Sendai Targets and Indicators: A roadmap for implementation TARGETS A-D

In support of the Sendai Framework
for Disaster Risk Reduction 2015 - 2030

UNISDR
The United Nations Office for Disaster Risk Reduction

Current status:

- 3 Sessions of OIWEG 2015-206
- OIEWG Report produced November 2016
- IEWG Report to General Assembly adopted 2 Feb. 2017 in UNGA Resolution A/RES/71/276

Mandate from the OEIWG

In order to support Member States in the operationalization of the global indicators to measure progress towards the achievement of the global targets of the Sendai Framework and relevant targets of the Sustainable Development Goals, the **United Nations Office for Disaster Risk Reduction is requested to undertake technical work and provide technical guidance to**:

- Develop minimum standards and metadata for disaster - related data
- Develop methodologies for the measurement of indicators and the processing of statistical data
- Conduct a review of data readiness with respect to the indicators
- Develop technical guidance material for the testing and roll -out of the indicators and the web -based monitoring system

Feasibility studies

- Japan feasibility study
- JRC Loss Data Challenges and comparisons
- UNISDR statistics and review of databases
- **UNISDR Readiness Review**

- NO COUNTRY IN THE WORLD CURRENTLY HAS ALL THE DATA REQUIRED
- NO COUNTRY IN THESE STUDIES HAS EXPRESSED THAT **ALL** INDICATORS ARE AVAILABLE/FEASIBLE

PRODUCTS

Technical Guidance Notes (Data/Methodology Document)

For each Target/Indicator:

- Minimum data set required
- Recommended Optimal dataset (including disaggregation)
- Challenges, temporary considerations, etc.
- Computation Methodology (from minimal to recommended datasets)
- Metadata: contents, methodology and other possible topics such as coverage, representativeness, quality

http://www.preventionweb.net/publications/view/54970

PRODUCTS

Draft For Consultation - Technical Guidance Notes (Data/Methodology Documents)

- Roadmap Meeting, Ispra (Italy), February 2017
- Technical Workshop, London (UK)
- Consultation with Member States and Stakeholders, April 2017
- Upcoming: First operational version, October 30, 2017

http://www.preventionweb.net/publications/view/54970

PRODUCTS

Web base on-line Monitoring System

- Implementing the Guidelines
- Allowing from minimum to Recommended data sets (including disaggregation)
- Metadata-enabled
- Loss Data Accounting as a SUB-SYSTEM
- With interfaces to SDG's and other frameworks
- Permitting nationally defined (Custom) Targets/Indicators
- Prototype developed and consulted during GP
- Development UNDERWAY

Prototype http://4d49ne.axshare.com/#g=1&p=welcome

Target A

Global target A: Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality between 2020-2030 compared with 2005-2015.	
A-1 (compound)	Number of deaths and missing persons attributed to disasters, per 100,000 population.
A-2	Number of deaths attributed to disasters, per 100,000 population.
A-3	Number of missing persons attributed to disasters, per 100,000 population.
	The scope of disaster in this and subsequent targets is defined in paragraph 15 of the Sendai Framework for Disaster Risk Reduction 2015-2030 and applies to small-scale and large-scale, frequent and infrequent, sudden and slow-onset disasters caused by natural or man-made hazards, as well as related environmental, technological and biological hazards and risk.

Target A

Indicator No.	Indicator
A-1	**Number of deaths and missing persons attributed to disasters, per 100,000 population.** COMPOUND INDICATOR. See method
A-2	**Number of deaths attributed to disasters, per 100,000 population.** **[Minimum data requirements]:** **Data to be collected by disaster** **A-2a** Number of deaths attributed to disasters **[Desirable Disaggregation Requirements]:** Hazard Geography Sex Age Disability Income **METADATA** **Additional demographic and socio-economic parameters needed** **Population**: Population of the country for each of the years of the reporting exercise. The national indicator would be calculated using the population of the country. The global indicator is the sum of the populations of all countries having reported.
A-3	**Number of missing persons attributed to disasters, per 100,000 population.** **[Minimum data Requirements]:** **Data to be collected by disaster** **A-3a** Number of missing attributed to disasters **[Desirable Disaggregation Requirements]:** Hazard Geography Sex Age Disability Income **METADATA** **Additional demographic and socio-economic parameters needed: Population**: see A-2

Target A

5. Computation Methodology

In the case of Target A, the formula for calculating the compound indicator is a simple summation of related indicators from national disaster loss databases divided by the sum of represented population data (from national censuses, World Bank or UN Statistics information)**:**

$$A_1 = \frac{(A_{2a} + A_{3a})}{Population} * 100,000$$

Where:

A-1:	Number of deaths and missing persons attributed to disasters per 100,000
A-2a:	Number of deaths attributed to disasters
A-3a:	Number of missing persons attributed to disasters
Population:	Represented population.

