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## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>M-00260</th>
<th>Urbanising Delta: What Lessons Dhaka Offers to Face Challenges</th>
<th>1-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Md. Sadaf Abdullah, Sara Nowreen, Rashed Uz Zzaman, Sakib Hasnat, Susmita Majumder Satu, Md. Enayet Chowdhury</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>M-00261</th>
<th>The Impacts of COVID-19 on Oman’s National Health Security</th>
<th>22-40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdul Aziz Al Alawi, Noor Sulastry Yurni Ahmad</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>M-00262</th>
<th>Universals of Gender Policy and its Socio-Cultural Adaptation</th>
<th>41-47</th>
</tr>
</thead>
<tbody>
<tr>
<td>Svitlana Hladchenko, Oleg Domin, Ulyana Varnava, Anna Rabokorovka, Marina Paskalova</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>M-00263</th>
<th>Developing Mechanisms of State Regulation of Development of Rural Territories in Ukraine</th>
<th>48-56</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetiana Hohol, Larysa Melnychuk</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Urbanising Delta: What Lessons Dhaka Offers to Face Challenges

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ABSTRACT

Cities built on deltaic regions are always prone to environmental risks like aggravated flooding, wetland reduction, compromised water quality, continuing water scarcity, and tainted air and these have been remarkable as the challenges while urbanizing deltas. On top of that, rapid urbanization adds more to the deterioration of ecosystem functions. Drawing insights from Bangladesh's capital Dhaka lying in the Ganges, Brahmaputra, and Meghna basin, this study basically appraises the common concerns of deltaic megapolises through a systematic literature review. The current literature has been brought up by analysing the status, factors, and impacts of the challenges and management by authorities. In addition, it is further updated with some urban experts' views, secondary records on groundwater levels, and remote sensing imageries. This paper also concludes with recommended guidelines from the reviews for more practical deltaic urbanization, especially when there is no turning back for urban transferability to a new region of the delta. Particularly, success demands (1) specifying current situation in quantifiable terms (e.g., numeric values, percentages, scores, indices), (2) practical but adaptive multi-objective plans/policies with a set of assessable targets, and (3) timely robust evaluation for tracking data for specific, measurable, and meaningful outcomes.

Keywords: Megalopolis delta; Growing competition; Ecological security; Continuing challenges; Practical solution; Dhaka

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1. INTRODUCTION

Urbanization of any delta is relatively more complex with social-ecological (dys)functions than any other conventional city (Meyer, 2016). The traditional inverted U-shape of the environmental Kuznets curve (EKC) is even claimed to become alarmingly downward sloping when urban development is added (Katircioglu et al., 2018). Specifically, Asian deltas are few of the most vulnerable among deltas in other regions of the world in terms of human suffering because of their dense population exposures (Seto, 2011). With the global urbanization trend (i.e., 68% rise of city-dwellers by 2050), it is becoming more and more difficult to ensure sustainable development without proper management, especially in low-income and lower-middle-income countries where urbanization is expected to be the most rapid (United Nations, 2018). This rapid growth puts unexpected pressure on the cities’ abilities to provide basic services such as adequate housing, electricity, water supply, healthcare, education, and jobs (Buhaug & Urdal, 2013). On the other hand, any anthropogenic activity impeding the deposition of fresh sediment fluxes in the basins can result in an accelerated relative sea-level rise and increased risk of flooding (Van Koningsveld et al., 2008).

Like many other deltas globally, Ganges-Brahmaputra-Meghna (GBM) basin also faces challenges of climate change and frequent flooding (Barua & Van Ast, 2011). Application of river basin approach, practices of sustainability of ecosystem functions, maintaining green spaces, etc., are compromised when it comes to its metropolitan capital Dhaka. Here, rapidly expanding urbanization demands ultimately end into contaminated water, depleted water table, grabbing of lands by infrastructures, impaired air quality from traffic, and so on. Eventually, risk avoidance and adjustment choices force trade-offs between the benefits (resources) from the city and increasing costs (e.g., compromised human health, comfort) creating multifaceted issues. Deltaic cities of Nile, Red, Pearl, and Yangtze rivers and their issues with urban villages (i.e., informal settlements) are no exception in this regard. A solution to the mega problems of megacities requires a holistic (systematic) approach; but consensus-building among multiple stakeholders takes longer time. Thereby, delta management of cities needs to forecast the order of magnitude of future requirements and then to translate it back to current actions worked out ahead of time. Though several studies can be found about the Pearl River and Yangtze River delta urbanization (Gu et al., 2011), there have not been many detailed literature reviews about the deltaic cities’ approach towards practical solutions after facing multiple challenges due to urbanization. Especially in case of the Ganges-Brahmaputra-Meghna (GBM) basin, delta reviews had not been well documented.

This review paper attempts to summarize the impact of the challenges that arise while urbanising a delta by exhibiting the existing overall situation of megalopolis Dhaka (a case for GBM delta) through the assessment of the current condition, steps taken, regulatory constraints in most practical methodologies, and externalities that have crippled the effective pathways toward facing the challenges. There remains a surprising dearth of studies examining the processes. As a result, from this paper, deltaic urban areas around the world with Dhaka-like circumstantial context are expected to facilitate themselves by figuring out and analysing the challenges that had already appeared or will appear for them. Lastly, this paper can be considered as a systematic literature review of recommended guidelines required that show the alternatives that a delta can adopt for urbanization when there is no turning back for the urban area transferability approach.

2. RESEARCH METHODS

2.1 Study Area

With its position at downstream of the GBM basin, Bangladesh has its capital Dhaka located in the centre. The Tongi Khal bounds city’s 306.4 km² area in the North, the Buriganga River in the South and Southeast, the Turag River in the West, and the Balu River in the East (Figure 1a). Dhaka lies between 23°40’ to 23°54’ North latitude and 90°20’ to 90°30’ East longitude. Dhaka gets the experience of the wet tropical climate with an annual average rainfall of 2,500 mm. Most parts of it are situated in low-lying areas with a small proportion of highland, free from annual inundation, which is situated at the southern edge of a Pleistocene terrace with an elevation of 6.5 to 9 m above mean sea level.
2.2 Methods

Most qualitative information about Dhaka, its plans, and policies are retrieved from literature reviews of published articles or reports accessed via online means and urban experts’ views (supplementary Annex-1). The quantitative study about the groundwater table declination over the years 1980-2018 was conducted by collecting secondary data from the Bangladesh Water Development Board (BWDB), Bangladesh Agricultural Development Corporation (BADC), and the Department of Public Health Engineering (DPHE). The Digital Elevation Models (DEM) data from Shuttle Radar Topography Mission (SRTM) and images from Landsat-8 OLI satellite of January 2018 were processed to assess the current drainage density thematic layer and land use/cover map, respectively.

3. CHANGE IN LANDFORM

"Natural" infrastructures (i.e., wetlands) are an essential feature of "turquoise" (i.e., combining green and blue) infrastructure (Childers et al., 2015) in virtually all bottomland cities. But shifting from an ecology of urban to ecology for urban restricts the city’s ecotone ecosystems. In essence, megacities limit natural functions of ecological services, fast growth offers optimal "commodity" in many city locations, and later, urbanised delta will end up with poor livability. Megalopolis Dhaka has been going through such processes.

3.1 Wetland Reduction for Urban Growth

Most of the eastern part of Dhaka used to contain open water bodies like the marshland of the Balu River floodplain and the western fringe had low marshy lands in 1968 (Sultana et al., 2009). In 1978, 130.17 km² of wetland existed (Habiba et al., 2011) that eventually started to reduce turning to sporadic patches (Sultana et al., 2009) at an alarming rate since 1989 (Islam, 2009). Only 9% of western water bodies of 1963 were lost by 1990, whereas it jumped to 28% by the year 2000 (Reza & Alam, 2002). In 2011, the number of wetland areas went down to 53.6 km² (Habiba et al., 2011) showing 502.5 hectares/year rate of wetland loss during the 1989-1999 period, and 1922 hectare/year loss during 1999-
2005 (Islam, 2009). Such shrinking is attributed to unplanned progressive urbanization, landfilling, encroachment, and lack of coordination between government agencies (Habiba et al., 2011). It is also evident that if this losing trend of the ecotone ecosystem is continued, by 2035 (Figure 2), Dhaka will lose all of its temporary wetlands (Islam, 2009). This may impact adversely resulting into (i) further waterlogging and flooding, (ii) decrease in groundwater recharge areas, hence, decline of groundwater level, (iii) destruction of natural drainage system, (iv) disturbance in local ecology and biodiversity, (v) destruction of aesthetically pleasant recreational sites, and (vi) increase in Impervious Surface (Habiba et al., 2011).

Figure 2(a): Dhaka's land cover and land use pattern in 2017 as per the prediction of Ahmed et al. (2018). Figure 2(b): Probable planned urban growth by 2035. Figure 2(c) Probable unplanned urban growth by 2035 based on Revised Dhaka Structure Plan (2015-2035).

Previously, Dhaka Metropolitan Development Plan (DMDP) for 1995-2015 had designated flood flow zones where the change to natural topography was restricted (Islam, 2009). Despite enacting various environmental laws and policies, private land developers have been encroaching, notably diverging from the city structure plan policies (Islam, 2009). The government of Bangladesh has expressed concerns about the loss of wetlands due to rapid urbanization in the Bangladesh Delta Plan (BDP) (Bangladesh Planning Commission, 2018) and announced strategic plans that will preserve urban wetlands and promote green and blue spaces. Moreover, the Detailed Area Plan (DAP) imposes strict land development regulations according to the hydrology of the area (RAJUK, 2018). For instance, DAP prohibits sand filling by using dredgers, forbids obstructing the flow of water current in some specified areas, and discourages infrastructures and constructions on wetlands, while expressing the need to construct water retention basins to conserve water. These are appreciable promises regarding preserving and restoring the wetlands for Dhaka city.

3.2 Rapidly Expanding Informal Settlements

One of the unavoidable challenges that a developing city faces is overcrowded urban cores with a lack of spatial coordination between housing and jobs (Cervero, 2013). Dhaka, being the 11th largest city globally in terms of population (Bird et al., 2018), is not free from such remarkable challenges either. The population of Dhaka is increasing rapidly, with an increment of 2 million from 1991 to 2001 and 9 million from 2001 to 2011 (Figure 1b) indicating the migrants' predilection for Dhaka as the primary choice to live in (Ishtiaque & Mallik, 2011; Population Reference Bureau, 2010). As a consequence, out of 85.3% of total urban migrants, 68.3% are pulled by Dhaka city alone (Biswas et al., 2019). Urban pull factors for
such internal migration can be attributed to the concentration of resources, employment opportunities, educational facilities, and access to the informal economy. Besides, climate change impacts in the GBM basin will continue to increase rural push factors, e.g., natural disasters leading to eviction threat, scarcity of freshwater, lack of food, poverty, etc. (Bangladesh Planning Commission, 2018; Ishbiaque & Ullah, 2013). As worst-case scenarios of future under climate change threat, the poor will be forced to become environmental refugees as the 'last resort' migrating (Penning-Rowsell et al., 2013) from coastal rural areas towards megacity, Dhaka.

Mostly, the urban migrants settle in informal settlements and new climate refugees will speed up amorphous informal developments (Saha, 2012). According to Angeles et al. (2009), Dhaka's overall gross population density is about 29,857 persons per square km, whereas informal settlements display 220,246. As informal settlements are non-legalised, the dwellers are deprived of basic rights, rising to issues like tenure insecurity, fire tragedy, insufficient drainage, internal flooding, unwanted garbage disposal, poor access to utility services including freshwater and safe latrines, etc. (Mohit, 2012). The presence of many migrants deteriorates the urban environment resulting in a very low standard of living for them (Jahan, 2012). In fact, according to Economist Intelligence Unit (EIU) liveability index 2015 (Bird et al., 2018), Dhaka's position is 139th among 140 cities based on health, education, stability, and infrastructure. The migrants get engaged in informal jobs that have no accountability in Gross Domestic Product (GDP) and Gross National Product (GNP), no imposition of the tax, and are not under government monitoring (Barmon, 2011).

At the expense of a cheap labour force for the city's productivity, Dhaka has been systematically creating a stressed ecological area by polluting and destroying a range of ecosystem services (Dewan et al., 2012) with the rampant expansion of informal settlement pockets and extraordinary density of informal settlements-dwellers. Nowadays, informal settlements across the world are considered unprecedented incubators of many diseases, such as breeding grounds for vector-borne dengue (Ferdoussi et al., 2015; Marti et al., 2020) and malaria (Rashid et al., 2013; Sclar et al., 2005) that are increasing due to drainage congestion, stagnant water, flooding and improper disposal of solid waste. Citizens must remind themselves that emerging and re-emerging diseases can travel across the city if informal settlements are neglected or ignored. Recent outbreaks of severe dengue in 2018 (Mutsuddy et al., 2019) and the spread of regular malaria (Rashid et al., 2013) in the city triggering casualties is a case in point. On top of the current agony of informal settlement dwellers, the contemporaneous COVID-19 pandemic has pushed the informal settlements into more tragic life forms (BRAC [Producer], 2020). Informal settlements are the potential sources of the virus spreading as social distancing is a utopian term for these densely populated areas. Moreover, it is apparent that the lockdown just has added another nail in their coffin as a day without work means no food at all. From the inspection of these tragic situations, scientists concluded that the lifestyle of the informal settlement- dwellers has now come to rest with trouble at both ends, either go out for food and get infected or stay at home and starve.

So far, several projects and policies have been approached by government organisations (GOs) and NGOs. Out of which, most notable informal settlement-related approaches include chronological encroachment-grounded eviction ( Wakely, 2007), major resettlement ( Mohit, 2012), upgrading, back to home (‘Ghorephera’) program, rehabilitation, contracting for health services (Ishrat & Siddika, 2019; Tripathi, 2008). 'National Rural Development Policy 2001’ also indicated high awareness of rural-urban migration risk, however, limited evidence of the practice is witnessed equitable growth or the decentralization of power, finance, and infrastructural development towards the rural area (Afsar, 2003).

