suggestions?

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Background

The Constitution of the People's Republic of Bangladesh
(ACT NO. OF 1972)

FUNDAMENTAL PRINCIPLES OF STATE POLICY
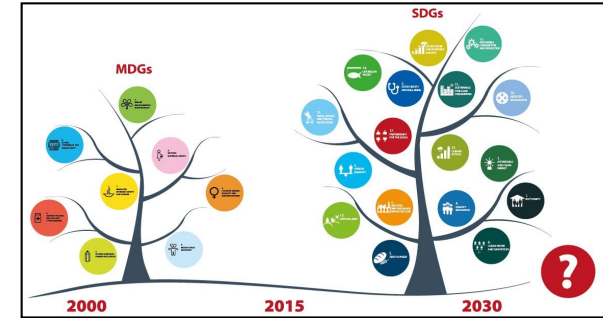
Protection and improvement of Environment and Biodiversity

18A. The State shall endeavour to protect and improve the environment and to preserve and safeguard the natural resources, bio-diversity, wetlands, forests and wild life for the present and future citizens

Background

Bangladesh is one of the world's most disaster and climate vulnerable countries, at the same time most resilient countries, due to the frequent, regular, and devastating disasters, subject to a wide variety of climatic variability, including irregular rainfall, cyclones, storm surges, SLR, salinity, floods, and droughts

Bangladesh has only 7% area of the total GBM basins which has more than 405 rivers, including 57 trans-boundary rivers

Impacts of climate change, such as drought, floods, extreme weather events like cyclone and food and water insecurity, affect women and men differently while making the poorest more vulnerable (Signatory of SDGs, Paris Agreement & SFDRR)

Gender are therefore disproportionately affected, at the same time they play a crucial role in climate change adaptation and mitigation actions

In order to bring about a paradigm shift towards climate resilient development pathways, globally and at national level, all climate change mitigation and adaptation actions need to equally pursue broader environmental, social, economic, and political benefits in a gender-responsive manner.

About half of the SDGs are directly environmental in focus or address the sustainability of natural resources", and"...over 86 targets and 93 indicators concern environmental sustainability, including at least one target in each of the 17 Goals".

Environmental Statistics Family in Bangladesh

❖ Formed an "Inter-Ministerial Technical Working Committee" for producing "Environment, Climate Change and Disaster Statistics";

❖ Established "Environment, Climate Change & Disaster Statistics (ECDS) Cell;

❖ Piloting of the Poverty Environment Accounts (PEA) 2017;