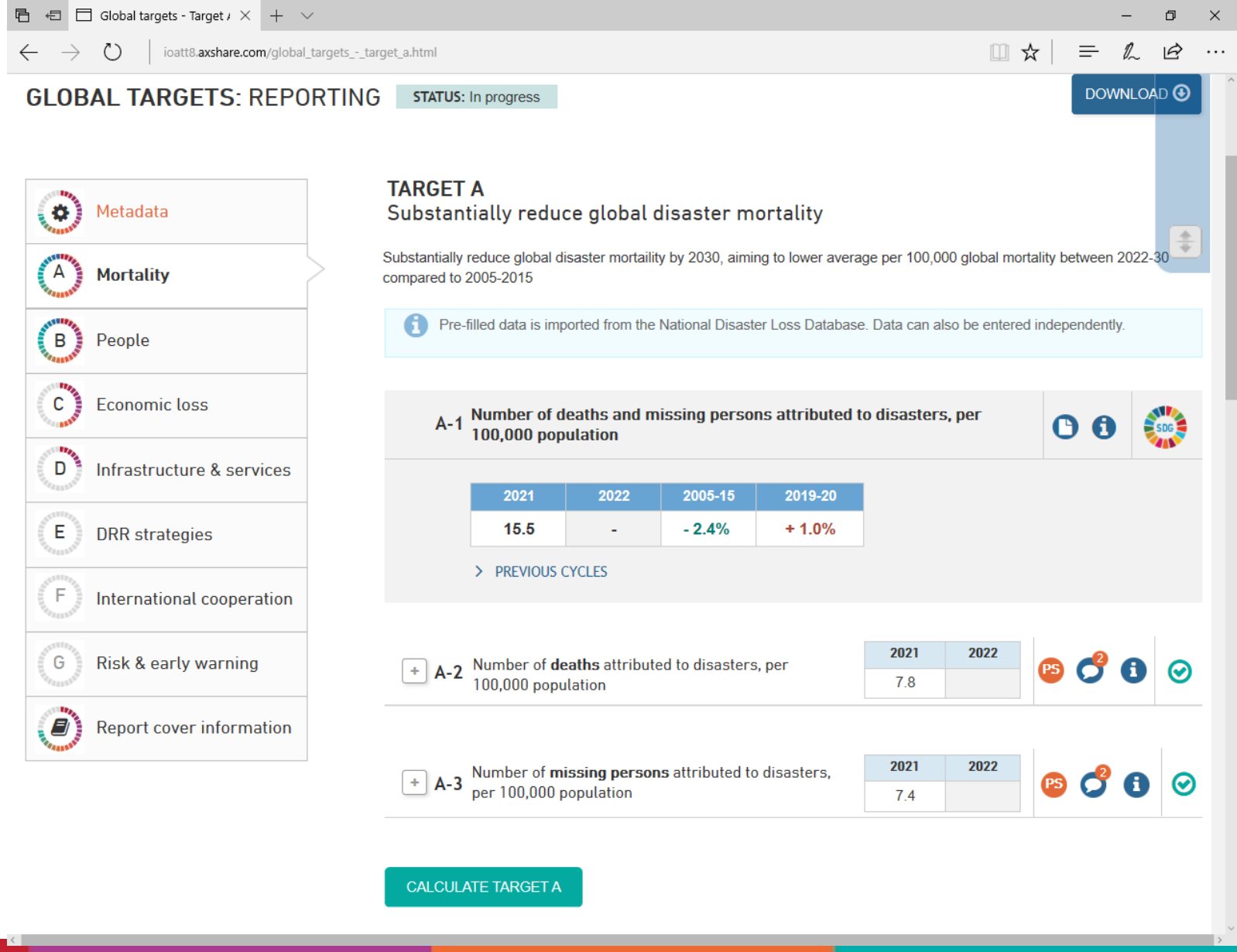
Note that the above formula can be derived from:

$$A_2 = \frac{A_{2a}}{Population} * 100,000$$

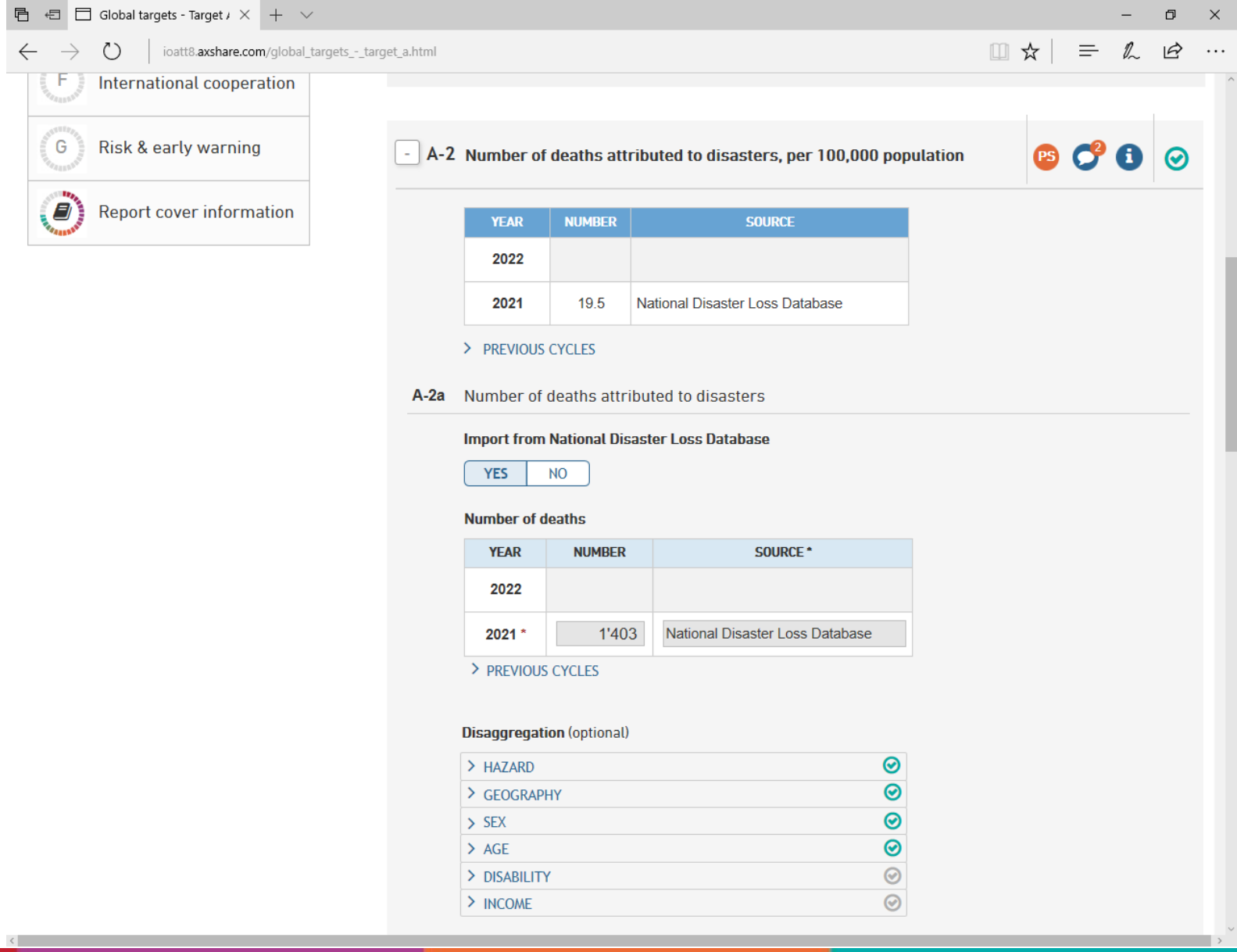
$$A_3 = \frac{A_{3a}}{Population} * 100,000$$

