Monitoring occupational and environmental health as part of the right to the highest attainable standard of health.

By

Ndakapara Chitsa

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Supervisors

Professor Leslie London, School of Public Health and Medicine, University of Cape Town

Associate Professor Lisa Forman, Dalla Lana School of Public Health, University of Toronto

DECLARATION

I, Ndakapara Chitsa (CHTNDA001), hereby declare that the work on which this dissertation/thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in the University of Cape Town (UCT) or any other university.

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Abstract:

Background: Environmental and Occupational Health (EOH) is a major contributor to global Burden of Diseases (BoD). State Parties (SPs) to the International Covenant on Economic, Social and Cultural Rights (ICESCR) are obligated to implement the Right to Health (RtH); which includes improving environmental and industrial hygiene, prevention, treatment and control of epidemic and occupational disease etc. Research shows that Noncommunicable diseases (NCDs) owing to EOH, and associated risk factors are the leading cause of death globally. Yet, ICESCR has a Committee on Economic, Social and Cultural Rights (CESCR) responsible for monitoring the implementation of the RtH. Also, Civil Society Organizations (CSO)'s role, acting as watchdogs, is to ensure that SPs comply with their obligation to realise the RtH. So far, little is known whether SPs, CESCR and CSOs are paying attention to EOH factors as one of conditions necessary for the realisation of the RtH. The purpose of this study is to investigate whether and how attention is given to EOH issues in implementing the RtH

Methods: A mixed method study design was used for this study. From State Parties (SPs) to the Convention, stratified random sampling was used to select 3 countries per each World Health Organisation (WHO) epidemiological region (N=18). For each country, we collected State Party (SP) reports, Concluding Observations (CO), and CSO reports published on UN OHCHR website between 2009 and 2018. Data was analysed using word frequency and thematic analysis for SPs (n=21), COs (n=18) and CSOs (n=22) reports, in total 61 reports.

Results: The attention given to EOH issues is limited. Where EOH factors were given attention, either the CESCR failed to adequately acknowledge their importance in the realisation of the RtH leading to the SPs reducing their focus and failing to report on EOH issues in their follow-up reports. Alternatively, the SP and CESCR did not follow through on issues previously raised leaving these concerns unaddressed. SPs appear to have no one to hold them accountable for RtH rights since neither CSOs nor the CSECR were effectively doing so.

Conclusions: Addressing EOH health risks is required of governments to protect, fulfil, and respect the RtH. In this study, a minority of SPs addressed EOH. In addition, those who addressed EOH have largely focused on addressing consequences of rather than preventing the EOH burden. There is an urgent need for governments to address the root causes of failure to provide the conditions necessary for realisation of RtH – and specifically EOH factors - within the UN system. Further work needs to be done by the CESCR in strict monitoring of SPs' obligations in terms of EOH factors as described in its General Comment 14 (GC 14).

Keywords: Environment, occupational health, working conditions, State Parties, CESCR and Right to Health.

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List of Abbreviations

BoD	Burden of Diseases
ICESCR	International Covenant on Economic, Social and Cultural Rights
ICCPR	International Covenant on Civil and Political Rights
IBL	International Bill of Rights
ILO	International Labour Organisation
UDHR	Universal Declaration of Human Rights
CESCR	Committee on Economic, Social and Cultural Rights
CSO	Civil Society Organisation
CO	Concluding Observations
ECE	Economic Commission for Europe
EOH	Environmental and Occupational Health
NCD	Non-Communicable Diseases
OHS	Occupational health and safety
OHCHR	Office of the High Commissioner for Human Rights
PHC	Primary Health Care
RtH	Right to Health
SDH	Social Determinants of Health
SP(s)	State Party(ies)
TA	Thematic Analysis
IBR	International Bill of Rights
ILO	International Labour Organisation
WHO	World Health Organisation
GC14	General Comment 14
UN OHCHR	United Nations Office of the High Commissioner for Human Rights

Thesis Organisation

This thesis is divided into three sections: Part A to Part C.

Part A: Contains a research protocol that provides an introduction, background, and context, aims and objectives, methods, and ethical considerations for the study.

Part B: Details findings of the study in a journal-ready manuscript format. The manuscript has been formatted according to International Journal of Environmental Research and Public Health author submission guidelines, (*see Appendix 5)*. In this manuscript, research methods, findings, discussion, recommendations, and a conclusion is discussed in detail.

Part C: Presents all supplementary materials relevant to the study as an appendix section in Part C. These include supporting summary codebook, theme mapping, characteristics of reports used, a copy of ethics clearance certificate to conduct this study and International Journal of Environmental Research and Public Health journal submission guidelines. A Vancouver referencing style has been used throughout this thesis in accordance with the author submission guidelines from International Journal of Environmental Research and Public Health referencing style has been used. Font size 11 Times Roman using English South Africa and a line spacing of 1.5 has been used throughout the thesis.

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PART A: PROTOCOL

Monitoring occupational and environmental health as part of the right to the highest attainable standard of health.

Introduction

Human rights are defined as rights to which everyone is equally entitled to, without discrimination and inherent to all human beings (1). There are two types of these rights, Civil Political Rights (CPR) and Economic, Social and Cultural Rights (ECSR). Firstly, CPR limit government interference with people's daily activities and private life. These include the right to life, dignity and respect, privacy, confidentiality, freedom of speech, fair and hearing in court. Secondly, ESCR, the departure point of this study, protect and guarantee basic needs necessary for dignified human life - for example, the Right to Health (RtH), work, housing, water, food, education, social protection, and an environment that is free from harm regardless of sex, nationality, race, language, ethnicity, or religion. These rights are all equally important, however "protecting the RtH means upholding other human rights" (2). Besides, health is a fundamental human right and is vital for the exercise of other human rights.

Health being a fundamental human right, is recognised in International Human Rights Law (IHRL), regional human rights instruments such as the African Charter on Human and Peoples' Rights and in approximately 115 domestic constitutions (3). However, the RtH is mainly provisioned and legally protected for, in the International Covenant of Economic, Social and Cultural Rights Convention (ICESCR). Under ICESCR, the RtH appears to be widely encompassed either directly or indirectly within other rights because the right is not only confined to health care but extends to social determinants of health that affects the physical, mental and social wellbeing of a person (4).

World Health Organisation(WHO) defined health as not only the absence of disease or infirmity but a state of complete physical, mental and social wellbeing (4). In ICESCR (Article.12), health is not limited to WHO's definition, rather the Convention considers biological and socio-economic preconditions of an individual. Comprehended from a human rights perspective, ICESCR defines health as a human right that everyone should enjoy in highest attainable standard of physical and mental health (5). In addition, the Convention have a designated Committee called the Committee on Economic Social and Cultural Rights (CESCR). This Committee further provides a more detailed description of the conditions or provisions necessary for the RtH to be fully achieved as per Conventions' definition through what is called General Comment 14 (GC14) (6). GC14 is ICESCR's methods of work and interpretation of the RtH as defined in Article 12 of the Convention together with clarity on provisions and implementing approaches that comes with this specific right. Having to see that within GC14's provisions and ICESCR definition of the RtH, mostly discussed are Environmental and Occupational Health (EOH) conditions either directly or indirectly required for full

realisation of this right (6), this shows how they are crucial not only within the human rights framework, but in public health.

Therefore, investigating how EOH issues are tackled under ICESCR is crucial in bringing new evidence and "missing" link that bridges the RtH and public health to provide practical and sustainable solutions to problems that are affecting people's health and growing global Burden of Diseases (BoD) attributable to EOH. To do this, the study will be divided in two main sections, Section I being a background and rationale of the problem. This will include a brief discussion on what ICESCR is, EOH provisions outlined in the Covenant and States' legal obligations in relation to the RtH as per GC 14. The section will be concluded with main reasons why EOH issues are crucial in realisation of the RtH as per ICESCR's provisions. Section II will be a literature review discussion which involves critically analysing different existing literature that speaks to EOH issues as a way of highlighting gaps that exist or require further research.

In addition, as part of the review, also how these EOH issues are addressed either by States who are members of the ICESCR (State Parties (SPs), the Civil Society Organisations (CSO's) and the Committee (CESCR) is also going to be discussed. This will be done in 3 segments, first by focusing on EOH BoD, secondly, a briefly discussion on the RtH as provisioned in other existing Conventions or international instruments and domestic Constitutions. The main discussion, however, will focus more on shedding light on the RtH as per ICESCR and CESCR GC14 interpretations. This will include an in-depth discussion on provisions and interpretations that directly talks about EOH issues, the impact these issues have on health and realisation of the RtH. This will be followed by a review and critical analysis of the benefits or potential opportunities that are brought by CESCR's role in realisation of health as a human right from EOH focus point together with guidelines that exist on violations of the RtH. To follow will be a description of methods that will be utilised in conducting the entire study and lastly a conclusion that summarises the main ideas raised in the study.

Background and Context

ICESCR and ratification of the Covenant

To date, 170 States have ratified the Covenant comprising of 31 articles spread in between Part I to Part V (7). In ratifying the Covenant, Part V of the Covenant states that governments or States agree to recognise the inherent dignity of human rights. However, for them to become a party and commit themselves to the Covenant's provisions, governments are subject and required to sign and ratify the Covenant (8). In ratifying the Covenant, States are required to deposit their instruments of ratification with the Secretary-General of the United Nations. Following which, the Secretary-General of the United Nations shall inform all States which have signed and deposited their instrument of ratification to the Covenant which come into effect 3 months after the date of the deposit of the thirty-fifth instrument of ratification as indicated in Article 28 of the Covenant (5). This will mean that these

governments are now State Parties (SPs) to the Covenant, legally bind and committed to create conditions that enable their population to enjoy the RtH.

ICESCR on EOH in realisation of the RtH

Table 1: ICESCR articles that address EOH factors (5).

Provision	**Content**
Article 7	The SPs to the present Covenant recognize the right of everyone to the enjoyment of just and favourable conditions of work which ensure, in particular. (b) Safe and healthy working conditions
Article 11	1. The SPs to the present Covenant recognise the right of everyone to an adequate standard of living for himself and his family, including adequate food, clothing, and housing, and to the continuous improvement of living conditions. 2. The SPs to the present Covenant, recognising the fundamental right of everyone to be free from hunger, shall take, individually and through international co-operation, the measures, including specific programmes, which are needed. (a) To improve methods of production, conservation, and distribution of food by making full use of technical and scientific knowledge, by disseminating knowledge of the principles of nutrition and by developing or reforming agrarian systems in such a way as to achieve the most efficient development and utilisation of natural resources
Article 12	1. The SPs to the present Covenant recognise the right of everyone to the enjoyment of the highest attainable standard of physical and mental health. 2. The steps to be taken by the SPs to the present Covenant to achieve the full realisation of this right shall include those necessary for: (b) The improvement of all aspects of environmental and industrial hygiene. (c) The prevention, treatment and control of epidemic, endemic, occupational and other diseases;
Article 25	Nothing in the present Covenant shall be interpreted as impairing the inherent right of all peoples to enjoy and fully utilise, freely their natural wealth and resources.

The ICESCR includes the right to enjoy the highest attainable standard of physical and mental health in Article 12 (5) This right is also linked to Article 11 (adequate standard of living, nutritious food, clothing and housing), Article 15 (participation in cultural life) and Article 13 (education for everyone) are all conditions necessary for realisation of the RtH (2). However, the Covenant in Article 12 firstly, provides for the improvement of all aspects of environmental and industrial hygiene as a means to realise the RtH (5). Secondly, the prevention, treatment and control of epidemic, endemic, occupational and other diseases. Thirdly, governments as SPs to ICESCR have the responsibility and obligation to take steps necessary for improvement of all aspects of environmental and industrial

hygiene to ensure that people enjoy the highest attainable standard of physical and mental health (7). SPs therefore should demonstrate and justify the manner in which they are meeting their obligations as described in ICESCR and after ratifying the Covenant(ICESCR) (7,9,10).

As such, in International Human Rights Law (IHRL), the government in principle is a duty bearer while people or the general population are right holders (10). This means that, under ICESCR, the government herein referred to as the State has a responsibility to meet set obligations required to the realise the RtH. These obligations are to respect, protect and fulfil human rights (1). This means that the State should not interfere with enjoyment of this right (Respect), but rather has a duty to defend people's rights and from interference by third parties (Protect) and take active steps to provide the rights for people (Fulfil) (1). These obligations in relation to the RtH will be explained later in the study.

To monitor whether states who have ratified the Covenant (SPs) are living up to their commitments as discussed above, a Committee responsible for overseeing the Covenant was established in 1985 under United Nations Economic and Social Council (ECOSOC) Resolution 1985/17 (11). The resolution identifies the "Committee on Economic, Social and Cultural Rights" (hereinafter referred to as "the Committee"), as responsible for overseeing Sates implementation of the ICESCR (11) . Since ICESCR Part IV, article 21 and 22 places this responsibility on the Council, the Committee was therefore established to help carry out functions listed in these responsibilities (11,12).

Committee on Economic, Social and Cultural Rights (CESCR)

In carrying out their obligations, SPs are required to submit reports to the CESCR on how they are implementing the rights outlined in the Covenant. State reports are first submitted within 2 years of ratifying the Covenant and then every 5 years thereafter (12). This is a requirement for SPs as stipulated in Article 16 of the Covenant to provide a report detailing how the rights in the Covenant are being implemented and to describe progress which has been made thereof (12). The CESCR, made by a team of 18 highly skilled independent experts in the field of human rights, then receives and analyse these reports to see what governments are doing as per their obligations. After examining and reviewing these reports, having picked up issues which governments might not have addressed fully or overlooked completely, they issue comments and recommendations in form of Concluding Observations(COs) (12). The purpose of recommendations is to bring important issues and concerns raised in the reports to SPs' attention. These are human rights issues which SPs might not be doing well or have not acted upon on and should start acting on them for improvement (6,12).

Issues identified in the COs which are not fully addressed or were not acted upon are then followed up in subsequent reports submitted by governments (12). However, previous reports will be used as a point of reference for follow-up in these subsequent reports which mainly serve a purpose of indicating corrective measures taken in response to the initial observations. Any concerns and

comments raised will then be addressed by the CESCR and responsible SP in a manner that meets the requirements of the Covenant and conditions interpreted in General Comment 14 (GC 14) (6,12).

General Comment 14: Interpretation of RtH

The CESCR has a responsibility to publish the interpretation of the provisions of the Covenant respective human rights treaty in form of "General Comments" or "general recommendations" (9,12). Thus, for realisation of RtH, GC 14 as mentioned earlier, serves that purpose to fully explain the normative content of what health entails and conditions necessary for realisation as per ICESCR. In respect to ICESCR's interpreted provisions of health as a human right GC14, describe RtH not only as timely and appropriate health care but also underlying determinants of health which EOH issues dominates the list. These include access to safe and portable water, adequate sanitation and supply of food, nutrition, housing, as part of healthy occupational and environmental conditions (6).

Furthermore, GC 14 states that, causes of health hazards inherent in the working environment should be minimised by taking steps to prevent and reduce people's exposure to harmful substances that affects human health such as radiation, chemicals or any harmful environmental conditions (6). Under this Comment (GC14), SPs are required to formulate coherent policies and take preventive measures on health and occupational safety. In addition, Grover (13) stipulates that not only should SPs formulate environmental and occupational policies but should monitor and evaluate them. Monitoring and evaluating these policies will therefore enable the SPs to see whether the formulated policies are facilitating easy access and availability of occupational health services by workers. Moreover, this is also necessary to ensure that EOH policies are updated time to time to address challenges posed by emerging technologies at workplace and the impact on the environment (13).

Based on this background, the hypothesis is that neither SPs nor CESCR pay close attention to EOH health issues. This study therefore will investigate the extent to which EOH issues are addressed within the UN system under ICESCR and as per CECSR and GC 14 interpretations. Reports submitted by SPs in the beginning of the study will be analysed to find out if they (SPs) are giving attention to EOH conditions when reporting steps taken in implementation of the RtH. If not, Concluding Observations (COs) provided for SPs as comments for the initial SPs are analysed to see if CESCR is raising concerns on EOH issues that might have been addressed in the SP reports. Thirdly, subsequent SP reports will be examined to identify if EOH related recommendations by CESCR have been provided for as a remedial action. Lastly CSO reports will also be analysed to establish whether they (CSOs), acting as watchdogs of SPs submissions to CESCR are recognising EOH issues as one crucial aspect in realisation of RtH as per GC 14 and Article 12 of the Covenant.

Aim

To describe the attention paid by the UN Committee on Economic, Social and Cultural Rights in regard to EOH in countries reporting under the ICESCR.

Research Questions

Does the UN CESCR respond or attend to environmental and occupational health issues from different SPs submissions in relation to assessing progress under article 12 of the Covenant?

Is there any evidence that governments are implementing recommendations made by the committee in follow-up reports they submit?

Objectives

1. To describe the extent to which countries' reports submitted to the Committee pay attention to EOH.
2. To investigate whether the recommendations made by the committee (a) pay attention to EOH and;
3. To investigate whether subsequent reports by States and subsequent recommendations by the Committee address any EOH issues identified in earlier reports.
4. To investigate whether any civil society reports submitted to the Committee pay attention to EOH issues.

Literature Review

Section I

Environmental and Occupational Health Burden of Disease

In order to understand why EOH factors are relevant in realising RtH, it is necessary to understand the environmental and occupational Burden of Disease (BoD) globally. This will provide evidence to justify why EOH issues are crucial for the realisation of RtH as a human right.

a) Non-Communicable Diseases (NCD's)

Different researchers have presented definitive evidence pointing to EOH risks directly linked to different NCD illnesses (14–16). Recently, WHO (17) published a report stating that NCDs are now one of the leading causes of premature deaths and illnesses globally citing EOH factors as the main contributing factors behind these deaths and illnesses. Of all deaths in 2012, 23% deaths or 12, 6 million deaths are said to be linked to unhealthy environments (17). Out of these deaths, an estimated two thirds are due to NCDs (17). Developing from this report estimates, Frumkin and Haines (14) states that there was a sharp rise in NCD deaths from 23% in 2012 to 70% in 2019. Additionally, from the same findings by Frumkin and Haines (14), chronic NCD illnesses such as lung cancer, respiratory and cardiovascular diseases are said to be causing more than 38 million deaths every year which is said to be 70% of all global deaths. This is a clear proof that EOH factors are crucial in reducing the burden of illnesses and premature deaths.

Furthermore, several researchers (15,18,19) indicated that work related illnesses and occupational injuries attribute to approximately 5– 7% of deaths in developed countries. In addition, the estimates of occupational deaths caused by occupational related illnesses approximated to 2 million out of the

annually recorded 2.3 million in 2012 (15,19). The problem was and is still likely to be far worse than the stated figures since the collection, quality and availability of data has been identified to be a challenge in obtaining correct estimates as argued by Takala and Rushton (15,19). Moreover, the higher exposure risk that workers working in environments where there are directly exposed to hazardous chemicals and risky working conditions compared to the general population holding other factors constant. Yet, despite this higher risk workers have, Lele's (20) research findings shows that that only few workers have access to occupational health services, safe working methods, first aid and Occupational Health and Safety(OHS) training that can help prevent occupational risks.

Contributing to these challenges is a lack of clear definition of what can be categorised as an occupational illness and decent work (15,16,21). Yet, these are essential terms in giving clear guidance on what occupational health services and safe working conditions are (20). Besides, if prevention of occupational hazards is not considered part of what needs to be addressed when "decent work" is provided for as described by ILO (21), workers' RtH are therefore being violated. In addition, working in an environment with exposure to toxic hazards increase the risk for various occupational related chronic illnesses(15). For example, in an earlier study, Knight (22) showed an increase in silicosis prevalence of up to 15 % in black miners at a gold mine in Free State province, in the 1980's due to crystalline silica dust exposure. A similar observation was recorded from former South African and migrant gold miners from Botswana and Lesotho in early 90's showing 22 to 36 % silicosis prevalence followed by 18.3 to 19.9 % silicosis prevalence in the year 2000 in a group of miners from different gold mine companies (23). High prevalence of such illnesses (silicosis) is rarely found in non-occupational settings, rather this is evidence that the environment and occupations these workers are exposed is the main contributing factor. Therefore, not giving EOH factors adequate, same, or more attention to what is given to other factors is an obstacle in realisation of the RtH amongst the working population.

Despite occupational hazard risks, working population are most likely to be at a higher risk of severe health outcomes if infected by unrelated illnesses or "opportunistic diseases". For example, a recent research (24,25) shows a high proportion of a global SARS-CoV-2 infections in patients with increased air pollution exposures and history of cardiopulmonary toxicants in their workplace. In addition, the studies also showed that, not only are they(workers) at a higher risk of infection with SARS-CoV-2 but the infection is severe compared to patients with no history of the said exposures (air pollution and cardiopulmonary toxicants) (24,25). This shows how almost each health problem experienced in recent years has an element of EOH risk. Moreover, with climate change, a consequence of neglecting EOH factors being undeniably evident (26), treating these issues as "less" important in tackling health related matters is misguided and could have far reaching consequences.

b) Climate Change

Air pollution is one of the highest environmental health risk factors that has contributed to the increase of NCDs Global BoD (17,27,28). As result, more than 7 million deaths per year are due to exposure to polluted air, both indoor and outdoor, which is a major risk factor for NCDs (17). The initial focus on individual risk factors such as unhealthy diets or alcohol abuse therefore, when RtH is being discussed has shifted to a more public health orientation because of the nature of exposures that are now more centred on the environment (17,29,30). This is because, air pollution leads to poor air quality which the public or entire community will be exposed to regardless of individual lifestyle or choices (26). Landrigan and colleagues' (29) states that anthropogenic causes; human activities that include burning of fossil fuels such as coal, oil in manufacturing industries or fuel used in transport systems are the major contributors of air pollution. Emissions from these activities result in changes to the climate either by increasing weather temperatures (ozone) or decreasing due to different components of Particulate Matter (PM) in the atmosphere (29).

Climate change leads to extreme weather conditions such as flooding, drought, and veld fires (26). These extreme weather conditions pose health risks to individuals and is a threat to public health. For instance, flooding promote allergen growth that can either cause or worsen asthma, allergic disorders and other respiratory illnesses to those exposed (14). Supporting this assertion, Perkison's (30) research reported a positive correlation between a prolonged exposure to extreme weather conditions and the increase in incidence of cardiovascular and respiratory illnesses and premature death. Besides these illnesses, severe weather conditions such as drought have a negative impact on agricultural production resulting in shortage of food supply also leading to accessibility, acceptability, quality, availability of food and nutrition problems (31).