4. WATER SECURITY

According to the National Water Security Index score by Asian Development Bank (ADB), the Bangladesh of GBM basin has been struggling with water security as it is ranked 44th among 48 nations (Asian Development Bank, 2016). In this paper, indicators like the accessibility of adequate safe water in human and environmental services, protection from hydrological hazards like flood and drought, sustainably using water systems and resources, and protecting them collectively comprise the term water security. Mostly mentioned water security problems are waterlogging or poor drainage systems, insufficient sanitation system provision, scarcity of water, flooding, and pollution through urban and industrial wastes and chemicals (Schultz, 2007) are described in detail as follows:
4.1 Flood

Dhaka city’s flood is a common occurrence with a history of most devastating forms during 1954, 1987, 1988, 1998, 2004, and 2007 (Figure 3). Flood volume is largely affected by further increase in peak runoff along with growth in impervious surfaces of built-up areas (Subrina & Chowdhury, 2018). Several structural measures have been taken as a response to the damages made by those floods. For instance, promoting efficiency in outpouring extra water by the pump and raising numbers of pumping stations became priorities (Bala et al., 2009). In this regard, emergency management by the civic bodies, namely, DWASA, Bangladesh Water Development Board (BWDB) and Dhaka South City Corporation (DSCC), was highly appreciated in the past flood events. Nevertheless, dewatering a large volume of floodwater can be only an immediate temporary solution.

Furthermore, external flooding is not the only difficulty during the monsoon season. Three past flood events of Dhaka confirmed that waterlogging due to local rainfall is also responsible for internal flooding, particularly the case of the 2007 flood (Bala et al., 2009). In general, intense rainfall causes waterlogging in Dhaka West due to the Dhaka-Narayanganj-Demra (DND) embankment encircled area performing poorly in drainage maintenance, whereas river flooding damages Dhaka East that has no embankment (see Figure 4) (World Bank, 2015). Note that the natural drainage of Dhaka city is connected with rivers surrounding the city by retention areas such as Dhanmondi lake with a retention capacity of $4.4 \times 10^5$ m$^3$ and also by 40 drainage channels (Tawhid, 2004). It is believed that the resuscitation of the blue networks is a foremost requisite for solving city waterlogging (Subrina & Chowdhury, 2018).

Figure 3: Flooded areas within Dhaka for the flooding event on (a) 10 August 2017 and (b) 24 August 2017; (c) Flood hazards within Dhaka based on flooding events from 2007-2017 (Haeusler et al., 2017).

Regrettably, lack of coordination among the concerned authorities is also blamed by communities for not taking timely flood action (Faisal et al., 1999) and was witnessed during 1998 floodwater intrusion, especially through embankment breach along the 2.2 km long section of the Buriganga River and through open regulators into the raised section of the Dhaka west from Balu River (Bala et al., 2009). However, an opposite scenario was observed during the 2004 flood. In this event, a well-coordination among the DWASA, BWDB, and DSCC in case of the on-schedule closing of the regulators and sluice gates of the flood protective embankment firmly made western Dhaka free from the floodwater. DWASA has the major responsibility to manage stormwater dividing the city into 12 drainage zones for the stormwater drainage with a total area of $140$ km$^2$ (Tawhid, 2004). In parallel, DSCC contributes to sludge management by constructing the 130 km underground piped drainage along with 1,200 km surface drains (Tawhid, 2004). Despite such extensive drainage network planning, waterlogging in Dhaka is prominent due to blockage originating from various anthropogenic factors (RAiN Forum [Producer], 2020). These include (i) faulty waste management system, (ii) local dumping of solids/garbages encroaching the drain, (iii) illegal encroachment of major rivers, (iv) reduction of water retention areas, and (v) unplanned haphazard development of the houses/city for fast-growing population resulting in the disappearance of natural waterways. In most of the cases, civic bodies end up in blame game instead of solving problematic cases through mutual integrity and cooperation. Every monsoon, DWASA and DSCC constantly get away by
blaming each other when choked drains lead to waterlogging. When it comes to drainage within flood-control projects, dilapidated river banks and indiscriminate filling of low-lying floodplains, a bunch of barriers like authoritative prolongation, no magistracy power, fund shortage etc. are quite common for BWDB, Bangladesh Inland Water Transport Authority (BIWTA) and Rajdhani Unnayan Kartripakkha (RAJUK), respectively, ultimately posing threats to ecological functions affecting the city.

During any flood in cities with poor sanitation, the high mortality rate due to the spread of waterborne infectious diseases is prevalent (Mark et al., 2018). Among the waterborne diseases, cholera transmission through flood water contact is one of the natives to Dhaka and the estimated average cholera risk per day for children is 10 to 70 times more than adults in the city (Mark et al., 2018). If the monthly maximum temperature increment is 1°C, either due to urban heat island effect or climate change impact, cholera incident is predicted to show an increment of 7% (p < 0.001) (Daisy et al., 2020). Again, when the floodwater level retreats in Dhaka, a suitable breeding environment for Aedes mosquitoes is created (Hashizume et al., 2012) leading to the dengue outbreak to a large extent. Currently, early warning and early predictions are used to restrict its destructive effect.

As part of tackling future floods, the newly designed storm sewerage system has now considered 100-year return periods to enhance water delivery capacity. Note that the previous design was based on 25-year return periods. As a result, water drainage takes a couple of hours that previously used to take 2-3 days. However, maintenance and poor or no monitoring issues still remain unresolved. Despite all the odds, the Wetland Conservation Act 2000 targets saving Dhaka from frequent flooding through increasing wetland areas, including 40% of Dhaka (Subrina & Chowdhury, 2018). One of such successful steps is the Hatirjheel – Begunbari re-excavation project, as it made the capacity of stormwater detention increase from 14,25,837 m³ to 22,01,601 m³ (Subrina & Chowdhury, 2018). It was jointly carried out by RAJUK, DWASA, the Local Government Engineering Department (LGED), and the Special Works' Organization (SWO) of the Bangladesh Army. This is definitely an excellent example of administrative
authorities of Dhaka city coming forward to cooperate with each other resulted in significant progress towards targeted bottom catchment urbanization.

4.2 Surface Water Contamination

Serious river pollution problems are common to any Asian megacity (Luo et al., 2019; Niemczynowicz & Ivra, 1996) due to industrial effluences and, partly, wastewater contamination exacerbated by population growth. Dhaka megalopolis is no exception, as rapidly growing urban development and residents continue discharging heavily polluted wastes to the environment. Without adequate wastewater treatment, water pollution continues to be a major challenge. About 3,300 tons of municipal solid wastes are produced in Dhaka South and Dhaka North per day (World Bank, 2015), stemming mostly from residential and commercial sources like industries (Bahauddin & Uddin, 2012). On top of that, 206 tonnes of contagious medical waste generation per day created a dire situation (The Business Standard, 2020). Approximately 50,000 septic tanks and pit latrines exist in Dhaka in addition to the (piped borne and waterborne) sewerage systems that cover 60% of the total area, and the rest of city dwellers do not have any type of sanitary disposal system actually (DWASA, 2019). As the DSCC fails to cover the rapidly growing Dhaka outskirts, about 1,100 tons of waste remain uncollected (World Bank, 2015). Despite the solid waste master plan and National 3R Strategy of the Department of Environment (DoE) (World Bank, 2015), the uncollected wastes are dumped in lowlands and other public areas (Bahauddin & Uddin, 2012). As a result, rivers get polluted directly or by the leachate from the wastes when rainwater gets swept through the dumping sites (Islam et al., 2015). Best practice dictates that improving water quality requires wastewater collection, blockage-free connection to sewerage, and ultimately wastewater treatment.

On the other hand, while running the economy through ensuring high-wage employment for a mass along with increasing productivity of valuable goods on a large scale (Yunus & Yamagata, 2012), thousands of industries are discharging their effluents in the rivers around Dhaka degrading the water quality (Islam et al., 2016). The chemical oxygen demand (COD) of tannery wastewater samples varied between 90 to 6,500 mg/L and was much higher than non-tannery wastewaters (Islam et al., 2015). For a further clear scenario, variation in physicochemical and toxic metal concentrations of Shitalakhya, Buriganga, and Turag River around Dhaka city due to tanneries, textiles, dyeing, pulp and paper, and steel re-rolling mill is given in table 1. To neutralize severe contamination effects, 148 industries were asked to relocate from the Hazaribagh area to Savar by 2017. Transferring all the said industries was a major initiative, and this relocation process solved the Hazaribagh area's local pollution issues to some extent. Now, biochemical oxygen demand (BOD), electrical conductivity (EC), ammonia (NH3), and nitrite ion (NO2-) concentrations in the Buriganga River show a decline. For instance, chemical oxygen demand (COD) values before and after relocation were found to be in the range of 65-140 mg/L and 55-85 mg/L, respectively (Islam, 2018).

However, shifting the industries upstream of the rivers, though it has shown an immediate local reduction of contamination, is not a sustainable solution (Rampley et al., 2020). Industrial metals are still gradually transported downstream and will continue to contribute in the long run (River Conservation Club [Producer], 2020). High toxicity due to critical heavy metals like chromium, zinc, and selenium with conductivity value touching the danger level of 944-1,001 μs/cm is present in river water around Dhaka. Moreover, the soil in the Hazaribagh area still contains contaminants such as lead and chromium in concentrations between 0.05 to 3.66 mg/kg and 7.20 to 21.15 mg/kg, respectively (Rampley et al., 2020). Thereby, scientists still find these relocated industries as significantly threatening sources and a future threat with the probability of endangering the groundwater quality when the groundwater level is recovered (Khan et al., 2020).

4.3 Groundwater Table Depletion and Water Scarcity

Due to intensive withdrawals in megacities, the dramatic lowering in groundwater levels persisted for ages (Islam et al., 2021; Kagabu et al., 2011; Onodera, 2011). Dhaka is one such city characterised by a significant cone of depression with water table elevations of -49 to -69 m during 1980-2018, where groundwater abstraction now exceeds recharge. Against the demand of 2,500 megaliters per day (MLD) at 160 liters per capita during 2018-19 (Figure 1b), DWASA has actual production ranging from 2,250 to 2,450 MLD (DWASA, 2019). It is also noted that 84% of the total municipal water supply system is based upon groundwater (Hoque et al., 2007) and the rest is from three surface water treatment plants, of which
the largest one has a capacity of 225 MLD (DWASA, 2019). More than 700-800 pumping wells (henceforth referred to as tubewells) of DWASA operate at a rate of 20 to 22 hours daily for lifting groundwater (BADC, 2019).

Table 1: Water quality parameters of Shitalakhya, Buriganga, and Turag River (adapted from Islam and Azam, 2015; and Islam et al., 2015b).

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Experimental Range</th>
<th>Standard Permissible Limits</th>
<th>Remarks</th>
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<td></td>
<td>Shitalakhya</td>
<td>Buriganga</td>
<td>Turag</td>
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<tr>
<td>Potential of Hydrogen (pH)</td>
<td>6.5-8.3</td>
<td>5.9-9.1</td>
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<td>Electrical Conductivity (EC), μS/cm</td>
<td>720-2321</td>
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<td>Total Dissolved Solids (TDS), mg/L</td>
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<td>Biochemical Oxygen Demand (BOD), mg/L</td>
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<td>38.9-151</td>
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<td>Chemical Oxygen Demand (COD), mg/L</td>
<td>14-172</td>
<td>17-185</td>
<td>5-181.7</td>
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By analysing records from the monitored borehole network, severe water mining was observed for 1998-2018 (Figure 5a-b) as the number of deep tubewells has been increasing every year since 1980 (BADC, 2019). Nevertheless, seasonal rainfall could not reflect any impact of recharging the Dupi Tila aquifer beneath Dhaka due to the impermeability of Pilo-Pleistocene (i.e., Madhupur tract) soil (BADC, 2019). On top of that, most soakable green areas have already been transformed into an impermeable concrete jungle. Here roads are creating further restrictions on rainwater penetration into the ground (Subrina & Chowdhury, 2018). This is why major runoffs drain out to nearby surface water and sewer systems without recharging the underneath. During 1980-90, the groundwater level lowering rate was below 1 m per year. Since 1996, this yearly lowering rate increased to 2 m showing a sharp decline since 2004 when 5.5 m dropped down in one single year (Figure 5c). This indicates that Dhaka city's groundwater situation reached a precarious condition. On average, the declination rate across the study area was 2.4 m/year for the monitored period (1994-2013) (Nowreen, 2017).

In order to safeguard the falling groundwater level, artificial recharges (Figure 5d) have been encouraged by the government, particularly by promoting rainwater harvesting and partly by injecting wastewater underneath after treatment. However, to date, experts are a bit skeptical about the consequences of wastewater injection (RAiN Forum [Producer], 2020). Then, again, as part of the pandemic prevention schemes, additional cleanliness requirements for COVID-19 may add pressure to water scarcity. According to the World Health Organization (WHO) guidelines, frequent and proper handwashing with soap points to a major increase in clean water demand in the cities.
Figure 5: Groundwater level condition of Dhaka City. Here, (a) map shows the spatial distribution of groundwater level position (m below ground level) for the year 2018, where points denote monitoring wells of piezometers observed by Bangladesh Water Development Board (BWDB), Bangladesh Agricultural Development Corporation (BADC), and Department of Public Health Engineering (DPHE); (b) line plots show an annual groundwater level position during the period 1980-2018; (c) point graphs show year-wise anomalies (i.e., rate of declines) plotted against average (1980 – 2018) groundwater levels for the same observation points shown in (b), and (d) prospects of artificial recharge and other augmentation options proposed by Sultana (Sultana et al., 2009).

5. AIR QUALITY

Dhaka is ranked 2nd in the world in terms of the most annual average concentration of particulate matter (PM) - PM$_{2.5}$ - according to the 2019 World Air Quality report (IQAir, 2020). Increased activities and vehicular emissions in parallel to the growth of the economy are the primary contributing sources (Rahman et al., 2021). Every day there prevails about 100 kg of lead, 3.5 tons of suspended particulate matter (SPM), 1.5 tons of sulphur dioxide (SO$_2$), 14 tons of hydrocarbon (HC), and 60 tons of carbon monoxide (CO) from automobile emissions (Alam, 2010). In semi-residential areas, the minimum average PM$_{10}$ mass concentration recorded during 1996-2005 was 10.5 µg/m$^3$ that changed to 27 µg/m$^3$ during 2006-2015 (Begum & Hopke, 2018). Substantial impact on public health (see Table 2) is likely to occur from high fine PM concentrations as measured by Gujrar et al. (2010). Note that the global position of Dhaka is the worst in three of the cases (Total, Respiratory, and Cardiovascular Mortality) and second worst in the last one case of table 2.