$$A_1 = A_2 + A_3$$

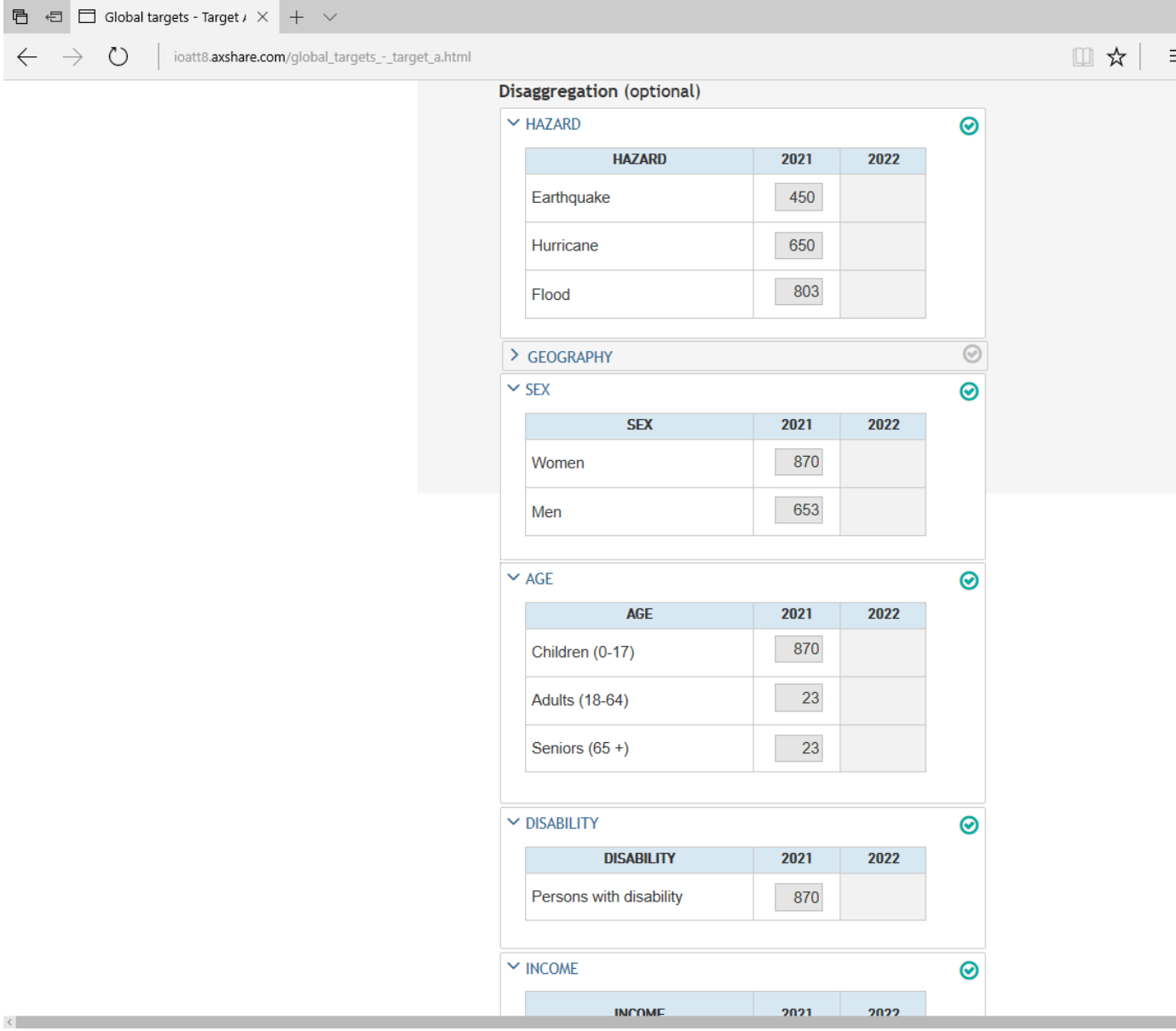
Target A


Global targets - Target A
ioatt8.axshare.com/global_targets_-_target_a.html
GLOBAL TARGETS: REPORTING
STATUS: In progress
DOWNLOAD
Metadata
A Mortality
B People
C Economic loss
D Infrastructure & services
E DRR strategies
F International cooperation
G Risk & early warning
Report cover information
TARGET A
Substantially reduce global disaster mortality
Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality between 2022-30 compared to 2005-2015
Pre-filled data is imported from the National Disaster Loss Database. Data can also be entered independently.
A-1 Number of deaths and missing persons attributed to disasters, per 100,000 population
2021 2022 2005-15 2019-20
15.5 - - 2.4% + 1.0%
PREVIOUS CYCLES
A-2 Number of deaths attributed to disasters, per 100,000 population
2021 2022
7.8
A-3 Number of missing persons attributed to disasters, per 100,000 population
2021 2022
7.4
CALCULATE TARGET A

