

**Polychlorinated biphenyls (PCBs) Crisis and the Policy Process: A Comparative  
Policy Network Analysis in United States and in Ghana.**

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## **ABSTRACT**

Polychlorinated biphenyls (PCBs) have been globally classified as a chemical substance of harm to flora and fauna. By virtue of this classification, PCBs have become an issue among well-meaning governments, non-government organizations, media, academics, and societal groups in the policy network. This is especially so within the discourse of industrial development and environmental justice, environmental policy frameworks, and public participation in policymaking process.

In Ghana, research shows that PCBs have become ubiquitous. However, the country's existing environmental protection policy framework does not adequately address the problem, unlike in the U.S. This inadequacy is considered a policy failure, which has led to large-scale environmental injustice from an historical point of view. There are underlying factors leading to this policy failure, which merit researching. The policy process leading to the ban of PCBs in the U.S. in 1979 provides a unique case to contrast the PCBs case in Ghana, while at the same time underscoring how the U.S. policy facilitated conditions of environmental injustice in Ghana.

The paper is divided into four main themes: Introduction; The PCBs cases in the U.S. and in Ghana; Fieldwork and Analysis; Conclusion. In my introductory theme, I will look at industrialization and the environment justice frame that emerges as a result of a hegemonic order that exists between developed and developing nations. I will also look at environmental policy frameworks and the discourse on the dynamics of policy networks and processes. The section also reviews literature on public engagement with a focus on public participation as a modest way of expanding the policy network. Finally, I review the polity and policy frameworks in Ghana from an historical perspective to underscore the basis of environmental policy in the country. In the PCBs cases in the U.S. and Ghana theme, I foremost provide a brief about the history of PCBs and then proceed to the historical problematization of PCBs in the U.S., and the policy process that ensued afterwards. I then look at the PCBs case in Ghana from a historical perspective through the lenses of Ghana's quest to expand access to electricity as a catalyst for socioeconomic growth. My fieldwork and analysis theme points to the

methodology and the tools and techniques that were utilized in my research. Interviews and questionnaires responses, literature, court, policy, and institutional documents formed the backbone of my analysis. The last theme, which is the concluding part of my paper, discusses my summary and understanding of the policy process for the two countries and points out my observations. The chapter also offers recommendations as part of my contributions to the policy process, particularly in Ghana. Overall, this process provides a better comparative picture of the environmental policy process in the U.S. and in Ghana through the lenses of the policy network.

## **FOREWORD**

This paper is directly connected to my Plan of Study, which aims to explore the environmental policy dynamics leading to policy failures in Ghana through my core components. This exploration is conducted by analyzing the environmental policy process in Ghana and in the U.S. through a comparative study of the policy networks of the two countries, using the case of PCBs in both countries as the problem barometer.

To make my case concrete, I conducted fieldwork in Ghana and directly connected my findings to the literature position of the three core components of my Plan of Study: Industrial Development and Environmental Justice; Electricity Industries in Ghana and the PCBs Crisis; Participatory Governance and Environmental Policy Process. This connectivity provided the platform for me to review the PCBs case in the U.S. and the policy process leading to its ban in 1979; and the case of PCBs ubiquity in Ghana as a result of a national quest to industrialize through electrification projects. The review of the two cases together with a literature review of the core components in my Plan of Study provided a framework upon which I juxtaposed my fieldwork analysis. It offered me the opportunity to analyze the policy network in Ghana and the policy process by pointing out the causes of policy failures in Ghana while making meaningful comparison to the case in the U.S. This also gave me insight into how policy analysis is conducted using different approaches and how to actively involve the public in participatory governance in government decision-making processes. Importantly, it helped me to accomplish my learning objectives on Participatory Governance and Environmental Policy.

The fieldwork helped me to gain an inside understanding of how the electricity companies in Ghana influence environmental policy and contribute to environmental injustice. This satisfactorily accomplished my learning objectives under Industrial Development and Environmental Justice and Electricity Industries in Ghana and the PCBs Crisis, as stated in my Plan of Study. It also allowed me to achieve my learning objectives of understanding the role of government institutions in permitting industries to pollute the environment.

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Finally to my family, I say thank you for all the moral support, especially Eyram!

## **DEDICATION:**

**To Eric Amoako Forson.**

*You allowed yourself to be the vehicle of encouragement that has brought me this far in my academic pursuit.*

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## **ABBREVIATIONS**

<b>AGI</b>	Association of Ghana Industries
<b>AU</b>	Africa Union
<b>CCME</b>	Canadian Council of Minister of the Environment
<b>CDM</b>	Clean Development Mechanism
<b>CEPS</b>	Custom Excise and Preventive Service
<b>CEQ</b>	Council on Environmental Quality
<b>EAP</b>	Environmental Action Plan
<b>ECG</b>	Electricity Company of Ghana
<b>ECOWAS</b>	Economic Community of West African States
<b>EDF</b>	Environmental Defense Fund
<b>EHS</b>	Environment, Health and Safety
<b>EEI</b>	Edison Electric Institute
<b>EPA</b>	Environmental Protection Agency (emphasis on the U.S.)
<b>Ghana EPA</b>	Ghana Environmental Protection Agency
<b>EPC</b>	Environmental Protection Council
<b>ERP</b>	Economic Recovery Plan
<b>FDA</b>	Food and Drug Administration
<b>GBC</b>	Ghana Broadcasting Corporation
<b>GCS</b>	Ghana Chemical Society
<b>GEF</b>	Global Environmental Facility
<b>GNAFF</b>	Ghana National Association of Farmers and Fishermen
<b>GRIDCO</b>	Ghana Grid Company
<b>GSCS</b>	Ghana Students' Chemical Society
<b>IMF</b>	International Monetary Fund
<b>LDCs</b>	Least Developing Countries
<b>MEST</b>	Ministry of Environment, Science and Technology
<b>MESTI</b>	Ministry of Environment, Science, Technology and Innovation
<b>NEAP</b>	National Environmental Action Plan
<b>NED</b>	Northern Electricity Department
<b>NEF</b>	National Electrification Fund
<b>NEP</b>	National Environmental Policy
<b>NEPA</b>	National Environmental Policy Act
<b>NEPS</b>	National Electrification Planning Study
<b>NES</b>	National Electrification Scheme
<b>NESRP</b>	Northern Electrification and System Reinforcement Project
<b>NGO</b>	Non-Governmental Organization
<b>NRC</b>	National Redemption Council

<b>OAU</b>	Organization of African Unity
<b>OECD</b>	Organization for Economic Cooperation and Development
<b>PCBs</b>	Polychlorinated biphenyls
<b>PCDFs</b>	Polychlorinated dibenzofurans
<b>PIA</b>	Pesticide Industry Associations
<b>POPs</b>	Persistent Organic Pollutants
<b>SHEP</b>	Self-Help Electrification Program
<b>TSCA</b>	Toxic Substance Control Act
<b>TUC</b>	Trade Union Congress
<b>UNDP</b>	United Nations Development Program
<b>UNEP</b>	United Nations Environmental Program
<b>UNIDO</b>	United Nations Industrial Development Organization
<b>UNITAR</b>	United Nations Institute for Training and Research
<b>The U.S.</b>	United States
<b>UPS</b>	Uninterrupted Power Supply
<b>USWAG</b>	Utility Solid Waste Activity Group
<b>VALCO</b>	Volta Aluminum Company
<b>VRA</b>	Volta River Authority
<b>WCED</b>	World Commission on Environment and Development

# INTRODUCTION

## INDUSTRIAL DEVELOPMENT AND ENVIRONMENTAL JUSTICE

### Overview

This chapter looks at the role of industrialization and hegemony and their contribution to environmental injustice, particularly in developing nations. The chapter reviews the regime of stringent environmental laws in developed nations and how these measures facilitated the problem of dumping toxic substances in the developing nations that were desperate to modernize. Finally the underlying factors leading to the strongly knit toxic substance trading relationship between developed and developing nations is pointed out. This is important towards understanding the case of PCBs ubiquity in Ghana.

### Industrialization and the power differentials among nations

Ulrich Beck has argued in his book *"Risk Society: Towards a New Modernity"* that modernity has revolutionize and made better the way social life is organized but at the same created the conditions for pollution particularly through industrial development (1992). Shrivastava similarly argued that industrial development of the past 200 years has led to increased prosperity, however with costly degradation to the environment and human life (1996). The global demand for chemical use after the Post World War (II) led to an unprecedented increase in the levels of Persistent Organic Pollutants (POPs) such as PCBs in the environment with dire consequences. Rachel Carson's groundbreaking book *"Silent Spring"* which raised significant awareness during the early rise of the chemical industry vividly pointed out the high cost of chemical toxicity to human life and the environment (1962). With the PCBs ban in the U.S. and similar bans in other developed nations in the 1970s, an era of increased exportation of PCBs-tainted equipment to many developing nations ensued. These developing nations were desperate to modernize through various development projects in the post-colonial era of the 1970s and early 1980s (Hoogvelt, 2001).

The postcolonial era became an era of immense dependency of the developing nations on the developed nations for economic advancement, with the vision to modernize. The characterization of this dependency dynamics introduced an established long-term bilateral and multilateral relationship, which was rooted in the ideology of trade liberalization and globalization. While the developing nations saw this relationship as the motor for their economic development, it was quickly exploited by the developed nations to their advantage in a manner that enhance their economic, social, and environmental good. It is this relationship that created a conduit for Africa and other developing nations to eventually serve as host to millions of tons of toxic waste; many of which came packaged in the name of development inputs (Vir, 1989; Wynne, 1989). While corporations in the developed nations like the U.S. pushed out tainted electric transformers and other PCBs contaminated substances to the developing nations in order to meet stricter regulatory requirement, the process quickly overburdened the developing nations with PCBs. Thus, a situation whereby the developing nations became the dumping ground for the developed nations was created. This phenomenon became known among some African scholars and well-meaning African politicians as “toxic terrorism” and “environmental imperialism” (Montgomery, 1995, p. 1).

According to Foster and Clark, the capitalist ideology has divided nations into core and periphery, which has created a world system of “dominance and dependency,” such as “the dumping of ecological waste in ways that widen the chasm between [core] and periphery” (2009, p.187). Andre Gunder Frank has equally pointed out that this relationship between what he called the “satellite underdeveloped” and “metropolitan developed” countries has created the condition of ‘underdevelopment’ of the satellite; thus creating the structures necessary for the capitalist system to thrive on a global scale (1966, pp. 18 and 24).

### **Finding a Dumping Ground: The Environmental Justice Perspective**

During the latter part of the 1970s and 1980s, environmental regulations in the developed nations became increasingly stringent due to increased public opposition to

toxic waste disposal to safeguard the environment and human health. As a result of this, the cost of toxic waste disposal became increasingly expensive, which undoubtedly continued to impact the profit margins of corporations. This led to an increased search for dumping grounds in areas where the cost was cheap, resistance was least, and the laws were lax (Mpanya, 1992; Clapp, 1994; Park 1998; Tesi, 2000; Mohai *et al*, 2009).

Park points out that in 1983, it was estimated that toxic chemical waste crossed a national frontier more than once every five seconds within Western Europe and North America (1998). However, by 1986 the trading route had changed to the developing world with about 400 shipment notices per year from 30 shipment notices in the 1980 (ibid). A Greenpeace report similarly shows that between 1989 and 1994, the Organization for Economic Cooperation and Development (OECD) countries exported 2,611,677 metric tons of toxic wastes to non-OECD countries (1994). Currently, it is estimated that about 440 million tons of toxic waste are produced each year globally (Gilman *et al*, 2011), with about 10 percent from the United States and other industrialized countries crossing international borders each year (Gilman *et al*, 2011; Pellow, 2007; Hilz, 1992). It is important to point out that toxic waste trade is not very lucrative and appealing among developed nations because such trade thrives on strict regulatory differences and high cost of disposal amongst them (Clapp, 2002). The developing nations have therefore become a target for toxic waste dumping because of nonexistent or weak environmental regulations and enforcement regimes, and also the desperate desire by governments in poor nations to accept toxic dumping in exchange for financial returns. For instance, it is recorded that in 1989 toxic waste disposal in Africa cost only 40 dollars per ton, whereas the cost of disposal in Europe or United States was four to twenty-five times that figure (Park, 1998). In fact, Clapp points out that in the U.S. cost for dumping such waste was \$15 per ton in 1980, which quickly rose to \$250 in 1988 per ton (Clapp, 2007). Ironically, some African countries were even willing to accept far cheaper rates for toxic waste disposal in return for economic gains (Vir, 1989).

Disappointingly, toxic waste dumping in developing nations has even been encouraged by World Bank officials. On December 1991, then World Bank Chief Economist, Lawrence Summers, is reported to have written a memorandum to a colleague in which they discussed how to cement what they termed the “economic logic” of dumping toxic substances in developing countries (Summers, 1992: *in The Economist*, 8). Summers pointed out to his colleague that “...the economic logic behind dumping a load of toxic waste in the lowest wage country is impeccable and [they] should face up to that” (ibid).