Table 2: Health risk in Dhaka in the late 1990s/2000 due to air pollution

<table>
<thead>
<tr>
<th>Cases</th>
<th>Number per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Mortality</td>
<td>14,700</td>
</tr>
<tr>
<td>Respiratory Mortality</td>
<td>2,100</td>
</tr>
<tr>
<td>Cardiovascular Mortality</td>
<td>7,000</td>
</tr>
<tr>
<td>Hospital Admission: Chronic obstruction pulmonary disease (COPD)</td>
<td>2,100</td>
</tr>
</tbody>
</table>

Note: The total and respiratory mortality rates are recorded in terms of total suspended particles (TSP), sulphur dioxide (SO$_2$), and nitrogen dioxide (NO$_2$) effects, whereas cardiovascular mortality is in terms of NO$_2$ only (Gurjar et al., 2010).

Taking air pollution into account among many government steps taken, remarkable are (i) conversion of 80% vehicles in 2010 to compressed natural gas (CNG) (Begum et al., 2011), (ii) the embargo
on the import of high sulphur diesel and coal (Alam, 2010), which reduced sulphur to 500 ppm by 2016 (Begum & Hopke, 2018), (iii) ban on importing lead petrol (Alam, 2010), (iv) restriction of registration of two-stroke three-wheelers by Bangladesh Road Transport Authority (BRTA) (Alam, 2010), (v) taking Urban Transport Project in hand (Alam, 2010), and (vi) target to remove 25 years old trucks, buses, minibuses from 15 July 2010 (Ahmed & Mahmood, 2011).

6. OTHER INESCAPABLE CHALLENGES

There may be some other challenges that create adverse impacts on the city. Among those, the challenges that have a relatively higher impact on the fastest-growing Dhaka (Hossain, 2013) include traffic congestion, electricity deficit (Mahin et al., 2017), the temperature increase for urban heat island effect (Tashnim & Anwar, 2016), seismic risk (Khan, 2016), etc. affecting society, economy, and the individuals. Notably, Dhaka now ranks the 10th most traffic-congested city in 2020 (Adamovic, 2020) and, according to Gallagher's (2016) prediction, the average daily traffic speed would go down to 4.5 kph by 2035, if ‘no regret’ phase continues.

7. RECOMMENDATIONS

The problem for one delta may not be the problem for the other, and a solution for one megacity may not be the solution for the others. Therefore, drawing insights from the impactful Dhaka issues discussed above, some generic and simplistic recommendations followed by Dhaka-specific opinions are suggested and categorised into policy, intervention, and research. However, ultimate outputs will never be fruitful if there is no strong intermediate ‘Evaluation’ or ‘Monitoring’ and no capacity/flexibility for adaptive planning or alternative pathways to achieve the same goal are undertaken on time. For these time-to-time evaluations, numerical data of baseline situation, quantifiable indicators and targets are timely and practical demands to track policy progress.

7.1 Policy

1. Coordinated decentralization by generating alternative urban centers can reduce urban growth (Childers et al., 2015). At least administrative decentralization is recommended along with shifting universities and garment industries either to peri-urban areas or intervening secondary cities. Empowering secondary cities will be helpful in this regard.

2. Integrated land-use planning has been recommended as a helpful technique (Roy, 2009). For instance, synergising roadway infrastructure mapping with water-connected river master plan applications should be elevated (Cervero, 2013). In Dhaka’s case, the collaboration between RAJUK and Dhaka Transport Co-ordination Authority (DTCA) is recommended. Further, urbanization should not take the places of high-value agricultural lands and, of course, not take place in the flood-prone area. In this context, the plans like DMDP, Dhaka Integrated Transport Network (DITN), and Flood Action Plan (i.e., FAP no. 8A) are the tools for potential alternative analyses. The DMDP support system can be a suitable mechanism too (Roy, 2009).

3. Regulating the ecological function zoning by formulating laws with exemplary penalties and imprisonment is required. Effective enforcement of laws should be immediately carried out. Specifically, the wetlands of Dhaka should be classified as jurisdictional wetlands to preserve the existing retention storages (Islam et al., 2012).

4. Distributions of roles among authorities should be cast as per the suitability and proficiency of the administrative organization and their departments to make policies into practices (M. A. U. Rahman, 2015). In this regard, one single authority, preferably selected by the public, can ensure political support from down to top-level development. Khan (DWASA, 2012) stated that city corporations should take responsibility for both surface water and stormwater drainage systems for better performance. Rana (2011) recommends that municipal authorities or local governments handle urban planning like budgets with independence, whereas the central government should majorly focus on the overall master plan and development guidelines provision such that the fund, service, and resource facilities are ensured.

5. For executing plans, the integration or partnership approach should be given emphasis. In this context, DWASA, DSCC, and RAJUK can synergize national-level plans with sector budget allocations through short- and long-term action programme reviews (M. A. U. Rahman, 2015). It is recommended
that the Bangladesh National Adaptation Programme of Action (NAPA) like national strategies should line up with the actions of the DMDP (Roy, 2009). Also, merging similar functions like urban planning functions of DSCC with the DMDP are highly suggested (M. A. U. Rahman, 2015). Digitization for constant monitoring can further help to ensure coordination and end up the blame game probabilities, to be specific, between DWASA and city corporations. Coordination between city corporations in executing the strategies and master plans is now required more than ever.

6. Blending Top-Down and Bottom-Up Approaches can be initiated for a successful change. The public-private relationship should be strengthened. NGO activities that get troubled by bureaucratic regulations costing a lot of time should be changed. Immediately bottom-up development policies are to be implemented with reforms in administrative institutions (Rana, 2011).

7. Enabling the environment is a prerequisite with sound policy guidance. To avoid the corruption probabilities of RAJUK, a separate high-ranked regulatory authority for controlling development could be a better choice (Alam & Ahmad, 2011). Further, consensus-based implementation approaches should be initiated to stop the trend of the squatter settlement process (Swapan et al., 2017).

8. Integrated, inclusive and interconnected policies and planning are necessary, and implementation by the same organization is recommended. Further, formulation of policies on waste management related to infectious and contagious diseases (e.g., COVID-19) creates awareness on potential consequences of hazardous waste management, enactment of anti-waste dumping laws (The Business Standard, 2020), micro-level monitoring for daily cleaning routines with the unloading of solid dumps, and recycling strategies are recommended for minimising primary and secondary waste collection (World Bank, 2015). Specific to Dhaka city, amendment of the "Medical Waste (Management and Processing) Rules 2008" and its proper implementation is one of the demands.

9. Other recommendations include technical knowledge to incorporate in planning involving planners, architects, and engineers, no political influence on feasibility study reports, open-source information for better response/management.

7.2 Intervention

1. Envisioning multipurpose structures or blue cities can protect retention and detention areas and develop urban fringe areas to increase green networking (Lal, 2020) with more open spaces, water plazas, rainfall gardens, and rooftop gardening (Subrina & Chowdhury, 2018). The ‘Sponge City’ concept paves a better solution pathway in this regard. A sponge city is a modern stormwater management approach that allows a city to collect rainwater and use the stored rainwater when needed. Much like a sponge, the city will soak rainwater and stormwater instead of creating excess runoff. The target of a sponge city is to collect the floodwater at the rainfall location instead of building canals and drainages to try to get rid of the excess runoff (Nguyen et al., 2019). Using dams, gates, and pumps to try to escape from floodwater is becoming an outdated concept. Thus, it should be recommended to WASA that Dhaka too should start implementing the sponge city approach since the whole world is slowly moving in that direction. The first and foremost step for constructing a sponge city is to incorporate vertical gardening with large buildings. Some structures in Dhaka are already starting to use vertical gardening, as it can intercept the rainfall, absorb it, and infiltrate it into the underground. It can also act as a natural air conditioner and absorb large amounts of carbon dioxide while producing oxygen. Many cities in the world, including Delhi, have initiated the vertical gardening concept with the vision to make their city greener. It is high time that Dhaka should be reconstructed in such a way to allow for it to become a green city (The Institution of Engineers Bangladesh Dhaka Centre [Producer], 2020). Further, the government can authorize provisions about rooftops gardening in building codes like the Bangladesh National Building Code (Chowdhury et al., 2020).

2. Instead of informal settlement clearance or relocation or rehabilitation, scopes identification for informal settlement up-gradation via participatory budget is suggested following any or multiple options like self-help, in-situ public housing, assisted (i.e., equity-based affordable) community housing (Begum et al., 2018), co-managed informal settlement upgrading (Panday, 2020), etc.

3. Water-urbanism (i.e., a wet, hydrological and softer infrastructure approach) (Ahmed, 2017) practice is required than prevailing dry or harder approach by reinventing interconnected water networks, redevelopment of wetlands, reconstruction of land-water transports (Siddiqua, 2020). Dig-elevate-dwell principle (Islam, 2001) can be applied on low-lying lands to minimize the obstruction of floodwater flow. Specific to Dhaka's context, the recommended proposals and plans for future drainage
infrastructure improvements are advised to remain the same as stated in RAJUK's DAP, Narayanganj City Corporation's Concept Vision Plan, and DWASA's Sewerage Master Plan (Dasgupta et al., 2015).

4. Polluting industries should always be transferred downstream a river (Rampley et al., 2020), as the water contamination therein is controlled by upstream flow (Islam et al., 2015). As unreliable figures exist on effluent disposal to the environment after adequate treatment, the idea of used (waste) water injection to the city's groundwater should be avoided. Further, on-site sanitation systems, such as septic tanks and pit latrines should be encouraged before releasing them to the sewage system. In this context, citizen science (van Noordwijk et al., 2021) can be applied for the active participation of the stakeholders.

5. For the decrement of air pollution in the future, it is recommended to install catalytic converter in the vehicles and reduce sulphur in diesel through hydro-desulphurization (HDS) (Alam, 2010). It is necessary to immediately relocate smoke-emitted industries (Ahmed & Mahmood, 2011).

7.3 Research

It is suggested not to face a problem when it arrives; instead, it is more important to find what problems await in the future before it arrives through researching with enough knowledge. To be specific:

1. Reconceptualize water/delta by policymakers, engineers, urban planners, designers and architects, coevolution of nexus across city economy, ecology, and living condition.
2. Systematic study and development of more technical know-how applying citizen science. New (solution) models to introduce after gaining more knowledge for implementation.
3. Formulation of multi-objective planning tools which is multidisciplinary and multi-dimensional in nature, a digitalised decision support system for better coordination.
4. Feasibility/model studies to be done in advance applying variable future scenarios to get response characteristics of water resource systems.
5. Propose social models that can build up community ownership, promote sharing value, and encourage cleanliness culture, water reuse, recycling, gender-friendly behaviours, online payments, etc.

8. CONCLUSION

The delta urbanization process should keep urban transferability as the prime choice that provides the scope of transferring a city location to shifting the delta's waters. Understanding the water system must get priority before implementing any measures. But when these choices are overlooked with negligence at the advent of the urbanising process, then there is no turning back in the mid-way to establish this facility because it will result in irrecoverable loss due to the permanent interlinkage of different urban sectors. As a consequence, the urban area has to go through the adaptive phase in order to face the challenges like mushrooming of squatter settlements in and around the cities, the establishment of permanent constructions that are gradually replacing room for water, and also with emerging issues such as land degradation, unsafe water, and air pollution. This further leads contemporary urbanism to face pressures for basic facilities and the decent standard of living required for human dignity. Now half-hazard settlements are unlikely to go away, migration is unlikely to stop, and frontline battling with climate-change-induced challenges are inescapable for urbanising delta, i.e., Dhaka. On top of that, this megacity is starting at another crisis of tackling pandemic outbreaks and its extra challenge of handling disposals of single-use biomedical and plastic usage.

Thus, when there is no chance of urban transferability, the only choice left in hand is to follow the recommended guidelines stated above in Section 7. The most noteworthy among them are multi-objective planning that includes integrated land-use, regulate ecological zoning, and slum up-gradation; enabling environment by inter-sectoral and cross-sectoral collaboration or implementation by the same organisation, blending of top-down and bottom-up approaches, coordinated decentralisation, etc.; micro-level monitoring; and awareness build-up for recycling strategies. These recommended guidelines pave the way to cope with the complexity that can at best minimize risks, merely mitigate and transform risk to other parts of the deltas. In fact, most of the time these recommended guidelines can result in nothing but a failure because, so far, urbanization in bottom catchment promoted fortification against the hydro-ecological functions of nature with only just a dry approach comprising hard infrastructures and no concern about water and people in it at all. The recommended guidelines will only be efficient when people within the delta and the water urbanism are taken into account while forming plans and policies. Furthermore, for a delta, if long-term plans and policies can be ensured to avoid sudden rapid responses
to the challenges, then these guidelines will give much more promising and practical outcomes to sustain a stable Environmental Kuznets Curve (EKC). Specifically, identifying the current situation in quantifiable terms (e.g., numeric values, percentages, scores, indices), setting a quantitative target to measure progress, and tracking data for specific measurable and meaningful outcomes are practical and timely demands for any plan/policy to succeed. These long-term plans and policies must include digitised monitoring facilities and ensure citizen science with open data sources within organizations for transparency. In this context, with current conditions and guidelines for the future, Dhaka city is standing with a great many lessons for the deltaic urban areas around the world. However, no solution fits all, hence, integrated tailor-made strategies are needed to incorporate in the adaptive pathway settings.

9. DATA AVAILABILITY STATEMENT

All data, models, and code generated or used during the study appear in the submitted article.

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Lancet, 365(9462), 901–903. https://doi.org/10.1016/S0140-6736(05)71049-7
### Annex-1: List of experts and webinars used for retrieving qualitative information

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<td>Bangladesh Institute of Planners and Bangladesh Architects Institute [Producer]. (2020). Webinar: A virtual roundtable meeting on Future Dhaka and Detail Urban Area Plan. [Video]. <a href="https://www.facebook.com/groups/1802483560017928/posts/2721447471454861">https://www.facebook.com/groups/1802483560017928/posts/2721447471454861</a></td>
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<td>Chairperson, BRAC (International NGO of Bangladesh), Executive Chairman, Power and Participation Research Centre (PPRC) ARISE Bangladesh Advisory Board Member</td>
<td>Joint Secretary, Bangladesh Environment Movement Chairperson BRAC Professor, Water Resources Engineering, BUET BAPA (urban activist) Researcher, Bangladesh Centre for Advanced Studies (BCAS) Professor, Urban and Regional Planning, Jahangirnagar University Professor, Political Science, DU Head of the Wageningen Project Office, Dhaka, Bangladesh</td>
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AUTHORS’ DECLARATIONS AND ESSENTIAL ETHICAL COMPLIANCES

Authors’ Contributions (in accordance with ICMJE criteria for authorship)

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<tr>
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<th>Author 2</th>
<th>Author 3</th>
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**Research involving human bodies (Helsinki Declaration)**

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**Research involving animals (ARRIVE Checklist)**

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**Research involving Plants**

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**Research on Indigenous Peoples and/or Traditional Knowledge**

Has this research involved Indigenous Peoples as participants or respondents? No

**(Optional) PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses)**

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The Impacts of COVID-19 on Oman’s National Health Security

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ABSTRACT
The COVID-19 has had a massive impact on the Oman national health security system, putting the officials and medical crews under sustained pressure and challenges to cope with this crisis. We need to improve the national health security system to achieve health equity and to protect us all from the threat of COVID-19 and future pandemics. This study addresses the impact of COVID-19 on Oman national health security system. The study focuses on three objectives to determine the relationship between COVID-19 and national health security in Oman, to investigate the impact of COVID-19 on national health security, and to identify the role of government in mitigating the impacts of COVID-19 on national health security. The study applies a qualitative method approach and was conducted in two parts using questionnaire surveys and interviews. The study has found that, having a strong relationship between COVID-19 and national health security, the COVID-19 has had impacts on Oman national health security system and the role of the government in mitigating the impacts is very important. The purpose of the study is to generate recommendation to Oman national health security system to pave the way to a robust and resilient national health security system.