Target A


Global targets - Target A
ioatt8.axshare.com/global_targets_-_target_a.html
F International cooperation
G Risk & early warning
Report cover information
A-2 Number of deaths attributed to disasters, per 100,000 population
PS
YEAR NUMBER SOURCE
2022
2021 19.5 National Disaster Loss Database
PREVIOUS CYCLES
A-2a Number of deaths attributed to disasters
Import from National Disaster Loss Database
YES NO
Number of deaths
YEAR NUMBER SOURCE *
2022
2021 * 1'403 National Disaster Loss Database
PREVIOUS CYCLES
Disaggregation (optional)
HAZARD
GEOGRAPHY
SEX
AGE
DISABILITY
INCOME

Target A


Global targets - Target A
ioatt8.axshare.com/global_targets_-_target_a.html
Disaggregation (optional)
HAZARD
HAZARD 2021 2022
Earthquake 450
Hurricane 650
Flood 803
GEOGRAPHY
SEX
SEX 2021 2022
Women 870
Men 653
AGE
AGE 2021 2022
Children (0-17) 870
Adults (18-64) 23
Seniors (65 +) 23
DISABILITY
DISABILITY 2021 2022
Persons with disability 870
INCOME
INCOME 2021 2022

Target B

Global target B: Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 between 2020-2030 compared with 2005-2015.	
B-1 (compound)	Number of directly affected people attributed to disasters, per 100,000 population.
B-2	Number of injured or ill people attributed to disasters, per 100,000 population.
B-3	Number of people whose damaged dwellings were attributed to disasters.
B-4	Number of people whose destroyed dwellings were attributed to disasters.
B-5	Number of people whose livelihoods were disrupted or destroyed, attributed to disasters.

Target B

Indicator No.	Indicator
B-1	**<u>Number of directly affected people attributed to disasters, per 100,000 population</u>** COMPOUND INDICATOR. See computation method **Additional demographic and socio-economic parameters needed** **Population**: number of inhabitants of the country for each of the years of the reporting exercise. The National indicator will be calculated using the population of the country. The global indicator is calculated with the sum of the populations of all countries having reported.
B-2	**<u>Number of injured or ill people attributed to disasters.</u>** **[Minimum Requirement]** **Data to be collected by disaster** **B-2** Number of injured or ill people attributed to disasters **[Desirable Disaggregation Requirements]:** Hazard Geography Sex Age Disability Income

Target B

B-3	**Number of people whose damaged dwellings were attributed to disasters.** **[Minimum Requirement]** **Data to be collected by disaster** **B-3** Number of people whose damaged dwellings were attributed to disasters (calculated based on B-3a or directly measured in situ) **B-3a** Number of damaged dwellings/houses attributed to disasters **[Desirable Disaggregation Requirements]:** Hazard Geography (The following disaggregations could be artificially calculated) Sex Age Disability Income **Additional demographic and socio-economic parameters needed** **Population**: number of inhabitants and number of households of the country for each of the years of the reporting exercise. The National indicator will be calculated using the population of the country. The global indicator is calculated with the sum of the indicators of all countries having reported.

Target B

B-4	**<u>Number of people whose destroyed dwellings were attributed to disasters.</u>** **[Minimum Requirement]** **Data to be collected by disaster** **B-4** Number of people whose destroyed dwellings were attributed to disasters (calculated based on B-4b or directly measured on the field) **B-4b** Number of destroyed dwellings/houses attributed to disasters **[Desirable Disaggregation Requirements]:** Hazard Geography (The following disaggregations could be artificially calculated) Sex Age Disability Income **Additional demographic and socio-economic parameters needed**: see B-3

Target B

B-5	**Number of people whose livelihoods were disrupted or destroyed, attributed to disasters.** **[Minimum Requirement]** **Data to be collected by disaster** **B-5** Number of people whose livelihoods were disrupted or destroyed, attributed to disasters (**directly measured in situ and/or using a nationally defined methodology)** **NO OTHER DATA. Countries may opt not to enter B-5 and if socio-economic parameters are provided and , requiring UNISDR to make the calculation using** the following data to be collected by disaster, related to the indicators for Target C: - **C-2a** Number of hectares of crops damaged or destroyed by disasters. (to be used to establish the statistic of Number of Workers affected) - **C-2b** Number of Livestock lost in disasters (to be used to establish the statistic of Number of Workers affected) - **C-3a** Number of Productive Assets Facilities (such as Industrial, Commercial, Services, etc.) damaged or destroyed by disasters (to be used to establish the statistic of Number of Workers affected in all facilities type) [Note this data will be collected for Target C, so no additional data would be needed for this indicator] **[Desirable Disaggregation Requirements]:** Hazard Geography Sex Age Disability Income **Additional demographic and socio-economic parameters needed** **Population**: Population of the country and number of workers per type of asset in the country, OR the average number of people per household, for each of the years of the reporting exercise. The national indicator would be calculated using the data of the country. The global indicator with the sum of the indicators of all countries reporting.