❖ Pilot Survey on Sex, Age and Disability Disaggregated Data (SADDD) for DRR & CCA 2021
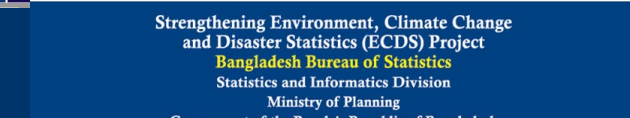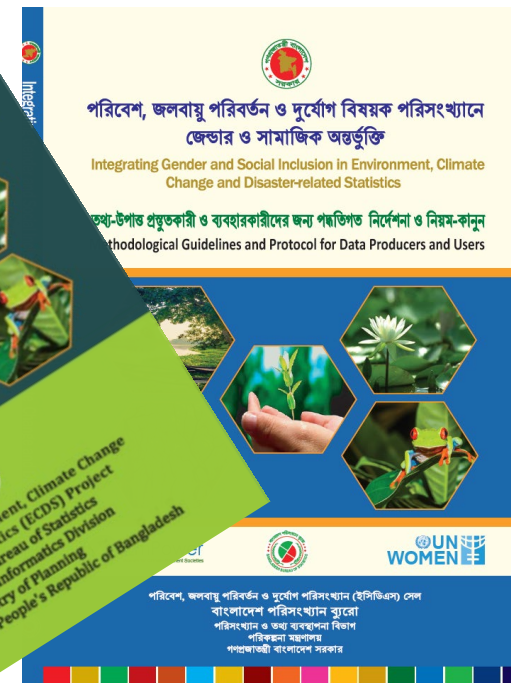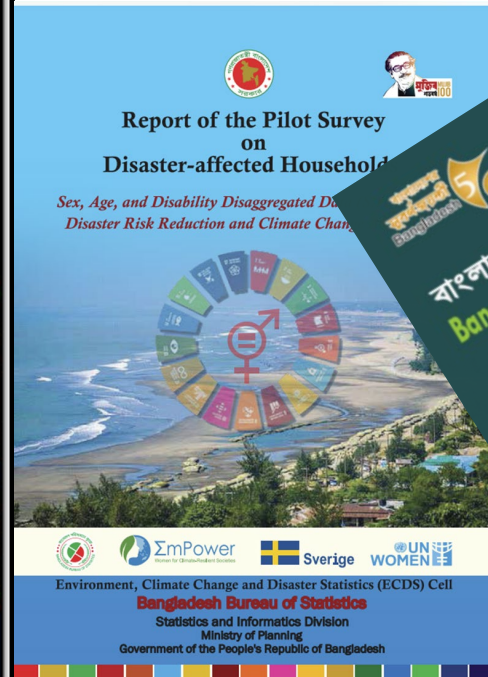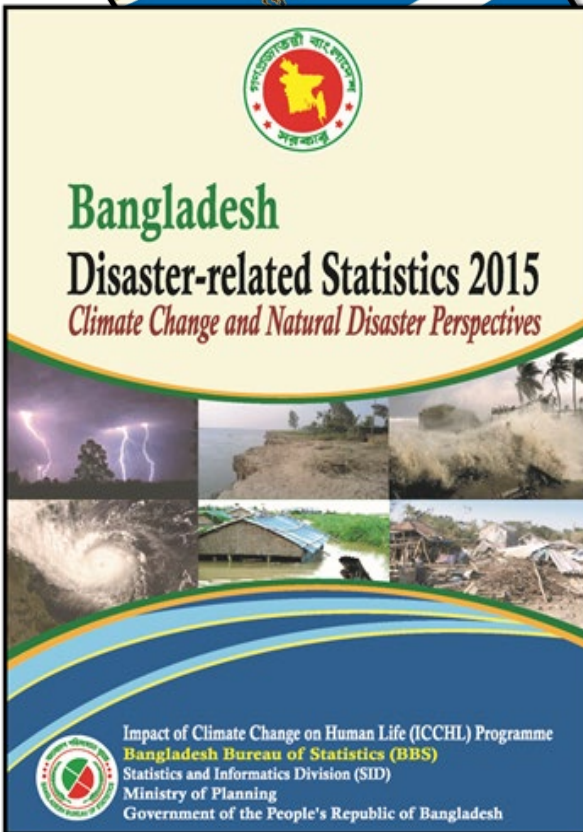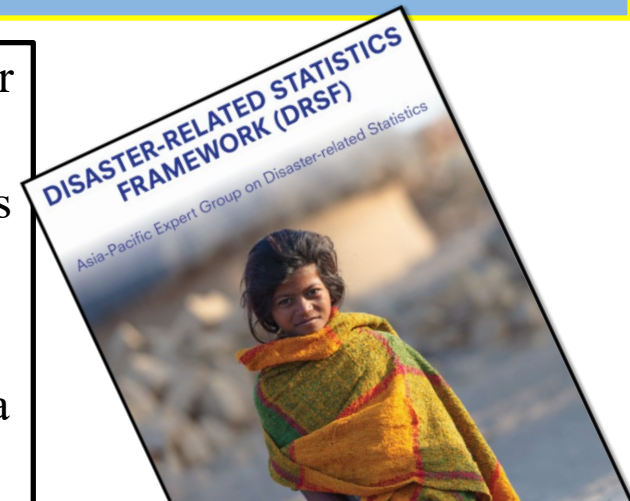
The Legal Provisions for DM, DRR and Resilience

Four Key Elements of Risk to Resilience based on National Plan for Disaster Management (NPDM) 2021-2025 Action in Bangladesh

RISK KNOWLEDGE

- Systematically collect data and undertake risk assessments
- Are the hazards and the vulnerabilities well known?
- What are the patterns and trends in these factors?
- Are risk maps and data widely available?