Summers advocated for more migration of what he termed “dirty industries” and pollution in the “Least Developing Countries” (LDCs), with no regard to human life or the environment of these regions (Johnson *et al*, 2007; Pellow, 2007).

For the past 30 years, Africa has been playing host to millions of tons of toxic waste from the developed nations in exchange for financial benefits. It is reported that in some cases the fees paid by corporations to dump toxic waste in some African nations was greater than those nations annual Gross National Product (Abu, 1988). The vastness of Africa’s entrenchment came to light in the latter part of the 1980s when an Italian-Swiss firm attempted to negotiate contracts with Guinea Bissau, Djibouti and Senegal to trade in hazardous waste (ibid). In the case of Guinea Bissau, it was calculated that the deal would have earned the country \$600 million if it had permitted fifteen million tons of industrial waste for a period of five-years (Okaru, 1992, Wynne, 1989). Wynne argues that this was “more than four times the country’s gross national product and twice its national debts” (1989, p.121).

In “*The Dumping of Toxic Waste in African Countries; a Case of Poverty and Racism*,” Mpanya (1992) argues that one of the biggest international environmental injustice is the exportation of hazardous wastes to Third World countries. Citing the most prominent case of hazardous dumping in Africa is the 1987 case in the small town of Koko in Nigeria. Five ships loaded with 18000 barrels of hazardous waste weighing about 3800 tons, consisting of about 150 tons of PCBs were described as building materials and dumped in the backyard of Sunday Nana, a local farmer and businessman for a rental

fee of \$100 per month for almost eighteen month (Vir, 1989; Ehwarieme and Cocodia, 2011; Okaru, 1992). Whereas the dumping in Nigeria fetched the importer \$4.3 million dollars in profit, it led to the death of nineteen people (Okaru, 1992). When the illegal dumping was discovered, an agreement was reached between the Nigerian and Italian government to ship back the cargo to Italy after some bureaucratic tussle between the two nations (Vir, 1989). However, the citizens of Italy refused to allow entry of the hazardous waste cargo into their land by protesting in all the ports the ship had attempted to dock, to prevent it from offloading into their country (ibid). Another case of environmental injustice that emerged in Africa is the case of Benin, a neighboring country to Nigeria. In the mid to late 1980s, out of poverty Benin was coerced by western nations to submerge itself in the toxic trade for economic gains (Vir, 1989). Vir succinctly pointed out how Benin offered to receive about five million tons of toxic waste from Europe and North America at a meager fee of \$2.50 per ton as a result of a contract it had signed with a company called Sesco Ltd (ibid). A similar agreement it had had with France was to fetch the country \$18 million (ibid).

This pattern of irresponsible leadership is no different to the most recent case in Côte d'Ivoire. On August 20 2006, Trafigura, the world's third largest independent oil trader clandestinely dumped toxic waste in numerous places in Abidjan, Côte d'Ivoire. This led to 17 fatalities and about 30,000 people sustaining severe injuries from the exposure to the waste (Greenpeace, 2010; Gilman *et al*, 2011). A three-year investigation into the incident by Amnesty International and Greenpeace revealed that the absence of effective law enforcement was a loophole Trafigura exploited to maximize corporate profit, without regard for human life and the environment. The harshest reality of the incident to the victims was that, the government of Côte d'Ivoire gave Trafigura legal immunity from prosecution in exchange of financial settlement (Greenpeace, 2010). Wole Soyinka, the Nigerian Nobel Prize Winner has referred to such act as "the poisoning of the continent" and an expression of global inequality (Abu, 1988, Case number 52).



The rampant dumping of toxic substance in Africa in the 1980s, especially the sub-Sahara region, became a concern to the then Organization of African Unity (OAU), which is now Africa Union (AU), and the Economic Community of West African States (ECOWAS), to call for stiffer punishment for culpable toxic waste traders in the region. It is of interest to know that Côte d'Ivoire was one of the first nations to institute laws that was supposed to impose hefty fines (\$1.6 million) and a prison sentence of up to 20 years for toxic waste dumpers (Vir, 1989).

The Trafigura case clearly shows how governments and corporations could collude for economic gains without regard for human life, the environment, or international and domestic laws. It also point to the fact that instituting the most stringent laws does not necessarily guarantee successful abidance, until it can be adequately enforced. This shows that one of the weaknesses in environmental governance in developing nations that are exploited by the developed nations is the weak regime of regulatory enforcement, and may not necessarily be the absence or laxity of existing regulations, as proposed by popular literature. This assertion has been pointed out by Clapp who notes that “[toxic substance] are transported with relative ease from one country to another, regardless of international regulations”(Clapp 2002, p.141). In the case of developing nations, it is important to note that poverty, indebtedness, and the quest to gain economic freedom further reinforces the toxic substance trade (2007).

When poverty and indebtedness overwhelmingly clouds a nation, rule of law become ineffective and is violated by citizens and government institutions alike. Stringent laws gain their potency when people can satisfactorily meet their basic needs and nations can adequately service their debts. The conditions of poverty and indebtedness simultaneously provided reasons for individuals and governments to break the laws for economic gains. The process sets the grounds for economically related environmental injustice paradigm in developing nations. Clapp argues that this paradigm “only compromise economic development prospects in the future, and thus fuels a vicious circle of poverty and environmental damage”(2007, p. 508). It is in light of

this that developing nations like Ghana need to restructure their environmental policies from front-end to ensure adequate enforcement regime, which simultaneously promotes socioeconomic development.

## **ENVIRONMENTAL POLICY AND POLICY NETWORK DYNAMICS**

### **Overview**

This chapter cursorily explains public policy and the dynamics of policy failure and success through the lenses of the policy process and actors. The chapter also reviews in brief terms, the copious literature on policy networks and its relevance as an analytical tool in understanding how policy actors behave during policymaking process. This chapter gives the prelude to understanding the policy dynamics in the U.S. and in Ghana with regards to the PCBs case.

### **Public Policy**

There continues to be varied views and explanation to what public policy means. Turgeon and Savard in their writing, *"Public Policy,"* have effectively shed light on this variety (2012). Whereas government actors may consider their actions to be public policy, researchers may regard public policy as "whatever government chooses to do or not to do" (Dye, 1995, p.4). Thus, action and inaction on the part of government constitutes public policy. Brooks and Miljan equally argue that once an issue has been framed in problematic terms, inactions by policymakers become a deliberate policy choice in itself (1998). Jenkins placed emphasis on the interdependent relationship of government actor's decisions and the means to achieving the decision outcomes (1978). To others, public policy may be set of rules enshrine in a document by government authorities (Brooks and Miljan, 1998; Ostrom, 2007). In the 1950s, Lasswell first proposed a framework consisting of seven steps by which public policy can be made (1956). His framework has served as the bedrock for more refined models in public policy analysis (Jones, 1970; Brewer and DeLeon, 1983). The policymaking process helps actors to understand the dynamics of their decisions (See appendix 1 for fuller description of the policy process/cycle).

## Policy Failure and Success

McConnell asserts that policy has multiple dimensions, often succeeding in some areas and failing in others with severity of failure dependent on outcomes of the policy (2010). However, based on political inclination, policies framed as successful by some actors may be framed as unsuccessful by others, especially political opponents (McConnell, 2010; Fischer, 2002).

When current policy fails to address important public problems because it is either insufficient or virtually nonexistent (McConnell, 2010; Bachrach and Baratz, 1970; Kerr, 1976), or no longer achieve the political and program goals they proffer or are preferred by responsible decision-makers (Walsh, 2006), then policy failure is acknowledged.

On the converse, McConnell<sup>1</sup> attempts to define a successful policy as one that “achieves the goals that proponents set to achieve and attracts no criticism of any significance and /or support is virtually universal” (2010, p. 356). There is difficulty however, in measuring these attributes of policy since interpretations of policy success or failure depends on which end of the policy one is standing. The subjectivity of positioning a policy outcome makes its measurement problematic and somewhat metaphoric. Generally when the public becomes distrustful, disgruntled, and feels disjointed from the policy process, prescribed policy by government actors’ encounters resistance and may be violated. This potentially leads to policy failure.

## The Policy Networks

Pioneered in the U.S. in the 1950s, the policy network framework was noted as a structured system within which “interest groups, congressional committees, and government agencies mutually interacted over legislative and regulatory matters” (Hessing and Howlett, 1997, p.75). The centrality of government actors<sup>2</sup> within the policy network has been well recognized by scholars. Hessing and Howlett argue that the normative position of government actors to directly influence policy is pitched on their “structural location at the center of the policy network” (1997, p. 85). This positional

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<sup>1</sup> Allan McConnell is of the view policy succeed or fail along a continuum of “[consented] success, resilient success, conflicted success, precarious success, and failure

<sup>2</sup> Government actors are considered as the political powers and institutions that participate in policy formulations and expend greater resources and authority in the policy network

advantage of government actors enables them to promote or discourage environmental policy options through the “development of bills, their public presence, media skills, and engagement in policy discourse” (Hessing and Howlett, pp.85-86). Besides, government actors possess executive powers, which can be exercised through the court to influence a policy over options presented by the policy community.

The extensive literature on policy networks reveals that there is no single policy network approach to public policy (Skogstad, 2005; Rhodes, 1997; Adam and Friesi, 2007). This means to understand the policy network, an array of factors must be considered to be able to conceptualize the behavior of actors in the policy network for contextualization. Hessing and Howlett set out that in order to understand actor behavior within the policy process, it is important to know the key actors, the resources and environmental interest of actors, and their accessibility to the policy process (1997). Policy networks identify who makes decision and why those decisions have the content they do (Rhodes, 1997; Skogstad, 2005). It also shows the governing structures of society (Daugbjerg and Marsh, 1998). Peterson and Bomberg have also pointed to policy network as “clusters of actors, ‘or stakeholders’ each with an interest in a given [government] policy sector and the capacity to help determine policy success or failure” (2000, p. 9).

According to R.A.W Rhodes, whose definition I find more heuristic to the study of policy networks; “policy networks are sets of formal institutional and informal linkages between governmental and other actors structured around shared if endlessly negotiated beliefs and interests in public policymaking and implementation”(2006, p. 2). In essence, the close interaction among actors over commonly held substantive interest in the policy network generates the basis for policy decision-making. As such, the kneading together of ideas from actors constructively and consensually is important towards developing policies with the capacity to reform society.

Within the continuum of policy network are the policy communities<sup>3</sup> and issue networks. The policy communities are actors with common interest, values, largely autonomous, and may coalesce around an issue to develop policy (Hessing and Howlett, 1997). The issue networks or groups usually have large but unstable participants, are less integrative, have alternative to policy and may have divergent views to issues due to individual actor interest and preferences (Bressers and O'Toole, 1998; Hessing and Howlett, 1997). Hessing and Howlett have observed that government actors, who are forerunners of the policy community, may suggest (recruit) actors into the network with a parochially directed economic interest to tighten the monopoly of the policy community (1997). Even though issue networks have attempted to break such monopoly, which is usually implicitly expressed by policy communities, the disjointedness, lack of resources and their incoherent integration to constructively push through the policy networks weakens their effective participation and influence in the policy process (Rhodes, 2006). As pointed out by Adam and Kiesi, the inability of issue networks to mobilize to “destabilize” the monopoly by “exogenous shocks” (given as new ideas, values and knowledge) keeps the policy monopoly intact with its configured powers (2007). Adam and Kiesi note that destabilization may lead to power fragmentation, which favors coalition of issue networks for power (2007). On the other hand when power is concentrated, policy monopoly may persist because issue networks may not have the resources to break into it (ibid). Policy scholars are of the view that policy networks have regularized patterns of social interaction among actors whose interaction and interdependence is ‘supposedly’ stable over time in routine decision-making (Adam and Kriesi, 2007; Skogstad, 2005). However, the policy network structure become unstable when new ideas and new actors thrust into the network, or when policy communities’ experiences change in believes systems (Atkinson and Coleman, 1992; Coleman and Perl, 1999), thus causing “incremental or paradigmatic change” (Skogstad, 2005, p. 8).

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<sup>3</sup> Hessing and Howlett (1997) have identified four types of policy communities: hegemonic community, chaotic community, fractious community, and bifurcated community, p. 88.

The internationalization of global environmental issues have created a transnational corpus of policy networks with the potential to link actors of policy network through the sharing of ideas to legitimate a national or international policy interest (Bernstein and Cashore, 2000; Sikkink 1993). According to Rhodes, transnational networks are “knowledge-based experts with an authoritative claim to relevant knowledge within their domain of expertise” (2006, p. 15). As a result of this they exhibit greater level of hegemony and professionalism in their relation with other actors within the policy network. Adam and Kriesi posit that the dynamics of transnational actors opens up new policy opportunities for domestic actors (2007). However, this relationship between transnational actors and domestic actors discourage the participation of civil groups in the policymaking process and skew policy goals to merit their vested interests. This can be easily pointed out in the Ghanaian policymaking dynamics which acceptingly incorporated international experts yet discourage the active participation of civil groups in the policy making process.