Target B

In support of the Sendai Framework
for Disaster Risk Reduction 2015 - 2030

$$B_1 = \frac{sum(B_2 .. B_5)}{Population} * 100,000$$

Indicators B4 and B5 shall be computed using the Average Number of Occupants per Household of the country, **AOH** where:

$$AOH = \frac{Population}{Number\ of\ Households}$$

And

$$B_3 = \text{number of dwellings damaged} * AOH$$
$$B_4 = \text{number of dwellings destroyed} * AOH$$

$$B_3 = C_{4a} * AOH$$
$$B_4 = C_{4a} * AOH$$

Where the number of dwellings/houses damaged and destroyed are also to be used in Target C.

If countries have a national methodology to measure Indicator B-5 the indicator can be entered directly as measured in situ. If a methodology or measurement is not available, B-5 will be computed using several ratios such as number of workers per hectare, number of workers per livestock, average number of employees per commerce and per industrial facility:

$$B_{5a} = \text{hectares of crops affected} * \text{average workers per hectare}$$

$$B_{5b} = \text{Livestock lost} * \text{average workers per livestock}$$

$$B_{5c} = \text{Sum of productive assets and infrastructure facilities affected} * \text{average workers per facility}$$

Data required will be collected for target C, therefore:

$$B_{5a} = C2C_a * \text{average workers per hectare}$$

$$B_{5b} = C2L_a * \text{average workers per livestock}$$

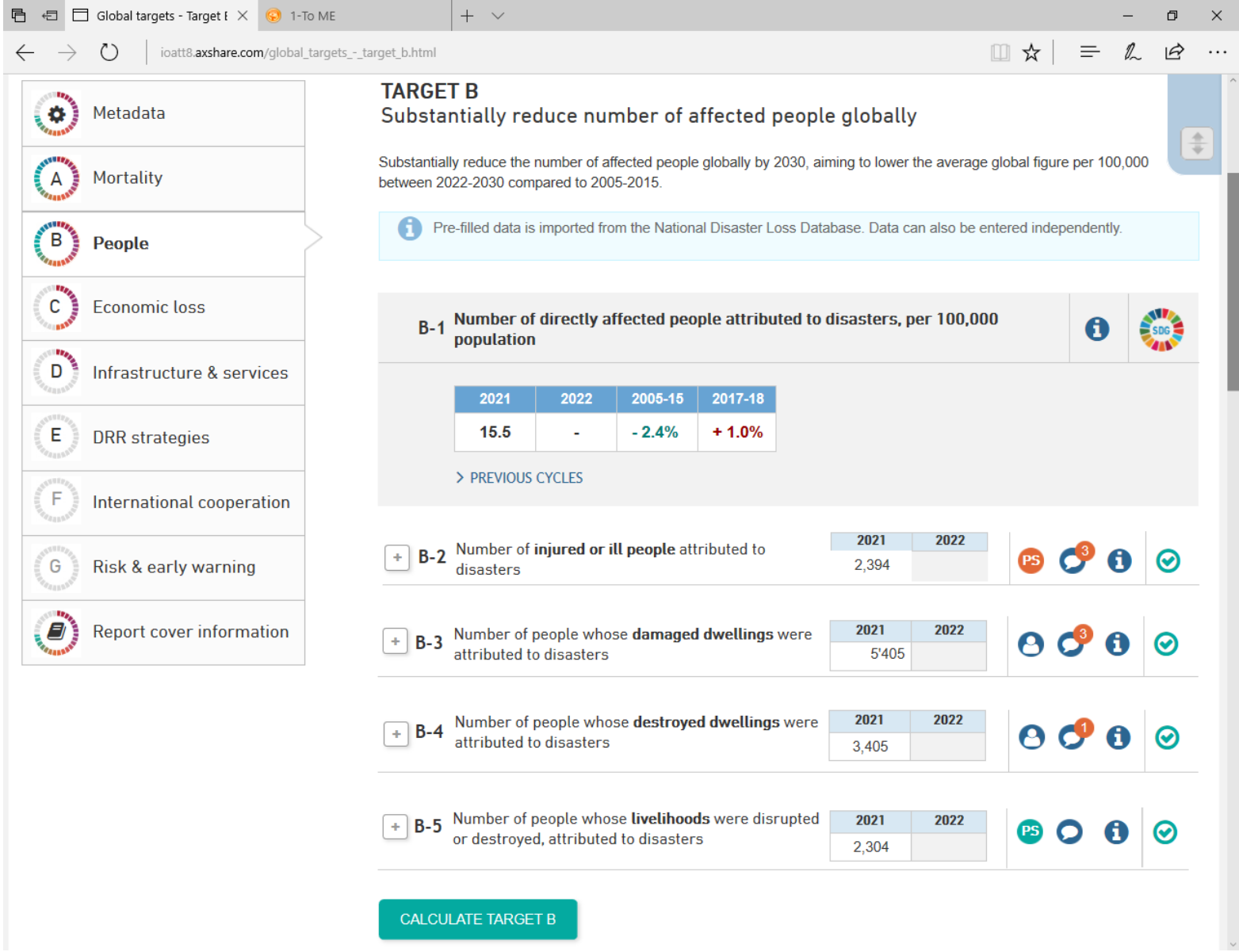
$$B_{5c} = C3_b * \text{average workers per facility} + C5_b * \text{average workers per infrastructure}$$

$$B_{5c} = \sum_{i=1}^{n} C3_{bi} * Workers_i + \sum_{i=1}^{n} C5_{bi} * Workers_i$$

