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Policy responses and government science advice for the COVID 19 pandemic in the Philippines: January to April 2020

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ABSTRACT

In this paper we examine two policy questions about the COVID 19 pandemic in the Philippines. These are science informed policy questions that will have to take into consideration a large degree of uncertainties in outcomes. The first question is on when to lift the Enhanced Community Quarantine (ECQ) as informed by epidemiological modelling. The second deals on how the Philippines can respond to a future pandemic crisis. We review the Philippine government’s responses and introduce the complicating scientific, social, and political contexts for both questions and address proposals for strengthening the science advisory structures. We propose a permanent science advisory body for emergencies with the widest source of expertise as needed.

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1. Introduction

Since the WHO declared the COVID 19 as a pandemic on March 11, 2020, the global science community has demonstrated that science can respond quickly with advanced techniques, technologies and the immediate dissemination of research results in a largely transparent and focused science research effort. For example it is no surprise that the SARS COV 19 viral genome was made public within two weeks [1]. Rapid communication and publication has allowed the global public to cognize the seriousness of COVID 19.

This is due to the increased capability of the data sciences to model epidemic trajectories [2,3] and to show the statistical models as probability distributions a.k.a. curves. Filipino data scientists initially did this as citizen scientists with the aim of providing the initial basis for policy decisions [4]. Their efforts have made one phrase that has entered the Filipino’s lexicon, “flattening the curve” [5,6]. These efforts while it has resulted in a positive outcome in suppressing COVID 19 infections reveal gaps in the channeling of science advice to government especially in crisis and the need for a more coordinated science policy structure for emergencies.

While COVID 19 can be considered a “black swan” event with its low probability of occurrence but with a high impact [7], this is disputed since SARS in 2002, a coronavirus outbreak was deemed very possible [8] but with very uncertain consequences. The history of the COVID 19 pandemic has been reviewed as of March 2020 and details the responses of the WHO and national health ministries worldwide [9,10]. The international response is more transparent and coordinated than in previous WHO declared pandemics. Even then the control of COVID 19 is full of uncertainties even if curves can be flattened and because it involves many factors and players as evidenced by research gaps [11]. And the uncertainties are magnified in a post truth world with misinformation on COVID 19 taking on infectious behavior similar to the virus itself [12].

The Philippines has an estimated population of 106.7 million as of 2018. Fifty one (51%) of the population lives in cities and in high densities. The population is estimated to increase to 145 million by 2045 based on a 1.4% per annum growth rate [13]. By 2040, 14 million Filipinos will belong to the senior citizen demographic (>60 years). While the percentage of an aging population will increase it is not as fast as in industrialized countries. Nevertheless it will put an added stress to the health care system. The Philippine Statistics Authority (PSA) estimates that in 2020, six million

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http://dx.doi.org/10.1016/j.pdisas.2020.100115
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Filipinos are senior citizens. As this demographic is at most risk from severe COVID 19 [14], it is in the country’s interest to suppress the pandemic. With collation and content analysis of policy responses and their narratives, the purpose of this paper to review the COVID 19 pandemic response in the Philippines in light of the inevitability of relaxing quarantine protocols. We take off from two initial questions, “When can the ECQ be lifted?” and “How can we foresee and be better prepared for the next pandemic?” and to identify policy options with their complicating social and political contexts in light of the epidemiological science outcomes which informs policy decisions. We also propose formalizing government science advice by developing more permanent science advisory structures with the widest expertise available.

The paper is structured as follows. Section 1 gives the background and rationale. Section 2. introduces the reality of the virus in order to contextualize uncertainty. Section 3. Is the context of uncertainties in the Philippines, Section 4. Narrates the Philippine government’s policy and intervention responses in quarantine, Section 5 is about the recommendation to institute a science advisory group for emergencies and Section 6 is our conclusion.

2. The reality of the virus

It is unlikely that the SARS -CoV2, the virus that causes COVID 19 will be eradicated from the human population in the absence of a vaccine. Even with a vaccine, only smallpox has to date the only viral infection been globally eradicated [15]. Poliomyelitis was expected to have been eradicated by the first decade of the 21st century [16,17] but new cases have emerged [17–19]. Thus it is unlikely that coronaviruses or any viral pathogen will be eliminated as there is genomic diversity in the taxon and in its animal hosts [20–23]. Thus we can expect more coronaviruses and viral zoonotic outbreaks. The WHO will alert on a 5 to 10 year time frame, based on the frequencies of pandemics in the last 30 years [24,25]. Previous studies have specifically identified Metropolitan Manila, together with Dhaka, Bangladesh and Kibera, Kenya as nightmare scenarios in the management of emergent pandemic diseases due to the lack of sanitation, high population density and poor health care delivery systems [25].