Therefore, despite experiencing these negative impacts of climate change impacts which research (29) has provided evidence that they are due to anthropogenic causes, ignoring environmental factors in the process of urbanisation is likely to have a ripple effect on both the climate and health; This, considering, the unsustainable nature of urbanisation and economic development processes which 'majority' of governments support, or favour at the expense environmental wellbeing (32). For example, opting to make funding available for coal mining to generate electricity compared to renewable (solar) energy (31). Hence, a rapid increase in uncontrolled emission of toxic gases in the air, land and water resources, leading to climate change conditions that adversely impact human health (29,32).

c) Economic Development

Environmental and Occupational related BoD impacts adversely on economic development, which in itself is one of the conditions necessary for the RtH to be fully realised (6). Rushton (15) in his research indicated that occupation-related diseases do not only affect one's health but have a wider impact on the economy. Yet, there is still evidence (33) that the same government(s) disregard the threat EOH factors pose to the realisation of the RtH to its highest attainable standard. An example, is

a decision by US government opting out of Paris Agreement in 2019, citing the financial burden that comes with compliance to the Agreement (34). This, despite the potential cost-saving and benefits, signing the Agreement offers to US economy in the long run. For instance, Frumkin and Haines (14) shows that climate change costs more than $400 billion to the US. This is a cost that is of significance and could have been potentially lessened if the government had long enough continued being committed to international climate change Conventions such as this Paris Agreement; A global Climate Change protocol aimed at committing countries to reduce rising global temperature under 2 degrees Celsius and further to 1.5 (27).

Furthermore, in the process of economic development, climate change conditions and other EOH impacts are said to be worsened by global industrialisation (23). In developed countries, ILO report(35) shows that rapid global industrialisation has led to an increase in EOH related illnesses and deaths, despite technologies to minimise hazardous exposure to toxic chemical at workplaces in these countries. The report's prediction was that deaths resulting from occupationally related illness will potentially be doubled by 2020 as a result of increase in exposure to toxic chemicals (35). This prediction has proved to be valid based on 2019 XXI World Congress on Safety and Health at Work in Singapore report (36) which noted EOH health burden estimates were estimated 2,78 million people every year more than double of 1999 as predicted by ILO 10 years earlier. How EOH issues are linked to health and RtH thereof is illustrated Figure 1 of Appendix 1. Showing how these factors are linked through different routes of exposure to human health is important to understand EOH's role in realisation of RtH.

Section II

The right to health in other Human Rights Conventions/Instruments

Besides the ICESCR Convention mentioned earlier in the study, there are several other conventions that deals with EOH and how in this regard, health as a human right can be realised. Consideration of these conventions and international instruments implies that, SP reporting to CESCR is also meeting their obligations to provide for the same EOH conditions under different conventions necessary for realisation of several human rights. These include, firstly, the UN Convention on the Rights of the Child (CRC) (37) that outlines conditions in which states should take into consideration the dangers and risks of environmental pollution in combating illnesses and malnutrition and access to primary health care in children. Secondly, the General Assembly resolution 45/94 on the need to ensure a healthy environment for the well-being of individuals (38). Thirdly, the ILO Convention No. 155, art. 4.2 and its International Labour Standards on Occupational Safety and Health among others (39).

Still, on a regional level, Conventions such as the African Charter on Human and Peoples' Rights of 1981 (art. 16) as discussed earlier also addresses the RtH (40). The European Social Charter of 1961 revised in (art. 11) which among others talks about the EOH, "right to just conditions of work," and "all workers have the right to safe and healthy working conditions," (40,41). Then the Additional

Protocol to the American Convention on Human Rights in the Area of Economic, Social and Cultural Rights of 1988 (art. 10) (42). In this Protocol, RtH has been viewed in the context of recognition of health as public good through aspect of Primary Health Care (PHC), poverty, occupational health and prevention of illness among others (42).

Furthermore, among several others, the Vienna Declaration and Programme of Action of 1993, San Salvador Protocol to the American Convention on Human Rights, all which recognises RtH at regional level (42) and more likely in line with GC 14 provisions. Furthermore, since the adoption of GC 14, a Special Rapporteur on the right to the highest attainable standard of health was appointed by UN in 2002 (43). The purpose of the Special Rapporteur was to help States promote and protect the RtH in a highest attainable standard including identification of good practices for this right's operationalisation (43). In addition, there are 8 Special Rapporteur directly relevant to EOH, published as "Resolutions of the Human Rights Council" from 2008 to 2020. These include;

i. The adverse effects of the movement and dumping of toxic and dangerous products and wastes on the enjoyment of human rights (44).

ii. Mandate of the Special Rapporteur on the adverse effects of the movement and dumping of toxic and dangerous products and wastes on the enjoyment of human rights (6 of them) (44).

iii. Protection of the rights of workers exposed to hazardous substances and wastes (44).

Their main mandate is firstly focused on the implications for human rights of the environmentally sound management and disposal of hazardous substances and waste. Secondly, in helping States, businesses and other stakeholders adopt solutions that prevent the exposure of people to harmful toxic waste or substances without their prior informed consent. Thirdly to protect workers on occupation hazard exposure (44).

Legal Obligation of governments in relation to ICESCR

a) The obligation for governments to respect

CECSR GC 14 (para 33) (6) refers to States or governments' obligation to respect, meaning that they must refrain from passing laws or adopting any programs that might violate human rights. In the context of EOH and RtH as per ICESCR and GC 14 para 36, governments should, for example, refrain from unlawfully polluting the environment that is air, water, and soil (6,45). This means that any such polluting industrial activity approved or owned by the government is a failure to fullfill this obligation (46).

Additionally GC 14, (para 36) (6) also requires States to adopt measures against environmental and occupational health hazards. In respecting this obligation, States should reduce and eliminate pollution involving air, water, and soil. These should be accompanied by corresponding policies aimed at reducing and eliminating EOH hazards at all levels (international, regional, country) (33). For

example, formulating policies, laws, standards and regulations that protect workers' health and the environment in national constitutions (16,33). Policies should also include the provision of public environmental health education, awareness-raising, allow consultation and public participation. In the adoption of these policies and decisions, legislation that also facilitates remedies relating to environmental grievances should be included too (33).

Benefits of consultation, education, legalisation to enforce EOH policies have been evidenced in the European region. In the European region, a report by UN Economic Commission for Europe (ECE) (47) documented how SPs from countries such as Bulgaria, the Czech Republic, Denmark, Finland, Germany, Netherlands, Slovakia, have formulated, consulted and implemented policies towards reduction of sulphur dioxide emissions. These are ICESCR SPs parties and has shown to have contributed to the achievement of a 50% reduction in emissions of sulphur dioxide (47). However, this was not as smooth as with similar UK government's Clean Air Strategy. In a Lancet report (48), the implemented environmental health policies failed to yield similar success as that achieved by the ECE, citing inadequate funding and political power dynamics. This shows how, if coherent policies both on environment and occupational health are not in place, then the obligation to respect RtH in this regard might be difficult. Regardless, regulations on third parties may be in place but still, the government itself may be directly involved in activities that violates peoples's rights through their economic activies such as coal mining in providing electricity through State owned enteprises (49). For example, in the South African context, the government has granted licensing authority to Eskom a State-Owned Enterprise permission to exceed the country's own emission standards (50). This shows a failure of the South African government, on the obligation to respect since this decision violates health-based standards and or the RtH at large.

Nonetheless, EOH factors are not only addressed by the obligation that requires the government to respect RtH but to protect and fulfilling them too.

b) Obligation to Protect.

Secondly, the government has an obligation to protect individuals' rights from third parties violating their rights (1). For example, by regulating private entities such as medical aid companies who provide essential services needed for the realisation of the right of acess to health care. However, as health is not only realised through clinical means, underlying conditions that exist in the environment in which people live should be adressed too (6). Also, as Chapman (45) points out, these conditions covers a broad range of environmental, legal, and social determinants of health. Thus, States, through environmental health regulations, should protect their population from industrial pollutants and their effects on health by preventing or regulating hazardous emissions from industrial plants (45,51). In addition, these industrial plants should be regulated or monitored for occupational health issues. These include existing labour guidelines and standards to protect working population's rights from abuse by employers and access of occupational health services (13,16).

Besides the effects these industries' activities have on the environment, the local communities or those within close proximity to the industrial plants are likely to bear the burden beyond pollution. Disregarding EOH factors reduces the opportunities of local communities' opportunity to benefit from their land of occupation through sustainable livelihoods activities, which adds important concerns related to vulnerability and environmental injustice issues (52). Frumkin's definition of environmental injustice encompasses the exposure to hazardous environment risks and their disproportionate impacts on poor people and communities (14). The effects of environmental injustice are said to have implications that goes beyond hazardous environmental exposures which include disparities in social determinants of health and access to environmental resources (14,52). Hence for full realisation of the RtH, the ICESCR and CESCR's has obliged SP's to protect vulnerable cummunity members from health related descrimintion as a requirement (5,6). For example, the government is obliged to adopt low cost targeted programs for rehabilitation and cannot fall back on claiming that there are no funds for this purpose in disused mines, whether they pose a risk to local communities or not (6). Yet despite this obligation, disused mines are left unhabilitated in several countries, despite their governments being SP's of ICESCR (8,45).

Furrthermore, London and collegues (52), argues for environmental injustice, saying that often this contributes to differential attainment of health if unadressed. In support of this, they further gave an example in which toxic waste sites in poor communities of minority groups who are politically powerless leads to differential distribution of environmental harzards and vulnerability. This is evident in the Xolobeni community in South Africa where a foreign mining company planned to mine the local sand dunes for titanium but was opposed by the local community (53). The Xolobeni Community is made up of minority and vulnerable groups of South African citizens who had to turn to the courts in 2018 to force the government to ensure their rights are protected by opposing a mining project planned to take place on their ancestral lands. The project had its mining right application first confirmed by Department of Minerals and Energy (DME) in 2007 (53). In this scenario, this is environmental injustice which potentially would have resulted in differential realisation of health had the project continued (52). Firsty, because Xolobeni communities residing on the land, the proposed mining was going to take place would have possibly been evicted from their land or displaced. Secondly, and lastly, Xolobeni communities working in the mining projects would have been exposed to occupational hazards while working in the mines while the community within the proximity of the mine, would been exposed to air, water and land pollution caused by mining activities (20). Would this been the case, the South African government as ICESCR SP, would have failed to respect and protect RtH of the people of Xolobeni and shown a disregard of EOH (52,54).

c) The obligation to fulfil.

GC 14 (para 33) (6), states that governments have an obligation to fulfil the right to full realisation of RtH by adopting appropriate legislative, administrative, budgetary, judicial, promotional and other

necessary measures. In this regard therefore, States are required to formulate, invest and implement national health policies towards realising RtH (2,5,6). In addition, States should not only stop at regulating privately owned health acess but should also establish infrastructure to ensure easy access to those publicly available health services and care to fullfill RtH (2,6). For instance, by establishing universal vaccination campaigns for children against malaria such as that of Malawi, Ghana and Kenya which started in 2018 using a phased in approach in facilitating the enjoyment of RtH (55).

Despite the easy access of vaccinations made through such approach (phased in approached), a more immediate approach capable of producing lasting tangible progress, while covering a wider sphere in improving availability, acceptability, and quality of health care, need to be considered. For example, through Universal Health Coverage (UHC), a Primary Health Care (PHC) approach that would ensure quality health care for all individuals and communities without suffering financial hardship (56). Moreover, the foundations and opportunities that were first created by the adoption of PHC back in 1978 at Alma Ata Conference stressing equitable coverage and aiming to achieve health for all by year 2000 (57). This would also ensure, progressive realisation of RtH beyond achieving the minimum essential services; That is moving beyond the minimum levels of health service provision by utilising maximum of SPs available resources (7).

Nevertheless, Ooms and colleagues (58) argue that interpretation of CESCR regarding core obligations of the States is significantly inadequate under RtH and provisions that CESCR has for Universal Health Coverage (UHC) in providing essential primary health care. Therefore, since GC 14 did not make clear interpretation on UHC as a requirement for primary health care and failed to offer clear or sufficient guidance beyond essential medicines (58), a question on how SPs are meeting the core obligation to fulfil RtH in this regard is questionable. This, considering clear evidence that UHC is consistent in provision of essential primary health care as one of SPs' core obligation under ICESCR (58). In this regard, SPs providing PHC without taking consideration of quality and affordability or cost of such services and medicines could be violating the RtH.

More directly on EOH issues, in an earlier study, WHO (59) had also brought a similar argument to the one above, in which issues of work and healthy environments are widely discussed on their link to the RtH, with no clear guidance on how these should be achieved. Yet with an overly vague and broad definition of what healthy environments are, it might be therefore difficult to adequately address EOH factors as ICESCR requires. Notwithstanding the adoption of GC 14 in 2000, 6 years earlier, with interpretations of RtH and description of EOH conditions necessary for its realisation which should have provided the much needed and detailed definitions (6,56). This has led to "little being known and ill-defined," with no clear norms identifying corresponding duties and subsequent violations not only in the right to a healthy environment but RtH too (45,56,59). Yet, with these concerns at hand, the question of how the CESCR is overseeing or supposed to oversee implementation of the RtH under ICESCR by SPs remain unanswered.

In addition, inadequate or lack of clear definition of what EOH issues entails in that regard may also mean that the CESCR might not be able to identify and follow-up on these issues effectively. How, CESCR has been able to provide comments or corrective measures in their CO reports regarding a healthy environment and work is also therefore unknown. If what is meant by EOH related elements of RtH under ICESCR is unclear (59,60), then it is important to examine how the CESCR addresses EOH in review of country reports and recommendations.

Furthermore, in the context of EOH, governments should minimize the risk of occupational accidents and illnesses by formulating, implementing and periodically reviewing national policies on occupational and health services (6,13). Therefore these policies should aim promote safe working conditions for all workers including informal sector, migrant and domestic workers. This because workers in the informal sector often are at a high risk of occupational disease and injury as to those in the regulated formal sector (13,61). Same applies migrant workers providing cheap labour in industries such as agriculture who may be exposed to pesticides or other agricutral pollutants (13,62). But because the informal sector often lacks effective regulations from the government, occupational illenses and workplace injuries in some cases are not compensated for. Yet, this sector contributes up to 50% of a number of developing countries' economy (13). Thus RtH should incorporate the right to occupational health, as one of its an integral component as well as occupational health policies effectively implemented for workers regardless of which sector they are in or citizenship status. Besides, it is States' obligation to monitor and evaluate occupational health risks and diseases affecting vulnerable and marginalized groups and to pay special attention to their needs without discrimnation (6,13). In addition, the RtH requres the State take steps in prevention and reduction of exposure to harmful substances, assess health impacts on workers and pay full compansation for those that are affected(13,62).

Overall, governments are legally obliged to fulfil all minimum core obligations in 'good faith'(46). However, through international, regional, and national legal frameworks, there are legal protection of rights to which governments are bound. For instance, under the African Charter, governments who are member States are legally bound to meet their obligation to respect, fulfil, and protect all rights protected by it without fail, and that includes the RtH (42,46). Hence, besides governments being required under ICESCR to fulfil their obligation they are also bound by regional instruments. Therefore, to avoid violation of human rights as per the ICESCR and other regional Covenants which they have ratified, governments should also have their own legal frameworks and legislations at country level (33,42). This is done through the country's Constitution, domestic laws and policies (7,46). If these fails, that is when regional and international human rights law help ensure that human rights standards are indeed respected, implemented and enforced (42).

Chapman argues that some States may hide under the notion of progressive realisation of the RtH or use it as an excuse not to fullfill the right to health incLuding conditions provided for in GC 14 (45) .

This means that enforcing human rights and making sure those who violate human rights are held accountable is a necessity (42). This is done by, for example, enforcing environmental laws to prevent pollution of water, air, and soil by extractive and or transnational companies and, if they do not comply, holding them accountable through fines or the 'polluter pays' principle(13,50). An environmental policy principle is that those who cause pollution to the environment should be required to incur the costs of as a result of their activities (Polluter Pays principle). These accountability mechanisms therefore serve a purpose of identifying any action or process that violates RtH by third parties and appropriate remedy to redress that violation (13,45).

Nonetheless, if in conflict or if there is non-compliance, then matters of violation of human rights may have to be settled through Court of Law, whether in magistrate court, States' high court constitutional or international court (46). The question, however, is whether the judiciary is willing and has the capacity to invoke the Covenant in making sure that violaters are held accountable, taking account of provisions in both ICESCR and GC 14 (45,46).

Key international instruments in protecting and promoting ESC rights.

a) Limburg Principles

Implementation of ICESCR prior to GC 14, was guided by a set of principles which include the Limburg Principles (hereinafter 'the Limburg Principles') (1). Highlighting the difficulties developing countries were facing in realisation of rights provisioned in ICESCR, Chapman (45) explained that the Limburg Principles provided interpretative principles to offer clarity on nature and scope of SPs' obligations. However, because the adoption of these principle did not seem to be working well, the Maastricht Guidelines were adopted in 1997 aimed at revisiting Limburg Principles (1).

b) Maastricht Guidelines

The purpose of adopting Maastricht Guidelines were to look at how violations of ESC rights and appropriate responses and remedies by States can be dealt with (HRC, 1986). These Guidelines were intended to be of use for example by the legal community such as human right layers concerned with understanding and determining violations of ESC rights (HRC, 1986). Moreover, there were also useful for monitoring and adjudication bodies at national, regional, and international levels in relation to ESC rights while providing remedies thereof (HRC, 1986). In such instances, paragraph 16 of the Maastricht Guidelines (1986)'s idea of a Special rapporteur to oversee accountability for violating rights by States is important.

c) Instrument to regulate, in international human rights law, the activities of transnational corporations and other business enterprises.

Much of the States' obligations to protect human rights relates to its role in regulating third parties, such as businesses and corporation to prevent them from violating rights of workers and communities. A report by UN HRC (2011) brought to light the role businesses play in human rights realisation and

violations and indicated that the problem was not only in governments' conduct but that of private businesses too. This was as a result of the increasing economic activities of transnational companies and sudden expansion of the private sector which attracted global and UN attention in early 1990's (UN, 2011). Hence, creating societal awareness of businesses' impact on human rights was important to put these issues on the policy agenda.

First, through a document which clarified Norms on the Responsibilities of Transnational Corporations (TNC's) and Other Business Enterprises (OBE's). This was a UN initiative sought to impose on companies with "responsibilities" for human rights under a responsibility of a lesser nature compared to obligations. Secondly, through the HRC Seventeenth session on promotion and protection of all human rights including ESC rights (13). In this instrument, the emphasis was that (i) transnational corporations and other business enterprises have a responsibility to respect human rights (ii) through national legislation there should be proper regulation of transnational corporations and other business enterprises to ensure responsible operation and help in directing the benefits of business to the enjoyment of human rights and fundamental freedoms. However, HRC was concerned of national legislations that is weak and implementation that cannot effectively lessen the negative impact of globalisation on vulnerable economies (63) This led to further development of a draft in subsequent that aims to fully maximise the benefits of activities of these transnational corporations and other business enterprises as additional efforts to bridge governance gaps at all levels (national, regional, and international).

In 2014, there was further development and adoption of a Legally Binding Instrument (LBI) by UNHRC in Geneva to regulate the activities of TNC's and OBE's in IHRL (64). In 2017 the Elements for the draft LBI on TNC's and OBEs with respect to human rights instrument was issued by the United Nations (UN) Chair. This instrument included 10 obligation which SPs have, that directly speaks to EOH. One of them include, "take all necessary and appropriate measures to ensure that TNC and OBEs design adopt and undertake human rights and environmental impact assessments that cover all areas of their operations," (64).

In addition, SPs should report on regular basis on the steps taken to assess and address environmental impacts resulting from TNC and OBE'S operations (64). This was subsequently followed by a Zero Draft in 2018, presented by Intergovernmental Working Group (IWG) with 2 of the Convention articles putting more emphasis on EOH issues (65). The Zero Draft Convention requires a report on non-financial matters concerning the environment and human rights (65). In 2020, a Second Revised Draft (66) was published for consideration with 2 more articles that exclusively addresses Protection of Victims (Article 5) and Access to Remedy (Article 70). The Convention further acknowledges the capacity that these TNC's and OBE's have in fostering the achievement of sustainable development through an increased productivity and economic growth that is inclusive (66). Meaning that SPs and these enterprises alone cannot not fully achieve this. Rather, by engaging the Civil Society creating

opportunities of an economic development that creates employment while complying to labour rights of workers and environmental and health standards as per international standards and agreements which ICECSR also fit in.

The role of CSO's (Promotion of ESC rights)

Civil society representing vulnerable minority groups, Non-Governmental Organisations (NGO's) and other public institutions, may submit to the CESCR, shadow reports which are parallel submissions to SP reports (2). In light of this, the UN Economic and Social Council (ESC) adopted a General Comment No. 10 in 1998 which explored substantive issues arising in the implementation of ICESCR (67). In GC10, the Committee acknowledged the critical role played by civil society and national institutions in the realisation of all rights in the Covenant and their indivisibility and interdependency nature. However, they also acknowledged that CSO's role has, "too often either not been accorded to the institution or has been neglected or given a low priority by it," (67).

Despite the CESCR being aware of this weakness, 8 years later Danny (68) brought forward a similar observation that, CSO's contribution and submissions to the CESCR are sometimes discarded and or have little impact at international level. This raise questions on the CECSR's commitment on deliberative democracy within the Human Rights Framework which requires those affected by policy decisions to be part of the formulation process (68). Moreover, London and colleagues (69,70) argues that a rights framework enables civil society mobilisation while reinforcing community agency to advance health rights for poor communities. Furthermore, they (London and colleagues) state that CSO's participation act as an inclusion or representation of the vulnerable and the voiceless. Therefore, CSO's do not only provide room for civil society action to engage with the legislature but also hold public officials accountable for not living up to their obligations (51).

In addition, with CSO's involvement, there are higher chances of reduction in health inequities since they play an important role by taking action to change the conditions of vulnerable and voiceless population groups(70). If not so, the government may only serve to respond to the interest of those groups that, "has the loudest voice," as stated by Chapman (45). Thus, in the context of the RtH, it is only such recognition of these CSO's that will ensure that health and safety conditions at workplaces are practically addressed and implemented as previously argued by London (70). This will also contribute SPs compliance on their obligation to protect rights of exposed and vulnerable workers (6,13).

One of the requirements of the RtH is monitoring and compliance (13). In this regard the role of CSO's is to raise awareness and understanding these rights in terms of obligation of duty bearers for them to comply and what right holders are entitled to. So, on RtH, firstly, CSO's may engage in promotion of educational and information programmes related to realisation of this right on right holders and particular groups, such as the private sector and labour movements (67,70). Secondly,

SPs' existing laws, administrative acts and legal frameworks within which human rights are protected should be scrutinised to ensure that they are consistent with ICESCR requirements (67). Thirdly, still in relation to the ICESCR, CSO's can provide technical advice, or undertake surveys inclusive of other agencies and public authorities' request. Lastly, CSO's can then identify benchmarks at national level against which the Covenant obligation' towards the realisation of the RtH can be measured (67).