## **PUBLIC ENGAGEMENT IN ENVIRONMENTAL POLICY PROCESS**

### **Overview**

I begin this chapter by pointing out some of the approaches to public engagements, with greater emphasis on the evolving dynamics of public participation and its ability to effectively influence decision-making processes.

The chapter pulls together the positional narratives relating to the role of the public in the public policymaking process. I make an attempt to point out some of the factors that have reduced or relegated the influence of marginalized citizens from participating in the environmental policymaking process especially in burgeoning democratic nations like Ghana. While continuing to draw from scholarly positions on the subject, I focus on public participation as being a modest approach for effectively expanding the policy network that have previously supported corporations and their activities.

### What really is public participation?

Rowe and Frewer define public participation as “the practice of involving members of the public in the agenda setting, policy development, and decision-making, and policy forming activities of organizations or institutions responsible for policy development” (2005, p.254). According to Rowe and Frewer, public participation is a dynamic activity that takes place through “instruments, techniques, methods, tools, etc” (referred to as mechanisms), which enables the process of involvement (2005, p. 275). Public participation takes different forms and approaches for different circumstances. These are influenced by geopolitical settings, demographic classification, situational dynamics, historical participatory challenges, etc. The bottom-line is, the ‘mechanisms’ adopted become assistive handrails that enables the inclusivity of the public in the decision-making process.

In public communication, what Blumler *et al.* referred to as ‘mass democracy’ in their book “*the crisis of public communication*,” information is transmitted from government institutions and its allies such as parastatals, consultants, or even the media, to the public (1995). Rowe and Frewer affirm this “one-way” information flow by referring to “communication proponents” as the policy-setting organization, whose main agenda is to acquaint the public thus, “public feedback is not required or specifically sought” (2005, p. 255).

Public deliberation on the other hand gives the public the opportunity to discuss public policies and issues in many informal and formal ways that may be highly engaging, and not necessarily rewarding (Levine *et al*, 2005). According to Levine *et al.*, public deliberation even though can prove deeply fulfilling for participants; it has had low stakes for participants since views expressed don’t necessarily get onto the policy agenda (2005). They point out that “the goal of a meeting is to build networks of citizens, to develop new ideas, to teach people skills and knowledge, to change attitudes—rather than to influence government” (Levine *et al*, 2005, p. 8). Bohman argue that public deliberation “seems to be [for] elitist” rather than for the general public (2000, p. 3).

In the case of public consultation, policy proponents seek the opinions of the public through referenda, sift through choices propose by public and choose to use or

discard public choices (Fishkin, 2009). Information in this case flows from the public to policy proponents, and is “believed to represent currently held opinions on the [policy issue] in question” (Rowe and Frewer, 2005, p. 255). Pierre *et al.* argue that the role of the public in this case is not to “put new issues on the agenda but rather to provide assessments of different alternatives to alleviate policy problems” (1998). These assertions point to the fact that the consultative process limits the role of the public in decision-making process, and at the same time legitimize the policy choice that policy proponents chose to make (Pierre *et al.*, 1998, p. 138).

The limitations of public communication, public deliberation, and public consultation in allowing for full integration of the public in the policy process makes public participation a preferred choice in the engagement of society in policymaking processes. While public participation encourages active involvement of the public in the policy process, public communication, deliberation, and consultation inherently promotes passivity. These typologies see the public as recipients of policy, as such keeps the public on the fringe of the policy network. In the case of Ghana for instance, public communication, deliberation, and consultation are normalized, and wrongly taken to be public participation. Conversely, In the case of the U.S., scholarly evidence is supportive of the fact that public participation continues to change the dynamics of the policy process (Shapiro 1982). For instance, Page *et al.* argue that the U.S. public does have significant impact during policymaking process (1987). The pattern of inclusivity of the public in governance issues in the U.S. can be attributed to its mature democracy developed over centuries, and its Constitution and Bill of Rights (Burstein, 1988). Nevertheless, it is important to point out that there have been cases of deliberate exclusivity of people of color in the policy process in the U.S. resulting in environmental and social injustices (Bullard and Johnson, 2000; Harrell, 2000; Pulido, 1996; Brulle, 1996). This situation of excluding marginalized people in the policy process in the U.S. is no different to the case in Ghana where public participation is in its embryonic stages.

The lack of active public participation in the policy process, as Carson points out, “accurately [describes] (un)representative systems of government” (2009, p. 1636).



Pierre *et al.* however argue that, when the public is allowed to penetrate the policy process through new ways that influences the political system, the powers vested in government institutions to legitimate public policy is reduced, hence allowing for representative government (1998). This perspective explains the dynamics of power, which have historically undercut full integration of the public in decision-making processes, especially in burgeoning democratic nations like Ghana.

### **Public Inclusivity: Mirage, Reality or façade?**

Increasingly but tactically, governments seems to be accepting the intrusion of non-government actors in its environmental decision making process. This is especially true in developed nations. According to Beierle *et al.* the increased attention for non-government actors is fueled by optimism about how public involvement can increase the effectiveness of environmental management (1999). Provided it is not bureaucratically maligned or undermined by government institutions, the power of the public has been found to be enormous in changing the dynamics of environmental policy process. This is strongly reflected in the case of the U.S. policy process in the 1970s, during the peak of the PCBs crisis, where the public more or less became the mainstay of the polity.

Whereas the U.S. case shows an effective public role-playing in the policy process, the same cannot be said of the Ghana case due to a strongly formed bureaucratic policy network that has traditionally relegated the public as policy recipient. Rowe and Frewer in their lucid work "*Public Participation Methods: a Framework for Evaluation*" point out how legislations in some developed nations "made it necessary to gain public input and comments prior to decision making in a number of risk arenas" (2000, p. 4).

For nations where the public exercises enormous political power to vote a political party out of power, it is politically prudent for incumbent government to include the public in policy decisions that affect them. Whereas this is the case for mature democratic nations like the U.S., developing nations that are in burgeoning stages of democracy like Ghana continue to sideline the interest of the public in environmental decision-making process. My fieldwork in Ghana and communications

with officials in government institutions, corporations, and a section of the public to get a firsthand understanding of the policy networks and process reveals this position.

Sabatier in his analysis *“Towards Better Theory of the Policy Process”* effectively established the abundant evidence policy scholars have shown; that the general public can play a “more modest” part in policy formulation and implementation (2007). Sabatier builds his argument on the modesty of public influence in government policy by pointing to the greater influence exerted by the public when citizen complaints increases, and grass root movements mushrooms to perturb the politics of government policy decision-making process (ibid). Rosenau and Czempiel equally argue that citizens have gained much greater legitimacy to challenge government decisions through ideational and socially sourced authority, thereby possessing some power to weaken the full authority of state autonomy over policy decision-making processes (1992).

Towards the path of applicability of public participation in environmental policy, Beierle *et al.* have pointed out five criteria as indicators to measure the success of public participation (1999). They point to educating participants, improving the substantive quality of decisions, incorporating public values into decision-making, reducing conflict, and building trust (ibid). Smith *et al.* have reinforced this assertion; however, they also argue that descriptions of procedures for fostering public input have dominated the literature with little attention paid to fundamental concepts ((1997). Macnaghten and Jacobs have also prescribed public education as remedy for information deficit in the policy process (1997). Reed point out that through “comprehensive information input” public participation could be enriched with what he terms “normative and pragmatic benefits” (2008, p. 2420). According to Reed, normative benefits places emphasis on “democratic society, citizenship, and equity” whereby ‘marginalized’ citizens are actively included in the making of decisions on issues that affect them (2008, p. 2420). Reed points to pragmatic benefits as citizen participation in the decision-making process that emphasis on “quality and durability of environmental decisions” (2008, p. 2419). Irvin and Stansbury also argue that citizens are critical to reaching consensus that leads to positive social and environmental change (2004). The activity of the public in policy

decisions that affects their lives has the singular effect of ensuring a greater policy success rate.

When the public remains silent and passive, not showing the willingness to be part of the decisions that affect them, policy outcome diminishes into failure mode. The public participation literature continues to be filled with the concept that by actively encouraging citizen participation in the governance process, they tend to understand the position of government decision and are highly likely to support tough decisions (Irvin and Stansbury, 2004). Constructively, when citizens are empowered to play an active role in policy decisions, the policy process and policy outcome benefits in diverse ways; process effectiveness (Reed, 2008; Newig and Fritsch, 2009; Beierle, 1999; Thomas, 1995), alternative solution provided (Scheer, 1996), public corporation (Irvin and Stansbury, 2004), acceptance of government decision (Newig and Fritsch, 2009; Howard *et al*, 1994) flow of trusted quality information (Rowe and Frewer, 2000), clear consensual outcome (Warner, 1997), win-win potential (Newig and Fritsch, 2009). Unfortunately, however, this is largely not the case as governments are not always in favor of allowing the public to have a direct say in its decision making process (Innes and Booher, 2004). In the views of Innes and Booher, public participation in democratic decision making process fails because in reality government actors don't want to listen (and act) to external voices (such as environmental groups) whose interest are outside its domain (*ibid*). Governments may seek to include the public in its decision-making process only to avoid resistance, gain support and agreement (legitimation) for the choices it makes, and because of matters of democracy and procedural justice (Newig and Fritsch, 2009; Innes and Booher, 2004).

The maneuverability of government to foist decisions on the public in the pretense of engaging them in the policy process may build mistrust and anarchy during the public participation process. Walters *et al*. have pointed out how democratic institutions subtly undermine the public by replacing the public with so-called "public experts" (2000). Ascher and Steelman made reference to these experts as "expert valuation" and argue that these experts who are preferred by governments to represent

public opinion succeed in “supplant[ing] democratic expression,” thus limiting the actual views and opinion of the public (2006, p. 73). They explain further that,

Expert valuation, clearly the most “technocratic” vehicle for conveying public preferences, may preempt more robust forms of public participation in environmental policymaking and present policymakers with a particularly narrow sense of the public interest and what the public wants. (Ascher And Steelman, 2006, p.73).

The relegation of the public to the periphery of the public policy process by powerful actors such as governments and corporations is hinged on: the promotion of actors self-interest (Walter *et al*, 2000; Hessing and Howlett, 1997; Fischer, 1995), unappealing power sharing-‘*power dynamics*’ (Mostert, 2003; Thomas 1995; Arnstein, 1969), time-constraint (Creighton, 1981), contentious problems (Innes and Booher, 2004; Susskind and Cruikshank, 1987), perceived public ignorance (Bulkeley and Mol, 2003), trust problem (Renn, 2006). It is interesting to observe that some of these characteristics can be easily pointed out in my analysis of the policy networks on the PCBs issue in Ghana. It is for these reasons that strongly formed issue networks are necessary to ensure that the policy monopoly of core actors are broken to allow inclusion of the public in the making of policies that directly or indirectly affects them. This should be especially the case in burgeoning democracies like Ghana where citizens are highly marginalized.

## **POLITICS, PUBLIC AND POLICY FRAMEWORKS IN GHANA**

### **Overview**

This chapter reviews the policy actors and political environment of Ghana and their influences on the public from a historical standpoint. The chapter also looks at the legal systems and the historical background of Ghana’s environmental policy framework. It point out the government’s ambivalent position on environmental issues, which is directly linked to its prevailing quest for socioeconomic development. Finally the chapter provides a brief review of environmental policy challenges in Ghana.

## The Political Environment and Legislative Framework in Ghana

After Ghana's independence from British rule in 1957 and some few years of political stability, which lasted till 1966, the nation quickly drifted into a state of political instability with inundated coup d'états for almost two decades. During this period, the public and the media were critically restricted in matters of freedom of speech and expression. It was not until 1993 when the nation returned to democratic rule leading to a relatively stable political climate. As Marci Hoffman put it, "the Ghanaian governmental and political system has been involved in a long, slow and almost torturous process of democratization that commenced with a decisive shift towards constitutional reform..."(Hoffman, 2014, p. 1).

Even though this period of democratization was a testing moment, it ushered in an aura of relative political stability that opened up an avenue for the public and media to enjoy the constitutional human rights and freedom required to express themselves either collectively or independently.