Given the nature of and etiology of SARS COV 19 and COVID 19, the present crisis revealed that Philippine infrastructure and manpower capability for pandemics is very limited and this adds much uncertainty in predicting the outcomes.

3. Dealing with uncertainty and managing risks

The consensus by the Filipino epidemiological and data scientists is the curve had been flattened, the question of whether to lift or relax the ECQ has to be decided. The statistical estimates of the epidemiologists and data scientists do not immediately translate to a qualified estimate of risks. Decisions will entail risks. The question is what the risks are and can they be managed even with the “uncomfortable facts” especially in rapidly urbanizing countries like the Philippines [26]. For COVID 19, the uncomfortable fact is death. COVID 19 is a life and death risk. Those who came from travel abroad have greater risks of being infecting other people or being infected [27] and so have to undergo 14 day quarantine and monitor their health condition. The stay at home orders are also to minimize risk, but not totally eliminate it. Washing hands with soap and water for 20 s, wearing masks, social distancing, using alcohol and hand sanitizers, keeping your environment clean are other ways to even lower risks [28]. These recommendations need long term positive behavioral reinforcement [29].

Risks becomes complex when whole communities have to resume their lives. People have to go back work, students have to go back to school. Entrepreneurs and employees produce services and commodities that enable an economy to function. When people have a way to make a living, they can invest for their future, like education and health care as examples. The question for the government is “What are the risks of a second wave of COVID 19 infections?”

The problem is that we do not exactly know. It is uncertain. Uncertainty can be metaphorically called a “monster” [30]. How do we deal with COVID 19 monster? We exorcise the monster by implementing purely science based policy decisions. We can train or adapt the monster by reducing the uncertainty, but it can only get us as far if the situation is not complex. We can embrace the monster by recklessly playing the risks in the complex situation with a single objective in mind. Or we can asimilate the monster in this complex situation by recognizing the decision options and the uncertainty and risks. We could stop demanding a single understanding of risk and live with a multitude of risks that we have to consensually manage in an atmosphere of transparency in what is called a postnormal science approach [31]. But it has its difficulties such as getting experts from the disciplines to come up with a consensus on risk assessments. There is also a need to have extended peer communities to review the science and identify positive outcomes in consensus. Is what Versluis considers as “wicked questions” which often appears in crisis situations [32]. We shall consider the “wicked problems and questions” first by recalling the narrative for policy response after the World Health Organization (WHO) first notified the international community of the disease.

4. The Philippine government’s COVID 19 policy response

4.1. Timeline of the government’s response

When WHO on 31 Dec 2019 was notified by its China office of a potentially infectious pneumonia of unknown origin in Wuhan City [33], this became a matter of global public health concern that necessitated government public health policy response. The next day, on 1 Jan 2020 the WHO instituted an IMST (Incident Management Support Team) across the three levels of the organization: headquarters, regional headquarters and country level (WHO website). On 8 Jan 2020, the WHO said the increasing number of cases in Wuhan could be due to a coronavirus. The first death in China was reported on January 11.

In the Philippines, WHO notifications are relayed to its Southeast Asia regional office in Manila and then to the Philippines Department of Health (DOH). As news of the outbreak reached Filipino audiences through social, print and broadcast media, the DOH reported no confirmed COVID19 cases in the Philippines but were closely monitoring twenty two (22) persons under investigation for the disease by Jan 28. Two days later on Jan 30, the case of a 38 year old female Chinese national arriving from Wuhan via Hong Kong admitted to a government hospital showing pneumonia symptoms was made public. This was reported to the DOH Interagency Task Force on Emerging Infectious Diseases. On the same day the WHO declared a Public Health Emergency of International Concern but stopped short of declaring a pandemic.