Furthermore, GC 14 (6) (para 42) makes provision for SPs to provide an environment which facilitates the discharge of the above responsibilities by CSO's. Therefore, their role is important since in most cases they represent vulnerable communities and people affected by EOH matters in the context of realisation of RtH. However, research indicates that States have limited engagement with NGOs and CSO's (46), and this suggests a high possibility that CSO's input is not being taken into consideration as a result. This may explain why, in the presence of a number of CSO's working on RtH involving up to 76% of the African country's respondents according to Motari, and Kirigia (71), States are still failing to fully realise this right.

Limitations, opportunities and CESCR's role in realisation of the RtH

There should be no excuse for government's failure to apply appropriate remedies when it comes to realisation of the RtH (58). This is because article 2(1) of ICESCR (5) says that steps should be taken individually for progressive achievement and realisation of the right through economic and technical international assistance and co-operation. This also means that SPs have an obligation to take appropriate measures towards the full realisation of the RtH to the maximum of their available resources (2). If the maximum available resources are still not sufficient, the CESCR recognises such limitations[1] and will make recommendations to the countries to seek developmental aid so as to address identified limitations. On the other hand, developed States or SPs with vast resources are obliged to pursue higher and wider level of health care (58).

Surprisingly, as much as the provision of assistance has been provided for in ICESCR, Motari and Kirigia's (71) study paints a different picture on the reality of the situation in regard to realisation of RtH in different countries within the African region. In the study, twelve countries, all of whom ratified ICESCR, were said to be failing to enforce RtH at country level, citing financial, technical and advocacy challenges. These countries were Zimbabwe, Zambia, Uganda, Swaziland, Sierra Leone, Niger, Gambia, Eritrea, DRC, Cameroon, Burundi, and Angola from the African Region (71). Part of the reasons for the failures provided are likely not a case of inability due to mentioned challenges[2]. Rather, reasons, potentially are the unwillingness on the part of concerned SPs, since there is

[1] Resources, political structures inequality gaps and discrimination

[2] Financial, technical and advocacy challenges

provision in both the ICESCR and GC 14 (para 16; 38; 40; 45; 65) for other international institution in a position to help to give assistance on the challenges being experienced (5,6,13).

Motari and Kirigia's (71) findings suggest that implementation of RtH at country level remains an issue or a difficult mission in Africa. For example, the study indicated that most of these SPs who are failing to give adequate recognition to meet their minimum core obligation to fulfil the RtH, already have health policies in place, but are not putting in coherent institutional mechanisms that support these policies. Out of 25 countries in the African region interviewed with national health policies in place, 52% gave reasons such as inadequate financing for health, while 28% cited stigma, marginalisation and discrimination within communities and groups as well as gender-related inequities and violations (24%) (71).

These findings also raise the need to consider other factors outside of health care parameters that have an impact on health and sustainable implementation of RtH since it is evident that a number of countries are failing to effectively implement the RtH (71). Therefore, there is a need-to-know targets which were there in the first place, how far did these countries performed and that can be compared to internationally recognised standards such as those within the targets of Sustainable Development Goals (SDGs).

Given that the realisation of RtH, as described in GC 14 (6) includes several other social determinants of health, a question of how sustainable these provisions can be may also arise considering, a large number of them are centred around the environment (28). Therefore, the relevance of discussing SDGs an international tool which have been described by Forman and colleagues (56) as one of human rights-based approach in realisation of the RtH. Moreover, these SDG's come with indicators which are instrumental in measuring progress towards the realisation of the RtH (56).

Sustainable Development Goals (SDG)

Article 16 of ICESCR part IV outlines responsibility for SPs to, "submit reports on the measures which they have adopted, and the progress made in achieving the observance of the rights recognised herein," (5). In addition, a resolution by UN Economic and Social Council on CESCR state that benchmarks against which realisation of ICESCR can be measured should be identified (12). Nevertheless, Daniels in Chapman (72) stresses a rights-based approach in which specific goals should be set through commitment made by governments in achieving health as a right. Still, setting these goals require indicators acting as a benchmark so as to provide a scale which progress can be measured against (72). Therefore, as an instrument beneficial in meeting the provisions provided for RtH in ICESCR, SDG's may be regarded as one useful human rights-based approach useful in tracking and measuring progress regarding this specific right (56). This is because this approach, human rights-based, provides set goals towards realisation of the RtH, while addressing a broad range

of EOH issues with indicators and time frames which may assist ICESCR SPs to meet their obligations as required.

Moreover, with recent adoption of Resolution 37 in 2018 for promotion and protection of human rights and the implementation of SDG 2030 Agenda, showing how much of relevance SDG's and EOH factors are in the realisation of the RtH is crucial (63). In one of the sessions outlined in the resolution, session 37/8 links human rights to the environment indicating that, for RtH to be met, efforts to protect environment should be prioritised (63). Not only is prioritisation of EOH relevant in the context of current settings where an increases in burden of NCDs owing to EOH factors, but in the wellbeing of future generation (sustainable development) (28). Hence, another reason for governments to give equal attention to EOH health issues as much as they do to other factors if they are fully committed to having a health population and in fulfilling their obligations.

Almost all 17 SDGs speak to health, how it can be realised, indicators to measure progress and so are EOH health issues in each and every one of these goals (73). Consequently, with a WHO (59) report stating that reduction in EOH health risks is a crucial step towards the prevention and control of NCDs, it is clear that SDGs are a basic requirement in realisation of health as a right too. For instance, SDG 12 has a target (12.4) which aims to achieve environmentally sound management of all waste, chemicals and significantly reduce their release in the environment throughout their life cycle (73). According to Landrigan and colleagues (29), this means, reducing exposure to hazardous chemicals crucial in achieving this target would also provide opportunities for progress in reduction of NCD's burden. Furthermore, as per the same target (12.4), minimising adverse health impacts of these chemicals on humans and the environment by 2020 in line with SDG targets, was also relevant to CESCR on measuring how far SPs were in realisation of the RtH.

However, as it is the duty of the CESCR to examine the reports and make recommendations to SPs, it would also be vital to note if they (CESCR) have included improvement of all aspects of environmental and industrial hygiene as a remedial action in the comments (5). This would also be in the interest of achieving targets set for almost all 17 SDG goals while contributing to the realisation of the RtH. For example, SDG 6 target 6.3 aims to improve water quality, which also fulfils Article 12 of the ICESCR and meets GC 14 interpretation of RtH (6,8). If SPs have shown in their reports, actions which they are taking to reduce pollution, eliminate or minimise dumping of hazardous chemicals, this demonstrates commitment for people to access water that is clean and safe to drink. In addition, under the same target, the reduction of the proportion of untreated wastewater by half and significantly increasing recycling and safe reuse of water, would also demonstrate efforts towards accessibility of water and sanitation, conditions required to realise RtH (6,73).

Furthermore, SDG 3, target 3.9, aims to significantly reduce the number of deaths and illnesses from hazardous chemicals, contamination and pollution of water, air and soil by 2030 (73). This means that

SPs reporting on steps that prevents contamination and pollution of water, air and soil which are EOH factors, this would also indicate their contribution towards achieving SDG 3 goal. Moreover, they can also measure if steps taken are adequate and identify areas of improvement, both of which is beneficial to SPs and CESCR in monitoring and providing recommendations.

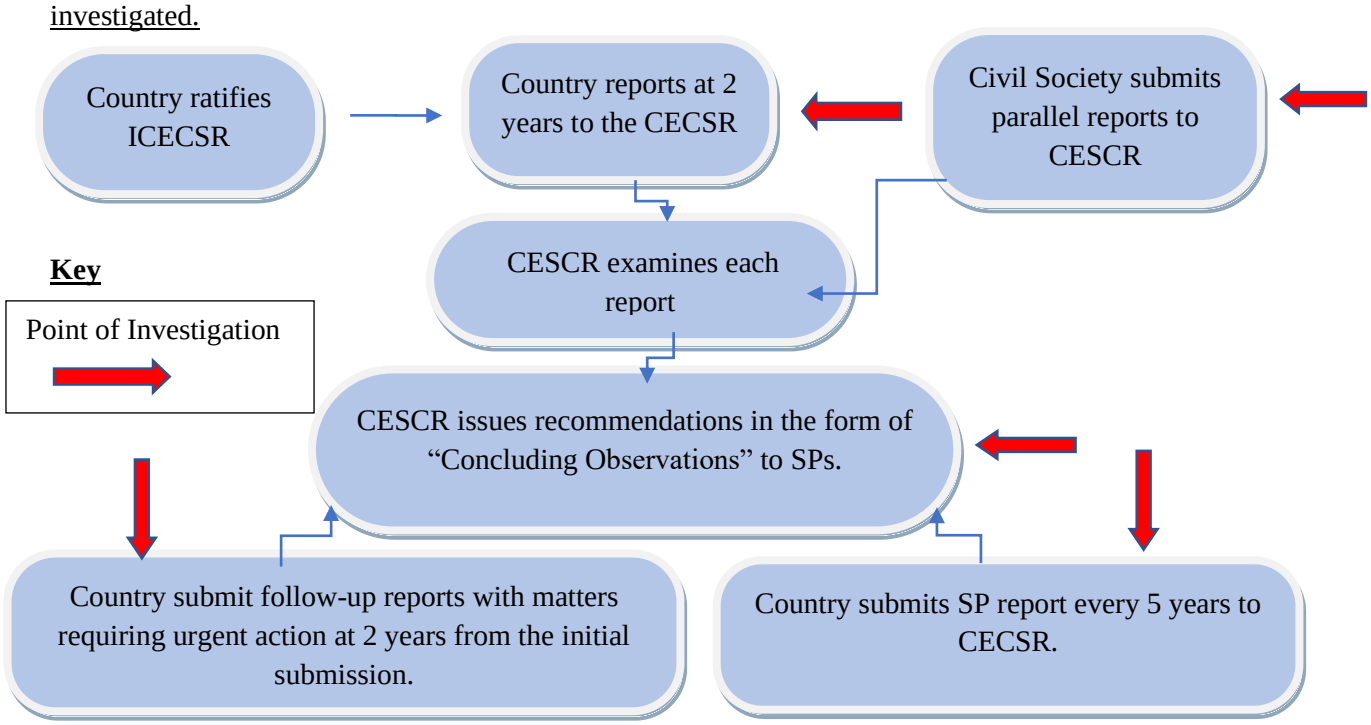
Consequently, if SPs are failing to take steps to achieve the full realisation of RtH as defined in Article 12 of the Covenant, not only are they violating these rights but are also failing to meet targets for SDG goals. Besides, fulfilling these SDG's will also mean a significant reduction in global BoD attributable to environment and occupational health such as injuries, communicable and NCD's (74), and factors provided for in both ICESCR and GC14.

As a result, firstly, it should be known if countries pay attention to EOH issues; if not, the reasons for these SPs failing to acknowledge the role EOH plays in realising the right to highest attainable standard of health under ICESCR when reporting is important. Secondly, it may be that they are not submitting the reports as required[3] to CESCR on how the rights are being implemented as per their obligation[4]. If they are submitting, reason(s) may be that the CESCR does not probe EOH issues when examining the reports. Nonetheless, even if EOH health issues do appear in the reports, it is not known whether CESCR COs prioritise recognition of these issues in their concerns and recommendations for remedial action to SPs, nor whether these SPs respond appropriately to such recommendations. Moreover, the Civil Society might also be not focusing their attention on EOH issues based on submissions made by governments.

Figure 2 below therefore indicates different points of investigating the question and gaps that exist in addressing issues relating to health within the human rights system and or from human rights perspective.

[3] 2 years from initial ratification of the Covenant and thereafter every 5 years.

Figure 2: Country reporting sequence under the ICESCR and point at which reports can be investigated.



Following the illustrated points of investigating in Figure 2 above, SP reports, CSO submissions and COs made by the CESCR on SP reports for a period of 10 years (2009-2018) will be reviewed. A 10-year period will firstly enable us to get a good spread from which to sample from which to sample. Secondly, the period enables us to look at follow up reports from those who submitted in the first 5 years of the period as per required CESCR submission guidelines. For example, a 10-year period would mean that we will get a repeat or follow-up reports compared to, if we took a 2-year period which we are highly likely not able to get repeat reports and therefore less spread of countries which might also lead to sampling error, depending on which country was due for report. Lastly, this period will provide us with enough reports that will enable us to have a bigger sample size allowing us to detect results that are meaningful and important for conclusive or precise results.

Methods

Study design

A mixed method study using a triangulation design model will be applied in this research project to synthesise findings both qualitatively and quantitatively. Qualitative research method as defined by Ulin and colleagues (75), is an inquiry process to understand and explore social or a human problem. Using this method will provide means to understand health problems, potential barriers and solutions in greater detail while providing an opportunity to identify overlooked issues and themes (75,76). On the other hand, quantitative research methods is defined as investigative tool that estimate population parameters, measuring associations between social, biological, environmental, behavioural factors and

health conditions in order to define the determinants of health and illnesses to understand causal pathways (76). Applying qualitative and quantitative methods within a triangulation design model will help converge analysis results from both methodologies with intent to draw valid conclusions on our research problem (77). This methods model will help show connections between themes by examining numbers which also help to reduce certain amount of bias and help study findings to be applied to larger populations making them generalisable as defined by LaMorte (76).

Three sources of information will be used: (a) the country reports under the ICESCR; (b) Concluding Observations of the CESCR; and (c) civil society shadow reports. These will be reviewed to answer the research question regarding the priority given to environmental and occupational health issues. Descriptive review allows application of statistical data analysis techniques which are simple and are useful in providing summary, description, and characteristics of the data. This will also allow counting of the frequency distribution of words with the identified search issues to be measured and central tendency (78). Narratives, quotes, cases, and vignettes (summary or portions in form of written essays) will be used to reinforce the evidence emerging from the quantitative assessment (frequency distribution). In addition, this frequency distribution will be presented in graphical visualisation such as pie charts, bar charts or tables if there is need to add apart from the tables.

Data Collection Method

The SP reports (SPs), Concluding Observations (COs) and Civil Society Organisation (CSOs) shadow reports will be downloaded from the UN Treaty Body Database. These are publicly accessible documents in English maintained on a UN Treaty Body website; (https://tbinternet.ohchr.org/_layouts/15/treatybodyexternal/TBSearch.aspx?Lang=en&TreatyID=9&DocTypeID=5). The reports will be saved and archived on a file on the laptop which will also be copied on a secure external drive that is crash or malware protected with a backup being loaded on outlook OneDrive.

Population and Sampling

The population will be health-related aspects of SPs, CESCR COs and CSOs from year 2009 to 2018, a period of 10 years. A simple random sampling method stratified by region, year or period of reporting will be used to select reports which are to be reviewed in the study**.** For this study, regions will be defined according to WHO epidemiological world regions, that is Africa, European, America, Eastern Mediterranean, South East Asia and Western Pacific Region. Each sampling unit i.e State Party report or CO in the strata had an equal chance of being included in the sample. We randomly selected countries by the region they are grouped in so as to have a representation of the reports from all countries that have adopted ICESCR worldwide. From these selected countries we included all their SP, CO and CSO reports so as to improve validity, generalisability of study results,

representative of all countries and also to allow a complete investigation cycle within the CECSR reporting system(77).

From each region (n=6), three country reports will be randomly selected from the first 3 years from 2009 to 2011 (Sample A; total 18 reports). Similarly, we will select CO reports issued by CESCR from these 18 countries which have submitted their SP reports between 2009 and 2011(n=18) (Sample B). Sample C we will select SP reports submitted to CECSR in response to CO reports or recommendations(n=18). Sample D (n=18) are CO reports providing recommendations for SP reports submitted in Sample C. Sample E are CSO submitted as shadow reports from 18 countries randomly selected by strata at the beginning of the study (n=18).

Follow up reporting for country reports (SPs) is meant to happen after two years (if a first report) or after five years (if a subsequent report).

Each report selected between 2009 and 2011 will be paired with the country's follow up report, presumably submitted between 2014 and 2016 (Sample C). Additional to this pairing, we will also select any further (follow-up) reports from each region that falls within the 10-year period (partly depends on or if the report is a first country report which elicits a follow up in 2 years or a regular 5-yearly report) (Sample D). Total reports will be at least 72 as indicated in table 1 below.

Table 1: Sequence for selection of report samples grouped by reporting/submission period as per CESCR guidelines.

Year	Sample	Number
2009-2011	Sample A: Reports from 3 countries per each of 6 regions	18
2013-2015	Sample B: CO reports from 18 countries selected in Sample A	18
2016-2018	Sample C: Follow-up SP Reports from 18 countries selected in Sample A	18
2014-2016	Sample D: CO reports for 18 SP reports submitted by 18 countries in Sample C or for countries included in Sample A but 5 years later	18
undetermined	Sample E: CSO reports submitted as shadow reports for 18 countries in Sample A throughout the 10-year period of study	Unknown*
Total		At least 72

* Prior to selection, we will not know how many countries will have ratified the Covenant in the two years prior to the selection window, but if they did, then they will be included as additional sampled

reports, if falling within the overall time period of 2009 to 2018. As of this date there are 171 State Parties, 4 Signatories and 22 countries with no action.

Research analysis

This study will make use of two analytical methods;

Firstly, the study will apply Thematic Analysis (TA) involving a Word-frequency counting or analysis of EOH terms in MS Word downloaded and save reports using the MS Word search function. Search terms will include, "environment (s)," "environmental," "occupation," "occupational," "working conditions," and health". This will give us number of term counts which is one potential indicator for priority given to key issues and concepts used in this study.

Secondly, TA will provide a method of qualitative analysis of texts to identify common themes, topics, ideas, and patterns of meanings that come up repeatedly. The method also identifies and analyses reporting patterns in the data while focusing on the diversity, distribution of issues and processes in social groups (79). Both inductive and deductive approaches will be applied. Inductive, creating codes and themes from the data as well as from research question and literature (deductive) (75,79).

Key processes that will follow in analysing, firstly, is a process of data immersion in which we will familiarise ourselves with the data, reading and re-reading over and again (more than three times). Secondly, we will identify codes, guided by search results of the terms as described earlier, highlighting key issues, concepts and possible themes using different colours. For example, using green highlight for "Environmental" terms code, then yellow colour, on "Occupational" or "Occupation word" etc. Then if the same issue is addressed in the follow up report, I will highlight with the same colour to show that remedial action was applied and if not, all will be highlighted in red. I will do this entire exercise as an iterative process whereby I code all the text in the reports systematically (79).

Thirdly, having highlighted all codes, key issues, concepts, and themes, I will open a separate working word document which I will record all the highlighted codes within the context which they were written (75,79). For example, instead of just writing a one-word key code I will include the whole sentences, definition and reason why we are including the code for analysis (75,79). Directed by the study's research question and literature, a code book will be developed to record key codes and themes re-grouped or re-arranged into categories under the same key themes from the existing working word document also will be presented in form of theme mapping illustrative diagram. As part of the process, codes that speaks to the same theme or issue and highlighted with the same colour will be grouped together (79). Followed by which results are to be presented from the main or key themes that came out of the data.

Finally, a section with discussion of the findings, interpreting and integrating different EOH relevant matters that have come out of the reports will be included. This will be a process that highlight how

EOH issues where included, attended to, or addressed as one of basic conditions for attaining the right to the highest attainable standard of health as per ICECSR Art 12 and interpreted in GC 14. We will then look for associations between themes that have emerged from the reports in different stages of reporting as per Figure 2 and what the literature is saying comparing this to the ICESCR definition of the RtH. To answer the research aim, research questions and the objectives, we will then analyse EOH conditions that were included or provided for, necessary for realisation of right to the highest attainable standard of health. This will be done on different points of investigation as highlighted in Figure 2 and ways in which the issues have been addressed from the follow-up reports (75,79).

For reflexivity and rigour, throughout the study, a referral to initial codes and themes that has been both inductively and deductively developed from the reports (data) to derive themes to answer the research questions will be kept and attached as annexures. Moreover, the inclusion of CSO reports as point of investigation forms part of contradictory data contribution to validity of study results. Furthermore, the research is being guided, or directed by two senior research experts with different or diverse backgrounds. One being a public health specialist with an interest in human rights, public health ethics and the second, who is an international human rights law and global health specialist (triangulation) to ensure credibility of research findings.

Ethical Considerations

Informed Consent

Informed consent implies that a participant before deciding to be part of the project is given all the relevant information about the study including goals, duration, procedures, advantages and possible dangers of participating (80). However, this study is a secondary analysis of publicly available data that is not linked to any individual. The data will be extracted from the UN website from documents that are public. No person participants, and therefore no danger is posed to any research participants.
According to 2019 Manual of UCT Faculty of Health Sciences Human Research Ethics Committee Standard Operating Procures version 7-1 October, research activities that are using existing publicly available data or documents may not require Human Ethics. A signed letter of motivation with reasons why ethics approval is not required will be supplied by the Main Research Supervisor.

Data Management

All the secondary data extracted for this research project will be kept in secure drive that is crash or malware protected with a backup being outlook OneDrive since the reports do not contain any confidential information. The data will include country reports, Concluding Observations and CSO shadow reports. These downloaded files will be appropriately labelled, dated for easier management and retrieval of stored data. My supervisors Prof Leslie London and Associate Prof Lisa Forman will assist in guidance on how to access the data.

The data saved will not be destroyed immediately upon completion but will be stored in a computer-protected drive; the data can be discarded 3 years after the research project has been published.

Confidentiality and anonymity

De Vos et al (81) described confidentiality as the limiting of other people from accessing private information and anonymity. However, since this study does not directly include individual data such as people's names but only involves country level or organisational level data, there is no individual confidentiality to protect. Where civil society organisations are quoted, they will be named as they are described in publicly available documents. The extracted reports (data) and other notes, data from for this research project will be kept on the computer and back up one drive so the data will not be lost.

Potential Risks and Benefits

This study is non-experimental and involves minimal risk as it is a review of publicly available documents. No human participants or animals will be used.

There will be no direct benefits to countries with reports used for this study. However, since the project has to do with the RtH in its highest attainable standards, and the role of environmental and occupational health issues in State's ability to fulfil, realise and protect such right, there is new knowledge that is to be generated from this research to improve the protection of environmental and occupational health in addressing prevalent public health problems.

Dissemination Plan

This study is research which explores the importance of environmental effects on humans within a human rights context as outlined in ICECSR and GC 14. Making the research findings publicly available will contribute to knowledge that informs novel strategies or improve current strategies for realising the RtH and reducing the Burden of Disease (BoD). Adding to the already existing evidence in regard to the importance of EOH issues in the realisation of health as a human right, findings from this study are likely to bring on more evidence that will put more emphasises on including EOH issues on key discussions aimed at finding solution to public health problems at different levels. For example, how coal mining activities are exposing workers to dangerous chemicals at workplace, how emissions from the same activities are polluting the environment, climate change and the impact that has on NCD's. Highlighting these key issues, supported by evidence from this study can assist countries to rethink the processes in which they prioritise environmental and occupational health as part of the RtH.