Keywords: Oman; COVID-19; Security; Oman national health security.
1. INTRODUCTION

COVID-19 refers to Coronavirus disease-2019, which is an infectious disease caused by a recently discovered coronavirus. In the beginning of December 2019, the first case of coronavirus was registered in Wuhan city in China. China public health officials informed the World Health Organization about the situation in and that they were having a dangerous novel new virus causing illness in the city. They determined that it was COVID-19 and dramatically spreading in and out of Wuhan. China has implemented serious action to stop the spreading of the virus, shutting down public life, no gathering, market closing, and all citizens had to stay in home. Virus was spreading all over the world, the WHO classified the virus as a pandemic (WHO, 2020b).

The COVID-19 has placed people's lives, livelihoods and dignity in jeopardy, demonstrating that the COVID-19 is far more than a health crisis. In addition to immediate and devastating death loss, COVID-19 has led to a shocking increase in unemployment and a multi-stage economic crisis. It has shown major flaws in the delivery of social care, as well as social security and preparedness plans in the course of facing health crisis. As with most crisis, those already in vulnerable and precarious situations and minimum able to endure extra shocks to their well-being are firmness the brunt of the pandemic. Human security challenges, as posed by COVID-19, recognize that everyone's health is dependent on effective disease prevention programs, the availability of and access to high-quality healthcare and the wider environments in which people live. As COVID-19 spreads around the globe, the time has come to prioritize human security in our efforts to halt the pandemic's spread and rebuild a more inclusive and resilient world (Nihas, 2020).

The spread of COVID-19 in the Sultanate of Oman has generated an unprecedented precarious situation. The radical measures have been taken by the government to restrain the outbreak of the pandemic, which, by one way or another, has caused sustainable implications on the various sectors. On the side of economic sector, the lockdown measures that have been implemented led to an economic blow. The shopping malls, restaurants, travel, medium and small projects and tourism companies are closed. The ban on the international flights has significant effects on tourism and hospitality sectors, business travel and cancellations of travel booking and hotels. COVID-19 has triggered a predicament on the health sector in the Sultanate. The medical crews are working under much stress causing depression to them, affecting their work negatively. The hospitals’ capacity is overwhelmed, with the shortage of medicines and specific-design personal proactive equipment for staff. The dedicated doctors are focusing on dealing with COVID-19 patients, affecting other regular patients in the medical wards under doctors’ accountability. Moreover, medical research, audit and training are halted.

This study is useful for students and researchers who seek further information’s about the impact of COVID-19 on the national health security in Oman. At a broader level, the study may be useful as a reference material for researchers who research in the same field. This study is also intended for audience inside health security and economic sciences, e.g., political sciences, economics, health, psychology and other areas.

In the context of Oman, a limited number of researchers have studied, the impacts of outbreaks of COVID 19 in Oman. For example, Al Ghafri et al. (2020), studied with the following outcomes. The study found that amenities in Muscat governorate, with the support from the national teams, appeared to constantly raise-up their responses and preparedness to encounter the epidemiological forecast in the governance of COVID-19. Abdallah Badahdah (2020) studied the mental health of health care workers in Oman during the COVID-19 pandemic and one of the outcomes was that the mental health of health care workers has been harshly affected. He predicted that it would continue, to various degrees, with grave effects in the foreseeable future.

2. REVIEW OF LITERATURE

Holmes (2014) wrote that, the modern conceptions of national security emerged in the 17th century during Europe's Thirty Years War and England's Civil War. The Peace of Westphalia, which was signed in 1648, established the principle that the nation-State had sovereign power over not only domestic affairs like religion, but also external security. The pro-Westphalia global system was constructed on the presumption that there existed a worldwide principal dominating the affairs of States led by emperors,
kings, popes and princes. That was indeed the principle of the Holy Roman Empire. The new thought of the nation-State acquired a different approach. Stability and peace might be better served if individuals were not slaughtering each other over several global principles. It would be best to have a worldwide system constructed on the balance of nation-States dedicated to the restricted purposes of self-defence and national sovereignty.

According to Morgenthau & Thompson (2006), the national security must be defined as integrity of the national territory and its institutions. The notion of national security was born and developed during the Cold War. In reality, until the 1970s, national security was thought of solely in military terms. This is because the first decades of the Cold War were primacy linked with the realistic approaches. Realists in the period of 1950s to 1960s supported a "reductionist" definition of national security, which was actually synonymous to military security. Military power is the only tool capable of ensuring State survival, and it is the only legitimate object of security policies. While Wolters (1952) argues that the beginning of the Cold War brought about a shift in the common understanding of national interest, which was now conceived as national security interest, this shift was largely due to some important changes in the international system, such as nuclear warheads and the pressure and stress over policy makers they produced. On this regard, his article “National Security as an Ambiguous Symbol” can be considered the primary attempt to conceptualize the notion of national security whose usage was, and somehow still is, largely abused. According to Wolters (1952), the notion of national security was born as an evolution of the concept of national interest. In addition to that, Wolters' interpretation of national security bears the influence of the classics and of classical realism such as Hobbes (2006), Morgenthau & Thompson (2006). In their account, security is States’ primary concern. Thus, security is conceived in terms of power, while international politics is the environment in which rivalries and wars take place for achieving more power. Military power is, thereby, the most immediate tool for ensuring national security, the one State’s survival depends upon. Therefore, this first description of security points out the politico-military features of national security, whose goals are, first and foremost, the protection of the political independence and the territorial integrity of the State. The concept of national security has been mainly on the preservation of sovereignty, territorial integrity, and internal stability with the focus on the coercive power of the State (Bonsle, 2015).

Nihas (2020) stated that the traditional security studies look at the security through the national security lens. Sovereignty and integrity of the State are the loci and focal points. Cold war and the literature before his work zeroed in on the weapons, disarmament, increasing the deterrence to shield the State from other States. In order to fructify and protect the State, traditional security studies also encompassed the idea of making pacts, alliances and treaties between various States. To sum up, Holmes (2014), Morgenthau & Thompson (2006), Wolters (1952), Bbonsle (2015) and Nihas (2020), in their perspective views, articulated that the main concern and ultimate goal of the State is about power and maintain their national security stable and gain the maximum spectrum of national interests. The military power linked strongly with the national security. The States are guided in their relationship with other States by the logic of national interests, national security in the terms of power, also the national interests and national security are synonymous. All States are regarded as sharing the same concern of maximizing power for the sake of their own security. Moreover, in their views, the State is very important, the top in the priority agenda, and, to whatever cost, it should ensure the safety of the State and protect it by using all military means.

According to Jackson-Preece (2011), security is a fundamental value of human life. As Thomas Hobbes stated, “there is no place for industry, no arts, no letters, no society without security, and, which is worst of all, continual fear, and danger of violent death and the life of man, solitary, poor, nasty, brutish, and short” (Newey, 2008). In the same views, Walt (1991) mentioned that the security studies may be defined as the study of the threat using and controlling by military force. It explores the conditions that make the use of the force more likely, the ways that use of force affects individuals, State, and societies and the specific policies that States adopt in order to prepare for, prevent, or engage in war.

Tadjbakhsh (2005) wrote that the simplest definition of security is “absence of insecurity and threats”. To be secure is to be free from both fear (of physical, psychological abuse, violence, persecution, or death) and from want (of gainful employment, food, and health). Human security, therefore, deals with the capacity to identify threats, to avoid them when possible, and to mitigate their effects when they do occur. It means helping victims cope with the consequences of the widespread insecurity resulting from armed conflict, human rights violations and massive underdevelopment. This broadened use of the word
“security” encompassing two ideas: one is the notion of “safety” that goes beyond the concept of mere physical security in the traditional sense, and the other the idea that people’s livelihoods should be guaranteed through “social security” against sudden disruptions.

Williams (2020) argued about the importance of a government to the citizens in a crisis like the outbreaks of COVID-19 pandemic; he stated that Hobbes believed that government’s prime responsibility is ensuring the safety of citizens’ lives (Newey, 2008). However, Taylor (2004) had argued that traditional State centered security reached a peak during the Cold War. For forty years, the major world powers entrusted the security of their populace, and to a certain extent of the world, to a balance of power among States. With the fall of the Berlin Wall, it became clear that despite the macro-level stability created by the East-West military balance of the Cold War, citizens were not necessarily safe. They may not have suffered from outright nuclear attack, but they were being killed by the remnants of proxy wars, environmental disaster, poverty, disease, hunger, violence and human rights abuses. Ironically, the faith placed in the realist worldview, and the security it provided, masked the actual issues threatening the individual. Being the central foci of security, the protection of the person was all too often negated by an over-attention on the State. By allowing key issues to fall through the cracks, ‘traditional security’ failed at its primary objective: protecting the individual (Taylor, 2004). This led to the challenging of the notion of traditional security by such concepts as cooperative, comprehensive, societal, collective, international and human security (Smith, 1997).

Realists failed to anticipate the end of the Cold War, which put ‘realism and realists’ on the intellectual defensive. Threats and vulnerabilities can arise in many different areas, military and non-military, but to count as security issues they have to meet strictly defined criteria that distinguish them from the normal run of the merely political. They must be staged as existential threats to a referent object by a securitizing actor who, thereby, generates endorsement of emergency measures beyond rules that would otherwise bind. The clearest statement was made by Walt (1991) in his article on the state of the field security studies, broadening the concept of security (Buzan, 1983).

The concept of security has for too long been interpreted narrowly: as security of territory from external aggression, or as protection of national interests in foreign policy or as global security from the threat of a nuclear holocaust. It has been related more to nation-States than to the people. The superpowers were locked in an ideological struggle – fighting a cold war all over the world. The developing nations, having won their independence only recently, were sensitive to any real or perceived threats to their fragile national identities. For many of them, security symbolized the protection from the threat of disease, hunger, unemployment, crime, social conflict, political repression and environmental hazards. Human security is not a concern with weapons – it is a concern with human life and dignity. Human security is people centered, first, embodying a safety from such chronic threats as hunger, disease and repression. And second, it means protection from sudden and hurtful disruptions in the patterns of daily life – whether in homes, in jobs, or in communities (UNDP, 1994).

From this statement, the UNDP (1994) presented the debate about the narrowing and widening the concept of security, the realist theory looks to the national security as to build up the maximum military capability to deter any threats, it focusses only on the survival of the State and do not give a concern to the individuals in the territories of the State. As UNDP (1994) mentioned, human security not only links with superb military capabilities but its moves far beyond of that to the security of individuals from various non-military threats affecting their lives and survival.

While Buzan (1983), argues that; the States become the mechanism by which people seek to achieve adequate level of security against social threats. Buzan, stated that the definition of national security, set by the Thomas Hobbes (Newey, 2008), is as, the people find States in order to defend them from the invasion of a foreigner. The great achievement of men is, putting themselves under government for preserving their property. Buzan (1983) agrees that the concept of national security was dominated by the thoughts of realist to defend the territory of the State from any enemies. Buzan (1983) underlies common voices to expand the notion of security and the meaning of security bound to the level of State, which is inadequate. From this point of views, Buzan (1983) pushed to cementing his position paving to broaden the concept of security. He also argues that due to the concept of security was dominated for long time by the realist, it led to wars. Another reason is the increased debate amongst IRSS scholars to re-defining the concept. He argues that there is a relationship between individual security and State security. Hough (2008) argues that when national security is defined negatively, as protection against outside military threats, the sense of threat is reinforced by the doctrine of the State sovereignty, which
strengthens the boundary between a secure community and a dangerous external environment. For this reason, many critics of realism claim that if security is to start with the individual, its ties to State sovereignty must be severed (Hough, 2008). Buzan (1983) and Hough (2008) agreed that the national security concept has to be clear, meaning that what should we put in our mind when we define the national security is only the State, the individuals or both of them, because if the concept is not clear there will be a consequence.

Buzan (1983) made obvious argument about the national security and individual security. He stated that security is a relative concept, it is much easy to apply to things than to people. Security for individuals cannot be defined so easily. The factors involved are life, health, status, wealth and freedom. Many of them cannot be replaced if lost. It is useful to discuss security in relation to specific threats such as diseases, poverty and natural disasters. Also, individual’s security moves to social threats, physical threats (pain, injury, death), economic threats (destruction of property, loss jobs). From this views, Buzan (1983) goes so far as to define the five security sectors that affect human collectivities: military security, economic security, environmental security, societal security and political security (Buzan, 1983).

Health security is an important dimension of human security, as good health is “both essential and instrumental to human survival, livelihood and dignity” (Human Security Unit, 2013). Martin (2017) stated that the significance of health and its influence on human security can be estimated on the fundamental of four factors:

1. The scale of the disease burden now and in the future
2. The urgency for action
3. The depth and extent of the impact on society
4. The interdependencies or “externalities” that can exert ripple effects beyond particular diseases, persons or locations.

By putting these factors to health security, three fundamentals’ threats to human security were recognized: Poverty-linked to threats, global infectious diseases, crisis and violence, conflicts and natural disasters. JICA (2006), found that the problem of poverty, is multifaceted, involving several dimensions, including the absence of capital investment, crippling debt, disease and ill-health, political instability, lack of education, ecological degradation, and inappropriate technology. He argued that the human security gets more attention due to globalized diseases, contemporary epidemics and pandemics. The movement of people, goods and trade between countries led to increased infectious diseases and pandemics. In the past, the State was the traditional focus of foreign, defense and security policies, and national security was understood as dealing with the protection of the State and its vital interests from attacks by other States.