The legal framework in Ghana hinges on the 1876 Gold Coast Supreme Court Ordinance, which was instituted by the British. The Ordinance embraces "the common law, doctrines of equity and the statutes of general application..."(Essien, 2005, p. 1). Similarly, Marci Hoffman point out that "[t]he Ghanaian legal system has always been influenced (sometimes subtly) by the presence of a long tradition of sophisticated and developed customary law which recognizes such western concepts as corporate personality..." (Hoffman, 2014, p. 1). The legal system in Ghana has gone through a great deal of change especially under military regimes. For instance, the regimes of the National Liberation Council (NLC), and the National Redemption Council (N.R.C.) abolished the Supreme Court structure (Judicial Service of Ghana, 2013). However, the Supreme Court was reestablished during the third Republic but under a Superior Court. The legal framework in Ghana has been rather unstable especially during the military regimes, with incumbent regimes changing the laws to suite their political ideology and personal indemnity. As pointed out on the website of the Judiciary Service of Ghana, "...revolutionary enactments added enormously to the body of laws which relegate[d] the relations[hip] between the citizens and the State"(2013). Hens and Boon point out

that while environmental issues were recognized and legislations were passed, “environment protection is not the central target of legislation” (1999,p. 27). Thus legislations were based on the colonial approach of “use oriented” rather than “resource oriented” which has formed the nation’s environmental policy framework until quite recently (ibid). James Read also point to this by arguing that environmental regulation in Ghana for centuries were applied under unwritten customary laws, which allows for the exploitation of the environment for livelihood (2007).

### **Background of Environmental Policy Frameworks in Ghana**

In 1972, during the United Nation’s Conference on Human Environment and Development in Stockholm-Sweden, which also set the foundation for the United Nations Environment Program (UNEP) to be born; Ghana, like many other nations at the time, realized the need for a formalized environmental framework. This was to enable the nation to address the environmental issues it was then facing, and also to tackle emerging ones, as part of the recommendations of the Stockholm Conference (Yeboah and Tutuah-Mensah, 2014).

In 1973, the leadership of the then military government of Ghana, the National Redemption Council (NRC), set the backbone structures for the establishment of the Environmental Protection Council (EPC). This was to affirm Ghana’s commitment made at the Stockholm Conference, and also to reinforce the country’s new role as a member of the Governing Council of the newly formed UNEP. In January 1974, the EPC was signed by the Head of State under NRC Decree 239, and was later inaugurated on June 4 1974, to oversee the environmental protection of the nation (Hens and Boon, 1999). The newly formed EPC was put under the Ministry of Finance and Economic Planning (Yeboah and Tutuah-Mensah, 2014). It was to serve as a consultative, advisory and research body, and to co-ordinate the activities of other agencies, however, the agency lacked enforcement mandates right from it very beginning (Read, 2007; Hens and Boon, 1999). In 1981, the EPC was moved to be under the Ministry of Health, and in 1982, the Ministry of Local Government and Rural Development took over administrative charge of the EPC (Yeboah and Tutuah-Mensah, 2014).

The early period of the 1980s however, was an economically difficult time for Ghana. This was made worse by a severe draught in 1983 in the country. The economic crisis in the 1980s increased citizens' dependence on the environment in meeting their socioeconomic needs. The situation quickly sidelined environmental issues from the governmental agenda to make way for economic strategies and programs. For instance, the country launched an IMF-World Bank supported Economic Recovery Program (ERP) in 1983 to stabilize and liberalize the economy, which unfortunately contributed to more environmental issues (Younger, 1989). The Bruntland Commission Report, "Our Common Future" by the World Commission on Environment and Development (WCED) in 1987, and the need for human and environmental sustainability, which the report emphasized, created a deeper awareness among governments globally. This awareness, again, led the government of Ghana at the time to bring environmental concerns to the fore of its agenda settings. It prompted the government to initiate an Environmental Action Plan (EAP) in 1988 with the purpose of developing policies that will promote the ideals of sustainable development (The World Bank, 1988). The United Nations Conference on Environment and Development (a.k.a. Rio Summit) held in June 1992 in Brazil, also brought about a new assurance to the international community, particularly the developing nations that effective environmental management can lead to economic growth. This assurance reframed the perception of many governments in developing nations. In the case of Ghana, the weight of influence the Rio Summit exerted on the nation's environmental policy reform was phenomenal. Hens and Boon pointed out that prior to the 1992 Rio Summit, environmental policy in Ghana was "ad hoc and cosmetic", thus lacking the institutional framework required to deal holistically with environmental problems from "front-end" (1999, p. 21).

In 1993 when Ghana returned to democratic rule, the Ministry of Environment, Science and Technology (MEST<sup>4</sup>) was created by the newly elected government to implement the Agenda 21 of the Rio Summit. The new ministry absorbed the EPC, which was tasked to provide a framework for the implementation of a National

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<sup>4</sup> The Ministry of Environment, Science and Technology (MEST) is now Ministry of Environment, Science, Technology and Innovation (MESTI).

Environmental Action Plan (NEAP). The NEAP replaced the EAP, which was earlier prescribed in 1988. The NEAP eventually led to a National Environmental Policy (NEP), which aimed to interconnect the environment to social and economic growth for the nation's socioeconomic development (Hens and Boon, 1999). In order to give the EPC some clarity to its mandate to regulate the environment and to ensure the implementation of government policies, the government deemed it necessary to migrate the EPC to what is now the Ghana Environmental Protection Agency (EPA), through the Environmental Protection Agency Act 490 of 1994 (Yeboah and Tutuah-Mensah, 2014). The transitioning of EPC to EPA however did not give the EPA the autonomy it deserved to operate as it continued to remain under the administrative leadership of the Ministry of Environment, Science and Technology (MEST).

It is worth noting that the government's indecisiveness to properly situate the EPC under one ministerial body over the years showed a lack of clarity as to what the EPC was instituted to do. It also showed the lack of importance the government places on the environment. This is reflected in the deprivation of autonomous powers to the agency to adequately perform its duties in a manner that is devoid of external interest and interferences.

### **Existing Environmental Policy Framework in Ghana and its Challenges**

The 1994 Environmental Protection Agency Act 490 sets out the vested powers of the EPA and its core functionalities. It mandates the agency to regulate, coordinate and manage the environment. The Act is loaded with responsibilities, some of which requires specialized skills to execute, and adequate staffing size to accomplish. Read pointed out that the functions of the Ghana EPA are listed in not less than 18 legislative paragraphs (2007).

Due to the long list of responsibilities enshrined in the Act, I limited my review to only the portion of the Act that closely relates to the control of toxic chemicals such as PCBs in Ghana. Section 2 lists the functions of the agency, which are discharged under the governing authority of a board, and may also receive directives from the Minister to perform functions that it deems necessary in the interest of the public.



Section 10 of the Act ensures that a committee called the “Hazardous Chemical Committee” is created from the Board. This committee inadvertently becomes the ad hoc body with the responsibility of determining the regulatory framework on how chemicals in Ghana should be managed. According to section 10 (1) of the Act, the function of the committee will be to;

- a. Monitor the use of hazardous chemicals by collecting information on the importation, exportation, manufacture, distribution, sale, use and disposal of such chemicals;
- b. Advise the Board and the Executive Director on the regulation and management of hazardous chemicals;
- c. Perform such other functions relating to such chemicals as the Board or the Executive Director may determine. (Environmental Protection Agency Act 490 of 1994, pp.7-8).

By section 12 (1) of the Act, the Agency is empowered to request in writing for an environmental impact assessment report from any person (corporations) whose undertaking in the opinion of the Agency has the potential to have adverse effects on the environment. In the event that the Agency finds the undertaking to be of serious threat to the environment, by section 13 (3) of the Act, “[t]he Agency may in an enforcement notice direct the immediate cessation of the offending activity where it considers that the circumstances so demand” (Environmental Protection Agency Act, 490 1994). In effect, the Environmental Protection Agency Act (490) 1994 is not specific in terms of addressing toxic substances from a holistic perspective; what Hens and Boon call “front-end” approach (1999). The Act is generic in context. As a result of this it does not adequately address specific issues raised by international conventions such as the Stockholm Convention on Persistent Organic Pollutants (POPs).

The closest environmental policy that may be regarded as specific to source is the Pesticide Control and Management Act (528) of 1996. This Act “provides for the control, management and regulation of pesticides in Ghana and [also] for related matters.”<sup>5</sup> Even though Act 528 addresses the importation, manufacture, formulation, distribution, use

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<sup>5</sup> Pesticide Control and Management Act (528) 1996 of the Parliament of Ghana

and the transportation of pesticides in Ghana, it lacks a strong compliance regime, as well as structured framework to regulate POPs. In order to address these inadequacies, a “Draft Policy on Contaminated Sites in Ghana<sup>6</sup>” with the aim to specifically target certain hazardous chemicals especially POPs such as PCBs has been developed. This Draft Policy will be reviewed in my analysis section to provide an input into the policy dynamics in Ghana.

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<sup>6</sup> The “Draft Policy on Contaminated Sites in Ghana” is interchangeable refer to as just “Draft Policy”.

# THE PCBs CASES IN THE U.S. AND IN GHANA

## THE PROCESS TOWARDS THE BAN OF PCBs IN THE U.S.

### Overview

This chapter provides a brief history of PCBs and the emergence of the PCBs crisis in the U.S. The chapter provides a systematic pathway leading to the PCBs case in the U.S. and the relational dynamics between the policy networks that developed. I review the process of PCBs problematization and how the issue was handled within the policy network. The behavior of the actors, the adopted strategies used, and how the policy community converged to formulate the policy is also reviewed. My review brings to the fore the economic, political, social, and environmental dynamics of the PCBs crisis and how this dynamics played out to set a policy ban on PCBs in the U.S. The Chapter also underscores the power relationship that exists among the actors and how actors within the policy network framed issues of environmental quality and socioeconomic values. The resultant of the policy is also highlighted and points out the environmental injustice perspective that it presents globally.

### Brief History of PCBs

Literature shows Polychlorinated biphenyls (PCBs) were first synthesized in 1881, however commercial manufacturing begun in 1929. PCBs are man-made organic chemicals that have about 209 congeners (types). These congeners differ by the position of the chlorine attachment to the benzene compound. However, the congeners are structurally (isomeric) related.

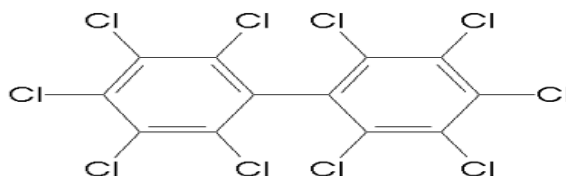


Figure 1 Chemical Structure of PCBs

PCBs have been extensively used in electric transformers and capacitors as coolants because of their high chemical stability and resistant to high temperature and

pressure (EPA, 2012; Head, 2005). They have also been used in other applications such as fluorescent light ballasts, inks, adhesives, and carbonless copy paper (Head, 2005).

It is estimated that bigger electric transformers can be filled with over 1000kg of dielectric fluid (Canadian Council of Ministers of the Environment, 1986). Prior to the use of PCBs in electric transformers, mineral oil was the only fluid used (ibid). However, mineral oil posed a higher risk to ignite, causing fire. This necessitated its replacement with a more durable resistant fluid such as PCBs. PCBs discovery and usefulness revolutionized the chemical industries in the U.S. during the early years of its manufacture. This led to it being nicknamed the 'Miracle Chemicals' (Head, 2005). It has equally been described as the embodiment of the "great industrial adventure of the nineteenth century" (Robin 2010, p. 11).

Ironically, it is the very ideality of PCBs in industrial application, such as its chemical stability, that inadvertently led to environmental and health problems in global proportion (Geiser and Waneck, 1983). The environmental and health problems that PCBs caused provided grounds for transforming the U.S. environmental policy system.

### **The Rise of the PCBs Crisis: The U.S. Case and the Policy Process**

A few years after the commercial production of PCBs in the U.S. in 1929 by Swan Research Inc, which later became Monsanto, evidence of acne-like pustules, what will become known as one of the landmark signs of PCBs contamination in humans began to show up on the faces and bodies of PCBs manufacturing workers. By 1935, the demand for PCBs by companies such as General Electric, Westinghouse and Halowax helped to increase the quantity of PCBs in the environment (Stelzer, 1994).

In 1937, scientific evidence published in the Journal of Industrial Hygiene and Toxicology showed that, there was a striking link between PCBs and liver disease (Drinker, 1937). Cecil Drinker led a research team to test PCBs on rats and presented the evidence at a meeting at Harvard University, which was attended by Monsanto, General Electric, Halowax, the U.S. Public Health Service, and State Health Officials from Massachusetts and Connecticut. Drinker pointed out "[there was no] doubt as to the possibility of systemic effects from the chlorinated naphthalene and chlorinated

[biphenyls]" (Drinker, 1937, p. 283). Drinker and his team were motivated to conduct this experiment after many workers of Halowax had contracted the acne like pustules and three of them had died, with two of the dead's autopsy revealing liver damage (Drinker, 1937). The acne-like postules were first called "halowax acne", which was later referred to as chloracne (Pfaffin and Ziegler, 2010). Despite the increasing evidence of problems posed by PCBs around this period, Monsanto, General Electric and Westinghouse continued to argue that PCBs posed no threat to the health of workers or the environment (Chemical Industrial Archives, 2009, Beiles, 2000).