Firstly, to disseminate findings of this study, an application to the UCT Research Committee (URC) Open Access Journal Publication Fund (OAJPF) will be made to publish in an open access journal (either EOH health and/or a Health and Human Rights journal). Secondly, a Policy Brief will be produced and circulated electronically (through various UCT linked list servers) and posted on the UCT Division of EH webpages. Presentation of the findings will also be made at a national and an

international EOH health and Human Rights conferences. Relevant application or submissions to the UNIHR Body and study results will be send to CESCR if opportunity to send research papers has been presented. Finally, the knowledge gained from this study will be shared in a summary form in published articles and a policy brief.

Conclusion

There is a need to determine whether the UN system for monitoring the implementation of economic, cultural, and social rights under the ICESCR provides sufficient attention to environmental and occupational health. By examining the country reports (SPs) submitted to the CESCR under the Covenant, submissions made by Civil Society Organisations as shadow reports, and COs provided by the CESCR and comparing follow-up on remedial actions by countries, this study can ascertain if and how environmental and occupational health issues receive attention and are improved as a result of the reporting system. Findings from this research project can be instrumental in informing further mechanisms for monitoring implementation of the ICESCR with the purpose of advancing environmental and occupational health protections under the Covenant as part of the full realisation of health as a right.

References

1. OHCHR. What are human rights? [Internet]. 2021 [cited 2021 Jul 22]. Available from: https://www.ohchr.org/en/issues/pages/whatarehumanrights.aspx
2. OHCHR. OHCHR | OHCHR and the right to health [Internet]. 2020 [cited 2022 Jan 8]. Available from: https://www.ohchr.org/EN/Issues/ESCR/Pages/Health.aspx
3. Daniels N. Is There a Right to Health Care and, If So, What Does It Encompass? A Companion to Bioeth Second Ed. 2010;1(1):362–72.
4. World Health Organization, United Nations Children's Fund. Declaration of Astana. Declar Astana [Internet]. 2018;2893–4. Available from: https://www.who.int/docs/default-source/primary-health/declaration/gcphc-declaration.pdf
5. International Covenant on Economic S and CR. The united nations international covenant on economic, social and cultural rights [Internet]. UN General Assembly, International Covenant on Economic, Social and Cultural Rights, 16 December 1966, United Nations, Treaty Series, vol. 993, p. 3, available at: https://www.refworld.org/docid/3ae6b36c0.html [accessed 8 January 2022]. 1966 [cited 2021 Dec 8]. p. 213–48. Available from: https://www.ohchr.org/en/professionalinterest/pages/cescr.aspx
6. Office of the High Commissioner for Human Rights. CESCR General Comment No. 14: The Right to the Highest Attainable Standard of Health (Art. 12). Adopt Twenty-second Sess Comm Econ Soc Cult Rights, 11 August 2000 (Contained Doc E/C12/2000/4). 2000;2000(14):1–21.
7. OHCHR U. International Covenant on Economic, Social and Cultural Rights [Internet]. 2020. Available from: https://indicators.ohchr.org/
8. Estébanez MAM. The united nations international covenant on economic, social and cultural rights. Synerg Minor Prot Eur Int Law Perspect. 2009;(December 1966):213–48.
9. Oberleitner G. International Human Rights Institutions, Tribunals, and Courts. 2018.
10. Tolley Jr H. The UN Commission on Human Rights. 1st Editio. Vol. 31. New York; 2019. 289–307 p.
11. OHCHR U. E-RES-1985-17 (2) [Internet]. 1985. Available from: http://ap.ohchr.org/documents/E/ECOSOC/resolutions/E-RES-1985-17.doc
12. OHCHR. Monitoring the economic, social and cultural rights [Internet]. 2021 [cited 2021 Jul 24]. Available from: https://www.ohchr.org/EN/HRBodies/CESCR/Pages/CESCRIntro.aspx

13. United Nations Human Rights Council. Report of the Special Rapporteur on the right of everyone to the enjoyment of the highest attainable standard of physical and mental health [Internet]. Vol. A/HRC/32/3, Promotion and protection of all human rights, civil, political, economic, social, and cultural rights, including the right to development. 2012. Available from: https://www.refworld.org/docid/500803192.html

14. Frumkin H, Haines A. Global Environmental Change and Noncommunicable Disease Risks. Annu Rev Public Health. 2019;40(1):261–82.

15. Driscoll T, Rushton L, Hutchings SJ, Straif K, Steenland K, Abate D, et al. Global and regional burden of disease and injury in 2016 arising from occupational exposures: A systematic analysis for the Global Burden of Disease Study 2016. Occup Environ Med. 2020;77(3):133–41.

16. Di Ruggiero E, Cohen JE, Cole DC, Forman L. Competing conceptualizations of decent work at the intersection ofhealth, social and economic discourses. Soc Sci Med [Internet]. 2015;133:120–7. Available from: http://dx.doi.org/10.1016/j.socscimed.2015.03.026

17. World Health Organization. Noncommunicable diseases country profiles 2018. NONCOMMUNICABLE DISEASES COUNTRY PROFILES 2018. 2018. 155–157 p.

18. Murray CJ., Lopez AD. Global Burden of Disease and Injur Y Series the Global Burden of Disease. Oms [Internet]. 1996;1–46. Available from: https://apps.who.int/iris/handle/10665/41864

19. Takala J, Hämäläinen P, Saarela KL, Yun LY, Manickam K, Jin TW, et al. Global estimates of the burden of injury and illness at work in 2012. J Occup Environ Hyg. 2014;11(5):326–37.

20. Lele DV. OCcupational Health Surveillance. Indian J Occup Environ Med [Internet]. 2018 Sep 1 [cited 2022 Jan 9];22(3):117. Available from: /pmc/articles/PMC6309353/

21. ILO. Decent Work Indicators [Internet]. 2013. Available from: http://www.ilo.org/wcmsp5/groups/public/---dgreports/---integration/documents/publication/wcms_229374.pdf

22. Knight D, Ehrlich R, Fielding K, Jeffery H, Grant A, Churchyard G. Trends in silicosis prevalence and the healthy worker effect among gold miners in South Africa: a prevalence study with follow up of employment status Environmental health. BMC Public Health [Internet]. 2015;15(1):1–9. Available from: http://dx.doi.org/10.1186/s12889-015-2566-8

23. Basu S, Stuckler D, Gonsalves G, Lurie M. The production of consumption: addressing the impact of mineral mining on tuberculosis in southern Africa. Global Health. 2009;5(1):11.

24. Zheng P, Chen Z, Liu Y, Song H, Wu CH, Li B, et al. Association between coronavirus disease

2019 (COVID-19) and long-term exposure to air pollution: Evidence from the first epidemic wave in China. Environ Pollut. 2021 May 1;276:116682.

25. Li J, Yin P, Wang H, Zeng X, Zhang X, Wang L, et al. The disease burden attributable to 18 occupational risks in China: An analysis for the global burden of disease study 2017. Environ Heal A Glob Access Sci Source. 2020;19(1):1–12.

26. WHO. Climate change and health [Internet]. 2021 [cited 2021 Jan 1]. Available from: https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health

27. Federation I, Associations of MS, (IFMSA). Climate and Health. 2016;

28. Frumkin H, Haines A. Global Environmental Change and Noncommunicable Disease Risks. Annu Rev Public Health. 2019;40:261–82.

29. Landrigan PJ, Fuller R, Acosta NJR, Adeyi O, Arnold R, Basu N (Nil), et al. The Lancet Commission on pollution and health. Lancet (London, England) [Internet]. 2018 Feb 3 [cited 2022 Jan 9];391(10119):462–512. Available from: https://pubmed.ncbi.nlm.nih.gov/29056410/

30. Perkison WB, Kearney GD, Saberi P, Guidotti T, McCarthy R, Cook-Shimanek M, et al. Responsibilities of the Occupational and Environmental Medicine Provider in the Treatment and Prevention of Climate Change-Related Health Problems. J Occup Environ Med. 2018;60(2):e76–81.

31. Edenhofer O, Pichs-Madruga R, Sokona Y, Agrawala S, Alexeyevich Bashmakov I, Blanco G, et al. Summary for Policy Makers. 2015.

32. Rights C for E. Major climate impacts scupper another coal power plant – Centre for Environmental Rights [Internet]. 2020 [cited 2022 Jan 9]. Available from: https://cer.org.za/news/major-climate-impacts-scupper-another-coal-power-plant

33. Knox JH. The Global Pact for the Environment: At the crossroads of human rights and the environment. Rev Eur Comp Int Environ law [Internet]. 2019;28,(1):40–7. Available from: https://repositorio.cepal.org/bitstream/handle/11362/43583/1/

34. McGrath M. Climate change: US formally withdraws from Paris agreement - BBC News [Internet]. 2020 [cited 2022 Jan 9]. Available from: https://www.bbc.com/news/science-environment-54797743

35. International Labour Organization. Report of the Director-General: Decent work [ILO]. 87th Int Labour Conf [Internet]. 1999 [cited 2022 Jan 10]; Available from: https://www.ilo.org/public/english/standards/relm/ilc/ilc87/rep-i.htm

36. ILO. XXI World Congress on Safety and Health at Work: Global action needed to tackle rising work-related injuries and diseases, ILO says. 2017 [cited 2022 Jan 10]; Available from:

https://www.ilo.org/safework/whatsnew/WCMS_573681/lang--en/index.htm

37. OHCHR. OHCHR | Convention on the Rights of the Child [Internet]. 1989 [cited 2022 Jan 10]. Available from: https://www.ohchr.org/en/professionalinterest/pages/crc.aspx

38. OHCHR U. University of Minnesota Human Rights Library [Internet]. 1994. Available from: http://hrlibrary.umn.edu/instree/healthyenvironment.html

39. ILO. Convention C155 - Occupational Safety and Health Convention, 1981 (No. 155) [Internet]. 2013. Available from: https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C155

40. OHCHR. African [Banjul] Charter on Human and Peoples' Rights, adopted June 27, 1981, OAU Doc. CAB/LEG/67/3 rev. 5, 21 I.L.M. 58 (1982), entered into force Oct. 21, 1986: [excerpts] . . . [Internet]. 1981. Available from: http://hrlibrary.umn.edu/instree/z1afchar.htm

41. Hendricks A. Revised European Social Charter. Neth Q Hum Rts [Internet]. 1996;14(163):341. Available from: http://heinonline.org/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/nethqur29&section=43%0Ahttps://rm.coe.int/CoERMPublicCommonSearchServices/DisplayDCTMContent?documentId=090000168007cf93

42. OHCHR. the Major Universal Human Rights Instruments and the Mechanisms for Their Implementation ..... Univers Hum Rights. 2014;27–70.

43. Hunt P. The human right to the highest attainable standard of health: new opportunities and challenges. Trans R Soc Trop Med Hyg. 2006;100(7):603–7.

44. OHCHR U. OHCHR | About the mandate of the Special Rapporteur on toxics and human rights. 2020 [cited 2022 Jan 10]; Available from: https://www.ohchr.org/EN/Issues/Environment/SRToxicsandhumanrights/Pages/aboutthemandate.aspx

45. Chapman AR. A "Violations Approach" for monitoring the international covenant on economic, social and cultural rights. Hum Rights. 2017;449–92.

46. Ssenyonjo M (Ed.). Economic, Social and Cultural Rights (1st ed.). Routledge. [Internet]. Angewandte Chemie International Edition, 6(11), 951–952. Routledge; 2017. 635 p. Available from: https://doi.org/10.4324/9781315257044

47. UN ECE. The Case of the United Nations Economic (UNECE). 2016.

48. The Lancet Respiratory Medicine. New strategy for clean air in the UK—is it enough? Lancet Respir Med [Internet]. 2019;7(3):187. Available from: http://dx.doi.org/10.1016/S2213-2600(19)30025-6

49. Backer LC. The Human Rights Obligations of State-Owned Enterprises: Emerging Conceptual Structures and Principles in National and International Law and Policy. Vanderbilt J Transnatl Law. 2017;50(4):827–88.

50. Centre for Environmental Health. Doubling SO2 pollution standards would have deadly consequences for Highveld communities – Centre for Environmental Rights [Internet]. 2019 [cited 2022 Jan 10]. Available from: https://cer.org.za/news/doubling-so2-pollution-standards-would-have-deadly-consequences-for-highveld-communities

51. Lucchini RG, London L. Global Occupational Health: Current Challenges and the Need for Urgent Action. Ann Glob Heal. 2014 Jul 1;80(4):251–6.

52. London L, Joshi IK, Cairncross E, Gilmore J, Claudio L. Environmental justice: An international perspective. Encycl Environ Heal. 2019;553–60.

53. Watts J. South African community wins court battle over mining rights | South Africa | The Guardian. The Guardian [Internet]. 2018 [cited 2022 Jan 10]; Available from: https://www.theguardian.com/environment/2018/nov/22/south-african-community-wins-court-battle-over-mining-rights

54. Gochfeld M, Burger J. Disproportionate exposures in environmental justice and other populations: The importance of outliers. Am J Public Health. 2011;101(SUPPL. 1):53–63.

55. WHO. WHO recommends groundbreaking malaria vaccine for children at risk [Internet]. 2020 [cited 2022 Jan 10]. Available from: https://www.who.int/news/item/06-10-2021-who-recommends-groundbreaking-malaria-vaccine-for-children-at-risk

56. Forman L, Ooms G, Brolan CE. Rights language in the sustainable development agenda: Has right to health discourse and norms shaped health goals? Int J Heal Policy Manag. 2015;4(12):799–804.

57. Sanders D, Nandi S, Labonté R, Vance C VDW. From primary health care to universal health coverage—one step forward and two steps back. Lancet [Internet]. 2021;394(August):1–32. Available from: https://www.thelancet.com/journals/lancet/issue/vol398no10312/PIIS0140-6736(21)X0046-3

58. Ooms G, Latif LA, Waris A, Brolan CE, Hammonds R, Friedman EA, et al. Is universal health coverage the practical expression of the right to health care? BMC Int Health Hum Rights. 2014;14(1):1–7.

59. Organisation W health. PREVENTING DISEASE THROUGH HEALTHY ENVIRONMENTS;Towards an estimate of the environmental burden of disease. World Health. 2006;1–96.

60. Matter DI. The President and Fellows of Harvard College Harvard School of Public Health / François-Xavier Bagnoud Center for Health What Is a Human-Rights Based Approach to Health and Does It Matter ? Author (s): Leslie London Published by : The President and Fell. Heal (San Fr. 2010;10(1):65–80.

61. London L. Human Rights, Environmental Justice, and the Health of Farm Workers in South Africa. Int J Occup Environ Health. 2003;9(1):59–68.

62. Slatin C. Environmental and occupational health and human rights. A J Environ Occup Heal Policy [Internet]. 2011;21(2):177–95. Available from: https://journals.sagepub.com/doi/pdf/10.2190/NS.21.2.c

63. Human Rights Council. RES/37/8 Human rights and the environment / RightDocs - Where human rights resolutions count [Internet]. 2018. Available from: https://www.right-docs.org/doc/a-hrc-res-37-8/

64. United Nations-Human Right Council (UN-HRC). Elements for a draft legally binding instrument on transnational corporations and other business enterprises with respect to human rights [Internet]. 2017 p. 1–14. Available from: www.ohchr.org/Documents/HRBodies/HRCouncil/WGTransCorp/Session3/LegallyBindingInstrumentTNCs_O BEs.pdf

65. OHCHR. OHCHR | WGTransCorp IGWG on TNCs and Human Rights [Internet]. 2018 [cited 2022 Jan 18]. Available from: https://www.ohchr.org/en/hrbodies/hrc/wgtranscorp/pages/igwgontnc.aspx

66. OHCHR U. OEIGWG CHAIRMANSHIP SECOND REVISED DRAFT 06.08.2020 LEGALLY BINDING INSTRUMENT TO REGULATE, IN INTERNATIONAL HUMAN RIGHTS LAW, THE ACTIVITIES OF TRANSNATIONAL CORPORATIONS AND OTHER BUSINESS ENTERPRISES [Internet]. 2020. Available from: https://www.ohchr.org/Documents/HRBodies/HRCouncil/WGTransCorp/Session6/OEIGWG_Chair-Rapporteur_second_revised_draft_LBI_on_TNCs_and_OBEs_with_respect_to_Human_Rights.pdf

67. United Nations Human Rights Council. General Comment 10 | ESCR-Net [Internet]. 1998 [cited 2022 Jan 11]. Available from: https://www.escr-net.org/resources/general-comment-10

68. Dany C. Information, organisations contribute to the democratic quality of the UN world summit on the society, TranState working papers, No. 43. econstor. 2006;

69. London L. What Is a Human-Rights Based Approach to Health and Does It Matter ? Author (s): Leslie London. Heal (San Fr. 2008;10(1):65–80.

70. London L, Schneider H. Globalisation and health inequalities: Can a human rights paradigm create space for civil society action? Soc Sci Med. 2012;74(1):6–13.

71. Motari and K. Realizing the Right to Health in the Who African Region: Issues, Challenges and the Way Forward. Heal Syst Policy Res [Internet]. 2016 [cited 2022 Jan 11]; Available from: https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&inst=8242021223475558914&q=Motari%2C+and+Kirigia%2C+2016%29%2C+&btnG=

72. Chapman AR. Assessing the universal health coverage target in the Sustainable Development Goals from a human rights perspective. BMC Int Health Hum Rights. 2016;

73. Nations U. THE 17 GOALS | Sustainable Development [Internet]. 2018 [cited 2022 Jan 11]. Available from: https://sdgs.un.org/goals

74. Prüss-Üstün, Annette, Wolf, J., Corvalán, Carlos F., Bos, R. & Neira MP. Preventing disease through healthy environments: a global assessment of the burden of disease from environmental risks [Internet]. 2016 [cited 2022 Jan 11]. Available from: https://apps.who.int/iris/handle/10665/204585

75. Elizabeth E. Tolley, Priscilla R. Ulin, Natasha Mack, Elizabeth T. Robinson SMS. Qualitative Methods in Public Health: A Field Guide for Applied Research [Internet]. 2016 [cited 2022 Jan 11]. Available from: https://books.google.co.za/books?hl=en&lr=&id=L0NICgAAQBAJ&oi=fnd&pg=PR13&dq=Ulin,+P.+R.,+Robinson,+E.+T.,+%26+Tolley,+E.+E.+(2005).+Qualitative+methods+in+public+health:+A+field+guide+for+applied+research.+San+Francisco,+CA:+Jossey-Bass.&ots=j6CuuWCxGC&s

76. Boston University School of Public Health. Quantitative and Qualitative Methods for Public Health [Internet]. 2019 [cited 2022 Jan 11]. Available from: https://sphweb.bumc.bu.edu/otlt/MPH-Modules/PH717-QuantCore/PH717-Module1B-DescriptiveStudies_and_Statistics/PH717-Module1B-DescriptiveStudies_and_Statistics9.html

77. Creswell JW, Klassen AC, Plano Clark VL SK. Best practices for mixed methods research in the health sciences. Bethesda (Maryland): National Institutes of Health. 2011 Aug 1;2013:541-5. In: National Institutes of Health. 2nd ed. 2011. p. 58–89.

78. Haneem F, Ali R, Kama N BS. Descriptive analysis and text analysis in Systematic Literature Review: A review of Master Data Management. 2017 [cited 2022 Jan 11]; Available from: https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=8002473

79. Braun, V. and Clarke V. Using thematic analysis in psychology Using thematic analysis in psychology. Psychiatr Q [Internet]. 2006;0887(1):37–41. Available from:

http://www.ncbi.nlm.nih.gov/pubmed/11752478

80. De Vos, A., Strydom, H., Fouche, C. and Delport C. Research at Grass Roots For Social Sciences and Human Services Professions. Van Schaik Publishers, Pretoria. - References - Scientific Research Publishing [Internet]. 2011 [cited 2022 Jan 11]. Available from: https://www.scirp.org/(S(351jmbntvnsjt1aadkposzje))/reference/ReferencesPapers.aspx?ReferenceID=2091146

81. De Vos, A.S., Strydom, H., Fouché, C.B. and Delport, C.S.L., Eds., Research at Grass Roots For the Social Science and Human Service Professions. 4th Edition, Van Schaik, Pretoria, 113-130. - References - Scientific Research Publishing [Internet]. 2011 [cited 2022 Jan 13]. Available from: https://www.scirp.org/(S(i43dyn45teexjx455qlt3d2q))/reference/ReferencesPapers.aspx?ReferenceID=514373

PART B: JOURNAL MANUSCRIPT

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Monitoring occupational and environmental health as part of the right to the highest attainable standard of health.

Ndakapara Chitsa *, Leslie London [1] and Lisa Forman [2,]

[1] University of Cape Town, School of Public Health and Medicine; leslie.london@uct.ac.za

[2] University of Toronto, Dalla Lana School of Public Health; lisa.forman@utoronto.ca

***** University of Cape Town, School of Public Health and Medicine; chtnda001@myuct.ac.za

Abstract:

Background: Environmental and Occupational Health (EOH) risk factors are a major contributor to global Burden of Diseases. State Parties (SPs) to the International Covenant on Economic, Social and Cultural Rights (ICESCR) are obligated to implement the Right to Health (RtH); which includes improving environmental and industrial hygiene, prevention, treatment, and control of occupational diseases. Research shows that Non-Communicable Diseases (NCDs) owing to EOH, and associated risk factors are the leading cause of death globally. Yet, ICESCR has a Committee Economic, Social and Cultural Rights (CESCR) responsible for monitoring implementation of the RtH. Also, Civil Society Organisations (CSO)'s role, acting as watchdogs, is to ensure that SPs comply with their obligation to realise the RtH. So far, little is known whether SPs, CESCR or CSOs are paying attention to EOH factors as one of conditions necessary for realisation of the RtH. The purpose of this study is to investigate whether and how attention is given to EOH issues in implementing the RtH.

Methods: A mixed method study design was used for this study. Stratified random sampling was used to select 3 countries, per each World Health Organisation (WHO) epidemiological region who are SPs to ICESCR (N=18). For each country, we collected SP reports, Concluding Observations (CO), and CSO reports published on UN OHCHR website between 2009 and 2018. Data was analysed using frequency count and Thematic Analysis (TA) for SPs (n=21), COs (n=18) and CSOs (n=22) reports, in total 61 reports.

Results: Attention given to EOH issues is limited. Where EOH factors were given attention, either SPs, CSO's or CESCR failed to adequately acknowledge their role or importance towards realisation of the RtH.

Conclusions: Addressing EOH health risk factors is required of SPs to respect, protect, and fulfil the RtH. There is an urgent need for SPs, CESCR and CSO's to adequately attend to EOH factors as key conditions necessary for realisation of the RtH.

Keywords: Environment, occupational health, State Parties, CSOs, CESCR and RtH

1. Introduction

Environmental and Occupational Health (EOH) is an essential component for everyone to enjoy the highest attainable standard of physical and mental health, as provided for in International Covenant on Economic, Social and Cultural Rights (ICESCR). Industrial settings such as mining and burning of fossil fuels for energy and transport systems in growing urbanisation processes contribute to occupational and environmental health risks (1). Recent empirical findings show that EOH risks are a leading cause of injuries, illness and deaths globally (1–3). More than 80 diseases and injuries are due to exposure to environmental hazards or pollutants, toxic workplace chemicals, unsafe drinking-water, poor sanitation, and indoor and outdoor air pollution (4). Air pollution, for example, is one key underlying cause for Noncommunicable Disease (NCDs) related deaths.