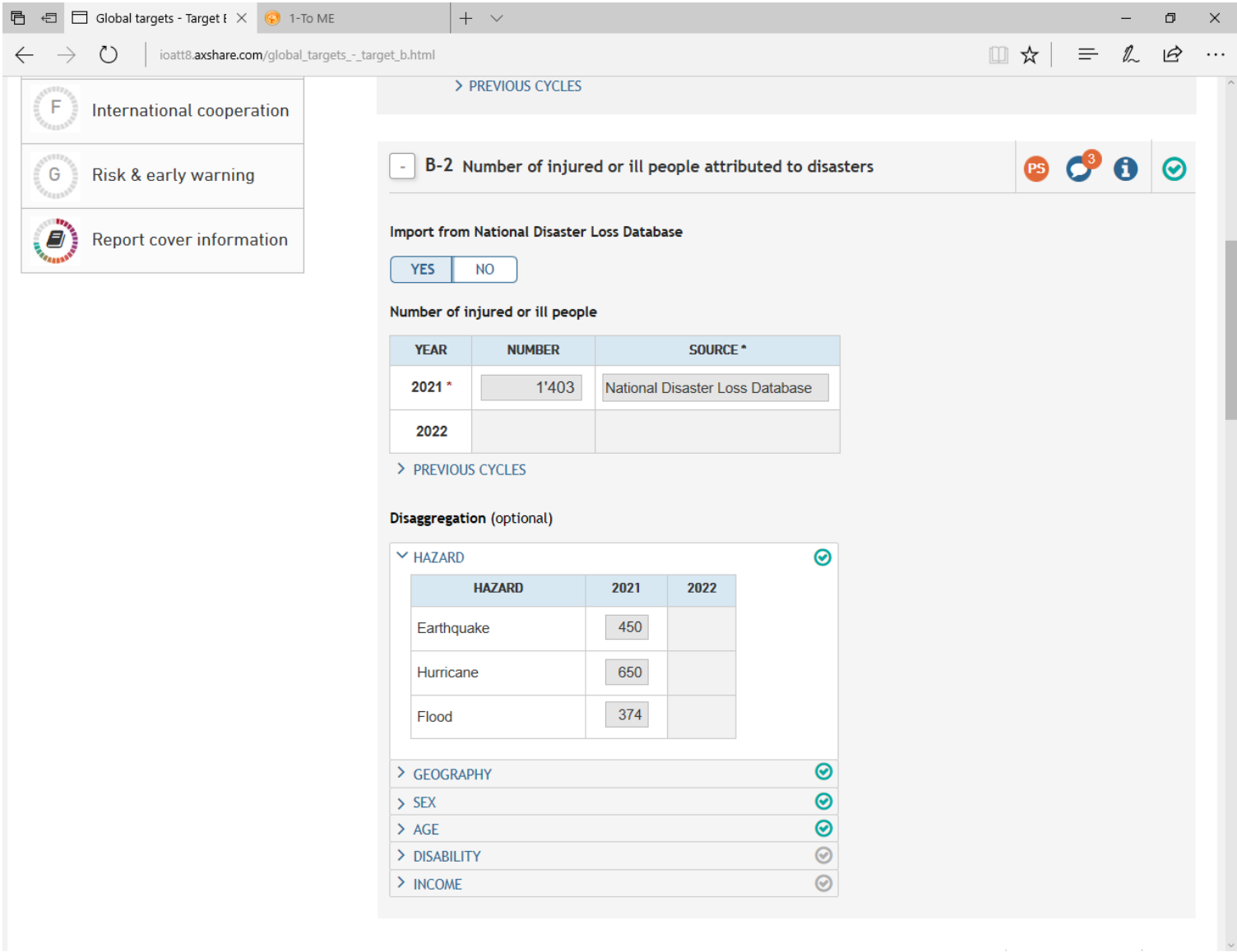
where i=1

…n, are the types of productive assets and infrastructure declared in the Metadata

Target B


Global targets - Target E
1-To ME
ioatt8.axshare.com/global_targets_-_target_b.html
Metadata
A Mortality
B People
C Economic loss
D Infrastructure & services
E DRR strategies
F International cooperation
G Risk & early warning
Report cover information
TARGET B
Substantially reduce number of affected people globally
Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 between 2022-2030 compared to 2005-2015.
Pre-filled data is imported from the National Disaster Loss Database. Data can also be entered independently.
B-1 Number of directly affected people attributed to disasters, per 100,000 population
2021 2022 2005-15 2017-18
15.5 - - 2.4% + 1.0%
PREVIOUS CYCLES
B-2 Number of injured or ill people attributed to disasters
2021 2022
2,394
B-3 Number of people whose damaged dwellings were attributed to disasters
2021 2022
5'405
B-4 Number of people whose destroyed dwellings were attributed to disasters
2021 2022
3,405
B-5 Number of people whose livelihoods were disrupted or destroyed, attributed to disasters
2021 2022
2,304
CALCULATE TARGET B

Target B


Global targets - Target E
1-To ME
ioatt8.axshare.com/global_targets_-_target_b.html
F International cooperation
G Risk & early warning
Report cover information
PREVIOUS CYCLES
B-2 Number of injured or ill people attributed to disasters
Import from National Disaster Loss Database
YES
NO
Number of injured or ill people
YEAR
NUMBER
SOURCE *
2021 *
1'403
National Disaster Loss Database
2022
PREVIOUS CYCLES
Disaggregation (optional)
HAZARD
HAZARD
2021
2022
Earthquake
450
Hurricane
650
Flood
374
GEOGRAPHY
SEX
AGE
DISABILITY
INCOME

