**INDICATOR OF VULNERABILITY ASSESSMENT**

**(Important Levels)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Category*** | ***No.*** | ***Indicator*** | ***Data Source*** | ***Type of scale*** | ***1*** | ***2*** | ***3*** | ***4*** | ***5*** | ***6*** | ***7*** | ***8*** | ***9*** |
| ***Physical*** | *1* | Number of critical infrastructures in hazard zone | GIS | Ratio scale |  |  |  |  |  |  |  |  |  |
| *2* | Building structural and occupancy | Questionnaire | Ratio scale |  |  |  |  |  |  |  |  |  |
| *3* | Population density | Census data | Ratio scale |  |  |  |  |  |  |  |  |  |
| *4* | Unsafe settlements | GIS | Ratio scale |  |  |  |  |  |  |  |  |  |
| *5* | Access to basic services | GIS | Nominal scale |  |  |  |  |  |  |  |  |  |
| *6* | Robustness and buffer capacity | Questionnaire | Nominal scale |  |  |  |  |  |  |  |  |  |
| *7* | Adaptability and quality in operational procedures | Questionnaire | Nominal scale |  |  |  |  |  |  |  |  |  |
| *8* | Rainfall/runoff | Measures data | Ratio scale |  |  |  |  |  |  |  |  |  |
| *9* | Permeable/ Non-permeable areas | GIS | Ratio scale |  |  |  |  |  |  |  |  |  |
| *10* | Drainage network length/Density | Measured data | Ratio scale |  |  |  |  |  |  |  |  |  |
| *11* | Topography/Digital Elevation Model (DEM) | SRTM/GIS | Nominal scale |  |  |  |  |  |  |  |  |  |
| *12* | Land use/Land Cover | GIS | Nominal scale |  |  |  |  |  |  |  |  |  |
| *13* | Natural water way | Measured data | Ratio scale |  |  |  |  |  |  |  |  |  |
| *14* | Flood extent | Measured data | Ratio scale |  |  |  |  |  |  |  |  |  |
| *15* | Flood protection structures/measures | Measured data | Ratio scale |  |  |  |  |  |  |  |  |  |
| *16* | Water and sedimentation quality | Measured data | Ratio scale |  |  |  |  |  |  |  |  |  |
| *17* | Warning system | Questionnaire | Nominal scale |  |  |  |  |  |  |  |  |  |
| *18* | Telecommunication/Broadband connection | Measured data | Ratio scale |  |  |  |  |  |  |  |  |  |
| ***Social*** | *1* | Population Under 20 Years of Age | Census data | Ratio scale |  |  |  |  |  |  |  |  |  |
| *2* | Population 65+ Years | Census data | Ratio scale |  |  |  |  |  |  |  |  |  |
| *3* | Female Population | Census data | Ratio scale |  |  |  |  |  |  |  |  |  |
| *4* | Population of Female-Headed Single-Parent Households | Census data | Ratio scale |  |  |  |  |  |  |  |  |  |
| *5* | Low Income Households | Census data | Ratio scale |  |  |  |  |  |  |  |  |  |
| *6* | Population Living Alone | Census data | Ratio scale |  |  |  |  |  |  |  |  |  |
| *7* | Population of Renters | Questionnaire | Ratio scale |  |  |  |  |  |  |  |  |  |
| *8* | Level of Education | Census data | Ratio scale |  |  |  |  |  |  |  |  |  |
| *9* | Employment | Census data | Ratio scale |  |  |  |  |  |  |  |  |  |
| *10* | Percentage of disable people | Questionnaire | Ratio scale |  |  |  |  |  |  |  |  |  |
| *11* | Population in flood prone area | Questionnaire | Ratio scale |  |  |  |  |  |  |  |  |  |
| *12* | Cultural heritage | Questionnaire | Ratio scale |  |  |  |  |  |  |  |  |  |
| *13* | Awareness/Preparedness | Questionnaire | Nominal scale |  |  |  |  |  |  |  |  |  |
| *14* | Past experience/knowledge about flood hazard | Questionnaire | Nominal scale |  |  |  |  |  |  |  |  |  |
| *15* | Social security (Insurance Coverage) | Questionnaire | Nominal scale |  |  |  |  |  |  |  |  |  |
| ***Economic*** | *1* | Period of Construction | Questionnaire | Nominal scale |  |  |  |  |  |  |  |  |  |
| *2* | Structure Type | Questionnaire | Nominal scale |  |  |  |  |  |  |  |  |  |
| *3* | Local resource base | Questionnaire | Nominal scale |  |  |  |  |  |  |  |  |  |
| *4* | Diversification | Questionnaire | Nominal scale |  |  |  |  |  |  |  |  |  |
| *5* | Number of small businesses | GIS | Ratio scale |  |  |  |  |  |  |  |  |  |
| *6* | Accessibility | Questionnaire | Nominal scale |  |  |  |  |  |  |  |  |  |
| *7* | Business units in flooded area or close to river | GIS | Ratio scale |  |  |  |  |  |  |  |  |  |
| *8* | Drainage system quality | Questionnaire | Nominal scale |  |  |  |  |  |  |  |  |  |
| *9* | Public facilities close to river or in flooded area | GIS | Ratio scale |  |  |  |  |  |  |  |  |  |
| *10* | Recovery time | Questionnaire | Nominal scale |  |  |  |  |  |  |  |  |  |

The list of indicator will be used during Focus Group Discussion:

1. All expert related to the subject from government agencies, private companies, local communities and NGOs’ will be invited to attend the FGD.
2. All expert will be asked to decide the importance level of each indicator. Result from all experts will be count for a ranking of indicator.
3. The ranking of indicator will be used during the calculation of weightage of each indicator based on Analytical Hierarchy Process (AHP).
4. Data source and type of scale of each indicator as explained in Table above.