In 2016, NCDs, to which EOH factors are major contributing factors, were responsible for 71% of the global 57 million deaths from all causes (3). Besides NCD's burden on health, communicable illnesses such as lower respiratory infections diarrhoea, malaria and unintentional injuries are said to be attributable to modifiable environmental factors (3). Noting the burden these EOH and associated risk factors have on health, failure to adequately address them potentially contributes to global BoD. For example, WHO (3) states that, approximately 94% of diarrhoeal burden is attributable to poor sanitation and lack of access to safe drinking water. Therefore, adequately addressing EOH factors under ICESCR will not only help increase access to sufficient sanitation and quality safe drinking water but create opportunities for health, economic systems and developmental processes that are environmentally sound, socially just, and sustainable for all (3).

The ICESCR includes provisions for the realisation of a number of social and economic rights, including the Right to Health (RtH). States ratifying the Covenant are required to deposit their instruments of ratification with the Secretary-General of the United Nations, following which, the Covenant comes into effect 3 months after the date of deposit (5). By ratifying the covenant, States commit themselves to create conditions that enable their population to enjoy economic, social and cultural rights (5)

To date, 171 States have ratified the Covenant. In the Covenant's Article 12 on the RtH, many of the conditions required for SPs to fully realise this right are based on EOH factors, including:

(i) Improvement of all aspects of environmental and industrial hygiene as a means to realise the RtH (5,6).

(ii) The prevention, treatment and control of epidemic, endemic, occupational and other diseases (5,6).

Apart from Article 12, the RtH is interrelated to many other rights recognised in ICESCR, including (5);

a) Article 7 enjoyment of just and favourable conditions of work
b) Article 11 (adequate standard of living, nutritious food, clothing, and housing),
c) Article 13 (education for everyone)
d) Article 15 (participation in cultural life)

While all human rights are universal, inalienable, equal, interrelated, interdependent and indivisible, this interdependence is particularly apparent when it comes to the RtH. This means that, the RtH must be considered not as a standalone right but closely linked to other rights, which all have equal status and relationship with each other for the full realisation of human dignity and development (7).

The International Bill of Rights (IBL) provides an international framework within which human rights can be legally protected (8). The IBL consists of the Universal Declaration of Human Rights (UDHR), the ICESCR and the International Covenant on Civil and Political Rights (ICCPR) (9). States which are parties referred to as SPs to ICESCR and ICCPR are duty bearers under international law with obligations to respect, protect and fulfil human rights (10). The SP's obligation to respect human rights means that the state must desist from actively violating or putting barriers preventing people from enjoying their rights; the obligation to protect means that the SP must protect people's rights from interference by non-state actors; the obligation to fulfil means that the SP must take active measures to make realisation of human right possible including budgetary, policy and regulatory measures (10,11). While individuals are right holders with entitlements, they also have a responsibility to respect and ensure others enjoy human rights without discrimination (6).

However, not only is the RtH codified in ICESCR but also in international and regional treaties (such as the African Charter on Human and Peoples' Rights) and in approximately 115 domestic constitutions including most famously in South Africa's Constitution section 27 (6,12). Not only did this wide recognition increase the social, legal, and political force that comes with this right but gave a way to a more authoritative interpretation of the RtH by the UN Committee on Economic, Social and Cultural Rights in year 2000 (the "CESCR") (13). The CESCR was established in 1985 to monitor the implementation of the ICESCR by its SPs (6). SPs to the Covenant are required to submit reports to the CECSR on progress they are making in implementing and realising the social, economic and cultural rights provided for in the Covenant (8). SPs reports are first submitted within 2 years of ratifying ICESCR and then every 5 years thereafter. The CESCR, comprising of independent experts, examines these reports and provides recommendations in form of "Concluding

Observations" (or COs) to the SP (8). Before the CO reports are issued, CESCR considers CSO reports submitted as "shadow reports" parallel to SPs' submissions detailing if the steps taken by SPs are adequate in providing conditions necessary for the realisation of the RtH (8).

Conditions necessary for the full or adequate provision of the RtH are outlined, interpreted, or explained by the CESCR in what is known as General Comment 14 (GC14). These interpretations, helps to clarify the content of the RtH and reporting duties of SPs with respect to this particular right. The interpretation of the RtH in GC14 extends beyond healthcare provision to include underlying social determinants of health (5). Many of these determinants are also independently recognised as rights as mentioned earlier - for example water, food, housing, and safe environment. These are rights which encompasses social determinants of health factors that emanate from different sectors (11).

Due to different requirement each sector needs or requires to ensure that these social determinants of health factors are met or provided for, there are possibilities that SPs may fail to fully provide and report on these factors. A good example is the situation in South Africa where the SP heavily depends on one national energy providing utility, ESKOM (14). ESKOM is a state-owned enterprise that burns coal and diesel to generate power for the country. In doing so, ESKOM was reported to have been exceeding the country's minimum emission standards; 50 for Particulate Matter (PM),500 for Sulphur dioxide (SO2), and 750 for Nitrogen (NOx) (15,16). These standards are already weaker compared to updated internationally accepted WHO air quality standards of 40 μg/m3 in a 24-hour period (14,17).

Despite evidence of non-compliance by ESKOM in this regard, the SP may fail to be transparent when reporting activities concerning regulation of emissions or pollutants since the utility is their only source of energy. Moreover, the same energy is required for use in hospitals, water pumps and food manufacturing industries necessary for provision of healthcare, water, and food. However, there are alternatives of clean and sustainable energy technologies available such as solar power in which the SP can invest (18). Compared to coal power plants that causes air pollution and increased health risks, solar energy is renewable, sustainable and reduces air pollution with less health risks (1,18). Therefore, there is need to consider reports from CSO's as they normally have no direct benefits from such activities but have a mandate to represent the poor, marginalised, and those uninformed or educated (19) on what their rights are.

When SPs fail to fully report, CSOs shadow reports become crucial in exposing these failures as per RtH provisions in the ICESCR and the GC 14 interpretations (8). In doing so, room for civil society action to engage with human rights experts within the UN human rights

system is created. These engagements and the resulting reports are therefore an important tool to hold governments accountable for their obligations respect, to protect, and to fulfil the RtH (19). In addition, where governments have to deal with transnational companies, CSO's public scrutiny on matters that violate human rights has potential to expose these companies if they have taken advantage of government laws and policies (20).

Given that the WHO reported a quarter of global BoD could be prevented by addressing EOH factors (9), it is clear that not only are EOH factors crucial in recognition of the RtH, they also play an important role in addressing social, economic, and public health issues. However, existing research provides limited evidence on how EOH factors are dealt with in achieving the right to health. Therefore, this study explores the role of EOH factors in the realisation of the RtH, by investigating whether and how SPs, the CESCR, and CSOs' pay attention to EOH issues in their reports as part and process of implementation of RtH under the ICESCR.

2. Materials and Methods

Methods

We used a mixed methods approach focusing on SPs and CSO reports submitted to CESCR between the period of 2009 and 2018, together with COs within the same period as they appear on UN OHCHR website; https://tbinternet.ohchr.org/_layouts/15/treatybodyexternal/TBSearch.aspx?Lang=en.

After filtering the reports by "2009-2018", we randomly selected three country reports for each of the 6 WHO epidemiological regions (Africa, Americas, Eastern Mediterranean, Europe, South-East Asia, and Western Pacific). This ensured representivity of reports submitted to the CESCR. For each country, we downloaded (i) State Party (SP) reports; (ii), Concluding Observations (CO) issued by the CESCR for these downloaded SP reports; (iii) CSO reports (21); (iv) SP reports of the same country in subsequent years; and (vi) the CO reports in subsequent reporting of the same countries. The inclusion of follow up reports of both SPs and COs enabled us to explore whether issues raised by the COs of the CESCR were addressed by the country in their subsequent SP report or reflected upon by the CESCR itself.

We undertook a Thematic Analysis (TA) (22) involving a word-frequency count of EOH terms in the downloaded reports. The word-frequency count or analysis of EOH terms was conducted on reports downloaded and saved in MS Word using the MS Word search function. Search terms used were, "environment," "environmental," "occupation," "occupational", "working conditions," and "health". This generated a number of term count as the first indicator of priority given to EOH issues and concepts.

Secondly, we performed a qualitative analysis of texts to identify common themes, topics, ideas, and patterns of meanings that came up repeatedly. This process helped identify reporting patterns in the data while focusing on the diversity, distribution of issues and processes in social groups (22). In the process, we created codes inductively, meaning that the codes were generated from the data (reports). To give our analysis a deeper context of issues from different perspectives we also added codes to the list we got inductively by applying deductive reasoning (13).

To compare whether SPs and the CECSR paid attention to EOH issues in subsequent reports from the first or earlier reports, in our coding process we highlighted key issues, concepts and possible themes using different colours. For example, we used green to highlight "environmental" terms and yellow for "occupational" or "occupation" terms. We applied this approach in analysing the first SP reports at the beginning of the study (considering SP report submitted between 2009 and 2011). If the same issue was addressed in the follow up SP report, we used the same colour to show that remedial action was applied and if not, we used red. The same process was applied in CO reports which were issued in response to SP reports. We used the same method for CSO reports. Since there were no CSO reports submitted as follow-up submission, we only highlighted all EOH issues that appeared in our search with the same colour.

In the process of coding and word frequency analysis, we found out that 80% of these reports were including "health" issues in terms of health care which would have biased our results since the RtH is not only limited to health care. We then went back to SP and CO reports and counted all search terms as general EOH total counts that include the "health" term and specific EOH term counts that excludes the "health" term; i.e., terms classified as specific EOH terms were, "environment," "environmental," "occupation, "occupational," and "working conditions". As a result, we were also able to compare between SP and the CESCR in the manner they were addressing direct environmental and occupational issues without having to refer to health care (Table 5) so as to answer our research question. We conducted this exercise as an iterative process to make sure that we clearly understood connections between segments of data selected, conceptualised, and labelled as a code. This also helped to identify if there are any networks between different codes to terms referring to specific EOH terms.

Thirdly, having highlighted all codes, key issues, concepts, and themes, we recorded these codes in a separate summary in a form of code book (Appendix 3) and briefly noted the context which they were used. Using the code book created, we re-grouped or re-arranged the codes into categories under the same key themes which we then presented as theme

mapping (Appendix 4). As part of the process, codes that speaks to the same theme or issue and highlighted with the same colour were grouped together and discussed under one main or key theme.

The results from the word frequency analysis were presented in a tabular format. This was followed by a discussion linking these themes, critically analysing EOH issues. In doing this we investigated the extent in which EOH issues were attended to.

3. Results

(a)Word frequency analysis

We randomly selected 18 countries, 3 each from the 6 WHO epidemiological regions. For these 18 countries, the UN CESCR Treaty Body Database, "1 January 2009 to 31 December 2018" search yielded 25 SP reports. Out of these 25 reports, 16 were grouped as initial reports, and 5 as SP reports submitted as follow-up reports. Four SP reports were excluded based on the following reasons: Although Sri-Lanka and Republic of Korea were initially randomly selected as part of study, a careful examination shows that their initial 2 SP reports were actually submitted outside of the 2009 to 2018 study period. Therefore, we removed all 4 SP reports (2 SP reports submitted for 2007 and 2008 while the other 2 were subsequent SP reports submitted in 2015 and 2016).

We then grouped the first round of submitted SP reports from 16 countries(n=16) and searched EOH terms as shown in Table 1 below.

Table 1. EOH word frequency of SP reports at the beginning of study period by country[1] (2009-2011)

[1] The word count of SP reports at the beginning of the study.

Country	Year	Environment(s)	Environmental	Occupation	Occupational	Working conditions	Health	Total
Argentina	2009	51	23	50	42	12	189	**367**
Ethiopia	2009	15	40	1	13	7	279	**355**
Iran	2009	52	14	19	15	2	397	**499**
Japan	2009	25	7	1	0	4	28	**44**
New Zealand	2009	19	25	4	11	1	303	**363**
Slovakia	2009	17	13	6	10	17	184	**247**
Tanzania	2009	4	2	0	5	2	84	**97**
China	2010	13	12	5	11	3	90	**134**
Denmark	2010	22	1	11	22	4	109	**169**
Egypt	2010	26	21	7	18	4	156	**232**
Jamaica	2010	15	0	5	13	2	115	**150**
Kuwait	2010	4	1	7	0	4	28	**44**
Finland	2011	7	3	11	1	4	184	**210**
Gabon	2011	14	4	2	5	2	122	**149**
Nepal	2011	21	5	5	5	2	115	**153**
Paraguay	2011	4	3	0	3	4	153	**167**
Total		**309**	**174**	**134**	**183**	**78**	**2650**	**3528**

As shown in Table 1, general EOH relevant terms appeared in all reports with a frequency ranging from 97 to 499 per SP report. However, SPs to the ICESCR referred mainly to "health" and there was much less use of specific EOH terms such as environment, environmental, occupation, occupation and working conditions terms in all 16 countries. For example, in Iran's SP report in 2013, "health" was mentioned 397 times compared to only 2 mentions of "working conditions "and 52 "environment(s)." In Tanzania (2012), a country with the lowest count of EOH terms, "health" was mentioned 84 times compared to only 4 mentions of environment and no mention of "occupation(s). Overall, 75% of all General EOH terms mentions across the 16 countries SP reports was of 'health' referring to health care.

Following SP reports above, we searched for CO reports issued by **t**he CESCR after examining each report. The search results yielded 16 CO reports for 16 countries as shown in Table 2 below.

Table 2. EOH word frequency of CO reports or recommendations for submitted SP reports in Table 1 grouped by country (2009-2015).[2]

Country	Year	Environ-ment(s)	Environmen-tal	Occupa-tion	Occupa-tional	Working condi-tions	Health	Total
Argentina	2011	1	0	0	0	0	8	9
Ethiopia	2012	0	1	0	0	1	14	16
New Zea-land	2012	0	1	0	0	0	10	11
Slovakia	2012	0	0	0	0	0	8	8
Tanzania	2012	2	0	0	0	2	14	18
Denmark	2013	1	0	0	0	0	6	7
Egypt	2013	0	0	0	0	0	16	16
Gabon	2013	0	0	2	0	1	13	16
Iran	2013	0	2	1	0	0	14	17
Jamaica	2013	1	1	0	4	1	15	22
Japan	2013	0	0	0	0	1	2	3
Kuwait	2013	2	1	0	5	1	9	18
China	2014	1	5	1	0	6	33	46
Finland	2014	1	0	1	0	1	11	14
Nepal	2014	0	0	0	0	2	16	18
Paraguay	2015	0	2	0	0	3	16	21
Total		9	13	5	9	19	205	260

We found that each report reflects a similar pattern to that of SPs predominant use of the term health compared to all specific EOH terms (Table 2). The term health was predominantly used to explain issues that had to do with provision, access, availability, and acceptability of healthcare not in explaining specific EOH or environmental and occupational factors. On average, the CESCR mentioned specific EOH terms less frequently than SP reports did. For example, in Egypt and Slovakia (Table 2), the CESCR did not mention any specific EOH terms anywhere in the CO reports. Yet in SP reports (Table 1), there was 25% mention of specific EOH terms for Slovakia 2009 and 49% for Egypt 2010 SP reports. In the other 14 countries, while there was mentioning of general EOH terms, the frequency with which the CESCR referred to specific EOH words in their CO reports ranged from n = (1- 6).

Of the 16 CO reports that raised concerns and recommendations in Table 2, there were only 5 SP reports (Table 3) submitted as follow ups (second country reports within the study period). We therefore conclude that 11 countries did not meet their reporting obligations to submit follow-up reports after 5 years of their initial report. Table 3 shows count of general

[2] Table 2: The word count of CO reports as recommendations to SP reports submitted and shown in Table 1.

EOH word frequency of the 5 complying countries, Argentina (2016), Slovakia (2017), Denmark (2018), Kuwait (2018) and New Zealand (2017).

Table 3: EOH word frequency of SP reports in subsequent to CO reports submitted in Table 2 (2016-2018)[3]

	Year	Environment(s)	Environmental	Occupation	Occupational	Working conditions	Health	Total
Argentina	2016	6	6	1	4	6	53	76
Slovakia	2017	4	2	0	1	9	68	84
New Zealand	2017	1	0	0	0	0	84	85
Denmark	2018	20	1	0	2	4	80	107
Kuwait	2018	17	8	2	9	5	39	80
Total		48	17	3	16	24	324	432

Compared to previous SP reports in Table 1, follow-up SP reports in Table 3 shows a reduced use of specific EOH terms on average, in steps taken by SPs in realisation of the RtH. This is evident for Argentina, Denmark, Slovakia, and New Zealand in which these terms' frequency in SP reports declined from 178 to 23, from 60 to 27, from 63 to 16 and from 60 to 1, respectively. Of significance, between New Zealand's 2009 and 2017 SP reports, there was a 97% reduction in use of the specific EOH terms. In addition, Argentina had 77%, Slovakia, 59%, and Denmark; 38% reduction in these terms (specific EOH) count comparing with SP reports in Table 1 to Table 3.

Following these 5 SP reports, were only 2 CO reports published on the UN website that fell within our study period. To compare trends and investigate whether EOH factors were given attention to, we recorded counts of Specific EOH terms and count of the term word "health" separately as illustrated in Table 4 below. On average, there was an increase in the mentioning of Specific EOH specific by the CESCR in both Argentina and New Zealand. In Argentina's and New Zealand first CO reports, the CESCR only mentioned Specific EOH terms once in both CO reports compared to 8 and 5 times mentions respectively in these countries in second CO reports. On SP reports however, Table 4 data shows that there was a significant reduction in the use of Specific EOH terms when comparing first SP reports with follow-up reports. Argentina SP reports had a 155 Specific EOH terms count difference i.e., 178 mentions in the first report compared to only 23 in the second. New Zealand had a 59-

[3] Table 3: Country reports that were submitted in subsequent to country reports in Table 1 and follow-up reports after the CO recommendations in Table 2. Only 5 CR reports were available, 11 reports fell out of the 2008-2018 study period and web search criteria, therefore they were excluded.

count difference with the SP mentioning EOH specific terms 60 times compared to only once in the second SP report. Therefore, over the 10-year period there was a reduction in mentioning of EOH specific terms by SPs while CESCR increased the use of the terms in their reports.

Table 4[4]: Total EOH word frequency (2009-2018) (trends)

	State Party reports			**Concluding Observations**		
	Specific EOH terms* (year)	Health	Total	Specific EOH terms* (year)	Health	Total
Argentina 1st report	178 (2009)	189	367	1(2011)	8	9
Argentina 2nd report (	23 (2016)	53	76	8(2018)	41	49
New Zealand 1st report	60 (2009)	303	363	1(2012)	10	11
New Zealand 2nd report	1 (2017)	84	85	5(2018)	20	24

* Specific EOH terms included, environment(s), environmental, occupation, occupational, working conditions.

[4] Table 4 contains sum of all EOH terms put together excluding "health" for Argentina and New Zealand from the first reports submitted to CESCR (SP reports) at the beginning of the study, follow- up reports and Concluding Observations (CO reports) published. Only 2 countries submitted their SP reports on time and therefore only these countries' CO reports appeared in the study period 2009 to 2018 and were included.

Table 5[5]**:** EOH word frequency in CSO reports for 18 countries selected for this study from 2009 - 2018

Country	CSO name	Year	Environ-ment(s)	Environ-mental	Occup-ational	Health	Total
China	Beijing AIZHIXING Institute	2012	0	0	0	32	**32**
China	Equal Opportunities Commission, Hong Kong	2013	0	0	0	17	**17**
China	Hong Kong Unison Limited	2013	1	0	1	0	**2**
China	Hong Kong Special Administrative Region (HKSAR)	2013	1	0	0	0	**1**
China	HRIC	2013	1	0	0	4	**5**
Ethiopia	Human Rights and Tobacco Control Net-work	2011	0	2	0	10	**12**
Ethiopia	African Rights Monitor	2012	0	0	0	52	**52**
Ethiopia	The Advocates for Human Rights	2012	1	0	0	28	**29**
Ethiopia	International Disability Alliance (IDA)	2012	1	0	0	10	**11**
Slovakia	The Human Rights and Tobacco Control Network	2011	2	0	0	11	**13**
Slovakia	Amnesty International	2012	1	0	0	1	**2**
Slovakia	Slovak national centre for human rights	2011	37	0	16	85	**138**
Slovakia	Centre for Reproductive Rights Citizen, Democracy, and Accountability and Free-dom of Choice	2012	0	0	0	143	**143**
Slovakia	International Human Rights Clinic Loyola Law School, Los Angeles	2018	4	0	0	81	**85**
Slovakia	Validity, Forum for Human Rights (FO-RUM), Social Reform Foundation (SO-CIA), Social Work Advisory Board (RPSP)	2018	2	0	0	6	**8**
Slovakia	European Roma Rights Centre (ERRC)	2018	0	0	0	9	**9**
Gabon	The Global Initiative for Economic, Social and Cultural Rights (GI-ESCR)	2013	0	1	0	0	**1**
Gabon	Global Initiative	2013	0	0	0	1	**1**
Egypt	International Baby Food Action Network	2013	1	1	0	45	**47**
Egypt	Global Initiative	2013	1	0	0	0	**1**
Egypt	Amnesty International	2013	0	0	0	3	**3**
Argentina	GIDES	2017	0	0	0	44	**44**
Total			**53**	**4**	**17**	**582**	**656**

[5] Table 5 illustrate EOH word count from available CSO submissions as shadow reports to SP reports from their respective countries.

CSO reports submitted as shadow reports to submitted SP reports are shown in Table 5 above.

As illustrated in the table 22 CSO reports were submitted as shadow reports to SP reports from 6 countries - Ethiopia (3 reports), Gabon (2 reports), Slovakia (7 reports), Egypt (3 reports), China (5 reports) and Argentina, 1 report. Two reports were excluded from analysis because they were written in Spanish and could not be translated.

From Table 5, it seems that only 1 of the 22 CSO reports paid any meaningful focus on EOH. The Slovakia National Centre for Human Rights had 37 mentions of the term "environment" and 16 of the term "occupational" which is the highest in all CSO reports submitted between the period 2009 and 2018.

(b)Themes

Health was the term most commonly cited by SPs, CSOs and CESCR. However, the context in which the term was used and patterns that emerged from the reports suggested that the CESCR had concerns about the accessibility, availability and quality of the health care provided by governments. There were no concerns expressed by SP, CO or CSO reports about EOH issues in relation to health care.