In the 1940s and 1950s, widespread toxicity of the chemical had reached alarming levels among workers. Besides chloracne, further studies of workers exposed to PCBs showed symptoms of "epidermal disorders, digestive disturbances, jaundice, impotence, throat and respiratory irritations and severe headaches" (National Service Center for Environmental Publications, 1980). Dumping of PCBs had also become a huge environmental issue around this period. General Electric for instance is on record for dumping about 1.3 million pounds of PCBs into the Hudson River from 1947 to 1977 (EPA 2012). In 1954, the Appleton Paper Company was also culpable for dumping PCBs contaminated wastewater into the Fox River (Patterson, 1998). Hesse pointed out cases of 'waste haulers' disposing of PCBs as "dust control on roads" and the "selling of [PCBs contaminated] oil as fuels in low temperature boilers..." during this period (1976, p. 127). In a declassified court document (exhibit 26) of the case, "United States v. Pharmacia Corporation (f/k/a Monsanto Company) and Solutia", it is reported that between 1929 to 1971, Monsanto produced about 680 million pounds of Aroclor<sup>7</sup>, wastewater discharge of about 1.8 million pounds of PCBs, with at least 87 million pounds of other PCB-containing waste, and an estimated 60,000 pounds of PCBs air emissions, (Beihoffer, 2005).

In 1966, Soren Jensen, a Swedish Chemist serendipitously found enormous quantities of unknown substances that were later identified as PCB compounds while he was researching on the accumulations of DDT and its metabolites present in human fat

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<sup>7</sup> Trade name for PCBs

tissue and in nature (Jansen, 1966, 1972). Jensen's accidental discovery set the grounds for worldwide PCBs research leading to enormous scholarly literature and scientific confirmation of PCBs toxicity. Despite all the evidences of PCBs toxicity, Monsanto in 1967 went ahead to invest "\$2.9 million [for] further developments of Aroclor products" (Robin, 2010, p. 19). In 1968 in the United States, Dr. Robert Riseborough who was researching on peregrine falcons accidentally chanced upon PCBs (Risebrough, 1969). Riseborough's research pointed to the fact that PCBs were widespread in the food chain (ibid). For instance, fish stock in the Great Lakes and other rivers were reportedly contaminated with PCBs during this period of rising PCBs crisis (Boyles, 1975). Similarly, in 1970, the U.S. Food and Drug Administration (FDA) reported cases of PCBs contamination in milk in Ohio, Georgia and Florida (Hesse, 1976).

Around the period of Jensen and Riceborough's findings, an incident occurred in Japan in which approximately 1,300 people fell ill after ingesting rice contaminated with PCBs in 1968 (Kunita *et al*, 1984). The Japan incident became known as Yusho, which literally means 'oil disease' in Japanese. Investigation by a "Study Group for Yusho" in Kyushu University, Japan, confirmed that the rice bran oil was indeed contaminated with PCBs, and PCDFs (Yoshimura, 2003). The patients in the Yusho incident suffered a range of symptoms, including "acneiform eruptions, pigmentation of the skin, nails, and conjunctiva, increased discharge from the eyes, and numbness of the limbs" (Onozuka *et al*, 2009). These incidents set the grounds for national and international actions against PCBs. Japan and Sweden quickly took a bold step to ban the manufacture and use of PCBs in their countries (Jensen, 1972). The initiatives taken by these two countries at the time became the precursor for the American public to advocate for policy on PCBs.

To avoid public and government criticism for contaminating the environment with PCBs and also to continue the production of the chemical, Monsanto in 1969 formed an "Aroclor Ad-hoc Committee" to redefine the image of the company (Chemical Industrial Archives, 2009). This was done to protect the marketing of PCBs, which was bringing Monsanto a gross profit of about \$10 million per annum, and to permit new product development from PCBs (ibid). In a concluding sentence of a February 16 1970

memo, N.T. Johnson of Monsanto stated, “we can't afford to lose one dollar of business. Our attitude in discussing this subject with our customers will be the deciding factor in our success or failure in retaining all our present business” (Monsanto Memo dated February 16, 1970 archived by Chemical Industrial Archives, 2009).

The economic gains of manufacturing PCBs around this period were too lucrative to abandon. Hesse pointed out that in 1968 alone, sales of PCBs containing capacitors was 30 million pounds, while that of electric transformers was 16.8 million pounds (1976). Historically, the 1960s and 1970s were eras of increased chemical revolution in the developed nations especially in the United States (Carson, 1962; Gottlieb, 1995). According to Gottlieb, around this period, about 60,000 different chemicals were on the U.S. market with little or no “tracking, testing, or premarket clearing mechanism” (1995, p. 60). Correspondingly, the impact of these chemicals on the environment and human life also reached alarming proportions with varied implications. Increasing concern from manufacturing workers, communities and environmental advocacy groups had also begun to mount and putting pressure on policy makers to safeguard human health and the environment from hazardous chemicals like PCBs. This was exacerbated by global scientific evidence and awareness of the hazardous chemicals around the time. For instance, Jansen’s accidental findings in 1966; the Yusho incident in Japan in 1968 (Onozuka *et al*, 2009); Rachel Carson’s expository book, “*Silent Spring*,” which had elicited a widespread public outcry for direct government action on chemicals to protect human health and the environment (Carson, 1962); the ‘Valley of the Drums’ incident in Kentucky in 1966 (Hamilton and Viscusi, 1999); the Love Canal incident in 1976 (Levine, 1982). These and many more similar cases became compelling force that pushed towards public resistance to PCBs and other toxic chemicals in the U.S.

The problem of toxic chemicals around this time undeniably threatened the U.S. environment and human communities at large. It became a situation that was often described as the “single most threatening issue facing [the U.S.]” at the time (Lester *et al*, 1983, p. 254), while others described it as the environmental problem of the century

(Epstein *et al*, 1982). Around this same period, the civil rights movement was also at its peak in the U.S., giving voice to disadvantaged poor people who bore most of the environmental burdens. The ideology and tactics of the civil rights movement became the backbone for the environmental movement in the U.S., to push for environmental equity in the late 1960s and 1970s (Roberts, 1998; Heinz, 2005). Heinz, who reviewed three African American newspapers (The Los Angeles Sentinel, The Chicago Defender, and Detroit's Michigan Chronicle), which covered issues of environmental quality and equity around this period, pointed out that environmental issues were well articulated in "politically problematic ways" during this period (2005, p .47).

### **The Role of the Policy Networks in Banning PCBs in the U.S.**

The scientifically proven fact that PCBs were toxic, and the public outcry for government intervention coupled with the political twist the media attached to this issue stimulated policy makers to look into policies that will protect people and the environment. As Hessing and Howlett have acknowledged, apart from effectively constructing issues, the media is also effective in influencing the formation of policy by mounting political pressure, which forces political actors to respond to public concerns (1997).

Like many other nations in the world around this period, the U.S. did not have any existing law that adequately regulated toxic chemicals from the front-end (Hathaway *et al*, 1994). Existing legislation at the time only dealt with a problem after it is manifested. Such regulatory lapses allowed manufacturers to produce chemicals, which may have irreversible adverse effects on humans and the environment. There was therefore the need to have a regulatory framework, which could regulate toxic chemicals before they are manufactured.

To press for a more robust regulatory framework to manage the environment and human health, President Richard Nixon set the stage by passing the National Environmental Policy Act (NEPA) of 1969 into law in January 1, 1970 and proclaimed the 1970s an "Environmental Decade" (NEPA, 2014; Kraft, 2000). It is important to note that, during the 1968 election, Nixon made the environment his campaign message. This



was strategic, realizing that majority of the people were drumming for environmental justice and were looking for a leader who will not only solve socioeconomic problems but also address the environmental problems that threaten the very lives of the people. In his special congressional message on Environmental quality on February 10, 1970, Nixon reemphasized his commitment to the environment when he proclaimed his willingness “to repair the [environmental] damage already done and to establish new criteria to guide [America] in the future” (Nixon, 1970).

At the 91<sup>st</sup> Congress in the spring of 1970, Senator Edmund Muskie became one of the politically outspoken senators in the Nixon Administration to steer policy toward environmental protection. Muskie was instrumental in assisting to formulate a policy escalation process, which laid the grounds for the environmental policymaking process in the 1970s (Vig *et al*, 2005). During the 92<sup>nd</sup> Congress in 1971, Nixon proposed the Toxic Substance Control Act (TSCA) as a precautionary measure to regulate toxic chemicals. It is important to note that the Council on Environmental Quality (CEQ)<sup>8</sup>, which was created by the National Environmental Policy Act (NEPA) of 1969 and a division of the executive office of the president, had initially crafted the TSCA bill in 1970 (CEQ, 1978). The CEQ, under its first chairman Russell E. Train, was to aid in preparing an environmental quality report for Congress, gather data, and advise on policy (EPA Historical Publication-1, 1992). Indeed the President was not mincing words on his environmental promises made during his campaign, and was steadily working through with Congress to establish a grounded environmental policy framework.

Roy Ash (founder of Litton Industries) was appointed by President Nixon to head a “Advisory Council on Executive Organization” which was to provide recommendations that will reform the U.S. environmental protection (EPA- Historical Publication-1, 1992). The “Ash Council” as it came to be known, pointed out during

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<sup>8</sup> The [Title 42 of United State Code Chapter 4321] 42 the U.S.C. § 4321 congressional declaration of purpose to the CEQ was to; declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.

congressional hearing that there was policy and regulatory deficiency within the U.S. environmental protection system (ibid). The Ash Council pointed out that, a separate regulatory agency was necessary to ensure an effective approach to regulating chemicals and other pollutants in the environment (ibid). Ash and his team therefore proposed the establishment of the Environmental Protection Agency (EPA) as an effective approach to regulating chemicals and other pollutant in the environment.

After going through a very rigorous congressional hearing and scrutiny, the EPA came into being on December 2, 1970 with William Doyle Ruckelshaus becoming its first chief administrator (EPA, 2012). EPA was thus established as an independent executive agency that reported directly to the President.

During this period on May 7, 1970, a note from Monsanto indicated that it had had a confidential meeting with Joe Crockett, the Technical Director of the Alabama Water Improvement Commission (AWIC) to discuss issues of PCBs contamination and the company's directives to collaborate "with government agencies to determine the effects of PCBs on the environment" (Robin, 2010, p. 20). The decision by Monsanto to collaborate with government may have prompted Nixon to acknowledge the U.S. industries willingness to be responsible. In his long congressional special message on environmental quality, Nixon stated "industry already has begun moving swiftly toward a fuller recognition of its own environmental responsibilities, and has made substantial progress in many areas. However, more must be done" (Nixon, 1970). Despite this seemingly positive commitment by Monsanto to be environmentally responsible, it continued polluting water bodies at its manufacturing plant in Anniston, Alabama, until it finally closed the plant in 1971(Robin, 2010). This however did not stop Monsanto from producing PCBs.

In 1971, CEQ presented a report titled "Toxic Substance"<sup>9</sup> to government, outlining the overarching need to streamline toxic substance laws as a precautionary measure to protecting people and the environment (Gotlieb, 1995). CEQ pointed out that toxic substances were entering the environment and were posing serious dangers to

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<sup>9</sup> Toxic Substance, Supra note 28, at 759- 60

human health hence the need for regulation<sup>10</sup> (Markel, 2010). Unfortunately, the House of Representative found the CEQ report unpersuasive and felt the CEQ were unfairly antagonizing the chemical industry with their report, especially when that period was a time of economic downturn (Markell, 2010). This forced the TSCA bill to go through the 93<sup>rd</sup> Congress, which lasted from 1973 to 1975. This period was a period of economic difficulty in the U.S. Congress therefore did not deem it expedient to suppress an already bad situation. It is worth noting that after the Second World War, the Chemical Industry became one of the fastest growing industries, generating about 7% of the U.S. GNP at the time (Markell, 2010).

During this period of economic relapse, which led to the shelving of the TSCA report, a major incident occurred at Allied Chemical Company, a small pesticide manufacturing company with about 133 employees, located on the banks of the James River in Hopewell, Virginia. Allied Chemical produced the pesticide called chlordecone (a.k.a Kepone), a chlorinated hydrocarbon insecticide, which was in high demand at the time. To meet the global demand, Allied Chemical outsourced the production of Kepone to two of its former employees, who started Life Science Products (LSP) and began production in 1973 (Okun, 2013). From March 1974 through July 1975, 76 (57%) of the 133 employees had contracted a previously unrecognized clinical illness characterized by nervousness, tremor, weight loss, opsoclonus, pleuritic and Joint pains, and oligospermia with production workers (Cannon *et al*, 1978). Outraged by the lack of effective regulations to control toxic chemicals, the public and environmental movements begun to pressure Congress. This was after the realization that about 10-20 tons of Kepone had been discharged into the James River, seriously impacting birds, fish and other wildlife; and leading to about 4000 job losses to people who depended on the James River (Okun, 2013; Wilson, 2011). While the story of Kepone became a lead story in the U.S. at the time, the governors of Virginia and Maryland requested a federal investigation into the Kepone incident. Around this same period (1975), a 55-gallon

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<sup>10</sup> CEQ Toxic Substance Supra note 28, 1971

drum of PCBs tainted transformer oil in a Michigan Power Plant leaked out 45 gallons of the oil, resulting in the contamination of soil around the area (Hesse, 1976).