Williams (2020) illustrated the link between health and security as shown in the table 1. He stated that the relationship between health and security have been both a direct result of conflict and indirect causes of health problems. Refugee flows lead to spread of infectious diseases. In the nineteenth century, as trade between Europe and the rest of the world increased, the risk of infectious diseases being brought into Europe from elsewhere. He argues about how to consider a health as a security issue, the first one is the growing acceptance to broaden the meaning of security during 1990. The second factor is the human agency. A member of prominent individuals used their positions of power and influence to place health on the foreign and security policy agenda. The third, the infectious diseases spread fast due to globalization. The new diseases include HIV, SARS and H5N1, which spread through movement of goods and people.

According to Mahoney-Norris (2019), the consequences of a changed security environment are profound for every people. In the past thirty years’ security concerns was circulated upon human security matters, such as crime, poverty and diseases. The security concerns overwhelmingly encompass contrasting views about issues, threats and actors which are reflected in the variety of ways in which the United States maintain the stability of its national security today. Mahoney-Norris (2019) established a framework considering the best way to realize human security groups, States, and individuals by examining the continuum of interconnected issue areas, they conceptualize in specific chapters as identity security, civic security, economic security, environmental security, maritime security, health security, and information security.
3. THE COVID-19 PANDEMIC AND THE IMPORTANCE OF STATE

Based on the figure 1, the State is like a house, and in this house, there are elements that must be kept as top priority to ensure that the house is safe and protracted from any threat. As in politics and security studies, the core of State is: national security, national interests, sovereignty and safety of the citizens. Those four elements are like a chain, if one of them faces any vulnerability at any level, this will ultimately be affecting the chain in its core. The role of the State in this course, is to deter and eliminate such threat or vulnerability as quickly as possible, using all available means, regardless of the price involved. People look to the State as the main actor to maintain their safety.

![Figure 1: Core of State](image)

In Oman, the government has been taking a serious action to deal with this virus from the first day. It takes full responsibility to secure the health of their citizens, provide all medical care needed and law enforcement to maintain security and stability. Therefore, the Omani government presents a comprehensive and powerful policy to curb the spread of the COVID-19 under a national supreme committee, take its task under supervision from His Majesty Sultan Haitham. Such policy reflects the concept of securitization theory. History told that, the State power and capability remain invisible unless the State feels that it endangered. Consequently, the State will act with full power to defend itself and their people with ultimate responses. The COVID-19 pandemic reaffirming the importance of the State and central decision making, States around the world presented an extraordinary measure in order to protect the lives of their citizens. From this point of view, State presided to maintain the stability of its national security and the safety of the people.

3.1 Securitization Process in Oman

Figure 2 shows how the securitization process in Oman began implementation to curb the spread of the virus. In securitization process, the government and audience were involved toward a certain aim that fighting the virus and the outcomes are beneficial for both of them.

The study circulated upon the figure, the inputs, the COVID-19 pandemic outbreaks in Oman, analyzes the implications on the health and economic system, presents the government actions to contain the virus, and shows the reaction of audience. The outputs investigate how the Oman model managed to deal with this virus maintaining the national stability, government capability in crisis management, how this reflects to cement its good reputation in international arena and various lessons toward enhancing the national health security.
Abdul Aziz Al Alawi, Noor Sulastry Yurni Ahmad | The Impacts of COVID-19 on Oman’s National Health Security.

Figure 2: Securitization Process in Oman

3.2 The Sultanate of Oman Securitization Approach

Based on figure 3, COVID-19 is an existential threat to Oman. The government has taken an obvious and significant extraordinary measure to fight the virus. All those measures and deployment of forces presented by the government was to secure the lives of citizens and maintain stability across the country. On the other hand, the audiences (citizens or residents) have been accepting these extraordinary measures and cooperated with the government in applying them for their safety first and to help the government overcome this virus.

From the Westphalia agreement 1648 people are expecting from the government as the referent object to preserve the acquisitions and capabilities and preserve the national security. It considers the military capability as the key point to preserve the national security and stability of the country. On the other hand, citizens are looking to the government as the entity that protects them from any threat, either external or internal threats. Since then, until now, the government is still very crucial to the community and the people. It is right that some governments are not totally perfect, and there are many deficiencies and weaknesses in the governments’ obligations, but the core of the government and its value remain important to protect the people and protect the territorial integrity.

Since the difference of opinions and different point of views of the community, and incapability to reach one decision in a time where fast decisions should be made. Also, the community interests are way difference since everyone is looking to their own interest from economic and social angles. Government is dealing with non-military threat to protect the national security and the individuals. Nowadays, citizens anticipate daily decisions from the government whether it is lockdown, closing market, or affecting the citizens financially by decreasing the workers or closing businesses. It is like waiting for a war with invisible enemy. These steps lead us to the result that the normal way of politicians to manage the country and their decisions could lead to right decisions as much as wrong decisions, and this is considered as human error. Some citizens were blaming the government and mistrusted the politicians by the wrong decisions. With COVID-19 pandemic, citizens believe that the governments are essentials, especially when there are threats to the people. At the end, the individual chooses whether to live in a government with law and order and
security system to protect its citizens and the country or lives in isolated place with jungle mindset where the strongest predator on the weakest prey. The second part of the argument is that, after the Cold War, to broaden the concept of security beyond the military security threat, scholars including Barry Buzan (1983) moved to include non-military threat that people face. From that time until now, there are critics to national security expansion to encompass non-military threat.

Figure 3: The Sultanate of Oman Securitization Approach

In Oman, people are not isolated from the rest of the world. So, these non-military threats affect people, especially the COVID-19 pandemic. The government role was effective and has observed to deal with non-military threat. The establishment of the supreme committee led by His Majesty the Sultan of Oman is to ensure that the COVID-19 is the real threat to the citizens. Added to this, many decisions have been made like the lockdown, prohibiting social gatherings, closing down malls, and decreasing the number of workers in government sector. These decisions’ main reason is to protect the national security of the country, protect the community and the citizens. The citizens are looking with trust to the government to the decisions made to protect the people from the outbreak of COVID-19. This will increase the importance of the government to ensure the safety of the people and the consequences of the crises. The government showed importance to the national medical security to play significant role as a weapon to face this invisible enemy. The government provided financial resources and showed high importance and unconditional support to the medical sector. The government will double their benefits during the outbreak of COVID-19, the citizen's faith put to the government to protect them from this threat, and after the end of the crisis, the citizen will trust the government more as they will be a part of the solution and the recovery process. By this, if any blame comes, the government and the community will share the pardon, and, instead of blaming each other, they will work side by side to find other solutions to any non-military threats.

When the citizens start to be a part of the government, they will start to trust the government more in health, national security and economic sector. This will reinforce the importance of the government to deal with non-military threats. When citizens understand that the government is on their side even during the current COVID-19 crisis by limiting the economic consequences of the citizens, this will increase the national security system in the country due to trusts in the government decisions. Also, it will eliminate any external political threat to divide the citizens and encouraging them against the government.

4. RESEARCH METHODOLOGY

The study primarily focuses on investigating the impact of COVID-19 on Oman national health security and what areas require improvement to pave a robust and resilient national health security system. The study applied qualitative method. The first stage of the research was carried out and the activities were limited to the Ministry of Health in Oman, medical crews working in the frontlines fighting the virus. The online survey was conducted with medical crews in the frontlines fighting the
COVID-19, while interviews were taken from selected decision makers and management in the Ministry of Health in Oman. The study attempts to present the impact of COVID-19 on Oman national health security. The second stage was targeting the senior management in the Ministry of Health in Oman, it was implemented through online interviews using questions derived from the questionnaires’ results of the first stage.

The population of the research involves the medical workers working in the frontlines fighting the virus. The questionnaires were disseminated, and sampling was carried out to get medical workers acting as respondents of the research. The sample parameters are based on how the participants are engaged and to which extent they would become aware the COVID-19 impact on national health security. Overall, more than 100 responses needed to be gathered from a sample of 1,000. The questionnaire survey was determined depending on the research objectives. The domain of questions intended at addressing the compound agents related to COVID-19 impact on national health security. Researcher used Google Forms to prepare the questionnaires and recorded in Google Spreadsheets. The data collected from the questionnaire were easy to be analyzed using several computer software like SPSS (Almawli, 2020). Interviews and online questions were the data collection instruments used to collect the data. For the interviews, open-ended questions were implemented to get data from the participants. The information collection for interviews by email responses were implicit. The parameters for choosing the interviewee embrace the level of senior management in the Ministry of Health in Oman. A total of 10 interviews were conducted.

5. RESULTS AND DISCUSSIONS

Stage I: Questionnaire Survey Analysis

5.1 The Impacts of Covid-19 on Oman’s National Health Security: An Analysis

This study was set out to: 1) Determine the relationship between COVID-19 and national health security in Oman; 2) Investigate the impact of COVID-19 on national health security, and 3) Identify the role of government in mitigating the impacts of COVID-19 on national health security. Each objective (herein called as subscale) had a set of questions collecting data to answer the objective. Therefore, this part presents the tests of internal consistency (Cronbach’s alpha) within items in each subscale. This is then followed with the data analysis per objective.

5.2 Reliability test results for each objective or subscale

The study had 3 objectives or subscales, each with a number of questions. The inter-question reliability within each subscale was assessed using the Cronbach’s alpha (α). The Cronbach’s alpha, which is a measure of the internal consistency of all the items in a multi-item scale, is derived as shown below (Cohen et al., 2007):

$$\text{Alpha (}\alpha\text{)} = \frac{n\text{rii}}{1 + (n-1)\text{rii}}$$

Where $n$ = the number of items in the subscale (or objective) and $\text{rii}$ = the average of all the inter-response correlations within the objective. Cohen et al. (2007) consider a coefficient alpha of ≥.70 acceptable. As shown in table 1, the 7 items in objective 1 yielded a Cronbach’s Alpha of ≥.70. Therefore, the questions in the objective had internal consistency with each other, and so all of them usefully contributed to the overall objective. Similar conclusions were reached in objectives 2 and 3.

Having assessed the reliability of the questions in each objective, the next step is to analyze and present the actual findings for each objective. The data whose findings are presented in the following subsections was collected from 56 medical crew in the Sultan Qaboos University Hospital. An online survey or questionnaire was administered to these officials. The statements in the questionnaire were circulated around the three objectives of interest. In that order, presented below is the analysis, presentation and interpretation of the findings.

5.3 Relationship between COVID-19 and national health security in Oman

In this objective, the medical crew were asked how they feel about the relationship between COVID-19 and national health security in Oman. There were 7 statements relevant to this objective (labelled 01-1 to 01-7). Overall, as shown in table 2, the medical crew felt that there was a very strong link between national health security and COVID-19 pandemic (Mean = 4.3852, 0.74948).
Table 1: Descriptive statistics for each objective as well as the Cronbach’s Alpha within every objective

<table>
<thead>
<tr>
<th>Objective (Subscale)</th>
<th>N of items</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Range</th>
<th>SD</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 1</td>
<td>7</td>
<td>4.385</td>
<td>4.143</td>
<td>4.536</td>
<td>0.393</td>
<td>0.7495</td>
<td>0.935</td>
</tr>
<tr>
<td>To determine the relationship between COVID-19 and national health security in Oman</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Objective 2</td>
<td>6</td>
<td>4.274</td>
<td>3.911</td>
<td>4.482</td>
<td>0.571</td>
<td>0.7624</td>
<td>0.891</td>
</tr>
<tr>
<td>To investigate the impact of COVID-19 on national health security</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Objective 3</td>
<td>14</td>
<td>4.066</td>
<td>3.768</td>
<td>4.446</td>
<td>0.679</td>
<td>0.7996</td>
<td>0.949</td>
</tr>
<tr>
<td>To Identify the role of government in mitigating the impacts of COVID-19 on national health security</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Descriptive statistics for objective 1

<table>
<thead>
<tr>
<th>Statement</th>
<th>N</th>
<th>Range</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistic</td>
<td>Statistic</td>
<td>Statistic</td>
<td>Statistic</td>
<td>Statistic</td>
<td>Statistic</td>
<td>Std. Error</td>
</tr>
<tr>
<td>O1-1</td>
<td>56</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>4.43</td>
<td>0.116</td>
</tr>
<tr>
<td>O1-2</td>
<td>56</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>4.23</td>
<td>0.122</td>
</tr>
<tr>
<td>O1-3</td>
<td>56</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>4.48</td>
<td>0.114</td>
</tr>
<tr>
<td>O1-4</td>
<td>56</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>4.54</td>
<td>0.111</td>
</tr>
<tr>
<td>O1-5</td>
<td>56</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>4.43</td>
<td>0.114</td>
</tr>
<tr>
<td>O1-6</td>
<td>56</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>4.45</td>
<td>0.117</td>
</tr>
<tr>
<td>O1-7</td>
<td>56</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>4.14</td>
<td>0.131</td>
</tr>
<tr>
<td>Overall Score Objective 1</td>
<td>4.3852</td>
<td>0.10015</td>
<td>0.74948</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Each of the individual statements attracted scores above 4 (See Figure 4), suggesting that the respondents believed all the issues under consideration affected national security significantly. However, despite the fact that all issues were relevant to national health security, the respondents felt that the following were at the top of the list: O1-1 There is a relationship between COVID-19 and national health security, O2-1 The COVID-19 create a national security dilemma, O1-3 The COVID-19 pandemic has reinforced the importance of establishing a national health security system, O1-4 Security stability depends on the presence of a health system prepared to deal with epidemics, O1-5 Health preparedness is key in national security stability, and O1-6 The efficiency of the health system and the management of epidemics and emergencies reflects the security situation positively or negatively. However, the following issues were placed at the bottom of the list of those issues connected to national health security, O1-7 COVID-19 has created a state of internal and external security instability. This can be interpreted to mean that although COVID-19, is significant in national health security stability of the Sultanate of
Oman, the respondents felt that, at the moment, the pandemic has created a threat it poses to national health security is significant.

Figure 4: Relationship between COVID-19 and national health security in Oman

5.4 Impact of COVID-19 on national health security

In this subscale, the respondents were asked to express their views regarding the impact of COVID-19 on different aspects of the social and national health security in Oman. Generally, as shown in Table 3, the respondents felt that COVID has had a huge impact on national health security, (Mean=4.2738, SD=0.76239).