While word count results gave us an important indicator of priority given to particular EOH terms and concepts, frequency cannot substitute for analysis in context of how these terms were being used. To gain understanding of the context in which these terms were used in relation to implementation of the RtH we applied Thematic Analysis (TA). Besides word count, we also focused on the context in which the EOH word counts were mentioned to derive our themes. Based on the study objectives and after rearranging the data according to themes that emerge from codes, using TA we then explored these emerging themes to help us define concepts and their relationship to study questions. Themes that emerged include:

1. Development projects and environmental injustice
2. Exposure to hazardous chemicals and environmental toxins
3. Environmental health and OHS policies, and inspections
4. Health Care and Social Determinants of Health (SDH)

To provide details as to how the above themes emerged from the data, are connected and have been influenced by the research objectives and question, we present our findings from the TA analysis as follows;

3.1 Theme 1: Development projects and environmental injustice

Subthemes

3.1.1 Evictions

Major issues mentioned in the reports are the evictions of people from their traditional lands to make way for mining, large-scale commercial farming, construction, and other commercial activities that destroy Indigenous people's livelihoods and the natural environment. Several reports stated that Indigenous people were dependent on their ancestral lands for farming in order to feed their families, have access to clean drinking water and environment free from toxins. Evictions were raised in 70% of all 18 CO reports. Despite the CSECR raising these concerns, same issues were found or repeated in SP follow-up reports for the same countries. The problem was prevalent in evictions from ancestral lands occupied by indigenous peoples, despite majority of SPs having ratified the ILO Indigenous and Tribal Peoples Convention (1989). This is evident when the CESCR raised concerns in Tanzanian 2012 CO report, regarding vulnerable communities which were "forcibly evicted from their traditional lands for the purposes of large-scale farming, creation of game reserves and expansion of national parks, mining and construction of military barracks," (Tanzania CO report 2012 p.3). This has resulted in deprivation of land and natural resources while threating the right to food of these evicted communities.

Addressing these issues of evictions, CESCR gave several recommendations related to the granting of licence for projects planned on ancestral lands without the informed consent of the people affected. In addition, one CSO suggested that there should be specific mechanisms to ensure alternative, adequate housing is provided before evictions, especially when in vulnerable populations such as children (Argentina GIDES CSO report, 2017 p.11).

3.1.2 Natural resource exploitation

In several CO reports, evidence shows that natural resources' exploitation was taking place without taking due consideration of the environment and affected communities. In Argentina's 2011 CO report, for example, the CESCR recommended that the SP should "ensure the protection of indigenous communities during the implementation of mining exploration and exploitation projects" (Argentina CO report, 2011 p.3). Taking steps to address this issue of environmental protection, the SP ratified the ILO Indigenous and Tribal Peoples Convention, 1989 (No.169) through Act No. 24.071 and the United Nations Declaration on the Rights of Indigenous Peoples and the Convention on Biological Diversity through Act No. 24.375. These ratifications were aimed at preserving and managing the biodiversity of indigenous peoples' lands and territories (Argentina SP report, 2016 p.40).

Nonetheless, after taking into consideration of these steps taken by the Argentinian government, the CESCR in their subsequent CO report raised a concern that "more than 120,000 hectares, many of which are in protected forests, were cleared in 2017 despite complaints from indigenous communities (art. 1 (2)." (Argentina CO report, 2018 p.4). In New Zealand,

the CESCR raised the same concern saying, "the State party does not give sufficient protection of the inalienable rights of indigenous people to their lands, territories, waters and maritime areas, and other resources, as manifested by the fact that Māori free, prior and informed consent on the use and exploitation of these resources has not always been respected." (New Zealand CO report, 2012 p. 3). Similar concerns were raised in the Tanzania, Nepal, Finland, Kuwait, and Iran CO reports. In raising these concerns, of note, the CESCR in one of the reports (Finland CO report 2014) directly linked natural exploration of resources in traditional lands to climate change and negative effect on health.

3.1.3 Intimidation and killings of human rights activist

Out of 16 countries, concerns regarding intimidation of human rights activists or killings were raised in the CO reports for 5 countries - Argentina, China, Egypt, Finland, and Ethiopia. Realising the importance of human rights activists in the realisation of economic, social, and cultural rights, the CESCR provided strong recommendations that there should be systems in place to protect them.

3.2 Theme 2: Exposure to hazardous chemicals and environmental toxins

The CECSR has raised concerns in Tanzania's 2102 CO report that high exposure to toxic substances such as mercury and other hazardous chemicals in occupational settings is a threat to human health. In the rest of the CO reports for 15 countries, less focus was health hazards inherent in the working environment or access to occupational health services. Rather the focus labour registrations, wages, salaries and ensuring that undocumented migrants were not allowed to work illegally. These steps were not adequate to address safety, health working conditions or health risks workers are exposed to in different working environments regardless of their nationality or sector which they work in. This could be potentially one of contributing factors to, for example New Zealand's increase in number of work-related fatalities in agriculture and construction sector over the period 2002 to 2006 as shown in the country's 2009 SP report.

Nonetheless, where EOH were given attention to, results in Tanzania CO 2012 report, the CESCR raised a concern that people working in the mines were exposed dangerous chemicals such as mercury and other highly toxic substances. In addition, the local communities were also negatively impacted due to, "artisanal mining and the chemicals used on the environment and livelihoods of local communities," Tanzania CO report 2012, p.4. As a result of these activities, water sources, such as rivers and lakes which the local communities depend on were contaminated. Since the CESCR brought to light that SPs are involved in mining activities and use of chemicals, both of which can pollute the environment, it is possible that SP reports were not providing sufficient details on the impact of these activities as

evident in the omission of the matter in Tanzania's 2009 SP report. Therefore, we speculate that there could be more issues and grievances that were not brought to attention and health impacts for those living within the proximity of these mining industries.

Mining industries are subject to international accepted air quality standards or specific country's EOH laws, policies, and regulations. SPs indicated that they have set maximum exposure levels through environmental standards for air quality and hazardous substances. However, only 1 country, New Zealand SP 2009 report detailed air quality standards which their own government introduced to regulate mining and transport industries. These were, however, not compliant to WHO 2005 Air Quality standards. For example, "14 national environmental standards for air quality were introduced. Five ambient standards set maximum thresholds for five commonly recognised air pollutants: PM10 particulates, nitrogen dioxide, carbon monoxide, sulphur dioxide, and ground-level ozone." New Zealand SP report (2009 p.81). The report was supposed to have indicated clear compliance with established guidelines, such as the WHO guidelines for air quality PM10: 20 μg/m3 annual mean 50 μg/m3 24-hour mean depending on the size of population to which these standards will be applied. Furthermore, the report gave scant evidence on how these standards are monitored and enforced. In the absence of CSO submissions, which would potentially reveal if there were misrepresentations or omissions of issues, it is not known if even the non-compliant set standards are adhered to.

Argentina, in their 2009 SP report noted they were implementing steps regarding environmental protection with no further details while giving more attention to other named non-EOH factors throughout the report. For instance, the SP described in detail "comprehensive" programs for factors such as child protection and unemployment but provided only the most general descriptions regarding environmental protection measures. The responding CO report in 2011 raised numerous EOH concerns which were having negative effects on the health of the country's population. These include the increased use of chemical pesticides and transgenic soya seeds in regions traditionally inhabited or used by indigenous communities (Argentina CO report 2011, p.3). Subsequent to this CO report, the SP in their 2016 follow-up report did not mention any steps to address these concerns. Remarkably, the CESCR took note of the SP's failure to address these concerns and repeated the same issues (regarding use of pesticide while adding new concerns – such as the issue of oil and gas exploitation and the negative impact they have on, "the environment, water, health, and the risk of earthquakes, and about the fact that the local impact of these forms of exploitation has not been adequately assessed and the local populations have not been duly consulted (arts. 11 and 12)." (Argentina CO report 2018, p.11). However, it was not clear how the urgency

for EOH matters were emphasised, particularly those that have been repeatedly mentioned and were still persisting.

Nevertheless, repeated mention of EOH issues by the CESCR may be an indication that the named concerns are recognised as important and need to be addressed. This was an improvement in how EOH matters were addressed throughout the study from the earlier period of 2009 to 2016 in both SP and CO reports, on the part of the CESCR with no submissions from CSOs. We speculate therefore that potentially, environmental and OHS policies which all 16 SPs have indicated to have in their respective countries offered a certain extent of protection to the environment and exposed population in the absents of CSO reports.

3.3. Theme 3: Environmental health and OHS policies and inspections

SPs have reported having policies, laws, and systems in place, carrying out inspections at workplaces to prevent injuries and maintaining a health working environment. This response is evident in all 16 countries which outlined different Occupational Health and Safety (OHS) policies in place and inspections being carried out in their respective countries. However, the data shows little evidence of availability of corresponding RtH indicators and benchmarks by which the implementation of the formulated OHS policies were being monitored against. Neither were there details on how these policies are being implemented in and detailed plans of action in the first place.

3.3.1 Workplace safety and health risks

According to the GC 14, policies, health strategies and a plan of action should be based on the principles of accountability, transparency, and independence of the judiciary for effective implementation of the RtH (11). In all 16 SP reports submitted to the CESCR, 80% of SPs did not fully give a full account of how these policies are being implemented in detail at workplaces, nor of the accountability of both employers and governments. Rather, the SP reports just outline those regulations that have been formulated and are in place. For instance, China's 2009 response to CESCR's concerns on the country's Workers Safety Act (WSA), was to make mentions of other policies without giving details as per CESCR's recommendations, "clear and specific provisions on work safety are provided in such laws and legal regulations as the Mine Safety Act, the Labour Act, the Trade Union Act, the Mineral Resources Act, the Coal Act, the Electricity Act and the Construction Act" (China SP report 2009, p.27). There was no information on whether and how these "clear" policies are implemented to ensure workers safety is guaranteed. Of the remaining 20%, SPs gave brief details of their regulatory measures. For example, Slovakia's SP report in 2009 noted that the government provides supplementary paid leave for each 21 days worked for all workers exposed to occupational hazards, such as ionising radiation and chemical carcinogens.

However, the SP was not focusing on the improvement of all aspects of environmental and industrial hygiene or the prevention of occupational diseases that may arise as a result of exposure to these hazardous chemicals at work as expected under the ICESCR (para 12). Instead, the SP appeared to be using paid leave as some form of remedial action for the violation of the RtH or exposure to occupational hazards.

The Argentinian report of 2009 (p.28) noted that "Inspectors visit company premises as part of their daily work and complete inspection reports to ensure that workers' rights are being respected." However, no information was provided of how employers are hold accountable if they are not complying to Occupational Health and Safety (OHS) requirements. Upon issuing recommendations in 2016 CO report, the CESCR did not address working conditions in terms of exposure to workplace hazards and or safety; rather, they focused on wages and labour department worker registration. Neither was there any concerns on a lack of access to occupational health services as an issue. In their follow-up report in 2016, Argentina appeared to recognise the role played by occupational risk as part of provision of working conditions beyond salaries or working hours by creating a National Agricultural Labour Commission that also regulates working conditions, occupational safety, and risks (Argentina SP report 2016, p.14). Still, this did not address occupational health services availability, accessibility, acceptability and of good quality, yet it is one of the RtH's requirement (23).

Only two (China and New Zealand) of the 16 countries reported a reduction in the number of accidents, injuries, and fatalities. However, there was no evidence that details or shows if environmental health and OHS policies and inspection were the reason behind the reduction. Moreover, in all 5 submitted CSO reports parallel to the Chinese SP report, there was no mentioning of EOH issues. The CESCR however recognised, "adverse environmental effects of industrial pollution and food contamination, and their negative impact on the enjoyment of the right to an adequate standard of living and health." (China CO report 2014, p.10).

3.4. Theme 4: Health care and SDH factors

3.4.1. Health care and medical attention:

Health was the term most commonly cited by CESCR but the context in which the term was used and patterns that emerged from the reports suggested that the CESCR had concerns about the accessibility, availability and quality of the health care provided by governments. In addition, discrimination in access to both health care, clean drinking water, and housing services was predominant as concerns raised by CSECR and CSO's. In accessing these few mentioned services, women, migrants, people in rural areas and of indigenous origins were not provided with the same opportunities as that of men, citizens of the said countries, urban and local communities.

3.4.2 SDH factors.

Both SPs and the CESCR explicitly addressed SDH factors. This is because the RtH is an inclusive right extending not only to timely and appropriate health care but also to the underlying determinants of health. There were issues with the quality, availability, acceptability, inequality, and discriminatory accessibility of underlying determinants of health throughout the reports over the 10-year study period. This is evident as follows:

(i) Food and nutrition

Food programs are easily accessible and available in most SPs to the ICESCR. This is evident as countries have specific programs and policies in place that aim to address food supplies. For example, in Nepal the country's policy focuses on "food sovereignty: availability of food, access to food, proper use of food, and food stability." (Nepal SP report 2011, p. 16). However, the problem is adequate quality food with high nutritional value. Provision of food has been closely linked to EOH factors in the realisation of the RtH. Slovakia's 2009 SP report explained the importance of ecological agriculture that is sustainable, conserve the environment while produce bio-foods crucial for a healthy diet. In addition, one of the submitted parallel CSO reports from the Slovak National Centre for Human Rights in 2011 also emphasised the need to protect the environment as one of conditions that helps sustain food security.

SPs, COs and CSOs acknowledge the importance of environmental factors as conditions necessary for the RtH and have provided evidence of this link. This was evident in SP reports from Tanzania, Argentina and Nepal submitted between 2009 and 2016 which identified famines, droughts, and fire as some of the factors leading to food insecurity challenges. Yet, SPs, when providing steps which they took to address food insecurity, suggested increasing access to foodstuffs and overlooked solutions to address famine, drought, and floods which they identified as the root cause of food insecurity.

(ii) Water and sanitation

SPs in their reports have to a large extent provided details of steps they have taken to ensure water and sanitation is accessible. Argentina adopted the Drinking Water, Social Assistance and Basic Sanitation Provision Programme (PROPASA) aimed at addressing water and sanitation accessibility, quality, and availability. The project's aims were firstly to promote access and availability of safe drinking water by activities such as building of dams and installing pumps for water extraction. Secondly, the programs also focused on improving individual human waste disposal and sewage systems and facilities for provision of basic sanitation (Argentina SP report, 2009 p. 108).

However, the CESCR, in their CO report, was not fully convinced of the adequacy of steps taken to ensure there is access to quality water which is safe for drinking. The CESCR questioned the access to water while there were reports of negative consequences of lithium exploitation which also affected the standard of living and subsistence of indigenous communities of the population of Salinas Grandes (Salta and Jujuy provinces of Argentina). This is evident in the CO report to the submitted SP report as follows: "The lives of indigenous communities in Salta and Jujuy relied mostly on their natural resources. The government of Argentina allowed exploitation of natural resources in territories traditionally occupied by the country's indigenous communities without informed consent prior and just and fair compensation being paid to." (Argentina CO report 2011, p.3).

The exploitation of minerals without informed consent from indigenous communities continued despite the SP indicating in 2009 that they would take steps to guarantee their participation in issues related to their natural resources. Moreover, the CESCR raised the same concerns about lack of participation and indigenous communities' consent and about the health impact of lithium exploitation in their 2011 CO report. Responding to these 2011 CESCR concerns and recommendations, the SP's 2016 report did not give account specifically on the steps that were taken to reduce the impacts of lithium exploitation on water access; rather the SP report shows that the government was taken to court on the matter and is still yet to act on the matter and provide, "compensation for damages resulting from the pollution of the basin and to demand that the pollution stop, and the environment be restored." (Argentina SP report 2016, p.4).

In 2018 CO report, responding to 2016 Argentinian's SP report, the CESCR did not provide any further comments on these concerns which they raised in their previous CO reports concerning exploitation of lithium and compensation. The CESCR, however raised new concerns which are directed at another province of Argentina involving large-scale exploitation of unconventional fossil fuels which the CESCR described as an obstacle towards achieving the 1.5℃ target laid down in the Paris Agreement on climate change (Argentina SP report 2018, p.3). Despite the failure of the CESCR to address issues of quality and acceptability of water services, New Zealand submitted a report where they acknowledged that 12% of the population connected to reticulated water received water that failed to meet national guidelines for water quality. This shows CESCR's inconsistency in addressing environmental factors that have an impact on the quality, accessibility and acceptable of water and sanitation despite how they are directly linked to the RtH. Moreover, this also uncovers irregularities in monitoring of the implementation of the Convention by the CESCR and failure by States' obligation to fulfil human rights.

(iii) Housing

The explicit mention of housing in all SP reports suggests that SPs were taking steps that aims at addressing the right to housing and the role it plays in the RtH. For example, in the New Zealand report in 2009 the SP indicated it had adopted a housing policy to give way for "development of safe, low cost and environment friendly housing." (New Zealand SP report 2009, p. 59).

Nevertheless, despite SPs taking steps to address access to housing, evidence in these SP reports suggests there are still challenges in regard to quality and acceptability of these services. For instance, "Significant proportion of New Zealand's housing stock remains inadequately insulated against the weather, and insufficiently and inefficiently heated." (New Zealand SP report 2009, p. 59). Owing to these challenges, the CESCR recommended that the SPs facing challenges in having adequate quality and acceptable housing services should adopt a human rights approach to their reconstruction efforts. This would also include making provision for temporary housing (New Zealand CO report 2012, p. 5).

However, there was no mention of this issue in its subsequent SP report submitted in 2016 to New Zealand. As the CO report in 2012 did not give clear guidance as to what it meant by a human rights approach, the SP may not have taken the recommendation seriously or may not have understood what was expected. Unsurprisingly, 6 years later, the CESCR observed the same SP was still experiencing housing shortages which were contributing to water and sanitation problems and interfering with the realisation of the RtH. The CO report in 2018 illustrated that the country was experiencing an increase in informal settlements and households that, "have no running water and over 30 per cent have no sewerage services." (New Zealand CO report 2018, p. 9)

4. Discussion

On average, there was low usage of specific EOH terms by SPs, CESCR and CSOs as conditions necessary for the realisation of the RtH. Nevertheless, results showed that SPs had a higher mention of specific EOH terms in their initial reports compared to their follow-up SP reports submitted 5 years later. This could have been as a result of CESCR CO reports which seemed to provide less attention, comments or concerns that addresses EOH factors as shown by a low count of specific EOH terms. Upon submission of follow-up SP reports, the CESCR, might have realised that the reduction in low count and referral of specific EOH terms was due to their first CO reports not paying attention to EOH factors. The CESCR, issuing CO reports to follow-up SP reports between 2016 and 2018, there was a slight increase in specific EOH terms count (Table 3). This could be as a result of availability and

increase in number of research pointing to specific EOH factors as crucial in reduction of global BoD between 2016 and 2018 (4,24,25).

Prüss-Üstün and colleagues shows that 94% of the diarrhoeal BoD was attributable to associated Specific EOH risk factors such as unsafe drinking water and poor sanitation and hygiene. Therefore, despite both SPs giving more attention to health care, the absent of diarrhoea in a human body after access to medical treatment do not necessarily mean they are health (26). Besides these environmental factors, there are occupational hazards for which long-term exposure at low dose are associated with health impacts such as cancer. For example, a long-term exposure to pesticides that contain glyphosate may lead to cancer as shown in WHO International Agency for Research on Cancer (27). In our results, CESCR raised concerns of the high usage of the same pesticide in Argentina's 2018 CO report. In that same year (2018), Argentina's country profile reported an estimation of 78% of all deaths in Argentina attributable to NCDs which cancer is also part of (3). Yet Argentina is ICECSR SP with obligations to protect, fulfil and respect the RtH by taking step to ensure conditions set put in GC14 are met.

If the SP (Argentina) was paying adequate attention to EOH factors, their reports would have included exposure reduction strategies such as a hierarchy of control strategy (28). This strategy would have shown that the SP is taking steps to eliminate, substitute by using a less toxic pesticide or restrict use through EOH policies and regulations. These policies should have been accompanied with detailed implementation, monitoring and evaluation strategies (23). In addition, information on trainings developed to communicate pesticide risk or any chemical, both at work would have shown that SPs are considering the health effects as a result of exposure to hazardous chemicals (29). This would have demonstrated that the SP is meeting their obligation to not only fulfil the RtH as explained in GC 14, para 36 and 37 but the right to occupational health (11).

Furthermore, the results show scant evidence on how occupational health services were accessed in SP's reports. Despite this being evident, having the CESCR and CSO's not commenting the issue (lack of access to occupational health services) is a problem. This is because the RtH requires OHS services to be available accessible and of good quality as mentioned earlier in our results (23). For example, SP, CO and CSO reports did not provide information on provision of adequate and correct PPE to workers yet London states that no work is 100 percent safe (29). Not only does the availability of OHS services is required in within the SP jurisdiction but if not complied to that has potential implications of the SP in complying with EOH related international law instruments such as Occupational Safety and Health Convention 1981(No.155). The Convention in article 16 requires SP to have OHS

policies that ensures that the work environment is safe from chemical, physical, biological substances and agents harmful to health(30). If not, the Convention in article 16 requires employers to provide for adequate PPE to prevent the effect the exposure to these chemicals has on health. Besides, access to occupational health services is a requirement not only for realising the RtH but also to implement occupational health services as a right (31).

Despite a lack of evidence on how existing OHS policies were implemented, monitored, and evaluated, it emerged from the data that all SPs had existing but different policies on environmental and OHS guidelines. However, research suggest that policies to protect people's health, while important, may offer limited solutions for action on the RtH, when they are not enforced (32,33). Moreover, several researchers argue that detailing different policies on environmental standards for air and water quality, hazardous toxins and OHS guidelines without protective and enforceable measures in place is inadequate for the realisation of the RtH (23,34,35). Also, comments from the majority of CO reports support this assertion in which the CESCR raised concerns of enforceability of laws, noting that the Covenant had not been fully incorporated into the domestic legal systems in SP countries. If the provisions of the Covenant are not fully incorporated, the suggestion is that the formulated policies and laws are not fully compatible with the Convention to begin with.

London (36) asserts that the RtH is characterised by having a powerful normative role in establishing accountability, protections and freedoms. Therefore, SPs should in future provide details on implementation, enforcement of laws and regulations plan of action that accompany the said EOH policies. In providing an effective regulation plan of action there should be clear indicators with statistical data which Chapman (37) argues should provide yardsticks to measure SPs progress and compliance to ICESCR. Hence our argument that, data for workplace inspections, occupational accidents and disease, industries compliance with waste management and pollution regulations could have provided concrete evidence as to how far are SPs in addressing EOH factors. Moreover, GC 14 (11) stipulates enforcement measures for steps taken by SPs in conformity with policies; and the provision of EOH services with preventive functions should be made clear when reporting. Therefore, since these enforcement measures were not clear and statistical data not provided in approximately 90% of SP reports, how illness prevention and improvement of all aspects of environmental and industrial hygiene is effectively achieved is therefore not known. Neither are environmentally and occupationally attributable disease burdens.

