Resilience Assessment: Case Study of District 13 of Kabul City

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Abstract— Natural and man-made disasters have been undermining the development efforts of the people of Afghanistan. This paper presents how resilient urban community is in the capital city of Afghanistan. Through the invented resilience assessment methodology, we analyzed the a few capitals that urban communities own in terms of human, social, physical, environmental and financial capitals. It is found that the communities of Kabul city have limited level of resilience against possible shocks they may suffer. For instance, they have limited level of education attainments, limited knowledge on natural hazards and health related issue, limited access to public services such as health services and waste collections, little organized community mutual help mechanism, poor water and sanitation conditions, limited ecosystems in surrounding area and limited financial assets. In order to achieve the Sendai Framework goals, the resilience of urban communities needs to be enhanced. We suggest further investments and supports to urban communities especially in human, social and physical aspects focusing on Water, Sanitation and Hygiene by mainstreaming Disaster Risk Reduction.

Index Terms— Assessment, Resilience Capital, Sendai Framework, Urban Community, Disaster Risk Reduction, Ecosystem

1 INTRODUCTION

Kabul city is located in the Kabul Province of the Islamic Republic of Afghanistan. It has approximately 4.3 million populations in the 1,030 km2 of land [37] , divided into 22 Districts. A rapid urbanization with irregular development in the city is becoming a force to increase natural disaster strikes especially for those live in high risk exposure area. Afghan cities cover one-third of country population and will increase to 50% by 2060 [37] and the biggest concern in Afghan-cities is slum development as 86% of the urban housing stock could be classified as slums based on the UN-Habitat definition of lacking one or more or the following basic elements of adequate housing: (i) access to a safe water source, (ii) improved sanitation, (iii) durable, structurally sound housing materials, (iv) adequate living space and (v) security of tenure.

The major natural hazards which are observed and anticipated in Kabul are flood, earthquake and mass movement and heavy snow.

The resilience assessment has been carried out using a questionnaire because currently Kabul city is facing various problems but it is still un-prioritized for the follow up with feasible solution according to future city planning to build the city more resilient the survey targeted relatively high hazards risk in district 13 in Kabul city. These targeted districts are identified through referring to primary and secondary data. Secondary scientific hazards data are mainly taken from Afghanistan Spatial Data Center (ASDC)[1] for visual information of Kabul City natural hazards based on digital modelling, whereas a primary data on natural hazards are taken from field survey checking the topography and interview with residents.

In this study, we take the result of District 13 of Kabul city, as a case study to analyze the resilience - the ability to anticipated and adapt to shocks and stresses; implementing lessons learns to leverage emerging opportunities and effectively reduce vulnerabilities - of urban community against available risk data shows [16] that the natural hazards types and areas in the Kabul city where flood and flashflood, earthquake, and mass

movements hazards exists. Together with ASDC data, Stellate Images from the available different national and international organizations such as ASDC [4], UN-Habitat is used to find the natural hazards profile in the Kabul city [34].

Currently Kabul is facing many problems. So the proposals related to disaster risk reduction do not get the priority it deserves. This low prioritization happens in spite of the fact that there is great need for proposals focusing on urban development and resilience as mentioned in international framework such as New Urban Agenda, Sendai Framework of Disaster Risk Reduction (SFDRR), and Agenda 2030 for Sustainable Development and Paris Agreement.

There are no studies and research on natural hazards in Kabul city. This topic is not getting the attention it deserves. Institution lack capacity and resources to undertake such studies. In fact this is a low priority topic in institutions. However each year Kabul City suffer from flood, and rockslide risks and sometimes seismic waves shake the buildings in the city. Most of the Kabul citizens have experiences of flood and inundation once in the living neighborhood and due to natural hazard totally 3,087 families have been internally displaced in 2016 in the Kabul city[3].

2 OBJECTIVE

The objective of the resilience assessment is to assess urban communities' resilience by analyzing the degree of capitals that communities own which is divided into five; human, social, physical, natural and financial capitals.

3 METHODOLOGY

The resilience assessment is conducted in the communities in Kabul which are identifies as relatively high risk are of natural hazards and economically poor area of natural hazards and land use. 216 residents are interviewed from two different

communities (Gozars) in the Districts 13 located in the west of the Kabul city as shown in Fig.1 and Fig.2. Based on the number of residents identified in the targeted districts through community profiling exercise, more than 200 people have been interviewed from the District. This made the research result 95% confidence level with 6.7% error, following the general research sampling rules [10].