The first policy decision of the Philippine government was to impose selective quarantine. It did so on 2 Feb 2020 for returning OFW, but was still open to international air travel. On 7 Mar 2020, the first local transmission was reported by the DOH of a patient who had no travel history and had comorbidities. The Department of Health raised the alert level to Red sublevel 1 to anticipate the increase of COVID19 cases locally [34]. Upon the recommendation of the Health Secretary, President Rodrigo R Duterte issued Proclamation 922 on March 8, declaring a state of national emergency due to the threat of COVID 19. Under this proclamation, all agencies are required to render full assistance in the response to COVID 19. The Secretary of Health as the head of the Inter-agency Task Force for Emerging Infectious Diseases (IATF-EID) may call upon law enforcement agencies to assist in the implementation of quarantine and other measures to address the spread of disease. IATF-EID through Resolution No. 16 created a technical working group (TWG) consisting of representatives from the government departments and the Armed Forces of the Philippines.
4.2. Declaration of a state of national emergency

The first evidence of community transmission or when there were no traceable origins of the virus to a particular person was reported on March 12. Subsequently, Alert Code Red Sublevel 2 was then declared by the President upon the recommendations of the IATF-EID. Strict quarantine and travel ban measures in the community, municipal and provincial levels will be instituted under this alert level.

4.3. Implementation of Enhanced Community Quarantine (ECQ) and travel restrictions

On 13 March 2020 a quarantine was announced and was initially limited to the National Capital Region (NCR) but as more cases of community transmission were recorded from the nearby provinces, a Luzon island wide quarantine was implemented by the President effective March 17. Under this expanded quarantine, land, sea and air transportation was banned. Only transportation for essential services as allowed. The ECQ exempted medical personnel and goods, sanitation operations and emergency cases from mobility restrictions. People were advised to work from home and use online communications and business transactions to avoid gathering in offices. This quarantine period expired on 14 Apr 2020 but upon recommendation of the IATF to the President of the Philippines based on epidemiological models of the UP COVID 19 task force, it was extended to 30 Apr 2020.

4.4. Social amelioration initiatives

Republic Act 11469 or the Bayanihan to Heal as One Act (BAHO) was signed into law by President Duterte on March 24, 2020. It mandates application of WHO recommendations to Philippine pandemic health management and policy. It grants special powers to the executive department to provide public and private hospitals with additional support such as procurement of additional equipment and to engage temporary human resources such as additional doctors and staff. It also directs hospitals and health care facilities to function as COVID 19 hospitals or quarantine facilities, provides prompt testing for patients, provides compensation insurance for front line health workers. It also provides social amelioration financial assistance to low income household as well as enforce laws on profiteering and price manipulation.

5. Policy decision questions

5.1. When can the Enhanced Community Quarantine (ECQ) be lifted?

5.1.1. The epidemiological context

Because the COVID 19 has impacted all facets of life in the Philippines and has effectively ground the economy to a halt, the question of reopening the economy especially in the National Capital Region (NCR) by lifting ECQ restrictions is a very important concern and also the assessment of risks. Epidemiological models are an important source of science information and for a policy decision where R0 estimates are considered. The latest assessment as of April 27, 2020 [35], suggests that the Luzon wide ECQ has had the intended effect of reducing the R0 statistic to 0.87 in the NCR, with similar estimates for Rizal (0.89), Batangas (0.84). Cavite, Laguna and Quezon have R0 estimates greater than 1.1, and this means that the pandemic is still spreading (Fig. 1). Central Luzon provinces have similar trends with some provinces, Bataan, Tarlac and Nueva Ecija having R0 estimates below 1.0 but Zambales, Pampanga and Bulacan having R0 greater than 1.0.

In Northern Luzon Ilocos region and Cagayan Valley provinces the pandemic appears to have been controlled with no new cases reported and Benguet reporting the lowest R0 at 0.54. With the exception of Albay in the Bicol region R0 = 1.33, all provinces in Bicol and MIMAROPA have no longer reported new cases. In the Visayas and Mindanao, Cebu has an alarmingly high R0 of 5.09, which is much higher than the R0 (2.2) initially reported for Wuhan City in China within the first month of the outbreak [36].

The wide degree of R0 estimates makes risk informed policy decisions more complicated and the purely science based approach may not be applicable. However spatial patterns can be discerned and one of these is the Luzon provinces that are closest to the NCR have R0 greater than 1.10. Reopening the country for business may cause a spike in new infections estimated from 10,000 to 80,000 and deaths from 680 to 3800 by 31 May 2020. This also highlights the need for mass testing. This is the central science information for David et al. [35] recommendations.