Target C

Global target C: Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030.	
C-1 (compound)	Direct economic loss attributed to disasters in relation to global gross domestic product.
C-2	Direct agricultural loss attributed to disasters. *Agriculture is understood to include the crops, livestock, fisheries, apiculture, aquaculture and forest sectors as well as associated facilities and infrastructure.*
C-3	Direct economic loss to all other damaged or destroyed productive assets attributed to disasters. *Productive assets would be disaggregated by economic sector, including services, according to standard international classifications. Countries would report against those economic sectors relevant to their economies. This would be described in the associated metadata.*
C-4	Direct economic loss in the housing sector attributed to disasters. *Data would be disaggregated according to damaged and destroyed dwellings.*
C-5	Direct economic loss resulting from damaged or destroyed critical infrastructure attributed to disasters. *The decision regarding those elements of critical infrastructure to be included in the calculation will be left to the Member States and described in the accompanying metadata. Protective infrastructure and green infrastructure should be included where relevant.*
C-6	Direct economic loss to cultural heritage damaged or destroyed attributed to disasters.

Target C

Table: Example for Illustration of Suggested Metadata for Productive Assets of C3, C4 and C5 indicators

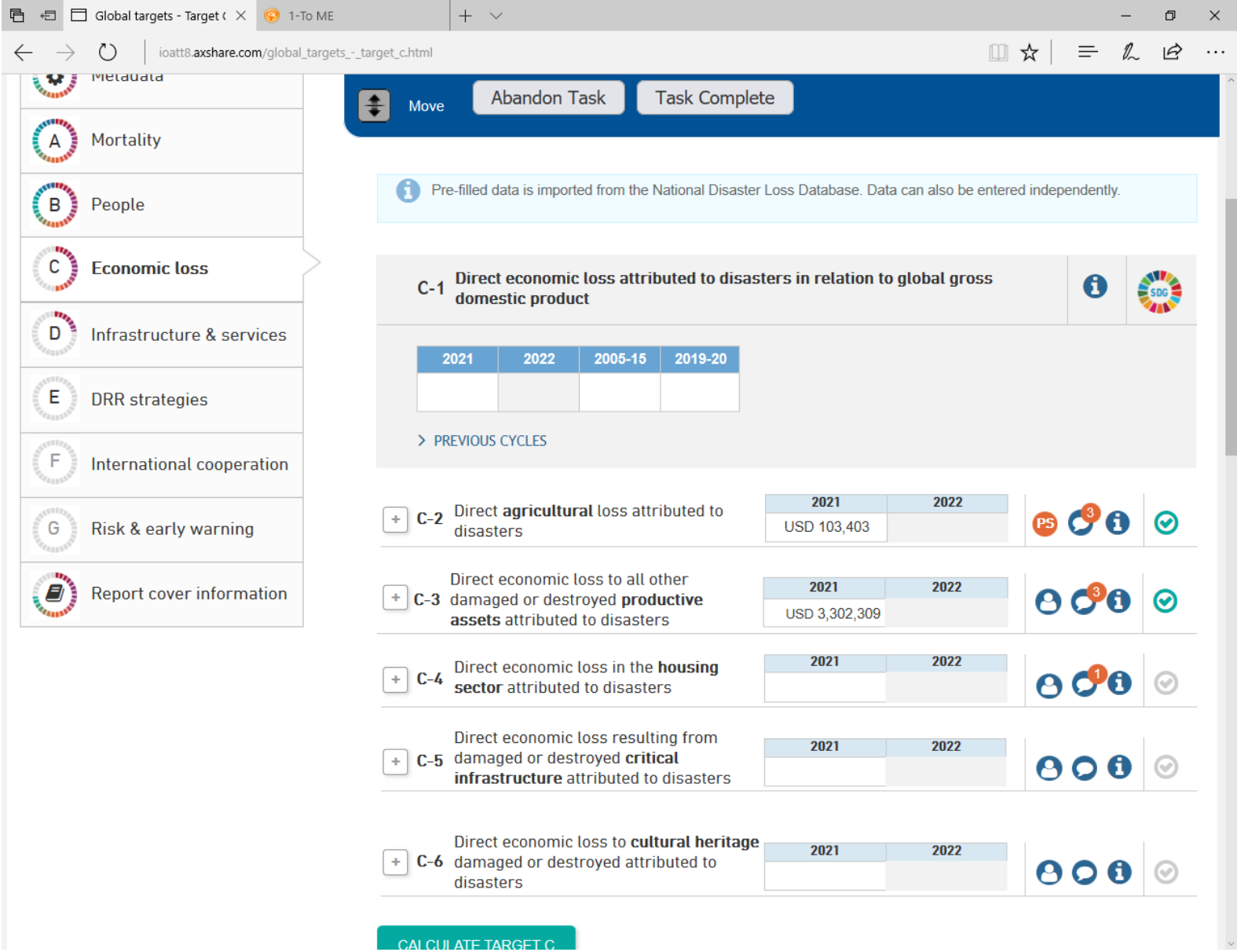
Type of Crop or Livestock or Agricultural Productive Asset	average size of facilities	Average replacement cost per Unit USD $, by YEAR (b) USD of 2015	Additional % Equipment, furniture & materials	Additional % associated infrastructure	Measurment UNIT	Formula	No. Workers
Corn	10000	1,200 2017 1,220 2018 1,245 2019 ….. …..	0%	0%	Hectare		10
Rice	10000	800 2017 805 2018 815 2019 ….. …..	0%	0%	Hectare		50
Wheat	10000	200 2017 220 2018 245 2019 ….. …..	0%	0%	Hectare	..	1000
……. (OTHER)	10000	800 2017 809 2018 ….. …..	0%	0%	Hectare	…	3
Cow	1	600 2017 609 2018 ….. …..	0%	0%	Animal	…	0.1
Pig	1	600 2017 609 2018 ….. …..	0%	0%	Animal	…	0.15
Sheep	1	200 2017 220 2018 245 2019 ….. …..	0%	0%	Animal	…	0.03
Goat	1	300 2017 409 2018 ….. …..	0%	0%	Animal	…	0.03