### **The Policy Making Process and its Dynamics**

The Kepone incident, the PCBs oil leakage incident, and similar other incidents in the U.S. at the time set the premise for Congress to re-look into the TSCA bill as a way of regulating chemicals before they become public nuisance.

This was the point of intersection where the policy problem became well defined. The policy community had become well informed, and the political will of government to act affirmed the beginning of the policy process. This is the moment of opportunity Kingdon<sup>11</sup> refers to as the “policy window” in his policy model (1995). A new stream of policy relationship was established between State and Society. This State-Society relationship was going to be the forerunner to contest the already formed State-Corporation caucus in the policy network.

With the overblown notoriety that PCBs had received during this period of toxic chemical warfare, environmental groups and labor unions were strongly advocating for a law that will specifically regulate PCBs. As a respond to this clarion call, between 1974 and 1975, the CEQ initiated series of studies to identify regulatory alternatives for specific toxic substances such as PCBs. On June 26, 1975, the EPA awarded Versa the contract to look into the role of PCBs in the U.S. economy, identifying and screening alternative regulatory and non-regulatory control options. Dr. Robert Durfee of Versar presented a paper on the background of PCBs at a conference in Chicago on November 19<sup>th</sup> through 21<sup>st</sup> 1975, to review PCBs (Hesse, 1976). The conference generated considerable public interest. The public outcry and need for regulating PCBs had become overwhelmingly clear, calling for Congress to act with urgency. This eventually

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<sup>11</sup> The Kingdon model of policy Analysis proposes a three-stream framework (problem, politics and policy), which operates independently, and once what Kingdon calls ‘a policy window of opportunity’ is created; all three streams converge to formulate the policy. Kingdon acknowledges the fluidity of actor participation in the policy process, problematization of issue and its preference, and the clarification of science and/or technology in providing alternative solutions (1995). In Kingdon’s view, the public policy making is a chaotic process, which coalesces to sound policy only when all streams converge to rationalize in producing the policy.

led to an amendment of the TSCA to the 1975 Senate bill. The amendment was to empower the EPA to regulate PCBs in Section 6(e) of the Act. The specificity of the amendment in section 6(e), which exclusively empowered EPA to regulate PCBs caused its initial rejection by senate in 1975. CEQ relentlessly continued to indicate to Congress that toxic substances were a menacing problem that Congress urgently needed to deal with. In CEQ's annual report in 1975, in its opening chapter, it pointed out that "...a disconcerting, growing body of evidence indicates that subtle, manmade hazards are supplanting famine and infectious disease as significant determinants of life expectancy in 20<sup>th</sup> century developed nations" (CEQ, 1975).

By 1976, congressional hearing of the Kepone incident was in process, reminding Congress again of the impact of chemicals on human health and the environment. On March 26 1976, Senator Gaylord Nelson of Wisconsin re-proposed the section 6(e) as an amendment to the 1976 TSCA Senate's bill. During the House debate, Senator Nelson pointed out that "PCBs were widespread in the environment and that they posed significant potential dangers to human health and to wildlife."<sup>12</sup> Senator James B. Pearson and Senator John Tunney vigorously presented to Congress solid arguments for the passing of the bill into law. Pearson reportedly stated;

We can no longer operate under the assumption that what we do not know about a chemical substance cannot hurt us. Tragic results associated with too [many toxic substances] have taught us that lesson all too well. Chemicals, not people, must be put to the test (15 U.S.C. § 2601(a)-(b), 2006).

To buttress Senator Pearson's assertion, Senator Tunney brought to the awareness of Congress that "the National Cancer Institute had estimated that [about] 60 to 90 percent of cancers reported in the U.S. were a result of environmental contaminants" (Brooks, 1996). Ed Brooks, of EPA's Chemical Control Division, describes this as the "drive for an authority to control existing chemicals" (1996). Tunney, in concluding his argument stated that;

Many doctors and scientists now believe that cancer, which has been projected to kill as many Americans in 1975 as all the battle deaths in Vietnam, Korea, and the

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<sup>12</sup> 15 U.S.C. § 2601(a)-(b), 2006)

Second World War combined, appears particularly susceptible to a preventive approach through control of toxic substance (Markell, 2010; p. 341).

Congressman John Dingell, from the House of Representatives, who recognized the widespread use and dispersal of PCBs called for the amendment to be pushed through quickly. He pointed out that "the history of EPA is not one of vigorous and quick action."<sup>13</sup> Despite the strong argument that supported PCBs control, some policymakers conversely argued the elimination of PCBs was not possible. For instance, Congressman Leggett noted that "PCB's cannot be removed from the environment" and that even if "PCB's were eliminated now, waterways will remain contaminated for years."<sup>14</sup>

Congressman Leggett was raising the point that instituting specific laws to regulate PCBs will not solve the problem of PCBs ubiquitous nature in the U.S. environment (ELR, 1980). The chemical manufacturers were not silent during the legislative debate either. Dow Chemicals for instance protested against the passage of the ban (Gottlieb, 1995). Opposition by legislators and the chemical manufactures who did not support the ban did so because they felt that the TSCA bill was aimed at ending the chemical industry by drafting policy that did not make economic sense (ibid).

The CEQ's continual persistence to create a new regulatory framework along with all the toxic chemical incidents, and the persistence public outcry for policy action eventually led Congress to accept the proposed amendment during the 94<sup>th</sup> congressional meeting.

This period, as Markell put it, was the "most active phase of federal environmental law-making" in the history of the U.S. (2010, p. 334). Representative John Dingell of Michigan finally offered Section 6(e) as an amendment to the House' TSCA bill, which became a legislative requirement. President Gerald Ford signed the bill into law on October 11, 1976<sup>15</sup>. Within three years after the passage of the TSCA bill into law, CEQ continuously reiterated the need for dealing with toxic substances "comprehensively and systematically [by the growing] recognition of toxic chemical's contribution to cancer" (CEQ, 1977; CEQ, 1978).

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<sup>13</sup> H.R. Rep. No. 1341, 94th Cong., 2d Sess. 133 (1976)

<sup>14</sup> Supra note 7

<sup>15</sup> Pub. L. No. 94-469, 90 Stat. 2003 (1976)

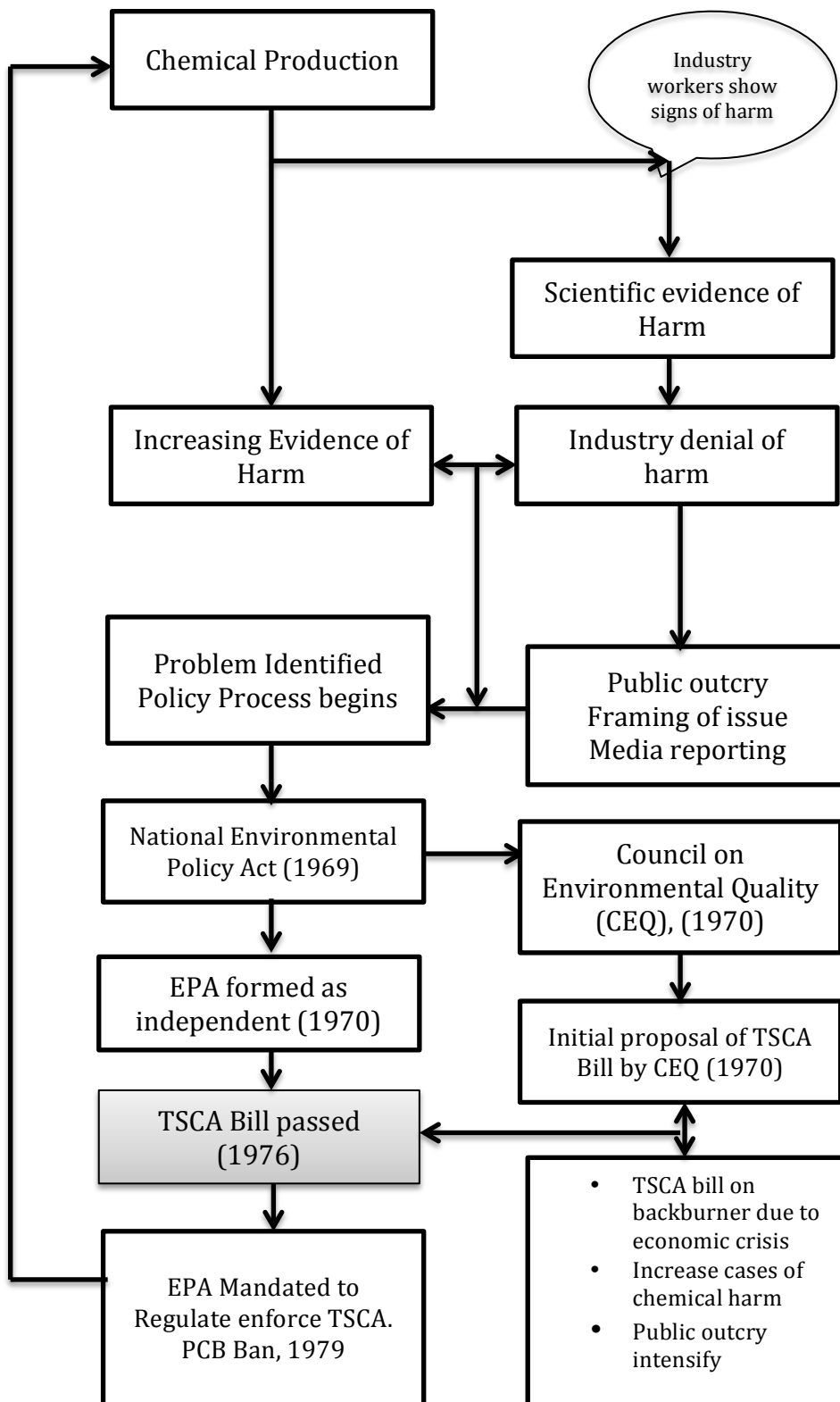


Figure 2 Diagrammatic representation of the policy process towards the PCB ban

### The EPA and Section 6(e) of the TSCA Bill

After the passage of the TSCA bill, the mandate of the EPA was tested when it began implementing the statutes of section 6(e). The bill on PCBs gave EPA the authority to institute rules on the Disposal and Ban regulations of PCBs.

Because Congress by itself lacks the scientific expertise and resources to make complex technical decisions, the EPA is necessarily permitted to set standards and design enforcement procedures for compliance (Vig *et al*, 2005). This power unassumingly creates interpretive problems for interest groups, leading to battle over validity of scientific evidence, standards and enforcement procedures (*ibid*).

Section 6(e) of the TSCA detailed a plan for the disposal of PCBs and banned the manufacture, processing, distribution in commerce and use of any PCBs other than in a totally enclosed manner. It defines 'totally enclosed manner' as "any manner which will ensure that any exposure to human beings or the environment will be insignificant as determined by the [EPA] administrator" (TSCA bill section 6(e)). On May 31 1979, EPA set rules which banned the manufacture, processing, and distribution in commerce or use of most PCBs. EPA however, used its vested powers to allow the continued use of PCBs in electric transformers, capacitors and other electrical equipment since they are considered enclosed (Head, 2005). By EPA's regulations, PCBs of concentration of less than 50ppm (parts per million) were considered non-toxic. Meaning manufacturing, processing, and distribution in commerce of PCBs below 50ppm was excluded from the ban (Head, 2005; ELR, 1980). Prior to this 50ppm rulemaking, the EPA on February 17 1978 had set the cutoff at a highly contentious 500ppm mark (EPA-National Service Center for Environmental Publications, 1980).