Increasing mass testing capability will reveal the true extent of infections and the proportion of asymptomatic carriers which remain as the greatest source of epidemiological uncertainty [37]. Resolving this will be the science informed basis for contact tracing. While several developers of mobile phone apps have launched contact tracing apps such as the Philippine Red Cross, data collection and reporting infrastructure will have to be there for this to be achieved. The University of the Philippines is in the process of a centralized data collection and portal for COVID 19 response management called endcov.ph (Fig. 2) The DOH has Covid Tracker (Fig. 3) https://www.doh.gov.ph/2019-nCoV which has information for clinicians and epidemiologists who wish to download case data with the data drop option. (See Fig. 1.)

The required information will have to include highly granular baseline data, data collected from previous crises, decision support tools and standardized tools for rapid data collections. These will inform modelling approaches, forecasts and confirm previous related research. There should be protocols on data security and data privacy. There is a need to further develop these data integrations in a national infectious disease database. This could assist in spatial analysis approaches that could aid decision making given that the situation is urgent.

While the Philippines has started to address the above needs, there is a need for open data and freedom of information guarantees for scientific data. DOH has a data portal for analysis and the University of the Philippines has the endcov.ph portal which present data summaries and visualizations. Endcov.ph and Covid Tracker can integrated and be the basis for a single government science portal on COVID 19.

5.1.2. The economic context

The epidemiological outcome informs all aspects of COVID 19 responses even in the economy. While the Philippine economy is not expected to slide into recession, the 2020 GDP growth rate is expected at 2% [38]. The ECQ lockdown has had negative economic consequences but is necessary from the epidemiological viewpoint. The lockdown ensured the viability of the public health delivery system, forestalling its collapse because the health delivery system was inadequate prior to the pandemic. The UP School of Economics has recommended the sequential lifting of the ECQ in all local government units starting with the barangay, within cities, between cities and between regions [39]. This will be informed by public health indicators and how quickly could public and development funds can be downloaded to the Local government.
Fig. 2. The University of the Philippines COVID 19 portal. Endcov.ph.

Fig. 3. The Department of Health COVID Tracker.
units. The economists suggested that the government provide food and not cash to the poorest communities. They also recommend the sequen-
tial lifting on the basis of how strategic and essential the business/industry sector is. There will be industries and services that can operate on
work from home arrangements. Underlining all of these is effective test-
ing and contact tracing protocols to be implemented by local government
units. The crisis according to the UP economists has “laid bare down the
weaknesses in the public health system, the fabrication and logistics cap-
pabilities, the research and development sectors, social safety nets and
capacity foresights and implementation in the public sector” [40]. To
the latter we will add the effective structures for government science
advice which underpins all policy options.

The UP School of Economics recommendations are within an epidemiologic-economic health risk paradigm informed by the precaution-
ary principle [41]. Based on the recommendations, the IATF-EID has recom-
manded the relaxing of ECQ to General Community Quarantine (GCQ)
which would allow the full opening of essential services and utilities, se-
llected retail businesses, but still banning cultural, religious, sports, business
and political mass gatherings.

5.2. How can we foresee and be better prepared for the next pandemic?

5.2.1. Improving health diagnostics and infrastructure

The pandemic also revealed serious weakness in health diagnostics. Health workers were being infected due to the critical shortage of personal,
protective equipment (PPE) and not all can be rapidly tested. The COVID 19
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To improve our capacity for molecular medical research and clinical di-
agnosis also for the training of medical technologists, we have to rapidly de-
velop a MD-PhD program. This complements the ramped up development of
molecular medical laboratories. At present we only have UP Manila offer-
ing a MD-PhD program. Similar programs will have to be offered in other
medical schools. This will allow a closely articulated basic science and clini-
cal science response to emerging pandemic diseases. One identified re-
search priority are the management of clinical manifestations of the
disease [42], reinfec tion, and vaccine development. The latter was identi-
fied by President Duterte as an immediate priority.

The more scientific knowledge, the better is the chance Filipino society
can live with COVID 19 as normally as possible. The capacitated research
and diagnostic facilities will strengthen the national as well as the global
health security system [25].

5.2.2. Institutionalizing a science advisory group for crises and emergencies

The Philippines has a formal science advisory system through The
National Academy of Science and Technology (NAST) [43]. NAST is by
presidential Executive Order 818 is the science advisor to the President of
the Philippines. The Philippines adopted as a model the role of the National
Academy of Science (NAS) in the United States [44]. The NAST advises by
publishing position papers and sponsoring forums on matters of national in-
terest requiring science advice. Other science academies such as the
Philippine American Academy of Science and Engineering (PAASE) on an
informal and at times on a formal capacity provide advice. The charter of
University of the Philippines mandates it to provide formal and informal
science advice as a public service university.