Table 3: Descriptive Statistics for objective 2

<table>
<thead>
<tr>
<th>Statement</th>
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<th>Maximum</th>
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<td>5</td>
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<td>5</td>
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<td></td>
<td></td>
<td>4.2738</td>
<td>0.10188</td>
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Specifically, the respondents picked the following three areas as the most affected by the pandemic (See Figure 1). O2-1, It has created a difficult economic situation that has affected all groups in society, O2-2 It has led to the loss of many jobs and social security in society, and O2-3 It has affected the actual preparedness of medical and health personnel in the Sultanate of Oman. On a positive note, most of those surveyed agreed that. On the other hand, O2-4 the existence of adequate financial resources contributes to the speed of treatment of COVID-19, and O2-5 existence of real investment in the health sector contributes to dealing with emergencies and epidemics, they not as much agree with statement. A significant portion of the medical crew felt that centralizing a single system of decision making has not at that much helped in dealing with COVID-19 (See the mean score to the statement: O2-6 Creating a single system has helped centralize decision-making for dealing with COVID-19).
5.5 Role of government in mitigating the impacts of COVID-19 on national health security

This subscale evaluated the role of government, and other interconnected sectors such as media in fighting the COVID-19 pandemic. There was consensus (Mean=4.0663, SD=0.79957) that these sectors play a significant role in fighting the pandemic (See Table 4).

Table 4: Descriptive statistics for objective 3

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<tr>
<th>Statement</th>
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<td>O3-13</td>
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<td>0.10685</td>
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Taking into account the specific areas, those surveyed in concurrence with the following statements touching on government and allied sectors are highlighted in figure 6. O3-1 The involvement of all the competent authorities in the pandemic crisis promotes constructive and effective management...
of the emergency, O3-2 Periodic monitoring and extrapolation of the spread of COVID-19 has enabled proactive decisions to be taken to monitor the health and security situation in the Sultanate, O3-3 The media have helped to create a healthy awareness in society, O3-4 Continuous communication with the community creates transparency and involvement to ensure the participation of all in the implementation of decisions, O3-5 The awareness bulletins have helped to raise the society's culture of health safety, and O3-6 Creation of a system of social solidarity has contributed to the creation of health and economic security in the Sultanate's society. Further, the following aspects received relatively higher ratings as well (signifying strong agreement with the statements): O3-8 Promoting scientific research and health studies contributes to dealing with crises and epidemics, O3-11 The recruitment, continuous training and qualification of medical personnel are helping to tackle the pandemic, and O3-14 There is a need to establish a national health security center to develop plans and strategies to deal with health crises.

Conversely, there are issues that attracted the least scores in this objective, implying that a considerable number of the respondents did not agree with the statements. These are: O3-7 The coherence of Omani society and the sense of responsibility of government decision-makers in the face of COVID-19 have helped ensure the safety of Omanis, O3-9 Through the ongoing support and monitoring of public health, decision-makers demonstrate their commitment to manage and mitigate the impacts of the crisis, O3-10 The equitable distribution of medical personnel, equipment and the decentralization of services have helped health facilities focus on the fight against COVID-19, O3-12 The optimal use of human and financial resources to deal with the COVID-19 has reduced the strength of its impact, and O3-13 The government has succeeded in managing the crisis.

![Objective 3: Role of government in mitigating the impacts of COVID-19 on national health security](image)

**Figure 6: Role of government in mitigating the impacts of COVID-19 on national health security**

### 5.6 Summary of the findings

An online survey was administered to medical crew members at the Sultan Qaboos University Hospital. From the data gathered, the study can now provide a summary of the perception of 56 crew members who responded to three key questions that were the basis of this inquiry: 1. What is the relationship between the COVID-19 pandemic and the National Health Security of Oman? 2. What is the
impact of COVID-19 pandemic on the Sultanate of Oman National Health Security? 3. To what extent has the government and the allied sectors played their roles in mitigating the impacts of the COVID-19 on National Health Security of the Sultanate of Oman?

With regards to the first question, most of the respondents felt that COVID-19 and National Health Security are intertwined, reinforcing the need for establishing a strong national health security system ready to deal with such crises. The crew further contended that the efficiency of the health system and the management of epidemics and emergencies reflects a country's security situation positively or negatively. However, the crew felt that the uncertainties arising from the pandemic and threats of COVID-19 to national health security and stability is currently of such a huge magnitude issue to the government.

In respect of the second objective, the medical crew agreed that the COVID-19 has had significant impact on various spheres of social and national health security of The Sultanate of Oman. The greatest harm was associated with loss of jobs and the distraction of the preparedness of the health workers in providing healthcare services to the citizens of the Sultanate of Oman.

In the third objective, concerning the role of government and the allied sectors in the fight against the COVID-19, there was unanimity among the crew that these sectors are crucial in the effective management of such crisis and emergencies. Among others, the crew pointed out regular monitoring of the pandemic patterns, the media campaigns against the pandemic, continuous bulletins and updates to community, as well the spirit of solidarity among the Oman citizens as having played key role in the fight against the COVID-19. On the other hand, there was a feeling among a significant number of respondents that the coherence and sense of responsibility among government decision-makers in the fight against the pandemic had some gaps. Moreover, some respondents had doubts about the commitment of government decision-makers towards managing and mitigating the impacts of the crisis. Additionally, there was a perception among a good number of respondents that the distribution of medical personnel, equipment and services was equal which help fight the pandemic.

**Stage II Analysis**

The second stage of this research included interviews with three senior management staff in the Ministry of Health in Oman, one Omani politician and one Omani from Shura Council. The interview questions were focused on the COVID-19 and national health security, impact of COVID-19 on national health security, the role of the government in mitigating the impact and the lessons learnt from this crisis, the ways to a robust and resilient national health security system. The interview stage delves into finding ways on the form of recommendations to establish a national health security policy.

The interviewees were asked about the impacts of COVID-19 on Oman national health security, most of the responses agreed that the COVID-19 has had impacts on national health security in Oman. The huge number of cases in Oman cause deficit of health institutions especially in the intensive care units, that included the high demand for oxygen, medical supplies and devices, and medical crew. The major difficulty was coping with economic fall down caused by the lockdown of the societies and stopping delaying with trade line. Many small to medium businesses faced bankruptcy in Oman due to the COVID-19 lockdown.

**5.7 Management's commitments to the importance of establishing a national health security center:**

The second area of discussion was about how to improve the national health system. They stated that, one major lesson learned from this pandemic is that it could happen again. The idea of establishing a national health center is a necessity in coming years. The main role of the national health center is to carefully observe and to act fast to prevent any outbreak affecting the health of the society. Also, there should be a research department that searches for vaccines for any potential disease or try to improve the vaccines that we have now. In addition, the national health center must be under the responsibilities of

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1 Majlis A’shura is elected by the people. It is a financially and administratively independent institution. It is the lower house of Oman Council which enjoys legislative and oversight competences. It aims to serve the country and the nation and participate in the development march. Majlis A’shura consists of members who are representing the different Wilayats of the Sultanate elected by direct secret ballot. The Wilayats shall be represented by two members if the number of its population exceeds 30 thousand and by one member if the population is less than 30 thousand. The membership term shall be four Georgian years. The Chairman and his two deputies are elected from the members. For more information on Majlis A’shura Oman, refer to https://www.shura.om/About-Us/About-the-Majlis.
the Ministry of Health in Oman and working in under their regulations. National health security center is very essential, establishing one should be the main lesson from COVID crisis in Oman. Its scope will include all concerned parties from the government similar to the supreme committee now and will be responsible to formulate all the policies related to the crises and responsible to maintain resources needed and should have the authority to mobilize resources between hospitals.

5.8 Management’s commitments to the role of the government in mitigating the impact of COVID-19 on national health security:

The first month with the outbreak of COVID-19, the high commission in Oman was established under the direct responsibility of His Majesty the Sultan of Oman. The high commission meet weekly for briefing and finding solutions to slow down the outbreak of COVID-19 in Oman. During the first wave of COVID-19 the Supreme Committee succeeded in dealing with the outbreak of COVID-19, but the strict decisions such as lockdown, closing restaurants and malls, not allowing social gatherings, could have been made faster. In this drastic time, strict decision should be forced on the society to prevent the situation from becoming worse. To stop the outbreak in Oman - knowing as a social community - strict decision must be taken to stop any gathering or social visiting between friends and family members.

The major decision was closing the shopping centers, malls, any social activities, and half lockdown. The decisions were focused on preventing any gathering of people at crowded places and always keeping two-meter distance. Also, forcing the wearing of gloves and masks while shopping or at workplaces. These decisions helped stop the mitigation of COVID-19 by limiting the contact of people. In addition, the government limited the workers in government sectors by 30%, 50% only, and established policies and regulation to coming to work or dealing with visitors at social services places.

5.9 Management’s commitments to the role of the media in the crisis:

The awareness of the risk and the nature of COVID-19 was the priority in Oman. Media was without any doubt the way to raise the awareness of society. In Oman, the national channels, the SMS services, social media, and the government briefings were all aiming to raise the awareness of society of the risk and danger of the COVID-19. The ministry of health gave the society daily briefing of the outbreak of COVID-19 and the number of cases, and the areas where the major cases are recorded. This information helps make people in Oman aware about the risk of this crises and how to limit the way to get infected by this virus.

5.10 Management’s commitments to the lessons learned from this crisis and what are the recommendations for dealing with such crises:

The lesson learned is that the people need to prepare better for any world health crises like COVID-19. The national health center should be established in Oman, and it should be prepared for any similar pandemic with the right resources to preparing vaccinations and studies with any potential health risk globally or locally. The major cause of the outbreak of COVID-19 was the lack of information and knowledge about the virus and the separation ways of the virus. With the right information and transparency of the fact between health organization and governments, dealing with any upcoming pandemic will be better and faster, this will result in less cases and less fatalities. It must be prepared in the future to face such a pandemic, as we all saw at the beginning of the pandemic that we faced difficulty in providing the tools and tests necessary to confront the disease, and we must also find a way to accommodate groups who are unable to quarantine home in institutional quarantine. There is an urgent need to include medical education in pre-university curricula and during university studies, to ensure awareness and promote community health, as there is a gap between medical education in educational institutions and clinical practices in health institutions.

The Sultanate is still dependent on abroad and on importing most of its needs of medicines, serums and other medical supplies. Oman does not have yet a real industry for medicines. Indicators and figures issued by the Ministry of Health show that the proportion of personal spending and the private sector’s contribution to health does not exceed 20% of public spending, while it reaches Government support for this sector has reached 80%, and the pharmaceutical industry in the Sultanate is very weak, still importing some medicines and equipment.

Oman still imports 95% of medicinal products and surgical instruments and 100% of laboratory instruments, as local factories produce only about 5% of the total medicines in circulation in the
Sultanate. There are currently only four factories in the Sultanate for the production of medicines, one to produce raw materials and one to produce pharmaceuticals in its semi-finished form, and two factories to produce finished medicines. With regard to the medical and pharmaceutical products industry, represented by medicines, surgical instruments, medical devices, and laboratory tools, it is considered limited, as it accounts for only 5.6% of the size of the pharmaceutical market in the Gulf Cooperation Council countries\(^2\), which amounts to $ 8.5 billion. These indicators show that Oman really needs to encourage investment in this very important sector. Packages of facilities that attract local and foreign investors specializing in establishing pharmaceutical factories, drugs and other medical preparations should be provided to the Sultanate in order to cover the Sultanate's needs for these products and to export part of them.

The pharmaceutical industries sector is one of the targeted sectors because of its utmost importance to achieve drug and health security in the Sultanate, indicating that the pharmaceutical industry in the Sultanate will open horizons that will enhance trade exchange in the sector, supporting the growth of the national economy and benefits to the entire industrial sector. The COVID-19 crisis has become a threat to the health security of the citizen and residents, and it has formed the largest demand for the local pharmaceutical industries. Therefore, it is assumed that the technology necessary for the local pharmaceutical industries will be transferred, diversify our economic resources, and attract the best international companies for the pharmaceutical industry, and it has given the opportunity to local companies.

6. CONCLUSION

The outbreak of COVID-19 pandemics in Oman caused an unprecedented situation. The world today is increasingly interconnected and interdependent. This global dynamic presents great opportunities but also comes with its share of challenges and hazards that continuously threaten our society. COVID-19 pandemic had reaffirmed the importance of health security to the State and individuals. COVID-19 has strengthened and redefined the approach of non-traditional security studies. The dimensions and approaches provided by non-traditional, comprehensive, widener school of thoughts has provided the theoretical fundamentals about how States dealing with the outbreak of COVID-19 pandemic. Traditional security system is comprehensively confronting new challenges due to the COVID-19.

The Covid-19 pandemic poses an unprecedented threat to human security, which recognizes health as an issue of national and international security in an interconnected world. While the pandemic may open the process of serious global engagement to deal with non-traditional security threats and find appropriate solutions, but the solutions will become effective only when they have incorporated new approaches to problem solving alongside the traditional ones. The national health system in Oman is facing a serious challenge as the spreads of the COVID-19 in Oman from the beginning of 2020. It shed lights on the important existence of a national health system ready to deal and operate normally under a health crisis. National health security is an essential element of a State stability. Infectious diseases can destabilize national security due to their high death tolls and staggering economic, psychological and social consequences. The health security is an integral part of the foundations of any country, and if this part is exposed to any threat or disorder as a result of the spread of an epidemic or the occurrence of natural disasters, this causes a potential security threat to the State function and stability. In conclusion, the outcome from this study is, the Oman National Health Security Policy, that should be the first policy focus on the national health security. The Oman National Health Security Policy (ONHSP)\(^3\) is the first comprehensive policy focusing specifically on the national goals of protecting people’s health in the event of a health emergency. The purpose of the ONHSP is to guide the national efforts to deal with a wide range of potential diseases outbreaks and health crisis now and in the future.

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\(^2\) The Gulf Cooperation Council (GCC) is a political and economic union of Arab states bordering the Gulf. It was established in 1981 and its 6 members are the United Arab Emirates, Saudi Arabia, Qatar, Oman, Kuwait and Bahrain.