Furthermore, SPs should indicate the established minimum exposure level to particulate matter which are also compliant to recognised international air quality standards for WHO guidelines for example. Not only compliance to these air quality standards help in reducing

the burden of illnesses to the general population but benefit those vulnerable communities and workers who are highly exposed to occupational hazards on daily basis (2). In addition to these detailed guidelines, a comprehensive analysis evidence of health risks associated with exposure to these regulated pollutants showing population attributable fraction; the proportional reduction in death or any other related illnesses as a result of the guidelines is useful (4,38,39). This is useful because efforts to redress occupational health problems for example depends on population attributable fraction results and clear knowledge of the rights and justice dimensions of health problems faced by exposed workers (29).

However, there are industrial activities which SPs may be involved in that expose both workers and the general population, for example a coal mine exposing mine workers to silica dust and when the coal is used for generating energy communities are exposed to sulphur dioxide emissions (14,40). This potentially increases the global burden of NCDs which have been reported to be the leading cause of death globally (3). Findings from this study also brings evidence that supports the association of neglecting EOH and an increase in NCDS. In Slovakia for instance our word count analysis results show that between 2009 and 2017, there was a 59% reduction in the use of EOH specific terms, indicative of reduced attention paid to EOH factors. In 2018, WHO's (3) report stated that of all deaths in the country(Slovakia), 89% of them were due to NCD's. In addition. more than half, that is 49% of this NCD proportion, were due to cardiovascular illnesses (3).

Research suggest that cardiovascular illnesses are associated with indoor air pollution and outdoor air pollution involving burning of solid fuels (4). Had the SP adequately considered the requirements of environmental and occupational hygiene and air quality regulation policies and clean renewable energy (1,11,18) our assumption is that NCDs' related deaths reported in the WHO report would have been lower. This is because, when human rights approaches are integrated into health and other policies there is a potential benefit that has on public health (41,42). In this scenario therefore, we would suggest SPs to opt for cleaner renewable energy while making quality occupational health care services accessible without discrimination together with stringent guidelines and pollution laws for manufacturing industries (18,23).

However, it is noteworthy that, despite a high burden of NCDs, Slovakia was one amongst all 16 countries with one of its CSO shadow reports mentioning EOH specific terms more commonly than any other CSO reports we reviewed across the 10-year study period. This could be a result of the Slovakian government valuing and encouraging participatory processes in their policymaking process and implementation of laws relating to health (31). Yet again, since the CSO report provided corresponding evidence to the SP report, that was

evidence showing benefits of participatory processes and the ability they have in bringing about collective deliberation that considers the need of the communities (42). In addition, the potential benefits of using human rights approach that allows for civil society mobilisation and participation. Not only does the approach creates opportunities for policy shifts that consider determinants of health factors besides health care, on the other hand they also encourage transparency from the SPs both when reporting and in their conduct or governance (42).

Existing research provides scientific knowledge linking, determinants of health emanating from EOH conditions and biological pathways leading to physical and mental health problems (43). Yet, in the UN human rights system, researchers have not adequately investigated how socio-economic factors and underlying determinants of health, which are largely EOH conditions, affects the realisation of the RtH (13,44). Moreover, having health-related Sustainable Development Goals (SDGs) such as promotion of environmentally responsible consumption or production patterns (SDG 12), mitigation of climate change (SDG 4), food and nutrition (SDG 2), water and sanitation (SDG 6); and reduction of inequality (SDG 10) (45) shows how underlying determinants of health factors are important for the realisation of the RtH in a broader context.

Numerous SP reports acknowledge that, drought and floods are factors contributing to food insecurity, while increasing problems related waterborne diseases, collapse of sewage systems and provision of safe and adequate sanitation. Including steps that aims to reduce greenhouse gases emissions such as improvement of transport systems strategies by regulating the activities of individuals, groups or businesses within this specific system should have been included in SP, CECSR and CSO reports (46). Bearing in mind growing food crops in polluted lands have an effect on the quality and acceptability of the nutrition content of the food crops. This contributes to food insecurity with negative impact on access to nutritional food thereby affecting people's health as experienced in several other countries such as Argentina (Argentina SP report 2013 p.91). Yet, none of climate change mitigation or adoption strategies were included. Rather, in addressing these challenges, the focus was on distributing more food parcels, a solution that temporarily calms the "situation". Therefore, SPs, CESCR and CSO's should consider mitigation and adaptation strategies to minimise the possible impacts of these climate change events, not only in solving food security problems but reducing illnesses such as diarrhoea, malaria and malnutrition caused by floods (4).

Several researchers have demonstrated how separating environmental, occupational and working conditions from the RtH or health in general contributes to environmental injustice and the failure to respect, protect and fulfil the RtH (42,44,45). Considering the intersectionality of RtH, EOH factors can be traced across a range of Covenants and labour standards other than the ICESCR. To this end, Kimberle Crenshaw's (47) theory of intersectionality is

generative for explaining how different individual experiences based on structural elements of discrimination such as power and vulnerability can intersect to produce worse injustices. Intersectionality is of value in informing how these structural elements shape the experiences of vulnerable communities against governments' power, the legal system, or existing policies in the context of EOH. Findings from this current study demonstrate that indigenous people and vulnerable populations were commonly evicted from their traditional lands, without sufficient or adequate consultation when licenses were issued to explore natural resources within their territorial land. Not only were these groups' ability to cultivate their land for food produce and carry out other subsistence activities for standard of living jeopardised but they were also exposed to hazardous chemicals and environmental toxins. The human rights violations arising with these evictions led to a situation of environmental injustice characterised by a disproportionate burden of ill-health amongst the indigenous and most vulnerable population (33).

All in all, despite the pattern that merged that there is a lower mention of EOH specific issues in our results, part of data show discrepancies between steps taken by SP in realisation of the RtH and concerns raised by CECSR in CO reports and CSO's shadow reports;
(i) CESCR do not effectively follow-up on the same issues of concern when issuing recommendations or CO reports, (ii) SPs were not fully addressing concerns raised by CESCR as per recommendations (iii) a lower number or no reports were submitted as shadow reports by CSO's. Therefore, the UN reporting system does not appear to work effectively to hold SPs directly accountable on issues of concern. If the CESCR does not call SPs out on these concerns and monitor their progress on a previous recommendation, then the question of who then hold SPs accountable remains unanswered. Moreover, CSO's, whom we anticipated would be able to call out SPs, either were not submitting shadow reports or on those that submitted they did not address EOH issues in their reports.

Recommendations

a) The CESCR should follow up on all its previous recommendations when considering follow-up SP reports.

b) SPs could (i) provide data on the size and vulnerabilities of population exposed to hazardous materials at work and in different communities; (ii) data on actual aggregate exposure to support their claims on steps they have or are taking to address EOH issues.

c) The CESCR should strictly comply to the guidance provided by the GC 14 on reporting on the RtH so that all factors receive the same degree of attention when issuing recommendations; this will guide SPs and CSOs in their reports.

d) Legal protection of the rights stipulated in ICESCR should ensure special protection of environmental activist to allow for full CSO participation in matters that affect vulnerable communities without fear of intimidation.

5. Conclusion

Overall, comparing the trend in SP reports and COs over a 10-year period from 2009 to 2018, EOH terms were rarely mentioned in the earlier years. However, in the later period, there was a slight improvement where the CESCR made more references to specific EOH issues. This was still not adequate considering research evidence showing an increase of NCDs global BoD owing to climate change and associated increasing extreme weather events such as drought, floods and other environmental disasters experienced in recent years. Therefore, addressing EOH health risks is required of governments to respect, protect and fulfil the RtH. Nonetheless, irrespective of CECSR slight efforts in paying attention to EOH factors and recommendations, only a minority of SPs addressed EOH specific factors in their reports to the CESCR in this study. In addition, those who addressed EOH factors largely focused on addressing consequences rather than preventing EOH burdens. Therefore, there is an urgent need for governments to address root causes of failure to provide for conditions necessary for realisation of the RtH, specifically EOH factors. Further work needs to be done by the CESCR in strict monitoring of SPs' obligations in terms of EOH factors as described in GC 14, which interprets the ICESCR's RtH. If SPs do not comply, existing CSOs should fully participate in high numbers by engaging with communities and CESCR to hold governments more accountable. Besides, government valuing participatory processes that include CSO's in their policymaking process and implementation of laws relating to health brings about collective deliberation that considers the need of communities they serve.

References

1. Edenhofer O, Pichs-Madruga R, Sokona Y, Agrawala S, Alexeyevich Bashmakov I, Blanco G, et al. Summary for Policy Makers. 2015.
2. Gochfeld M, Burger J. Disproportionate exposures in environmental justice and other populations: The importance of outliers. Am J Public Health. 2011;101(SUPPL. 1):53–63.
3. World Health Organization. Noncommunicable diseases country profiles 2018. NONCOMMUNICABLE DISEASES COUNTRY PROFILES 2018. 2018. 155–157 p.
4. Prüss-Üstün, Annette, Wolf, J., Corvalán, Carlos F., Bos, R. & Neira MP. Preventing disease through healthy environments: a global assessment of the burden of disease from environmental risks [Internet]. 2016 [cited 2022 Jan 11]. Available from: https://apps.who.int/iris/handle/10665/204585
5. International Covenant on Economic S and CR. The united nations international covenant on economic, social and cultural rights [Internet]. UN General Assembly, International Covenant on Economic, Social and Cultural Rights, 16 December 1966, United Nations, Treaty Series, vol. 993, p. 3, available at: https://www.refworld.org/docid/3ae6b36c0.html [accessed 8 January 2022]. 1966 [cited 2021 Dec 8]. p. 213–48. Available from: https://www.ohchr.org/en/professionalinterest/pages/cescr.aspx
6. Estébanez MAM. The united nations international covenant on economic, social and cultural rights. Synerg Minor Prot Eur Int Law Perspect. 2009;(December 1966):213–48.
7. Tolley Jr H. The Un Commission On Human Rights (1st ed.). Routledge. [Internet]. 1st ed. 1987. Available from: https://doi.org/10.4324/9780429315619
8. OHCHR. Monitoring the economic, social and cultural rights [Internet]. 2021 [cited 2021 Jul 24]. Available from: https://www.ohchr.org/EN/HRBodies/CESCR/Pages/CESCRIntro.aspx
9. OHCHR. the Major Universal Human Rights Instruments and the Mechanisms for Their Implementation ..... Univers Hum Rights. 2014;27–70.
10. OHCHR. What are human rights? [Internet]. 2021 [cited 2021 Jul 22]. Available from:

https://www.ohchr.org/en/issues/pages/whatarehumanrights.aspx

11. Office of the High Commissioner for Human Rights. CESCR General Comment No. 14: The Right to the Highest Attainable Standard of Health (Art. 12). Adopt Twenty-second Sess Comm Econ Soc Cult Rights, 11 August 2000 (Contained Doc E/C12/2000/4). 2000;2000(14):1–21.
12. Daniels N. Is There a Right to Health Care and, If So, What Does It Encompass? A Companion to Bioeth Second Ed. 2010;1(1):362–72.
13. Forman L, Ooms G, Brolan CE. Rights language in the sustainable development agenda: Has right to health discourse and norms shaped health goals? Int J Heal Policy Manag. 2015;4(12):799–804.
14. Evans J. Eskom emits more sulphur dioxide than any power company... Daliy Maverick [Internet]. 2021 [cited 2022 Jan 15]; Available from: https://www.dailymaverick.co.za/article/2021-10-05-dirty-business-eskom-emits-more-sulphur-dioxide-than-any-power-company-in-the-world-latest-research/
15. DEA SA. National Environmental Management: Air Quality Act, 2004(Act No.39 of 2004). Gov Gaz [Internet]. 2010;21(33064):3–36. Available from: https://www.environment.gov.za/sites/default/files/gazetted_notices/nemaqa_listofactivities_g33064gon248.pdf
16. Centre for Environmental Health. Big polluter Eskom regularly exceeds air pollution limits – damning new report – Centre for Environmental Rights [Internet]. 2019 [cited 2022 Jan 31]. Available from: https://cer.org.za/news/big-polluter-eskom-regularly-exceeds-air-pollution-limits-damning-new-report
17. World Health Organisation(WHO). New WHO air quality guidelines will save lives | IQAir [Internet]. 2022 [cited 2022 Jan 15]. Available from: https://www.iqair.com/blog/air-quality/2021a-WHO-air-quality-guidelines
18. Federation I, Associations of MS, (IFMSA). Climate and Health. 2016;
19. London L, Schneider H. Globalisation and health inequalities: Can a human rights paradigm create space for civil society action? Soc Sci Med. 2012;74(1):6–13.
20. Dany C. Information, organisations contribute to the democratic quality of the UN world summit on the society, TranState working papers, No. 43. econstor. 2006;
21. OHCHR U. International Covenant on Economic, Social and Cultural Rights [Internet]. 2020. Available from: https://indicators.ohchr.org/
22. Braun, V. and Clarke V. Using thematic analysis in psychology Using thematic analysis in psychology. Psychiatr Q [Internet]. 2006;0887(1):37–41. Available from:

http://www.ncbi.nlm.nih.gov/pubmed/11752478

23. United Nations Human Rights Council. Report of the Special Rapporteur on the right of everyone to the enjoyment of the highest attainable standard of physical and mental health [Internet]. Vol. A/HRC/32/3, Promotion and protection of all human rights, civil, political, economic, social, and cultural rights, including the right to development. 2012. Available from: https://www.refworld.org/docid/500803192.html

24. Frumkin H, Haines A. Global Environmental Change and Noncommunicable Disease Risks. Annu Rev Public Health. 2019;40(1):261–82.

25. Driscoll T, Rushton L, Hutchings SJ, Straif K, Steenland K, Abate D, et al. Global and regional burden of disease and injury in 2016 arising from occupational exposures: A systematic analysis for the Global Burden of Disease Study 2016. Occup Environ Med. 2020;77(3):133–41.

26. World Health Organization. The World Health Organization (WHO) [Internet]. The World Health Organization (WHO). 2008. Available from: https://www.who.int/governance/eb/who_constitution_en.pdf

27. McGuire S. World Cancer Report 2014. Geneva, Switzerland: World Health Organization, International Agency for Research on Cancer, WHO Press, 2015. Adv Nutr. 2016;7(2):418–9.

28. K. Lyon B, Popov G. Harmonizing the Hierarchy of Controls & Inherently Safer Design Concepts. PSJ Prof Saf. 2019;34–43.

29. London L. Human Rights, Environmental Justice, and the Health of Farm Workers in South Africa. Int J Occup Environ Health. 2003;9(1):59–68.

30. International Labour Organisation. C155 - Occupational Safety and Health Convention, 1981 (No. 155) [Internet]. [cited 2022 Aug 22]. Available from: https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C155

31. London L. Workers ' rights are human rights – new international norms. Occup Heal South AFRICA [Internet]. 2006;Vol. 12(No. 6 November/December 2006):13–5. Available from: https://www.occhealth.co.za/?/viewArticle/616

32. Di Ruggiero E, Cohen JE, Cole DC, Forman L. Competing conceptualizations of decent work at the intersection ofhealth, social and economic discourses. Soc Sci Med [Internet]. 2015;133:120–7. Available from: http://dx.doi.org/10.1016/j.socscimed.2015.03.026

33. London L, Joshi IK, Cairncross E, Gilmore J, Claudio L. Environmental justice: An international perspective. Encycl Environ Heal. 2019;553–60.

34. Basu S, Stuckler D, Gonsalves G, Lurie M. The production of consumption: addressing the impact of mineral mining on tuberculosis in southern Africa. Global Health. 2009;5(1):11.

35. Landrigan PJ, Fuller R, Acosta NJR, Adeyi O, Arnold R, Basu N (Nil), et al. The Lancet Commission on pollution and health. Lancet (London, England) [Internet]. 2018 Feb 3 [cited 2022 Jan 9];391(10119):462–512. Available from: https://pubmed.ncbi.nlm.nih.gov/29056410/

36. Matter DI. The President and Fellows of Harvard College Harvard School of Public Health / François-Xavier Bagnoud Center for Health What Is a Human-Rights Based Approach to Health and Does It Matter ? Author (s): Leslie London Published by : The President and Fell. Heal (San Fr. 2010;10(1):65–80.

37. Chapman AR. A "Violations Approach" for monitoring the international covenant on economic, social and cultural rights. Hum Rights. 2017;449–92.

38. Roberto G.Lucchini;Leslie London. Global Occupational Health: Current Challenges and the Need for Urgent Action | Elsevier Enhanced Reader. Ann Glob Heal [Internet]. 2014 [cited 2022 Jan 10];Volume 80(4). Available from: https://reader.elsevier.com/reader/sd/pii/S2214999614003099?token=2E7A3EA779E429855D4E8222387D340F6D36A03EA065E40C8E8D54349445F7AA8DBF79C73C1339E49C354B1FD0B1293D&originRegion=eu-west-1&originCreation=20220110165019

39. ILO. Global action needed to tackle rising work-related injuries and diseases, ILO says [Internet]. 2021 [cited 2022 Jan 9]. Available from: https://www.ilo.org/global/about-the-ilo/how-the-ilo-works/departments-and-offices/governance/labadmin-osh/news/WCMS_573681/lang--en/index.htm

40. Li J, Yin P, Wang H, Zeng X, Zhang X, Wang L, et al. The disease burden attributable to 18 occupational risks in China: An analysis for the global burden of disease study 2017. Environ Heal A Glob Access Sci Source. 2020;19(1):1–12.

41. London L. Workers ' rights are human rights – new international norms. 2006;13–5.

42. London L. What Is a Human-Rights Based Approach to Health and Does It Matter ? Author (s): Leslie London. Heal (San Fr. 2008;10(1):65–80.

43. Societies H, Analysis F, Heymann J. The Complex Relationship between Social and Biologic Determinants of Health. 2021;

44. Slatin C. Environmental and occupational health and human rights. A J Environ Occup Heal Policy [Internet]. 2011;21(2):177–95. Available from: https://journals.sagepub.com/doi/pdf/10.2190/NS.21.2.c

45. Sanders D, Nandi S, Labonté R, Vance C VDW. From primary health care to universal health coverage—one step forward and two steps back. Lancet [Internet]. 2021;394(August):1–32.

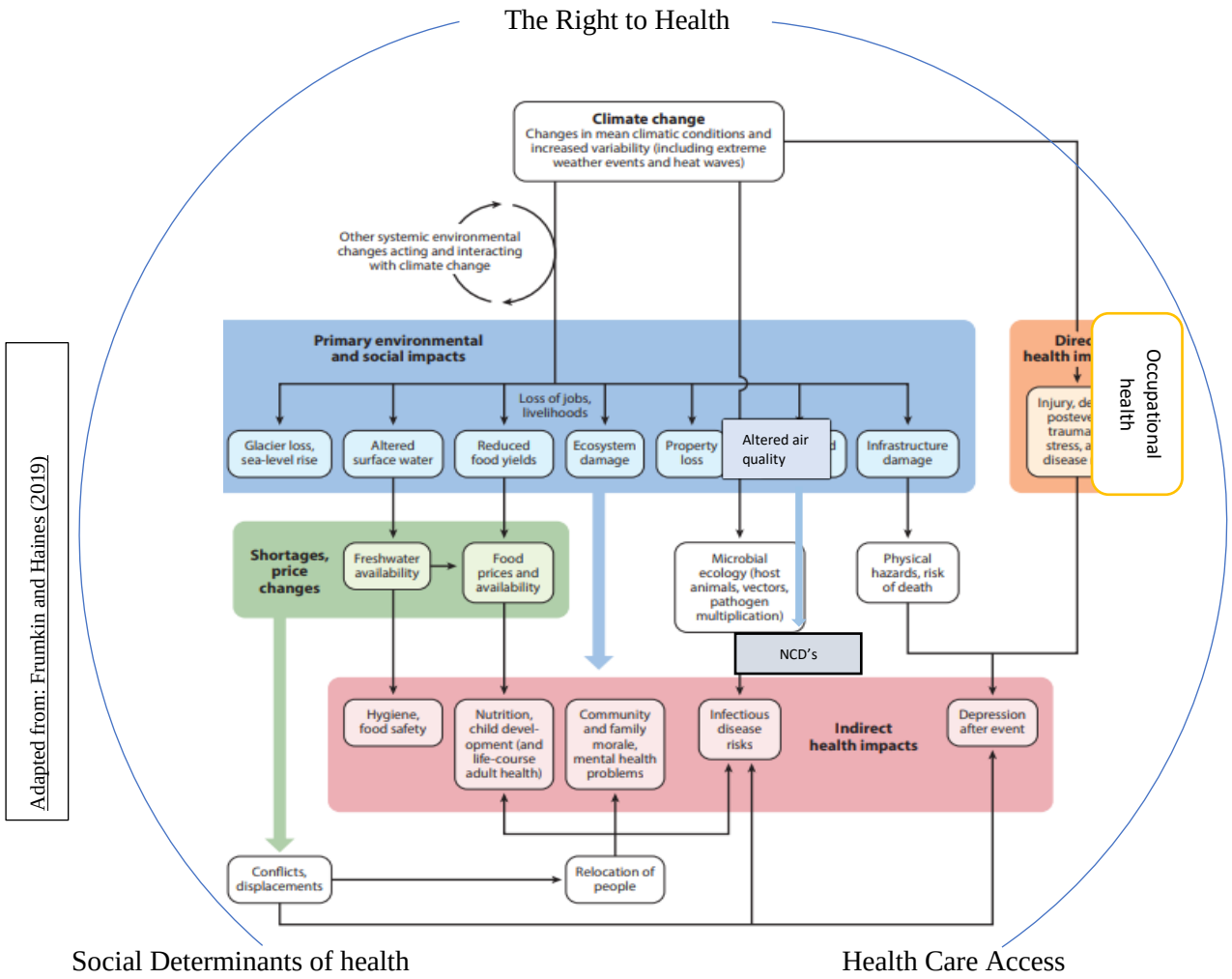
Available from: https://www.thelancet.com/journals/lancet/issue/vol398no10312/PIIS0140-6736(21)X0046-3

46. WHO. Climate change and health [Internet]. 2021 [cited 2021 Jan 1]. Available from: https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health

47. Crenshaw K. On Intersectionality: Essential Writings. Fac Books [Internet]. 2017 Mar 1 [cited 2022 Aug 23]; Available from: https://scholarship.law.columbia.edu/books/255

PART C: Appendices

Appendix 1: Figure 1: Linking the Right to Health to EOH.