The Environmental Defense Fund (EDF) challenged EPA's regulation on the 50ppm cutoff on grounds that it created the window for continual production, either deliberate or incidental (ELR, 1980). Undoubtedly, the knowledge-based expertise of non-governmental actors like the EDF in the 1970s and 1980s became a driving force that state actors had to contend with. EPA were of the opinion that when section 6(e) of the Act was being considered Congress was more concerned about regulating existing contamination of PCBs in the environment and their potential risk to humans, and not



about regulating PCBs from ambient sources. As a result of this, EPA argued that the cutoff at 50ppm rather than 500ppm, substantially increased health and environmental protection (ELR, 1980). It is important to note that during this period, "Edison Electric Institute (EEI), together with EPA worked hard to justify the 50 ppm cutoff as an "administratively" created exemption to the Act (ibid). Environmental Defense Fund (EDF) argued that EPA's position on PCBs cutoff was based on the fact that, the agency could not determine the "regulatory impact on commercial products" for lower levels (ELR, 1980). However, evidence made available to EPA made it to believe that the economic impact on commercial products of defining lower levels of PCBs in the range of 50ppm and above (something industry could easily comply) was less, hence the cutoff at 50ppm (ibid). From this premise, by asking industries to comply below 50ppm would impact the economy with serious effects to the organic chemistry industry (ibid). The D.C Circuit ruled that EPA's classification of transformers and other electrical equipment as enclosed were inadequate. The court also ruled that EPA contravened the mandate of section 6(e) by exposing humans and the environment to "an unreasonable risk of injury," through their regulations which permitted the continual manufacture of PCBs in concentrations below 50ppm (ELR, 1980). In the final ruling, the court pointed out that;

The EPA regulations can hardly be viewed as a bold step forward in the battle against life threatening chemicals. There is no substantial evidence in the record to support certain of the EPA regulatory enactments, and portions of the regulations are plainly contrary to law. Thus, the effort by EPA has, in certain respects, fallen far short of the mark set by the congressional mandate found in section 6(e) of the Toxic Substances Control Act (ELR, 1980, Transcript).

Realizing that by ruling in this matter would be a violation of section 6(e) of the TSCA, the court "agreed to stay its mandate" while allowing the parties to agree on a new rulemaking by EPA to regulate PCBs (Head, 2005, p. 15). During the stay, EPA realized that immediate ban on PCBs would definitely be disastrous as it would greatly impact the economy.

While the court hearing was ongoing, the Edison Electric Institute (EEI), who earlier defended the 50ppm cutoff, undertook a research with the Utility Solid Waste Activity Group (USWAG) to substantiate the new rulemaking, as requested by the court (Head, 2005). On February 19, 1982, the EEI-USWAG report was submitted to EPA. Based on the report, EPA published a set of rules for the use of PCBs in electrical equipment on April 22, 1982 (ibid). A number of observations were made in the EEI-USWAG report. One of these observations was that, “the use of electrical equipment could legally continue under an authorization granted by the EPA using the provisions of section 6(e)(2)(B) of the TSCA”<sup>16</sup> (also Head, 2005). For authorization of use of PCBs under the section, EPA was required by the TSCA to complete an investigation, which will establish that usage “will not present an unreasonable risk of injury to health or the environment” (Head, 2005).

On August 25 1982, EPA finally made known the final rule to “authorize the use of all PCB-containing, mineral oil-filled electrical equipment for its remaining useful life,” pointing out that there will be no reasonable risk of injury to human health or the environment<sup>17</sup>. On coming to this conclusion, EPA pointed out that;

- Imposing a total ban would cost the public and the United States Industry Billions of Dollars, primarily as a result of the disruption of the electrical service;
- The proposed inspection and maintenance program reasonably reduced the exposure risks associated with the use of PCBs in transformers and the servicing conditions prevent further PCB contamination; releases of PCBs to the environments and exposure to humans and wildlife from transformers was expected to be very small;
- And finally, the costs associated with an accelerated phase-out or requirements to retrofit or contain in-service transformers were not reasonable when compared to the potential reduction in release of PCBs that such an action would achieve<sup>18</sup>.

Irrespective of the legislative hurdles, the TSCA bill has been well lauded by issue networks such as the Environmental Defense Fund (Gottlieb, 1995).

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<sup>16</sup> The U.S. Government file 47 Fed.Reg.17, 426

<sup>17</sup> The U.S. Government file 47 Fed. Reg. 37,342-44

<sup>18</sup> The U.S. Government file 47 Fed. Reg. 37, 346-47

Whereas the official passage of the TSCA bill and the eventual ban of PCBs were initiated by government actors, it is important to bring to the fore that the process towards reaching that feat saw the active participation of issue networks such as the EDF and the public through effective protest and the court system.

### **The Global Environmental Injustice Inspired by the PCBs Ban in the U.S.**

On the flip side, the success story of the TSCA bill ban policy on PCBs in the U.S. created a new era of environmental injustice issues in developing nations.

The historical stringency that associated the regulations and the high cost of compliance compelled industries to find new ways of keeping up with their profits and fiduciary duties to stakeholders. This opened up a new dimension of exporting environmentally 'costly' industrial harm to developing nations, while policy benefits were retained for the good of the U.S. economy, environment, and people. The situation of stringent environmental regulations vis-a-vis weak or non-existent environmental regulatory enforcement regimes coupled with 'poverty and indebtedness' in developing nations conditioned a new toxic substance import-export relationship, which flourished after the passage of the TSCA bill. This economic relationship stems from the hegemonic ideology of the developed nations continuing to exploit weaker nations for their increased economic and political advantage, as pointed out in earlier chapter. It is this relationship that has positioned Ghana as a recipient of toxic equipment for socioeconomic development.

## **THE PCBs CASE IN GHANA: A COST OF MODERNITY**

### **Overview**

In this chapter, I will look at the historical background of Ghana's quest for socioeconomic development through its electric power generation projects, national electrification projects, and the emergence of environmental injustice that ensued in the process. The chapter reviews the dynamics of western hegemony and exploitation promoted by Ghana's pursuit to industrialize. It reviews the ambitious quest of Ghana to provide a nationwide access to electricity by 2020, and how this ambition set the

grounds for an increase in transformer purchases which led to burdening the nation with PCBs. The scientific evidence of PCBs ubiquity in Ghana is also cursorily reviewed. Finally the chapter reviews the attempts being made to eliminate PCBs in Ghana through the Stockholm Convention's National Implementation Plan (NIP).

### **Developing Ghana through Energy: The Embedded Cost of Industrialization**

The genesis of Ghana's power generation begun in 1914 by the colonial masters under the Railway Administration to serve the interest of British corporations (Barfour, 2009). By the time Ghana became independent in 1957, electricity, which was primarily powered by diesel engines, had reached a few major cities and mining towns that were of economic importance to the British imperialist (Clark, 1994; Barfour, 2009). By 1960, it was estimated that the total national electricity access rate, which is based on communities connected to the national grid, was not even more than 15% (Baffour, 2009). The demand for electricity around this period was primarily for domestic purposes, and the few industries and mines that served the interest of Britain. Prior to 1957, the British had done some feasibility studies on the Volta River to ascertain the potential for hydroelectric power generation. Their studies showed high potential; however, the high cost of dam construction deterred the colonial masters from pursuing any hydroelectric project on the river. After independence the country quickly wanted to modernize through the pathway of industrialization. This implied it had to expand its available national energy supply to support the process of industrialization. The problem for Ghana as a young nation at the time was how it was going to raise money to construct a hydroelectric dam on the Volta River. In July of 1958, Kwame Nkrumah, the first democratically elected president of Ghana visited the U.S. and had talks with President Dwight Eisenhower about the hydroelectric project, and the difficulties the country faced in raising money towards the construction of the dam.



**Figure 3: Kwame Nkrumah and President Eisenhower during the visit in 1958. (Courtesy <http://www.pinterest.com/aokyere/history-love/>)**

Kwame Nkrumah's visit yielded fruits as it led to the Kaiser Group of Companies expressing interest in investing in the hydroelectric project (Ghanaweb, 2014; Baah, 2003). The participation of the Kaiser Group of Companies in the project was to ensure that excess energy produced after the construction of the hydroelectric dam would be utilized during the first few years after the project (Rahaman *et al*, 2004). The Kaiser conglomerate conducted a feasibility study in Ghana and settled on siting an aluminum smelting company (which is highly energy-intensive) to absorb the excess electric power that will be generated by the dam.

By an Act of government of Ghana (the Volta River Development Act, 1961), the Volta River Authority (VRA) was established as an incorporated entity to manage the construction of the dam, and the power generated for the socioeconomic development of the nation. By 1965, the Akosombo hydroelectric dam had been completed with four generating units. Towards the end of 1972, two more generating units were added to increase the dam's capacity to 912MW (Sim and Casely-Hayford, 1986). Besides Kaiser, the U.S., Britain, World Bank, and International Bank for Reconstruction and Development, who partly financed the Akosombo dam project, Ghana provided over

half of the project cost (Rahaman *et al*, 2004; Tsikata, 1986). Ironically, Kaiser Group was allocated 70% of the power generated by the dam for its newly established aluminum smelting company in Ghana- the Volta Aluminum Company (VALCO) (Rahaman *et al*, 2004). It is interesting to note that less than 30% of the generated power from the dam was allowed for Ghana's burgeoning industries and domestic use (Ghanaweb, 2014; Rahaman *et al*, 2004; Sim and Casely-Hayford, 1986). The 70% power allocated to VALCO was part of the agreement for Kaiser to invest in the project for an initial period of 30 years, which was extendable to another 20-year period (Rahaman *et al*, 2004). It is also worth knowing that in the early stages of VALCO's operation, it enjoyed a ten-year tax holiday, faced no restrictions on the import of materials, and the repatriation of profits from Ghana (Graham, 1983). Graham point out that "[t]he Akosombo dam has provided the U.S.-based multinational Kaiser [Group of Companies] with cheap hydro-electric power, which has made their smelter [in] Tema in Ghana their most profitable smelting operation world-wide"(1983).

### **National Electrification Projects and PCBs in Ghana**

In 1970, Ghana initiated a rural electrification project to promote and sustain rural economic activities (Barfour, 2013). The project did not measurably become successful because only a handful of rural communities (about 70) benefited from the project (Barfour, 2013; 2009). In late 1970s and early 1980s, it became obvious that the national electrification access rate was inadequate as only 15% of the population then had access to electricity (Ahiataku-Togobo, 2010). Graham argues that during this period "Ghana was running dangerously short of [electric] power and was faced with the possibility of importing power from neighboring Ivory Coast" (1983, p. 51). This was due to the increasing domestic demand for electricity and the overwhelming power usage by VALCO (*ibid*). For instance, out of 110 districts capitals in Ghana during that period, only 46 were connected to the national grid, with less than 5% rural access (Ahiatku-Togobo, 2010). The Government responded to this by contracting "various multilateral and bilateral" loans to expand electricity access, particularly in southern Ghana in the mid-1970s (Barfour, 2009).

To augment the energy need of the nation as a result of increasing population and burgeoning industrial demand, the Volta River Authority (VRA) embarked on another hydroelectric project on the Volta River at Kpong, which was completed in 1981 with the capacity to generate 160 MW. This prepared the grounds for the nation to ambitiously increase national access to electricity to serve as the driver for socioeconomic development.

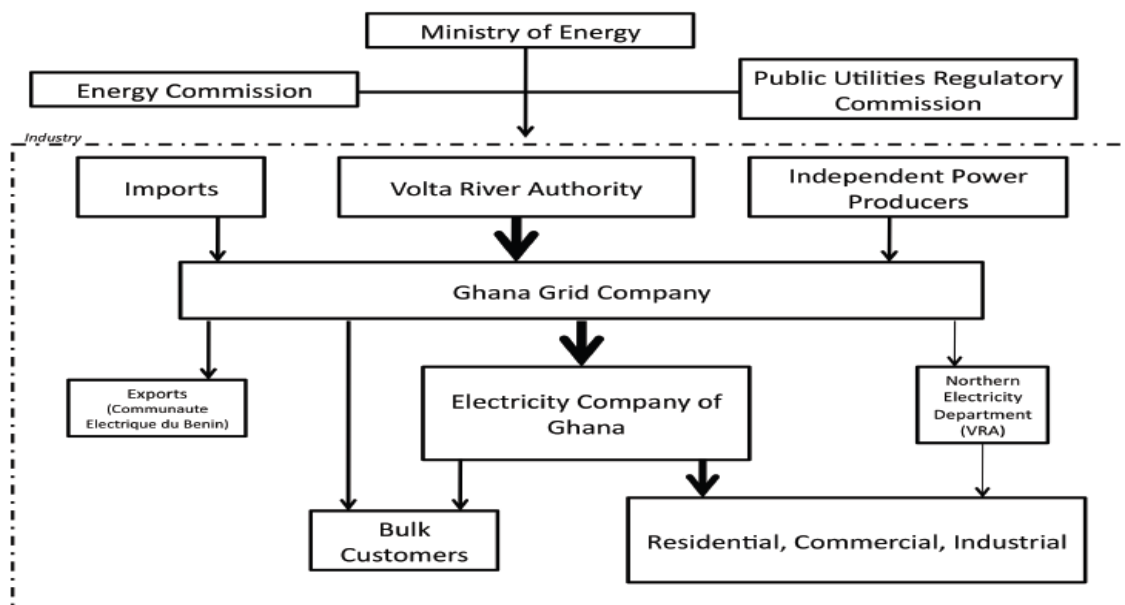


Figure 4 Organizational structure of the electricity sector in Ghana. “Power Sector Reform and Regulation in Africa: Lessons from Ghana, Kenya, Namibia, Tanzania, Uganda, and Zambia” (2013), by Kapika Joseph and Anton Eberhard.