\(^3\) https://www.oman.om/wps/portal/index/cr/lawsafetysecurity/nationalsecurity
REFERENCES


AUTHORS’ DECLARATIONS AND ESSENTIAL ETHICAL COMPLIANCES

Authors’ Contributions (in accordance with ICMJE criteria for authorship)

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<th>Author 2</th>
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Universals of Gender Policy and its Socio-Cultural Adaptation

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ABSTRACT

This article is devoted to the history of the implementation by the United Nations of the universals of gender policy that have developed in the context of the modern worldview. The author traces the evolution of the United Nations policy on the women’s issue in the context of historical realities and on the basis of an analysis based on the most important documents of the UN. It corroborates the beginning of a qualitatively new stage in UN policy, which manifests itself in shifting the focus from the legal status of women to the gender equality discourse, and changes in social structures and relations between men and women. The sociocultural determinants of gender value orientations and behavioral stereotypes had developed in the context of various national traditions, and its role in adapting the universal concept of gender equality. The article analyzes the value gender guidelines of modern Chinese society and the West European version of gender policy. The conclusion indicates that there are varied ways to achieve gender balance in society and the need to develop a new gender universal concept that dialectically combines the general and the singular gender relations.

Keywords: Gender; Gender policy; Gender concept; Women’s equality


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1. INTRODUCTION

The value orientations of human development, defined as universal norms after the Second World War, were based on the ideological paradigm of the Modern era, which, in turn, was of a progressive Eurocentric nature. On a generalizing note, the historical perspective of humanity is reduced to a single homogeneous social structure of the European type. This kind of universalism actualizes the problem of the relationship between the general and the individual.

Let us view the designated problem through the prism of such a universal, and analytical category, such as gender. As modern researchers admit, the gender “... interacts in a hierarchical order with other categories (classes, nations, races, citizenship) giving history a universal character ...” (O’Brien, 2006: 26).

2. UNITED NATIONS - THE GUARANTOR OF GENDER EQUALITY

Since its inception, the United Nations (UN) has identified gender equality as the most important global political strategy for the world development. To be specific, this international organization, due to historical conditions, presents the universals of gender policy reflecting European values and principles that were formed during the middle of the 20th century in the context of the history of modernity. These principles were defined as basic for the human behavior, for the structure of social relations, and, generally, for both men and women. The main task of the UN was to influence the formation of public consciousness and opinion in the spirit of respecting human rights and women's rights, in particular. To consolidate these rights at the international, and then national levels, the organization developed number of international legal documents that were to become the basis of the process aimed at establishing equality for women at all levels, as one of the indicators of the world development.

In the first year of the UN's existence, the Economic and Social Council established the Commission on the Status of Women, which became the main governing body exclusively dedicated to the advancement of women, and the members of this Commission participated in the drafting process of the Universal Declaration of Human Rights. Since the adoption of the Universal Declaration of Human Rights on December 10, 1948, the struggle for the equality of women was actualized (UN, 2015). The United Nations primarily dealt with the issues of political equality. For this, the 1952 Convention on the Political Rights of Women was adopted, which became the first international treaty where the parties assumed legal obligations in the implementation of women's political rights, and allowed women to be more actively involved in political life (UN, 1952). Ever since the adoption of the above Convention, the UN has consistently and purposefully carried out work to implement the political rights of women de jure and de facto.

Feminist movement of the late 1960s and 1970s was one of the factors causing the crisis of the worldview paradigm of modern era. However, it was organically connected to it, the principle of hierarchical dualism was at the heart of this worldview i.e., the world was perceived as an opposition of two ambiguous values, which are in a state of permanent conflict and constant struggle. At the same time, the feminist movement was largely influenced by the decision of the UN General Assembly to declare 1975 the International Women's Year and to hold the first World Conference of the International Women's Year in Mexico City (1975). The Mexican Declaration emphasized that further world development is not possible without the active participation of men and active involvement of women. In general, the Declaration called for every effort to create conditions for women equal to the men in order to realization of their rights. The Mexico City conference adopted a series of resolutions and recommendations for the national action by the governments of the participating countries during the decade 1975-1985, which was declared as the “decade of women”.

In 1979, the “Convention on the Elimination of All Forms of Discrimination against Women” (CEDAW) was adopted. The Article 1 of this international instrument states, “For the purposes of this Convention, the term ‘discrimination against women’ means any distinction, exclusion or restriction on the basis of sex that is intended to weaken or negate the recognition, enjoyment or exercise of women, regardless of their marital provisions based on the equality of men and women, human rights and fundamental freedoms in the political, economic, social, cultural, civil or any other field” (OHCHR, 1979). At the same time, the Convention emphasizes, “the adoption by the States ... of temporary special measures aimed at accelerating the establishment of de facto equality between men and women is not considered discriminatory, but it should in no way entail the preservation of unequal or differentiated...
standards; these measures must be lifted when the goals of equality of opportunity and equal treatment are achieved” (OHCHR, 1979). In fact, the Convention allowed for the adoption of special measures by State-parties in the form of “positive” discrimination or quotas aimed at improving the status of women and did not consider them discriminatory towards men. The adoption of this document was based on a long-term collection of information on the status of women around the world and was aimed at initiating the legislative consolidation by the States of the legal and civil rights of women.

Two more world conferences took place over the next two decades: the World Conference on Women in Copenhagen (1980), and the World Conference to Review and Appraise the Achievements of the United Nations Decade for Women Equality, Development and Peace in Nairobi (1985). The purpose of the World Conference in Copenhagen was to analyze and evaluate the implementation of the 1975 World Plan of Action at the national, regional and international levels. The conference was supposed to give a new impetus to the struggle for the equality of women. The Nairobi conference received wide international recognition. It was attended by representatives of 15,000 non-governmental organizations that treated the conference as an act of “the birth of world feminism.” It was emphasized at the conference that although over the past decade the main goals of the fight for women’s equality have not been fully achieved. However, it drew public attention to the need to take urgent measures to ensure women’s real equality with the men, and the participation of women in many actions carried out in the framework of the UN Decade of Women increasing their self-awareness. The Nairobi Forward-looking Strategies to 2000, developed and unanimously adopted by 157 UN member States, are an improved draft of a plan for the advancement of women by the end of the 20th century. The participation of women in decision-making and access to management of all spheres of human activity were recognized not only as their legal right, but also as a socio-political necessity - factors that had also to be introduced into all institutions of society. The Conference encouraged all bodies of the UN system to develop a set of concrete measures to assist in the implementation of the Nairobi Strategies, both at the international and regional levels. All of this was to be implemented through monitoring the implementation of strategies, technical assistance, training and the provision of certain services.

It should be emphasized that the Strategies and Action Plans developed at the conferences listed above have gone through several stages in their development - from looking at women almost exclusively in terms of their development needs to recognizing their significant contribution to the development process as a whole, striving to expand their rights and opportunities for full participation in all activities at all levels. However, historical experience has shown that the traditional principles and methods of struggle for women's rights at the international and national levels proved to be ineffective, as evidenced by gender studies. Since the general principle of equality without distinction between men and women, properly justified in law, often entails latent discrimination against the latter. As a consequence of the difference in the social roles of men and women, de jure equality often leads to de facto discrimination, and the allocation of women's rights to a special category of legal regulation, as it was customary to some extent, limits their application within the framework of a social group.

The main reason for these contradictions in the implementation of the principle of non-discrimination on the basis of sex is the factor of a woman's reproductive function, which manifests itself most often in the family, socio-economic and labour relations. Of course, the need to implement the State policy in the field of maternity protection was beyond doubt. However, the presence of such special legal norms hampered the social adaptation of women in society. On the other hand, the full equalization of the rights of women with men is virtually impossible due to the biological characteristics of the female body; the absence of special measures to protect women during pregnancy and childbirth will endanger the life and health of the mother and child. The need for a woman to combine homework, childcare and professional activities also does not contribute to her career growth and career advancement. Thus, the effectiveness of the implementation of the principle of non-discrimination and equality on the basis of sex depends not only on changes in the legal status of women, but also on changes in the social determinism of gender roles.

3. INTERNATIONAL RECOGNITION OF GENDER EQUALITY ISSUES

The international community has finally recognized the need to shift the focus from the legal status of women to the gender equality, to rethink the entire social structure and relations between men and women. The first step towards the implementation of this concept was the holding of the Beijing
World Conference under the auspices of the UN in 1995, where a gender approach to the issue of equality between men and women was first tested at the international level. This approach to the assessment of legal relations between representatives of both sexes allowed us to consider the problem of discrimination not only of women, but also of men. The Beijing Conference emphasized that “gender equality is a universal problem that everyone benefits from” and stated that “real equality of men and women cannot be achieved without the active participation of men in this process” (UN, 1995). Thus, the Beijing conference testified the influence of feminism on the world women’s movement and the transition from the struggle for women’s rights to the search for gender harmony.

The main achievement of the Beijing Conference was the recognition of the need to reassess the entire structure of society and relations between men and women, which were defined as gender. It was recognized that only through a fundamental restructuring of society and its institutions women will be able to take their rightful place as equal partners of men in all spheres of life. Thus, it was emphasized that women's rights are human rights, and that gender equality is a universal issue from which everyone benefits. The Beijing Conference can be called the final link in the chain of world conferences and a concrete call to action for joint efforts at all levels, using an integrated approach to address a wide range of gender issues. The Beijing Conference adopted a renewed international commitment to empower women everywhere in the context of the gender equality. The Conference adopted the Beijing Declaration and Platform for Action, which was a plan for the realization and effective implementation, protection and promotion of equal rights and opportunities for men and women in realizing "their potential in society while shaping their lives in accordance with their own aspirations" (Beijing Declaration and Platform for Action, 1995). The Final Act of the Beijing Conference is a mechanism for influencing States with the aim of practical implementation by the State parties to the Conference of their obligations to improve the status of women. The effectiveness of the implementation of this document was due to the definition of its legal nature, recognition of it as a form of international lawmaking, a form of existence of international legal norms.

The subsequent activity of the UN allows us to conclude on the universal recognition and application of the outcome documents of the Beijing Conference in international law. The Rome Statute of the International Criminal Court defined the term “gender” as “two sexes, male and female, in the context of society ...” (ICC, 2011: 6). Accordingly, the concept of ‘gender’ began to be interpreted as a set of social and cultural norms defined by society in relation to each biological sex. It is not biological differences, but sociocultural norms that ultimately determine the psychological qualities, behaviour patterns, types of activities, professions of women and men.

The problem of sociocultural determinants of gender value orientations and stereotypes of behavior that have developed in the context of certain national traditions and their role in the implementation of the universalist concept of gender equality is actualized. At the same time, it is obvious that absolute equality is socially and biologically impossible and unnecessary for the society itself, whose priority is the creation of a balance of gender relations. The history of the past 25 years since the Beijing Conference allows us to recognize the existence of variable paths to achieving gender balance in society. This was especially clearly manifested in relation to such a social institution as the family. A striking example of this is the Chinese experience, which in many respects represents the adaptation of Confucian social ethics to new historical conditions. Note that the European tradition of the women's movement was dominated by the struggle for civil rights. *De jure* equality between women and men, in the opinion of the Confucian elite, is only a minimum; an appropriate moral education is needed to achieve a balance of gender relations.

The Confucian tradition, first of all, was preserved in the family-oriented social structure of the Chinese society. In Confucianism, the family is the main social institution. The idea of the family as a State in miniature and the ideal of the State as an enlarged model of the family led to the realization that family stability is vital for society and the main function of the State is to ensure the natural cohesion of the family (Chernikh, 2019: 28). It is in the family, as the Chinese researchers emphasize, that the basic humanistic values are inculcated. Dyadic relationships within the family, depending on age, gender, rights, status and hierarchy, provide a very rich natural environment for gaining knowledge of how a person should be. The principle of mutual cooperation in the form of bilateral interaction between people determines all forms of ties in the family. Age and gender, which are potentially two different things in the immediate environment, combine in a continuous stream of personal experiences and care for others. Personal self-improvement is at the heart of the regulation of family relations and gender relations are
formed on the basis of “interconnected solidarity”, which excludes sexism. The concept of “interconnected solidity” is represented in the Chinese model of modern gender relations as a system-forming moral principle of society (Weiming, 2012: 15-16).

Referring again the Beijing Declaration, in contrast to the Chinese model of “interconnected solidarity”, it included the family in the discourse of “parity gender relations.” It is evidenced by Art. 15 of the Beijing Declaration Platform for Action, which emphasizes “Equal distribution of family responsibilities between men and women and harmonious partnerships between them are key to their well-being and the well-being of their families. ... to ensure the full and equal participation of women in decision-making on economic, social, cultural and political issues ... the principle of equality of rights and responsibilities of women and men in the family, at work and in the wider national and international context must be enshrined. ... Equality of women and men is a human rights issue and one of the conditions for ensuring social justice, and a necessary and fundamental prerequisite for achieving equality, development and peace. The transformation of partnership relations on the basis of equal rights for women and men is one of the conditions for sustainable development...” (Beijing Declaration and Platform for Action, 1995). The Beijing principles of partnership and equality in the family as a tendency are more clearly manifested in European countries, where women are actively involved in political processes. This was facilitated by the popularization of the concept of "parity democracy". Its supporters demanded that their governments take concrete measures to ensure equality of women in government structures according to the "50/50" formula. However, it can be stated that even in those countries where the process of active inclusion of women in politics is labeled with the term “parity democracy”, the emphasis is shifted to quantitative parity, which, in fact, can lead to formal equality (Hladchenko, 2020: 302). It continues to reproduce the principle of "positive" discrimination, which, as it was assumed back in 1979 by the Convention on the Elimination of All Forms of Discrimination against Women, should be abolished. Thus, no significant progress has taken place over 40 years after the adoption of this Convention, which clearly casts doubt on both the quotas itself and the effectiveness of "positive" discrimination.

4. CONCLUSIONS

The above does not, in general, question the appropriateness of the priority goal of the international community to realize the full and equal participation of women in political life at the national, regional and international levels. To reach this goal, the role of ideology and political practices in the reproduction and change of gender relations has increased since the end of the 20th century. Gender studies in Europe reveal that the process of forming a role model woman-leader is underway for which the male style in politics is not a standard. Women politicians form and demonstrate a new style of leadership, non-hierarchical relations between subordinates and colleagues, non-aggressive and aimed at cooperating with voters while meeting their needs. When solving problems, women, to a greater extent than men, tend to be open and flexible to compromise and dialogue, which can be due to both psychological characteristics and socialization processes (Hladchenko, 2020: 303). It should be noted that such a model of a political leader is, to a certain extent, consonant with the principles of Chinese “interconnected solidarity” in society, which, again testifies to the imperfection of the universal gender concept.