MONITORING AND WARNING SERVICE

- Develop disaster and hazard monitoring and early warning services
- Is there a sound scientific basis for making forecasts?
- Are the right parameters being monitored?
- Can accurate and timely warnings be generated?

DISSEMINATION AND COMMUNICATIONS

- Communicate risk information and early warnings
- Do the information & knowledge on disasters are communicated?
- Do warnings reach all of those at risk?
- Are the risks and the warnings understood?
- Is the warning information clear and usable?

RESPONSE CAPABILITY

- Build national and community response capabilities
- Are response plans up to date and tested?
- Are local capacities and knowledge made use of?
- Are people prepared and ready to react to warnings or preparedness alerts?

Challenges

❖ **Issues with data** accessibility, quality and timeliness**;**

❖ **Complex accountability** among BBS and Other Sectoral Agencies/ Organizations;

❖ **Operational Gaps**

  ○   in the Integration in national planning process

  ○   in the development of institutional mechanism for implementation;

  ○   in technical capacities for developing new surveys;

  ○   in the designation of Focal Point from respective agencies/org
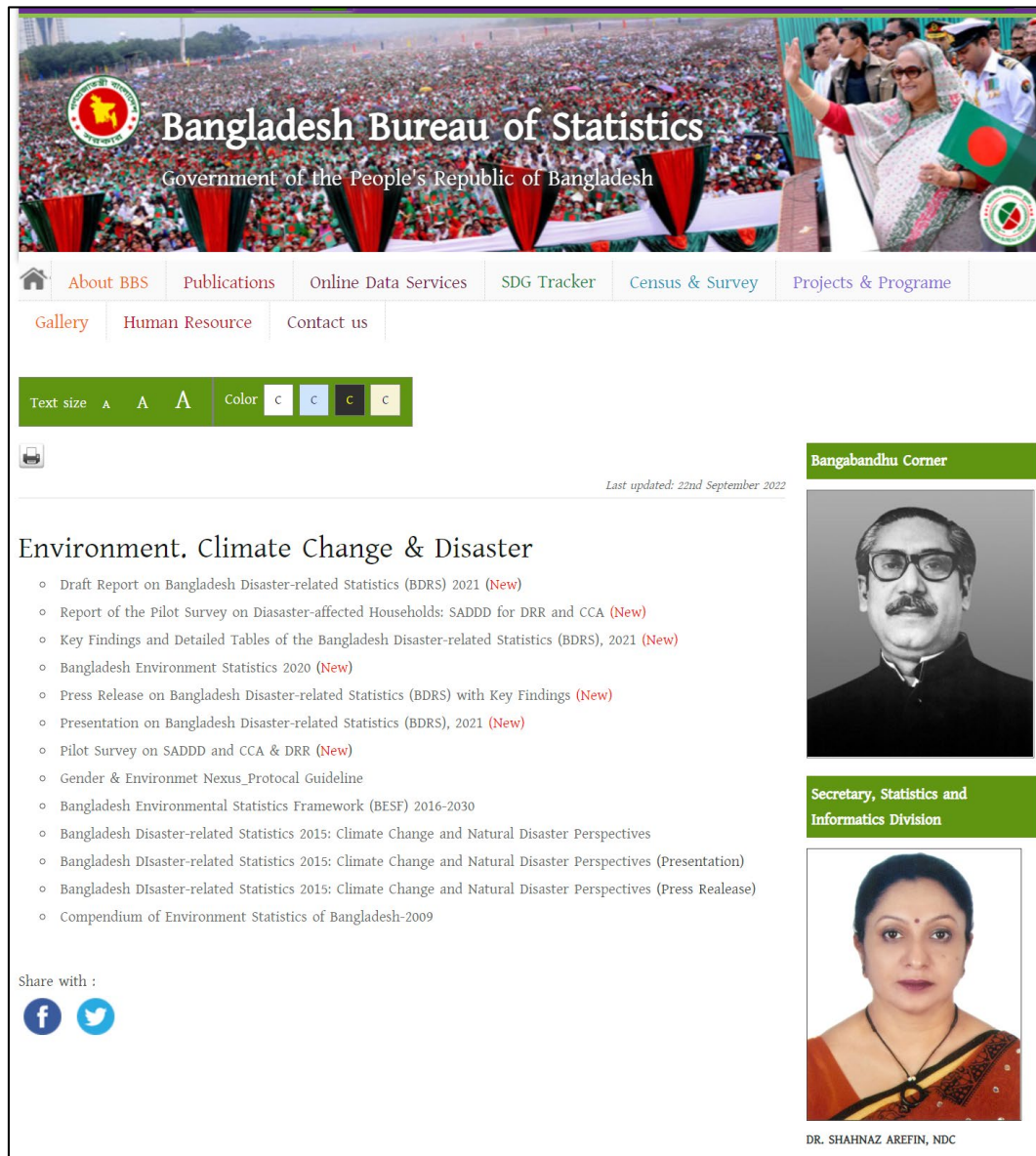
❖ **COVID-19** Pandemic