The questionnaire is designed to capture the capitals of community referring to the "Sustainable Livelihood Framework" presented by the British Department for International Development (DFID) and Institute of Development Studies (IDS) of University of Sussex in late 1990s [34].

Following this framework, the community capitals are divided into five capitals, human, social, physical, natural and financial capitals. Each questions developed based on the reality in the Afghan cities. Different references are used for each question such as User Guide of the Flood Resilience Measurement Framework of Zurich Insurance Group [25], Disaster Resilience Scorecard for Cities of UNISDR [7].The City Resilience Action Planning Tool of UN-Habitat [18] and Toolkit for Measuring Community Disaster Resilience of GOAL [12].
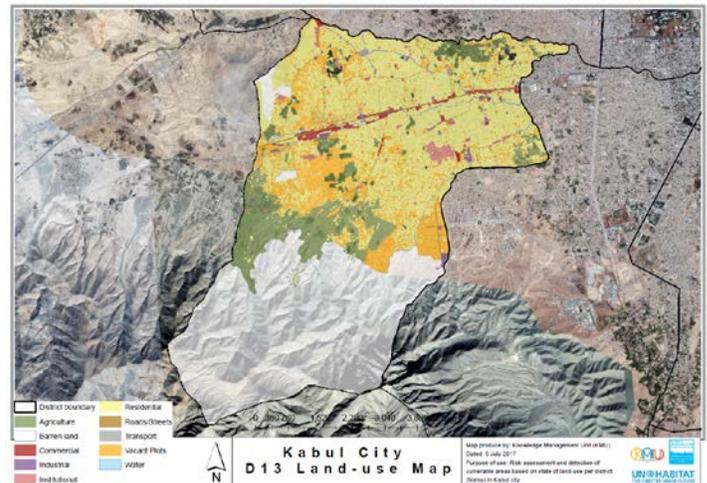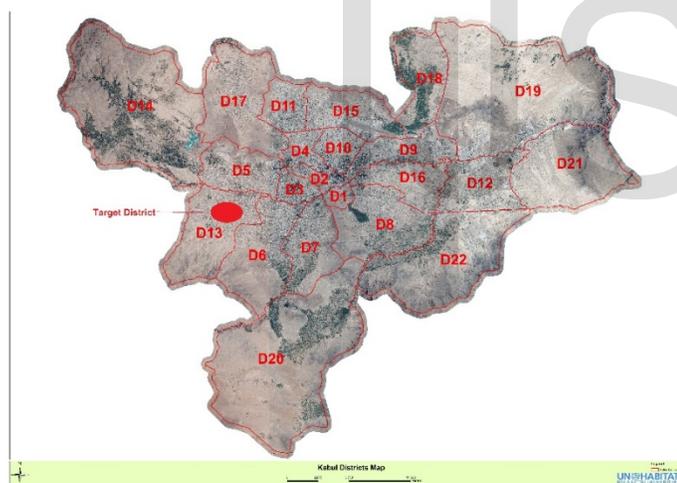

FIG 1. DISTRICT 13 BOUNDARY WITH NEIGHBOR DISTRICTS IN THE CITY

4 CASE STUDY OF DISTRICT 13 OF KABUL CITY

District 13 is located in the east side of the city. Kabul River built natural boundary with Districts 5 in the north. It also has boundary with District 6 in the east and District of the Kabul Province in the west. Total area of District is 4,664 hectares with regular and irregular 38,494 dwellings. In addition, 572 houses are settled in the hillsides as shown in the district [37].

Some key information and figures of District 13 are shown in the below Table 1 with the population estimate for 2018 based on 3.14% growth rate since 2015 [37].

FIG 2. LAND USE MAP OF THE DISTRICT 13 OF KABUL CITY [37]

TABLE 1. A FEW KEY FIGURES OF THE DISTRICT

Sn	Types of Area and Dwellings	Units	District 13
1	Total Land Area	Hectare	4,664
2	Dwelling Density	Dwellings/He	24
3	Total Houses	Count	38,376
4	Total occupied apartments	Count	118
	Total Dwellings	**Count**	**38,494**
5	Residential	Hectare	1,601
6	Commercial	Hectare	41.38
7	Institutional	Hectare	59
8	Industrial	Hectare	18.12
9	Transport	Hectare	10.84
10	Roads/Streets	Hectare	45.81
11	Vacant Plots	Hectare	572.22
12	Buildings under construction	Hectare	2.37
	Total Built-up Area	**Hectare**	**2,350**
13	Agriculture	Hectare	525.40
14	Green areas	Hectare	17.7
15	Forest	Hectare	0
16	Water	Hectare	23.26
17	Barren Land	Hectare	1747.69
	Non-built up Area	**Hectare**	**2,314**
18	Regular	Percentage %	12
19	Irregular	Percentage %	88
20	Population 2015	Person	346,446
21	Population 2018	Person	392,177

The survey was conducted in one community consists above 2200 households, called "Gozar 16 and 17" of District 13, and around 216 residents are interviewed as a sample. The survey covered various age groups, male and female.