The crisis of gender universals is just one aspect of the crisis in the ideological foundations of the modern era, as evidenced by the 2018 report of the Club of Rome. The world intellectual elite, today, has come to the conclusion that the growing global crisis is multifactorial and includes both social, political, cultural and moral aspects (Dahlmire, 2003: 275). Overcoming this general crisis is associated with the implementation of the principles of a new holistic worldview, where gender harmony does not at all mean the transfer of more women to “male” positions. “...We are in general in a crisis. As we develop new principles for a fundamental transformation of the worldview that will help overcome the global crisis, there are several areas in which it is imperative to achieve balance. It is between men and women...”; quoted by von Weizsäcker & Wijkman (2018). Sociocultural determinants of gender value orientations and stereotypes of behavior that have developed in the context of certain national and regional traditions actualize the need to comprehend a new universal gender concept, dialectically combining the general and the singular gender relations.
REFERENCES


AUTHORS’ DECLARATIONS AND ESSENTIAL ETHICAL COMPLIANCES

Authors’ Contributions (in accordance with ICMJE criteria for authorship)

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Developing Mechanisms of State Regulation of Development of Rural Territories in Ukraine

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ABSTRACT
A theoretical and methodological analysis is essential to ascertain the content, approaches, principles, strategic priorities of integrated development, and ways to improve the mechanisms of regulating the development of rural areas in Ukraine while integrating the relevant foreign experiences. The State regulation of rural development in Ukraine needs a rationale to adopt expanded approach to rural development, and to reiterate it as a separate sectoral area of public administration. It is recommended that the priority strategic direction of the State innovation policy in Ukraine should cover organizational and economic bases and adopt innovative model of development in rural governance contexts. The model of forming self-sufficient territorial communities is desirable in new administrative and financial decentralization contexts. Such a model can provide effective use of the internal resources of the community while taking into account the directions and mechanisms of the State regulation.

Keywords: State regulation; Rural territories; Complex mechanism; Territorial community

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1. INTRODUCTION

A reform in the public administration of rural areas is necessary keeping the system’s complexity in mind as each of its components play an important role in the realization of the strategic goals of the new State policy (Cabinet of Ministers of Ukraine, 2021). During the last many years, there has been considerable work done in Ukraine devoted to the relevant topics focusing development of rural territories (Lelechenko et al., 2020a, 2020b; Hagerty et al., 2001; Hohol, 2018; Ridei et al., 2021). This article is based on research offering practical recommendations to improve the mechanisms of State regulation encompassing development of rural territories in Ukraine. This article has developed a structure of a complex mechanism of State regulation for the development of rural areas within an orderly set of internal relations guiding the process of public administration, which ensures reproducibility under changing conditions. Based on the theoretical and methodological analysis, the content, conceptual approaches, principles, strategic priorities of integrated development, and ways to improve the mechanisms of regulating the development of rural territories in Ukraine are analysed and discussed taking into account the possibilities of integrating the progressive foreign experiences.

Thus, the objective of this research is to shape the possible directions of a mechanism of the State regulation of rural areas in Ukraine, and to justify new approaches to the governance of socio-economic processes in rural areas requiring fundamental changes in the principles behind rural management and its decentralization process.

2. METHODOLOGY

To define the rural territories from a theoretical point of view, the systematic approach methodology was applied because this approach intends to perform an integrative function, especially when issues cannot be resolved by traditional research methods. This approach defines the term "rural territories" from the angles of various elements of territorial organization, habitation settlement system, the social organization of rural society, and principles of determining the priority criteria, such as urban structure, architectural features, social features, economic features, public administration, and size of habitation.

The methodological approach was based on the framework of improving the mechanisms of State regulation guiding the development of rural areas in Ukraine through applying the principles of subsidiarity, participation, complementarity, self-sufficiency, legality, adequacy, balance, and differentiation of State policy of rural development. The methodological framework and approach applied to the management of social systems, where indicators of social infrastructure development are supplemental, contribute to the formation of public management system administering rural areas (see Figure 1).

The systematic approach was also necessary since the analysis of complex objects and problems inevitably leads to a systematic theory. Empirical research conducted by other scholars in the field of rural development was reviewed.

3. RESULTS AND DISCUSSION

3.1. Viewing rural territories as an independent object of State regulation

The State regulation of rural development has a rationale to be treated as the separate sectoral area of public administration. The essence of the rural areas is examined through the prism of public administration integrating purposeful managerial influence, and having historical, cultural and natural dimensions. the rural areas cover rural settlements (associated with local authorities) and the community of residents (Hohol, 2019). The conceptual clarification with regard to the interrelation between rural development and public administration reflects that the rational solution would ensure the effectiveness of public administration. The result of this research proves that rural territories come under the public administration since it is precisely a complex management system being carried out using the power mechanisms for the benefit of people's livelihoods.
The effectiveness of mechanisms, methods, forms and tools of State regulation is examined through the prism of functions such as economic, industrial, demographic, social, organizational and managerial, cultural and ethnic, ecological, recreational, spatial and communication, political, and control over the territory. The main directions of transformation of State regulation, with annex of the pace of positive changes, should be based primarily on strengthening the regulatory influence of local governments delivering organic functions of local authorities, in coordination of regional and national authorities, in solving social development problems posing rural settlements.

**Mechanism of state regulation of rural territories** – a set of types and methods of action of regulation, which is based on the basic principles and implementation of functions, ensuring with the help of certain types, methods and means for the effective operation of the system of state regulation to achieve a certain goal and resolve contradictions

Figure 1: Methodical approaches to the study of the mechanism of State regulation of rural territories

3.2. **European integration**

Integration of European strategies into Ukrainian foreign policy appears essential as predeterminant of new strategical approaches in order to the formation of State policy in context of the
rural development. The goals and guidelines of the EU public policy are important factors that can be considered useful in developing State regulation encompassing rural development in Ukraine. The European integration should be treated as mandatory tool to modernize State policy in the field of rural development, which is a mean of reducing inequality and strengthening economic and social equity; it sets goals for the three priorities of smart (intellectually), sustainable and inclusive (holistic) development, which can be implemented through the actions such as: employment, research and innovation, climate change mitigation and energy, education, and poverty alleviation.

Foreign experiences in context of rural development (organization of rural settlements, employment in agriculture, better housing, quality living, social programs, financing mechanism, etc.) can provide valuable opportunity to cater various human needs in Ukraine. Different countries have its unique approaches and mechanisms of development that can be adopted depending on the priorities of the State, its economic soundness, and administrative capabilities. Therefore, foreign experiences should be borrowed and integrated in the processes.

3.3. Assessment of problems

Socio-demographic processes in rural areas have their specific features: depopulation has become a fundamental factor in accelerating the aging of the population. It is the most significant feature of long-term changes in sex and age of populations (Hohol, 2018). Given the current trends in the development of rural settlements, a strategic alternative to improve the settlement system can be the spatial equalization of socio-economic opportunities to develop rural settlements and raise living standards therein.

The current development of the agricultural sector differs from the previous stages in terms of several important transformations, such as the functioning of new agricultural enterprises is based on private property (including private farms). On the other hand, the sector of personal holdings is becoming more and more widespread due to the land shares and land plots owned by people. Intensive development of agricultural production, the laws of a market economy led to a reduction in employment and a need to develop other areas of activity viz., the creation of non-agricultural jobs in rural territories (Gogol, 2018).

Therefore, mutual coordination of economic and social components is ensured if we reorient economic development from the perspective of meeting social needs and helping solve environmental problems. In addition, the formation and development of rural social infrastructure is a process purposefully influencing the social and infrastructural potential of State regulators (Hohol, 2018) while ensuring community self-sufficiency and increasing the competitiveness of rural territories to improve the quality of life of the rural population.

On the other hand, local budgets have profound influence on the socio-economic development of rural territories and administrative territorial units. Current trends in socio-economic development of rural areas of Ukraine reveal the declining interests of peasants in solving local problems, and the depopulation of rural territories. These are serious trends attracting urgent attention in policy and planning of the State.

3.4. Resource and functional capacity of communities

In the current conditions, local governments are not provided with the necessary financial resources to perform delegated powers; local budgets receive sectoral subventions in the form of compensatory costs. It prohibits the redistribution of allocated funds to other expenditures. In such state of affairs, the state and local governments need a clear division of powers in relation to not only administering the territories but also providing them with adequate resources and managing the funds under development heads. The local budgets need to be flexible and should not be strictly dictated by the upper-level government.

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1 Association Agreement (2015) between Ukraine, on the one part, and the European Union, the European Atomic Energy Community and their Member States, on the other part (Chapter V, Chapter 17, Agriculture and Rural Development, Articles 403-406, p. 5). Retrieved from http://www.kmu.gov.ua
3 Ibid, supra 1.
The mechanism of agricultural land allocation in rural areas is insufficiently effective due to several unregulated processes; while effectiveness of organizational mechanism is based on the model of agricultural development, which can be successful if family farms and cooperatives are promoted with their free access to bank credit facilities and financial markets.

An effective system of financial support to the development of the united territorial communities requires resources and functional capacities to deliver its assigned roles, namely: 1) the identification of urgent problems related to development of local rural areas, as they require defining the indicators of set goals in accordance with the national or regional policy; 2) justification of State intervention aimed at ensuring proper development of all the regions and communities; 3) expanding the resource base for local budgets by transferring the personal income tax as a budget-forming entity into the local budget; 4) defining the regional level as a viable strategic unit for socio-economic development.

3.5. Performance indicators: sustainable development, quality of life, capacity, community cohesion

The State management system responsible for development of rural areas and territorial communities should set indicators covering the dimensions of sustainable development in regional contexts. Theoretically, indicators of sustainable development provide key content points for the interaction of management entities and the system for sustainable development of rural areas in Ukraine. Action points can be arranged in a web containing People, Planet, Prosperity, Peace and Partnership, which take the form of a logical-structural matrix of management improvement (European Commission, 2014). However, before applying this logical structural matrix, an understanding of the peculiarities, social structure and livelihood complexities of territorial communities is a prerequisite for linking effectively the development of territorial communities (community development based on internal resources and capabilities) and constructing community cohesion.

State regulation of the development in rural territories should be based on a socially inclusive approach to cultivating an economic growth (Benner & Pastor, 2017), that is, the inclusion of people in all aspects of social life (people need to be seen as a goal and criterion of social progress, not as a means of economic growth). The criterion of determining an efficiency of public administration in rural territories is the assessment of the quality of life of the population, and such a criterion should be based on a system of complex indicators. The selection of indicators depends on the strategic directions focusing on own sources of development taking into account the motivation of the population. Based on it, it can be suggested a model of State regulation for development of rural territories in decentralization contexts. Some parameters of a system of concepts can be: forming self-sufficient territorial communities based on social priorities and cohesion; ensuring sustainable development; defining the development of rural territories based on anthropocentrism and positive dynamics of quality of life of the local population.

3.6. The rural development strategy

The priority strategic direction of the State innovation policy in Ukraine is to support the organizational and economic bases and to adopt the innovative model of development in rural territories. Social innovation is actually related to the social change in the community and its political powers having definite economic consequences.

The goal of the rural development strategy should be to ensure a high quality of life of the rural population, to ensure competitive advantages as decisive factors of development in the long run, and to achieve priority mechanism of State regulation of development in rural territories; all these lead to a social policy of development in rural territories. However, strategy of rural development depends on the capabilities of the State and the peculiarities of national culture (behavioral stereotypes), as well as the capacity of other state institutions.

3.7. Comprehensive mechanism for policy formation and implementation

This research presents the results of modeling the integrated mechanism of State regulation of rural development and determines its structure in figure 2.

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Tetiana Hohol, Larysa Melnychuk | Developing Mechanisms of State Regulation of Development of Rural Territories in Ukraine

Figure 2: Comprehensive mechanism of State regulation of the development of rural territories in Ukraine
The system of development of rural territories is a complex, multifaceted entity that requires the use of mechanisms of State regulation, which are based on a set of links, interactions between needs, interests of the rural population, subjects and objects of management of this system: regulatory, economic, organizational, social, institutional, information and communication. In the proposed mechanism, the implementation of measures developed for State policy is carried out with the defined objectives concerning State regulation of the development of rural territories.

The results support the priority areas of mechanisms of State regulation and give grounds to identify ways to improve the following mechanisms:

1. Institutional mechanism (goal management having a set of public authorities and local governments and other actors involved in forming and implementing public policy in a particular area).
2. Normative and legal mechanism (management based on constant inspections and instructions encompassing a set of normative-legal acts that regulate the content, process of formation, and implementation of state policy in the same sphere).
3. Economic mechanism (focusing on results management).
4. Organizational mechanism (addressing the management based on capacity building).
5. Information and communication.
6. Social mechanism (including management based on needs and interests).

This complex mechanism provides the process of formation of objects and determines the possible levers of influence on the implementation of the State policy for the development of rural territories. It is established that the first step towards the formation of a modern system of State regulation should be the development of an appropriate State policy for rural development, which needs to cover a set of priorities on which state or regional policy will build up during the next planning period.

4. CONCLUSIONS

It is determined that the goal of the rural development strategy should be to ensure a high quality of life of the rural populations; and to ensure competitive advantages as decisive factors of development in the long run, and the priority mechanism of state regulation of rural development. It also presents the results of modeling the integrated mechanism of State regulation of rural development and determines its structure. It is proved that the system of rural development is a complex and multifaceted entity that requires the use of mechanisms of State regulation.

The development of an concept of State policy for rural development will focus covering a set of priorities: 1) assessment of the effectiveness of State policy for rural development is determined by ensuring a high quality of life of its population and fair distribution of income; 2) it can be implemented only if the systemic action of the complex of social factors that determine it is fully taken into account and the application of a comprehensive system of living standards is applied; 3) assessment of the effectiveness of public policy to improve the quality of life is possible based on the analysis of the values of relevant indicators in time (retrospective or forecast) or in spatial (territorial) aspects, as well as signs of self-sufficiency and community cohesion.

REFERENCES


Tetiana Hohol, Larysa Melnychuk | Developing Mechanisms of State Regulation of Development of Rural Territories in Ukraine


AUTHORS’ DECLARATIONS AND ESSENTIAL ETHICAL COMPLIANCES

Authors’ Contributions (in accordance with ICMJE criteria for authorship)

<table>
<thead>
<tr>
<th>Contribution</th>
<th>Author 1</th>
<th>Author 2</th>
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<tr>
<td>Conceived and designed the research or analysis</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Collected the data</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>Contributed to data analysis &amp; interpretation</td>
<td>Yes</td>
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<tr>
<td>Wrote the article/paper</td>
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<td>Critical revision of the article/paper</td>
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<td>Editing of the article/paper</td>
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<td>Supervision</td>
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<td>Project Administration</td>
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<td>Yes</td>
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<tr>
<td>Funding Acquisition</td>
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Has this research used human subjects for experimentation? No

Research involving animals (ARRIVE Checklist)

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