Way Forward

- BDRS Qquestionnaire should be adjusted for length and scope in future rounds of the survey. Some modules could be attached to other surveys (household data on various water, sanitation, health and safety issues), and key disasters, climate change and environmental livelihoods modules could remain as stand-alone.

- There is room to improve it further with more focused and sex and age disaggregated data collection related to DRSF and UNSD Global Set statistics and indicators only to generate the BDRS in a better way.

- Special attention needs in developing the BDRS Questionnaire with consideration of time required by the interviewer and interviewee as well. Long questionnaire should be tiring for both sides then respond rate will be satisfied.

- A digital interactive platform needs to be developed in permanent basis for field level real time data collection before and after any disaster events incorporating disaster risks data along with geolocation or associated social, biophysical and geospatial parameters.

Way Forward..

- A large number of people lose their jobs and earnings due to disaster and sometime are adjusted with reappointment at lower wages. People shift to lower skilled jobs, which reduce productivity and earnings. The data on such changes need to be collected.

- There is a data gap in Bangladesh as about the drop out and learning losses due to any specific disaster. Disaster risks and access to digital technologies and services need to be collected from poor and vulnerable families.

- The disaster affected people have little access to drinking water and quality meal, reduced number of items in the meal, reduced intake of protein and finally reduced the number of meals per day, to cope with the loss in earnings and assets. These pre- and post-disaster risks data need to be collected through a regular data collection program.

- Finally, a Climate Resilient Investment Planning for Bangladesh or Investment Plan for Climate Resilience needs to be developed. So that BBS's data and statistical analysis and reporting can feed more evidence based DRR, DRM, CCA and resilience programming of the government.

Bangladesh Bureau of Statistics

Government of the People's Republic of Bangladesh

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Last updated: 22nd September 2022

Environment. Climate Change & Disaster

- Draft Report on Bangladesh Disaster-related Statistics (BDRS) 2021 (New)
- Report of the Pilot Survey on Diasaster-affected Households: SADDD for DRR and CCA (New)
- Key Findings and Detailed Tables of the Bangladesh Disaster-related Statistics (BDRS), 2021 (New)
- Bangladesh Environment Statistics 2020 (New)
- Press Release on Bangladesh Disaster-related Statistics (BDRS) with Key Findings (New)
- Presentation on Bangladesh Disaster-related Statistics (BDRS), 2021 (New)
- Pilot Survey on SADDD and CCA & DRR (New)
- Gender & Environmet Nexus_Protocal Guideline
- Bangladesh Environmental Statistics Framework (BESF) 2016-2030
- Bangladesh Disaster-related Statistics 2015: Climate Change and Natural Disaster Perspectives
- Bangladesh DIsaster-related Statistics 2015: Climate Change and Natural Disaster Perspectives (Presentation)
- Bangladesh DIsaster-related Statistics 2015: Climate Change and Natural Disaster Perspectives (Press Realease)
- Compendium of Environment Statistics of Bangladesh-2009

Share with :

Bangabandhu Corner

Secretary, Statistics and Informatics Division

DR. SHAHNAZ AREFIN, NDC

Environment. Climate Change & Disaster-related Statistics

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12. Bangladesh Disaster-related Statistics 2015: Climate Change and Natural Disaster Perspectives (Press Release)
13. Compendium of Environment Statistics of Bangladesh-2009
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