Among residents greatest concern is income followed by water sanitation and Hygiene (WASH) and health and education as basic life services. The most of residents recognize the possible impact of natural hazards, namely earthquake and flood in the area.

4.1 Human Capital

The first dimension of the capital that community own is human capital and find quantity result of the survey. Asking various questions about education attainment, behavior and knowledge on disaster risk, risk reduction, risk management, knowledge and experiences on managing WASH and health.

45 % of residents are not graduated from primary school whereas 16 % of them have graduated from high school and above. It was found that about a half of the residents know about potential risk of natural hazards and importance of WASH and health but most of them have not taken concrete measures nor has concrete knowledge on preparation and management.
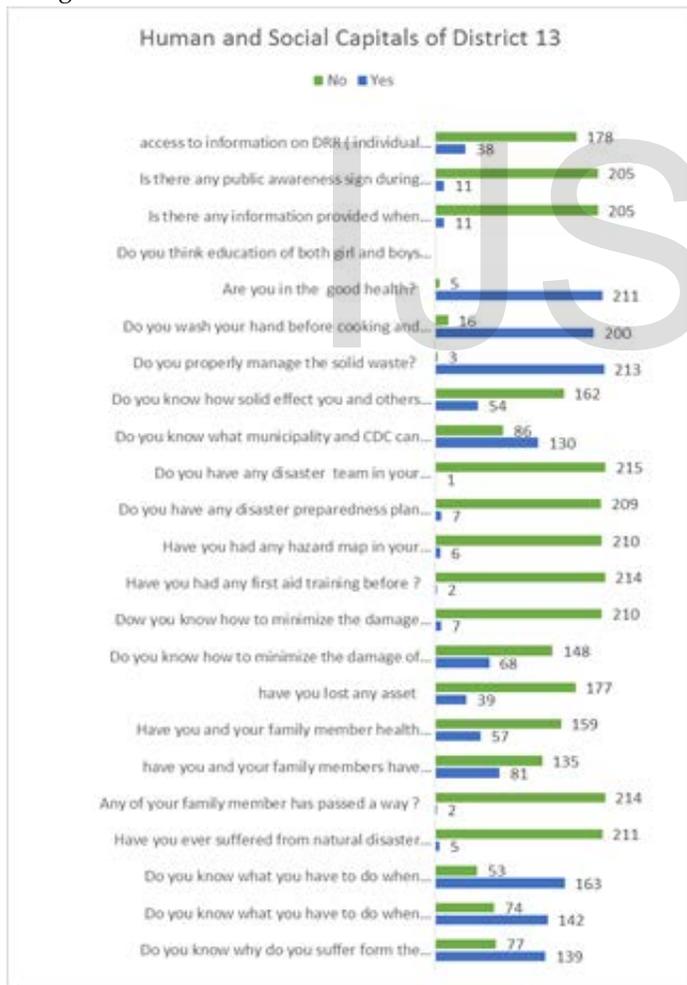

FIG 3. HUMAN AND SOCIAL CAPITAL OF DISTRICT 13 OF THE CITY

4.2 Social Capital

The second dimension of the capital is social capital. The survey assessed social capital of community such as whether if community has mutual help system, social inclusiveness, mechanism of information dissemination, and coping mechanism after disaster. It is very common to have strong feeling of the mutual help traditionally but on the other hand due to long lasting conflict the communities lost the mutual help mechanism .

4.3 Physical Capital

The third dimension of the capital is physical. The accessibility to basic public services such as drinking water, electricity, education, health facilities, drainage, waste collection, transport, public spaces and act are assessed.