Science advice passes through ad hoc task forces (TF) or technical work-
ing groups (TWG). While TF advice is formal and requested, their effective-
ness is constrained by their mandate and level in the bureaucracy.
The government is not obliged to take in all of their advice. However as knowl-
edge synthesizers they provide the basis for consensus building. For COVID
19, science advice to the government is synthesized by the IATF-EID TWG
which has members from government departments and seeks the science
input of the University of the Philippines COVID 19 task force as well as from
other universities.

However even under normal circumstances and more so in crisis situa-
tion most science advice is informal and unsolicited [45]. As informal ad-
vise, their effectiveness depends on how they are taken by the government agency or elected representative concerned. The IATF-EID
was formed to propose policy interventions and cannot be expected to be
able to synthesize science inputs in a short response timeframe. However
in crisis, immediate synthesis of scientific information is critical.

There is a need to have formal structures in the Philippine science ad-
vise ecosystem to synthesize scientific information in the government agen-
cies and in academe. These are not as ad hoc task forces but science advice
bodies that will do horizon scanning for future and expected crises and
should actively engage scientists giving informal advice even from advoca-
cies which often have political agendas [46] which consists the bulk of
science advice to government [45].

The institutionalizing of reflexive modes of science advice for govern-
ment which largely includes informal science advice in a crisis has been
reflected upon after the Fukushima nuclear meltdown in March 2011
[47,48]. Prior to the great earthquake, science advice was largely formal
and directive within the bureaucracy, rather than reflexive. After the disas-
ter the Science Council of Japan (SCJ) assumed a greater public role in sci-
ence advice. While the SCJ was created by an act of the Diet, it is fiscally
autonomous. The disaster is also the main impetus for the development
of international science advice and capacita tion structures with the creation
of the International Network for Government Science Advice (INGSA) [49].

In a crisis, the protocols and timescales of conducting research differ
from the usual practice of science. The usual deliberative, iterative and col-
laborative practices of science may not be suitable for the rapid, decisive
and compressed time frames in crisis. The positive outcomes in in a situa-
tion is measured by lives saved, injuries reduced, ecosystem and infrastruc-
ture services restored, speed of recovery, and development of mitigation
tools for future disasters [50]. However, questions posed by uncertainty re-
main, even more so. More efficient and responsive science advice structures
and processes are needed which in a crisis may mean focused and rapid
science advice from the widest range of science expertise available.

The United Kingdom is the first country to establish a science advice sys-
tem wherein there are scientific advisors to the cabinet departments and to
the Prime Minister, a chief science advisor. This model with modifications
has been followed by several Commonwealth countries, namely New
Zealand, Malaysia and Canada. In the case of crisis, there is a Science Advi-
sory Group for Emergencies (SAGE) whose membership depends on the na-
ture of the emergency as drawn from the horizon scanning science advisory
groups as proposed in Section 2. It is chaired by the UK chief science
advisor.

SAGE works with the UK COBR (Cabinet Office Briefing Room) and is
composed of the country’s leading scientists and experts from the natural
and social sciences. SAGE advice is provided to cabinet via COBR. The job
of SAGE is to respond to COBR questions. SAGE advice is not considered
government policy unless the Executive makes it so. It is responsible for co-
ordinated science advice is made available to decision makers in the Execu-
tive at the soonest possible time. It is independent of academic bodies but
closely works with them. SAGE holds closed door meetings to focus on syn-
thesizing scientific information and to outline risk options in the shortest
possible time [51].

We propose a SAGE like entity which will provide formal science advice
not only for pandemics but other kinds of crisis and may identify important
institutional developmental needs such as a Philippine Center for Disease
Control. A Philippine version of SAGE may enhance the present policies
for DRRM and is in line with the 2015 Sendai Framework [52]. Philippine
SAGE can be immediately convened in a crisis and meets at regular inter-
vals under normal circumstances as it will have institutional support from
the Executive. The Chair of the SAGE will be the President’s chief science
advisor. A Philippine SAGE will provide timely science advice to the Presi-
dent of the Philippines as it will be under the Office of the President in
support of cabinet functions. A Philippine SAGE is not a TWG for it will not be ad hoc but exist under a presidential Executive Order or could be legislated by Congress.