Adapted from: Frumkin and Haines (2019)

Appendix 2: Table 1: Characteristics of reports used for study

Region	Country	Sample A	Sample B	Sample C	Sample D	Sample E
Region		Initial SP reports	COs to Sample A SP reports	Follow-up SP reports	COs to follow-up SP reports	CSO reports
African	Tanzania	2009(3)	2012	No submission	N/A	No submissions
	Ethiopia	2009(3)	2012	No submission	N/A	3 CSO submissions
	Gabon	2011(1)	2013	No submission	N/A	2 CSO submissions
American	Jamaica	2010(1)	2013	No submission	N/A	No submission
	Paraguay	2011(1)	2015	No submission	N/A	No submission
	Argentina	2009(1)	2010	2016	2018	2(1 excluded)
European	Finland	2011(1)	2014	No submission	N/A	No submissions
	Slovakia	2009(1)	2012	2017(1)	No submission	7 CSO submissions
	Denmark	2010(1)	2013	2018(1)	2019(Excluded)	No submissions
Eastern Mediter-ranean	Egypt	2010(3)	2013	No submission	N/A	3 CSO submissions
	Kuwait	2010(1)	2013	2018(1)	2019(Excluded)	No submissions
	Iran	2009(1)	2013	No submission	N/A	No submissions
Western Pacific	China	2010(3)	2014	No submission	N/A	5 CSO submissions
	Japan	2010(1)	2013	No submission	N/A	No submissions
	New Zealand	2009(1)	2012	2017	2018	No submissions
South East Asia	Nepal	2010(3)	2014	No submission	N/A	No submissions
	Korea	Excluded	N/A	N/A	N/A	No submissions
	Sri-lanka	Excluded	N/A	N/A	N/A	No submissions

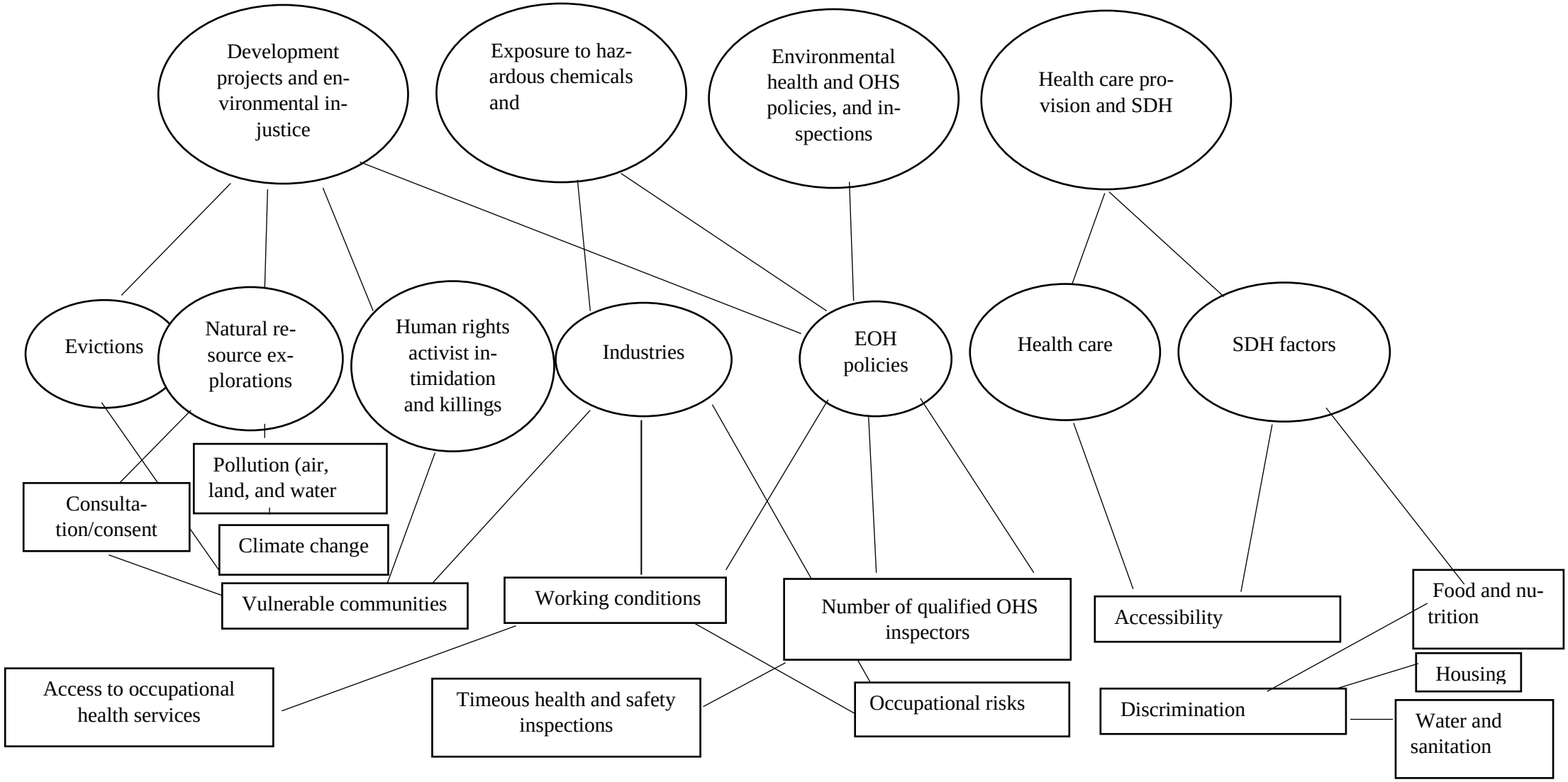
Appendix 3: Table 2: Code book

Main Codes	Main Themes	Reason for inclusion
• Environmental Injustice • Eviction • Discrimination • Indigenous people's land • Consulting with landowners • Mining and commercial projects on private land	Development projects and Environmental Injustice <u>Subthemes</u> a) Evictions b) Natural resources exploitation c) Intimidation and killings of human rights activist	1. The right to adequate standard of living and health services should be culturally appropriate and acceptable to indigenous people and marginalized communities 2. Projects or development-related activities forcing indigenous people out of their land and environment, denies them their sources of nutrition, relationship with their lands and has a deleterious effect on their health. 3. Sustainability nature of development projects vs sustainable development of indigenous people use of their own land for survival 4. Human rights activists are crucial in advocating for vulnerable population who are at the most affected by environmental injustice (lack of informed consent, violations of indigenous population's rights etc)
• Artisanal mining and the chemicals • Pollution from residents of areas neighbouring industrial sites	Exposure to hazardous chemicals and environmental toxins	ICESCR Article 12b states that, governments should take steps to prevent and reduce people's exposure to harmful substances such as radiation and harmful chemicals or other detrimental environmental conditions that directly or indirectly impact upon human health.
• Regular workplace inspections • Untrained inspectors • Shortage of trained inspectors	Environmental health and OHS policies and inspections	1. Regulating, assessing and control of environmental factors that can potentially affect health 2. Preventing illnesses and creating health-supportive environments (for certain diseases mostly NCD's which are entirely attributed to the environment and or occupation) i.e., occupational risks for employed people

		or susceptibility of people within an environment that is not regulated or protected from toxins 3. Article 12.2 (b), "The right to healthy natural and workplace environments" GC 14 pg.6
Food and nutrition • Food security and supply programs • High food prices • Food inadequacy - Drought - Loss of crops - Environmental protection • High level food safety • Agricultural production of food • Protein • Food consumption • Food legislation • Discrimination **Water and Sanitation** Water quality(treatment) No running water Safe drinking water Sewage treatment **Housing**	Health care and Social Determinants of Health <u>Subthemes</u> a) Health care and discrimination medication b) Food and nutrition c) Water and Sanitation d) Housing	1. Everyone is entitled to the right to adequate food, water, life, and adequate standard of living and health 2. According to GC 14," The Covenant proscribes any discrimination in access to health care and underlying determinants of health." (GC 14 p.g 7) 3. States must ensure, "equal access for all to the underlying determinants of health, such as nutritiously safe food and potable drinking water, basic sanitation, adequate housing and living conditions". (GC 14 p.g 13)

Informal dwelling - Mud houses - Slums Poor quality houses Inadequate housing Expensive rentals - Affordable mortgages Housing policy Environmentally friendly houses		

Appendix 4: Figure 3: Themes Mapping



Appendix 5: Journal Manuscript Template

Type of the Paper (Article, Review, Communication, etc.)

Title

Firstname Lastname [1], Firstname Lastname [2] and Firstname Lastname [2,*]

[1] Affiliation 1; e-mail@e-mail.com
[2] Affiliation 2; e-mail@e-mail.com
* Correspondence: e-mail@e-mail.com; Tel.: (optional; include country code; if there are multiple corresponding authors, add author initials)

Abstract: A single paragraph of about 200 words maximum. For research articles, abstracts should give a pertinent overview of the work. We strongly encourage authors to use the following style of structured abstracts, but without headings: (1) Background: Place the question addressed in a broad context and highlight the purpose of the study; (2) Methods: briefly describe the main methods or treatments applied; (3) Results: summarize the article's main findings; (4) Conclusions: indicate the main conclusions or interpretations. The abstract should be an objective representation of the article and it must not contain results that are not presented and substantiated in the main text and should not exaggerate the main conclusions.

Citation: Lastname, F.; Lastname, F.; Lastname, F. Title. *Int. J. Environ. Res. Public Health* **2022**, *19*, x. https://doi.org/10.3390/xxxxx

Academic Editor: Firstname Lastname

Received: date
Accepted: date
Published: date

Keywords: keyword 1; keyword 2; keyword 3 (List three to ten pertinent keywords specific to the article yet reasonably common within the subject discipline.)

0. How to Use This Template

The template details the sections that can be used in a manuscript. Note that each section has a corresponding style, which can be found in the "Styles" menu of Word. Sections that are not mandatory are listed as such. The section titles given are for articles. Review papers and other article types have a more flexible structure.

Remove this paragraph and start section numbering with 1. For any questions, please contact the editorial office of the journal or support@mdpi.com.

1. Introduction

The introduction should briefly place the study in a broad context and highlight why it is important. It should define the purpose of the work and its significance. The current state of the research field should be carefully reviewed and key publications cited. Please highlight controversial and diverging hypotheses when necessary. Finally, briefly mention the main aim of the work and highlight the principal conclusions. As far as possible, please keep the introduction comprehensible to scientists outside your particular field of research. References should be numbered in order of appearance and indicated by a numeral or numerals in square brackets—e.g., [1] or [2,3], or [4–6]. See the end of the document for further details on references.

2. Materials and Methods

The Materials and Methods should be described with sufficient details to allow others to replicate and build on the published results. Please note that the publication of your manuscript implicates that you must make all materials, data, computer code, and protocols associated with the publication available to readers. Please disclose at the submission

stage any restrictions on the availability of materials or information. New methods and protocols should be described in detail while well-established methods can be briefly described and appropriately cited.

Research manuscripts reporting large datasets that are deposited in a publicly available database should specify where the data have been deposited and provide the relevant accession numbers. If the accession numbers have not yet been obtained at the time of submission, please state that they will be provided during review. They must be provided prior to publication.

Interventionary studies involving animals or humans, and other studies that require ethical approval, must list the authority that provided approval and the corresponding ethical approval code.

3. Results

This section may be divided by subheadings. It should provide a concise and precise description of the experimental results, their interpretation, as well as the experimental conclusions that can be drawn.

3.1. Subsection

3.1.1. Subsubsection

Bulleted lists look like this:

First bullet;
Second bullet;
Third bullet.

Numbered lists can be added as follows:

First item;
Second item;
Third item.

The text continues here.

3.2. Figures, Tables and Schemes

All figures and tables should be cited in the main text as Figure 1, Table 1, etc.

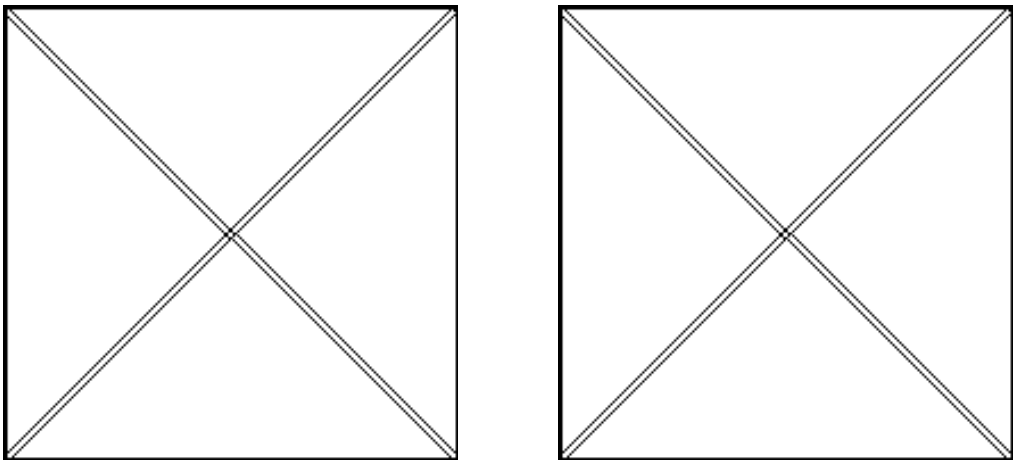
Figure 1. This is a figure. Schemes follow the same formatting.

Table 1. This is a table. Tables should be placed in the main text near to the first time they are cited.

Title 1	Title 2	Title 3
entry 1	data	data
entry 2	data	data [1]

[1] Tables may have a footer.

The text continues here (Figure 2 and Table 2).



(**a**) (**b**)

Figure 2. This is a figure. Schemes follow another format. If there are multiple panels, they should be listed as: (**a**) Description of what is contained in the first panel; (**b**) Description of what is contained in the second panel. Figures should be placed in the main text near to the first time they are cited. A caption on a single line should be centered.

Table 2. This is a table. Tables should be placed in the main text near to the first time they are cited.

Title 1	Title 2	Title 3	Title 4
entry 1 *	data	data	data
	data	data	data
	data	data	data
entry 2	data	data	data
	data	data	data
entry 3	data	data	data
	data	data	data
	data	data	data
	data	data	data
entry 4	data	data	data
	data	data	data

* Tables may have a footer.

3.3. Formatting of Mathematical Components

This is example 1 of an equation:

$$a = 1, \tag{1}$$

the text following an equation need not be a new paragraph. Please punctuate equations as regular text.

This is example 2 of an equation:

$$a = b + c + d + e + f + g + h + i + j + k + l + m + n + o + p + q + r + s + t + u + v + w + x + y + z \tag{2}$$

the text following an equation need not be a new paragraph. Please punctuate equations as regular text.

Theorem-type environments (including propositions, lemmas, corollaries etc.) can be formatted as follows:

Theorem 1. *Example text of a theorem. Theorems, propositions, lemmas,* etc. *should be numbered sequentially (i.e., Proposition 2 follows Theorem 1). Examples or Remarks use the same formatting, but should be numbered separately, so a document may contain Theorem 1, Remark 1 and Example 1.*

The text continues here. Proofs must be formatted as follows:

Proof of Theorem 1. Text of the proof. Note that the phrase "of Theorem 1" is optional if it is clear which theorem is being referred to. Always finish a proof with the following symbol. □

The text continues here.

4. Discussion

Authors should discuss the results and how they can be interpreted from the perspective of previous studies and of the working hypotheses. The findings and their implications should be discussed in the broadest context possible. Future research directions may also be highlighted.

5. Conclusions

This section is mandatory.

6. Patents

This section is not mandatory but may be added if there are patents resulting from the work reported in this manuscript.

Supplementary Materials: The following supporting information can be downloaded at: www.mdpi.com/xxx/s1, Figure S1: title; Table S1: title; Video S1: title.

Author Contributions: For research articles with several authors, a short paragraph specifying their individual contributions must be provided. The following statements should be used "Conceptualization, X.X. and Y.Y.; methodology, X.X.; software, X.X.; validation, X.X., Y.Y. and Z.Z.; formal analysis, X.X.; investigation, X.X.; resources, X.X.; data curation, X.X.; writing—original draft preparation, X.X.; writing—review and editing, X.X.; visualization, X.X.; supervision, X.X.; project administration, X.X.; funding acquisition, Y.Y. All authors have read and agreed to the published version of the manuscript." Please turn to the CRediT taxonomy for the term explanation. Authorship must be limited to those who have contributed substantially to the work reported.

Funding: Please add: "This research received no external funding" or "This research was funded by NAME OF FUNDER, grant number XXX" and "The APC was funded by XXX". Check carefully that the details given are accurate and use the standard spelling of funding agency names at https://search.crossref.org/funding. Any errors may affect your future funding.

Institutional Review Board Statement: In this section, you should add the Institutional Review Board Statement and approval number, if relevant to your study. You might choose to exclude this statement if the study did not require ethical approval. Please note that the Editorial Office might ask you for further information. Please add "The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board (or Ethics Committee) of NAME OF INSTITUTE (protocol code XXX and date of approval)." for studies involving humans. OR "The animal study protocol was approved by the Institutional Review Board (or Ethics Committee) of NAME OF INSTITUTE (protocol code XXX and date of approval)." for studies involving animals. OR "Ethical review and approval were waived for this study due to REASON (please provide a detailed justification)." OR "Not applicable" for studies not involving humans or animals.

Informed Consent Statement: Any research article describing a study involving humans should contain this statement. Please add "Informed consent was obtained from all subjects involved in the study." OR "Patient consent was waived due to REASON (please provide a detailed justification)." OR "Not applicable." for studies not involving humans. You might also choose to exclude this statement if the study did not involve humans.

Written informed consent for publication must be obtained from participating patients who can be identified (including by the patients themselves). Please state "Written informed consent has been obtained from the patient(s) to publish this paper" if applicable.

Part C

Data Availability Statement: In this section, please provide details regarding where data supporting reported results can be found, including links to publicly archived datasets analyzed or generated during the study. Please refer to suggested Data Availability Statements in section "MDPI Research Data Policies" at https://www.mdpi.com/ethics. If the study did not report any data, you might add "Not applicable" here.

Acknowledgments: In this section, you can acknowledge any support given which is not covered by the author contribution or funding sections. This may include administrative and technical support, or donations in kind (e.g., materials used for experiments).

Conflicts of Interest: Declare conflicts of interest or state "The authors declare no conflict of interest." Authors must identify and declare any personal circumstances or interest that may be perceived as inappropriately influencing the representation or interpretation of reported research results. Any role of the funders in the design of the study; in the collection, analyses or interpretation of data; in the writing of the manuscript, or in the decision to publish the results must be declared in this section. If there is no role, please state "The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results".

Appendix A

The appendix is an optional section that can contain details and data supplemental to the main text—for example, explanations of experimental details that would disrupt the flow of the main text but nonetheless remain crucial to understanding and reproducing the research shown; figures of replicates for experiments of which representative data is shown in the main text can be added here if brief, or as Supplementary data. Mathematical proofs of results not central to the paper can be added as an appendix.

Appendix B

All appendix sections must be cited in the main text. In the appendices, Figures, Tables, etc. should be labeled starting with "A"—e.g., Figure A1, Figure A2, etc.

References

References must be numbered in order of appearance in the text (including citations in tables and legends) and listed individually at the end of the manuscript. We recommend preparing the references with a bibliography software package, such as EndNote, Reference Manager or Zotero to avoid typing mistakes and duplicated references. Include the digital object identifier (DOI) for all references where available.

Citations and references in the Supplementary Materials are permitted provided that they also appear in the reference list here.

In the text, reference numbers should be placed in square brackets [ ] and placed before the punctuation; for example [1], [1–3] or [1,3]. For embedded citations in the text with pagination, use both parentheses and brackets to indicate the reference number and page numbers; for example [5] (p. 10), or [6] (pp. 101–105).

1. Author 1, A.B.; Author 2, C.D. Title of the article. *Abbreviated Journal Name* **Year**, *Volume*, page range.
2. Author 1, A.; Author 2, B. Title of the chapter. In *Book Title*, 2nd ed.; Editor 1, A., Editor 2, B., Eds.; Publisher: Publisher Location, Country, 2007; Volume 3, pp. 154–196.
3. Author 1, A.; Author 2, B. *Book Title*, 3rd ed.; Publisher: Publisher Location, Country, 2008; pp. 154–196.
4. Author 1, A.B.; Author 2, C. Title of Unpublished Work. *Abbreviated Journal Name* year, *phrase indicating stage of publication (submitted; accepted; in press)*.
5. Author 1, A.B. (University, City, State, Country); Author 2, C. (Institute, City, State, Country). Personal communication, 2012.
6. Author 1, A.B.; Author 2, C.D.; Author 3, E.F. Title of Presentation. In Proceedings of the Name of the Conference, Location of Conference, Country, Date of Conference (Day Month Year).
7. Author 1, A.B. Title of Thesis. Level of Thesis, Degree-Granting University, Location of University, Date of Completion.
8. Title of Site. Available online: URL (accessed on Day Month Year).

Appendix 6: Ethics clearance certificate

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee

Room G50- Old Main Building
Groote Schuur Hospital
Observatory 7925
Telephone (021) 406 6492
Email: hrec-submissions@uct.ac.za
Website: www.health.uct.ac.za/fhs/research/humanethics/forms

31 March 2021

HREC REF: 131/2021

Prof L London
School of Public Health & Family Medicine
Falmouth Building-FHS
Email: Leslie.London@uct.ac.za
Student: chinda001@myuct.ac.za

Dear Prof London

PROJECT TITLE: A REVIEW OF THE RECOMMENDATIONS MADE BY THE UNITED NATIONAL COMMITTEE ON ECONOMIC, SOCIAL AND CULTURAL RIGHTS (CESCR) ON COUNTRY REPORTS FROM 2009 TO 2018: ATTENTION TO OCCUPATIONAL AND ENVIRONMENTAL HEALTH IN THE FULL REALISATION OF HEALTH AS A HUMAN RIGHT-MASTERS CANDIDATE-MS NDAKAPARA CHITSA

Thank you for submitting your study to the Faculty of Health Sciences Human Research Ethics Committee (HREC)for review.

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

This approval is subject to strict adherence to the HREC recommendations regarding research involving human participants during COVID -19, dated 17 March 2020 & 06 July 2020.

Approval is granted for one year until the 30 April 2022.

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.
(Forms can be found on our website: www.health.uct.ac.za/fhs/research/humanethics/forms)

The HREC acknowledge that the student: Ms Ndakapara Chitsa will also be involved in this study.

Please quote the HREC REF 131/2021 in all your correspondence.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please note that for all studies approved by the HREC, the principal investigator **must** obtain appropriate institutional approval, where necessary, before the research may occur.

HREC/REF 131/2021sa

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, FACULTY OF HEALTH SCIENCES HUMAN RESEARCH ETHICS COMMITTEE

Federal Wide Assurance Number: FWA00001637.
Institutional Review Board (IRB) number: IRB0C0001938
NHREC-registration number: REC-210208-007

This serves to confirm that the University of Cape Town Human Research Ethics Committee complies to the Ethics Standards for Clinical Research with a new drug in patients, based on the Medica Research Council (MRC-SA), Food and Drug Administration (FDA-USA), Internat onal Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use: Good Clinical Practice (ICH GCP), South African Good Clinical Practice Guidelines (DoH 2006), based on the Association of the British Pharmaceutical Industry Guidelines (ABPI), and Declaration of Helsinki (2013) guidelines. The Human Research Ethics Committee granting this approval is in compliance with the ICH Harmonised Tripartite Guidelines E6: Note for Guidance on Good Clinical Practice (CPMP/ICH/135/95) and FDA Code Federal Regulation Part 50, 56 and 312.

HREC/REF 131/2021sa