It was found that there is a significant lack of basic services in targeted areas such as 38% of residents answered, they and their family do not have access to healthcare facilities and 28% of residents do not have enough access to drinking water. The majority of the community residents do not have access to community infrastructures in the normal condition and shows less accessibility to public facilities during and after the disaster strike.
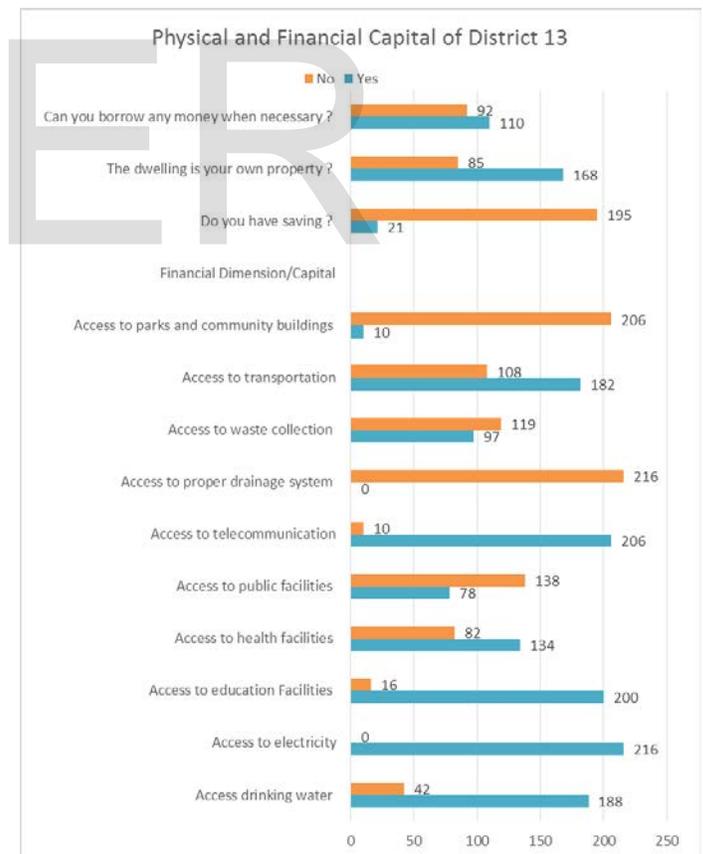

FIG 4. PHSYICAL AND FINANCIAL CAPITAL OF DISTRICT 13 OF THE CITY

4.4 Natural Capital

The fourth dimension of the capital is natural or environmental. The survey assessed the condition of ecosystem, WASH and waste management. This part has been primary assessed through site visit. It was found that there is almost non ecosystems for disaster mitigation. Also Majority of respondents said they did not have access to not WASH system because of poor management of waste including waste water, solid waste, and human waste.

4.5 Financial Capital

The survey assessed the economic status of residents as well as the level of financial infrastructures in the community such as access to banking system and insurance. Only 8% of residents have saving but 78% of residents own their property. 34% of them have smartphones. Also 51% of them answered they have access to credits, and 7% of residents said they can borrow money from banks and rest are borrowing money from relative and friends.

6 RESULT

As a result of the survey, the resilience level of targeted communities is identified. It is found that community lacks all dimensions of capitals especially human, social and physical capitals. Their vulnerability toward hazards are result of low level of knowledge of people about preparation and response to the disaster as well as lack of cooperation and coping mechanism in the community. Also lack of physical capital/ infrastructures put the residents in vulnerable situation such as 62% of residents said they do not have access to health facilities. Some dimensions of resilience need to be analyzed further based on focus group discussion so that more comprehensive status would be captured and it will enable us to analyze further.

7 DISCUSSION

Based on the findings of the assessment, it is assumed that the five capitals of communities will be enhanced by improving WASH condition as well as DRR activities. Activities can include providing basic WASH information, DRR awareness raising, soft activities in the community such as participatory hazard mapping, disaster drills at community, school and mosque, stockpiling, building community mutual help system such as DRR committees and youth volunteer groups for DRR and disaster response, early warning system and etc.

In addition, it is necessary to invest in infrastructures for DRR such as drainage/flood canal and retrofitting houses and public buildings as well as improvement of WASH related infrastructure including waste management system.

Through such improvement, the resilience of urban communities in Afghanistan will be enhanced. This will lead to achieve some of the commitments made under SDGs by reduce disaster risk in term of number of deaths and affect directly from the disaster impact especially poor people and build city resilient and adapt climate changes to follow the Sendai Framework for Disaster Risk Reduction 2015-2030.

4 CONCLUSION

Resilience community cannot be achieved if disasters continue to undermine the efforts for economic growth and social progress. As this analysis shows, urban communities in Kabul do not have enough resilience capitals, especially in terms of human, social, and physical aspects to be resilient enough against possible shocks. There is substantial limitation in access to public services especially related to WASH combined with little mechanism to foster mutual help among community members. Furthermore, it is prerequisite for communities to be resilient by mainstreaming DRR in those capital formulation. Therefore, it is recommended that investments in five dimension of community capitals especially in human, social, physical capital are in necessary for Kabul City.

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