SAGE in the UK has been criticized for holding closed door meetings to focus in outline risk options in the shortest possible time [51]. SAGE members have defended this as to insulate themselves from political pressure and focus on the science. This criticism is valid since science advisory structures are expected to be transparent [53]. In response to this criticism, the UK government has made public SAGE COVID 19 transcripts [54]. It is in COBR that various decision contexts political, economic and social are discussed and dissenting opinions heard. SAGE focuses option choices to achieve COBR consensus. If the SAGE model is adopted for the Philippines, this will likely be criticized for lack of transparency in the science advisory process. However the public can be assured by regular and even daily briefings by the relevant cabinet secretary as has been done by IATF-EID for COVID 19.

Our proposal for institutionalizing crisis science advice in the Philippines is reflection. It will utilize formal science advice from NAST, PAASE and other government agencies. This will necessitate the services of social scientists who in the past have been largely ignored [55]. Scientific expertise in the government science bureaucracy have been biased for the natural sciences and economics [56]. The role of the social scientist to assess that science advice is effective as it courses through different expertise communities with their different sociologies, as well the sociology of the public which will allow policy makers to rethink their options [57]. They also can manage the discourse in extended peer communities in postnormal science terms. Such an evolving role defines the role of social scientists in the USA. In Nigeria, a developing economy, the evaluation of science advice required the social scientists to link science outcomes with social development goals [58].

5.3. Science communication needs

Science during crisis is about mobilizing scientific expertise in knowledge generation, data analysis, data storage and archiving, and communicating [50]. Thus science communication cannot be separated from a science informed government policy. If effective science advisory systems are in place, a major focus of effort is science communication and education especially at the community level keeping in mind cultural sensitivities. A key aspect of this effort is to develop ethical standards for crisis response. A negative outcome of poor communication and engagement related with poor science advisory structures is when people have had enough of experts [59]. In mobilizing scientific expertise there is a need to mobilize social media players and to build trust to reduce misinformation that will negatively affect public health outcomes [60]. Crisis science advice will necessitate that the public’s attention is directed towards trusted sources of science information. This should be a major government effort in crisis response and not relegated to the background [60].

5.4. Human rights context

Lastly we comment on the human rights situation. The WHO has emphasized that in COVID 19 containment and quarantine, human rights of people should be respected [61]. International Health Regulations (IHR) also mandate respect for human rights [62]. Crisis driven public health responses are necessarily intrusive [63] and in the Philippines has historically been imposed in a military context [64,65]. Governments imposing COVID 19 lockdowns would necessarily restrict freedoms of movement and information as part of ensuring a positive public health outcome. While this may be necessary and acceptable in countries like China, this would be abhorrent in liberal democracies [66]. There is little doubt that by imposing strict mobility constraints and personal health status surveillance, China has controlled the outbreak. A question is if the same outcome can be achieved without severely restricting civil liberties. South Korea, and Taiwan have been cited as examples. These states have controlled infections by massive testing and using technology driven contact tracing. These approaches may be overtly intrusive and may result in surveillance regime which the state may use for other purposes [67,68].

In the Philippines, there have been reports that basic civil liberties have been violated in the enforcement of BAHO. The various local government units and police application of EQC enforcement has been criticized as too harsh and violative of constitutional rights and reports have been sent to the Philippine Commission on Human Rights [69]. The Philippine National Police has taken notice and has reminded its officers to respect human rights [70]. Filipino political culture historically tends towards authoritarianism [71], the COVID 19 pandemic generates a serious concern for human rights and privacy protections which will linger after the pandemic has passed.

6. Conclusion

In this paper we have narrated how the Philippine government responded to the COVID 19 pandemic at all levels, including the inclusion of science advice and its consideration of science information. We illustrated the various contexts of formulating a policy informed by epidemiological models. And while David et al. [35] recommends the extension of EQC and GCQ beyond April 30, 2020, the uncertainties remain, the questions associated with crisis which we hope will be addressed by developing science advisory systems and structures for crises and emergencies taking into consideration social, economic and human rights contexts.

In the COVID 19 crisis the Philippine government and its public has immediately recognized the importance of the role of scientists providing science information in economic and political life. This present an opportunity never before in the history of the Philippines, to locate science and technology as essential to responsive government and governance.

Funding source

This work was supported by development of policy for institutional development grant of the Science and Society Program, University of the Philippines.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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