Target C

Table: Example for Illustration of Suggested Metadata for Productive Assets of C3, C4 and C5 indicators

Type of Productive Asset	average size of facilities	construction cost per Unit USD $, by YEAR (b) USD of 2015	Additional % Equipment, furniture & materials	Additional % associated infrastructure	Measurment UNIT	Formula	No. Workers
Small Industrial Facility (Group C Manufacturing on ISIC)	100	1,200 2017 1,220 2018 1,245 2019 ….. …..	25%	25%	Mt^2	A*B*C*D*X	10
Medium Industrial Facility (Group C Manufacturing on ISIC)	600	1,200 2017 1,205 2018 1,215 2019 ….. …..	40%	25%	Mt^2	…	50
Large Industrial Facility (Group C Manufacturing on ISIC)	3,000	1,200 2017 1,220 2018 1,245 2019 ….. …..	60%	20%	Mt^2	…	1000
Commercial – small shop (Group G Wholesale and retail trade on ISIC)	60	800 2017 809 2018 ….. …..	50%	25%	Mt^2	…	3
Commercial – large shop (Group G Wholesale and retail trade on ISIC)	1,000	800 2017 809 2018 ….. …..	800	25%	Mt^2	…	100.
Small tourism facility (Group I Accommodation and food service on ISIC)	1,000	800 2017 809 2018 ….. …..	25%	25%	Mt^2	…	15
Large tourism facility (Group I Accommodation and food service on ISIC)	10,000	1,200 2017 1,220 2018 1,245 2019 ….. …..	25%	25%	Mt^2	…	300
Housing (C4)	55	500 2017 509 2018 ….. …..	25%	25%	Mt^2	…	1

Target C


Global targets - Target C
1-To ME
ioatt8.axshare.com/global_targets_-_target_c.html
Metadata
A Mortality
B People
C Economic loss
D Infrastructure & services
E DRR strategies
F International cooperation
G Risk & early warning
Report cover information
Move
Abandon Task
Task Complete
Pre-filled data is imported from the National Disaster Loss Database. Data can also be entered independently.
C-1 Direct economic loss attributed to disasters in relation to global gross domestic product
2021
2022
2005-15
2019-20
PREVIOUS CYCLES
C-2 Direct agricultural loss attributed to disasters
2021
2022
USD 103,403
C-3 Direct economic loss to all other damaged or destroyed productive assets attributed to disasters
2021
2022
USD 3,302,309
C-4 Direct economic loss in the housing sector attributed to disasters
2021
2022
C-5 Direct economic loss resulting from damaged or destroyed critical infrastructure attributed to disasters
2021
2022
C-6 Direct economic loss to cultural heritage damaged or destroyed attributed to disasters
2021
2022
CALCULATE TARGET C

Target C

In support of the Sendai Framework
for Disaster Risk Reduction 2015 - 2030

target_c.html

C-2 Direct agricultural loss attributed to disasters

Data entry options

- ○ Enter monetary value & hectares manually
- ○ Enter hectares manually & calculate monetary value
- ◉ Import both from National Disaster Loss Database

C-2C Loss of crops damaged or destroyed attributed to disasters

Loss of crops

YEAR	MONETARY VALUE	HECTARES	SOURCE *
2021 *	USD 103,403	128,309 ha	National Disaster Loss Database
2022			

PREVIOUS CYCLES

Disaggregation (optional)

TYPE OF CROP

	2021		2022	
CROP	MONETARY VALUE	HECTARES	MONETARY VALUE	HECTARES
Barley				
Millets				
Rice				
Tea				
Wheat				

C-2L Loss of livestock lost attributed to disasters

C-2Fo Loss of forests affected/destroyed by disasters

C-2A Loss of aquaculture production area affected

Target D

Global target D: Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030.	
D-1 (compound)	Damage to critical infrastructure attributed to disasters.
D-2	Number of destroyed or damaged health facilities attributed to disasters.
D-3	Number of destroyed or damaged educational facilities attributed to disasters.
D-4	Number of other destroyed or damaged critical infrastructure units and facilities attributed to disasters. *The decision regarding those elements of critical infrastructure to be included in the calculation will be left to the Member States and described in the accompanying metadata. Protective infrastructure and green infrastructure should be included where relevant.*
D-5 (compound)	Number of disruptions to basic services attributed to disasters.
D-6	Number of disruptions to educational services attributed to disasters.
D-7	Number of disruptions to health services attributed to disasters.
D-8	Number of disruptions to other basic services attributed to disasters. *The decision regarding those elements of basic services to be included in the calculation will be left to the Member States and described in the accompanying metadata.*

Standards

a) Conceptual standards:

- List of hazards
- Geography
- Disaggregation (Age, Sex, Disability, Income, Geography)
- Metadata

Standards

b) Data Exchange standards:

- Data exchange standards (HDX, HLX, DesInventar, JSON, Excel, etc?)

THANK YOU

In support of the Sendai Framework
for Disaster Risk Reduction 2015 - 2030

UNISDR
The United Nations Office for Disaster Risk Reduction