In 1985, the VRA initiated a \$150 million dollar Northern Electrification and System Reinforcement Project (NESRP) to provide a 161 kV National Grid to the northern regions of Ghana. By the end of 1985, the national electricity access rate had reached 23% (Team, 2012). Towards the end of the 1980s, the access rate had increased to 28% (Obeng and Evers, 2009).

In 1989, a National Electrification Scheme (NES) was launched to capture the broader national interest of rural-urban universal access to electricity, as a catalyst for socioeconomic prosperity and modernization. The government of Ghana together with the Volta River Authority (VRA) and the Electricity Company of Ghana (ECG) borrowed

\$80 million from The World Bank to promulgate the agenda of the NES (The World Bank, 2001). Part of this financial assistance was to be used in expanding sub-stations, build or replace major links between sub-stations (ibid). To provide for a sustainable funding regime, a National Electrification Fund (NEF) was instituted in 1989 to pull local resources for the project continuity, through tariffs and levies from customers (Barfour, 2013). With a lifespan of 30 years, it is expected that Ghana will reach the expected NES project goal of universal access to electricity (Ahiataku-Togobo, 2012; Barfour, 2009). The 30-year projection was established through a consultative National Electrification Planning Study (NEPS) conducted by Acres International Ltd of Canada and Asare-Tsibu & Partners in Ghana (Ahiataku-Togobo, 2012). The NEPS successfully developed a Nation Electrification Master Plan for the NES in 1988/89, which has become the blueprint for the entire project lifespan (ibid).

With the drive to speed up the process of universal access to electricity, the government introduced the Self-Help Electrification Program (SHEP) as a complement to the NES, with the aim of encouraging communities to be proactive by initiating their own electrification projects, however, with assistance from the government. This strategy catalyzed a consistently accelerative project pathway with remarkable success. By 1996, 41 more districts capitals have been added to the national grid. Eventually the remaining 23 of the 110 districts at the time were added to the grid by 1998 (Ministry of Energy, 2005). However, it is important to point out that the government of Ghana expanded its local government in the 2000s. Currently, there are 216-district capitals, almost doubling the initial 110 district capitals (Owusu-Mensah, 2014). This expansion, while it aims to directly facilitate decentralized governance and promote socioeconomic development, it also indirectly served as a stimulus to the 2020 universal electrification access project.

In 2000, with a population of 18,845,265 (2000 Census), national electricity access rate had reached 43% with an average Consumption/Capita of 386kWh (Ahiataku – Togobo, 2012). In 2005, the national access rate was recorded as 54% (Team, 2012). By 2010, the national access to electricity has reached 72% (Ahiataku –Togobo, 2012).



Around this same period of 2010, rural access rate reached 45%, with average Consumption/Capita reaching 443.3kWh (Barfour, 2013). The population data corresponding to this relatively high access rate in 2010 was 24,658,823 (2010 Census). This again points to the conventional assumption that increasing population invariably calls for increase demand for electricity access, which goes hand-in-hand with transformer importation.

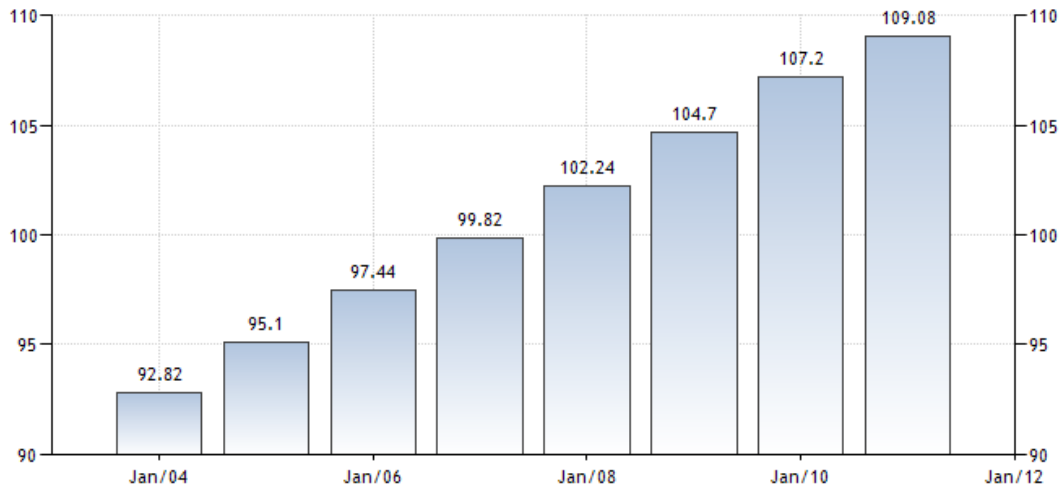


Figure 5: Population Density (people per sq.km) in Ghana. Source: [www.tradingeconomics.com](http://www.tradingeconomics.com)

Barfour in his paper presentation at the 13<sup>th</sup> Annual African Utility Week held in South Africa, Cape Town from the 14-15 May, 2013, pointed to “political will” as one of the success drivers for the electrification project in Ghana (2013).



Figure 6: Electrical Networks in Ghana. Courtesy of Ministry of Energy, 2011

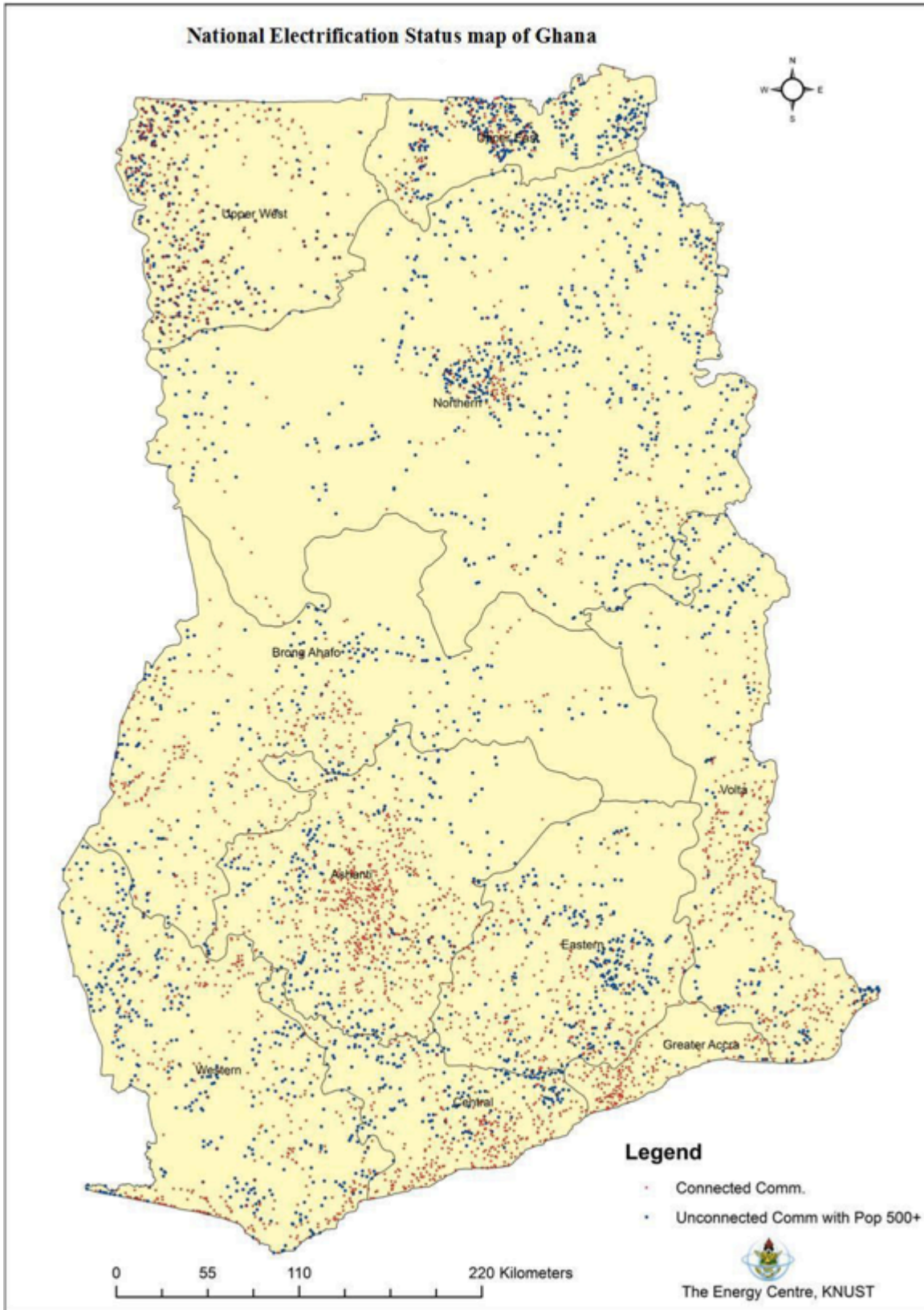


Figure 7: National Electrification Status Map. Courtesy of Ministry of Energy, 2011

Without a doubt, the national electrification project reveals the mutual relationship that exists between government of Ghana and the electricity companies.

One of the key objectives of the NES is “to construct new and reinforce existing generation and transmission facilities to support and sustain the scheme” (Ministry of Energy, 2005).

It is important to point out that during this period of extensive national electrification project in Ghana, there was also a frantic drive by corporations in the U.S. to transfer toxic harm (e.g. PCBs in equipment) to developing nations, as a result of the TSCA bill and the ban of PCBs in 1979. Most electric transformers shipped out of the U.S. around this period, and of course from many other manufacturing nations were potentially tainted with PCBs. It is this long process of ambitious electrification in Ghana which has led to the current PCBs ubiquitous presence in Ghana.

Whereas the government of Ghana and the electricity companies have been close partners in the drive for socioeconomic development, at least as far as national electrification is concern, it is needful to point out their collective negligence to protect the environment and human safety. This is the case I will seek to establish in my analysis chapter.

### **Evidence of PCBs in Ghana**

Scientific evidence of PCBs in Ghana continue to support the fact that Ghana has extensively imported and used electric transformers that contained PCBs for a long period of time (Bempah *et al*, 2012; Buah-Kwofie *et al*, 2011; Yeboah *et al*, 2005). The national electrification projects affirms this assertion. The Volta River Authority (VRA), the Electricity Company of Ghana (ECG), and quite recently the Ghana Grid Company (GRIDCO), which are all parastatals, have been the main importers and owners of electric transformers and equipment that have been identified to contained PCBs in Ghana. A United Nations Development Program (UNDP) project document report on the elimination of PCBs in Ghana established that “2-3% of transformers [in use] contains pure PCBs [whereas] a further 13% of transformers are PCBs contaminated to a level higher than the threshold set in the Stockholm Convention” (2008, p. 4). PCBs of

concentration less than 50ppm are considered non PCBs, greater than 50ppm but less than 500ppm are considered contaminated, and when it is more than 500ppm it is considered pure PCBs (Mills and Rhoads, 1985). Recent studies to determine the levels of PCBs from some selected electric transformers in parts of the Greater Accra Region of Ghana revealed that the ECG and VRA may still be importing or using tainted PCBs transformers (Buah –Kwofie *et al*, 2011). A total of 94 transformers were sampled with the latest manufactured transformer being 2005 (ibid). The authors concluded that there is no relationship between the year of manufacture and the level of PCBs contamination as transformers as recent as 2005 contained levels as high as 131.86+/-14.22 ppm (ibid). The conclusion of Buah-Kwofie *et al*, which indicated no correlation between year of transformer manufacture and the levels of PCBs leaves room for further research. This could be because some manufacturers continue to use PCBs in their products even after the global ban, provided the research tools and techniques used by the authors are not flawed. Analysis of PCBs in cow milk in Ghana showed concentration ranging from 2.5-87ppm (Asante *et al*, 2010). Studies on human milk and fish have also been conducted in Ghana. Forty-two samples of human milk were collected from primiparous mothers in 2009 from three locations in Ghana; Accra (costal), Kumasi (forest), and Tamale (savannah) from both urban and rural areas of each location (Asante, 2011). Concentration level were recorded from 15-160ppm (ibid). In the case of determining the levels of PCBs in fish samples, 40 tilapia fish from some lakes, lagoons and aquaculture pond were tested in 2010 (Ashante, 2013). Concentration level were recorded from 1.1-300ppm (ibid). In all cases, PCBs were detected indicating its ubiquitouness in the Ghanaian environment with Accra recording the highest level of PCBs concentration. In fact, Gioia *et al* (2011) have reported that total mean PCBs level in Accra in 2009 reached 82ppm, which was statistically higher than what was recorded in 2004 at a level of 34ppm. This point to the fact that, the PCBs burden in Accra is getting worse. A situation which can be attributed to the position of Accra as the capital of Ghana, and the extensive electricity access serving the overly populated communities and industries in the city.



### **Attempt to Eliminate PCBs in Ghana-The National Implementation Plan (NIP)**

The government of Ghana through the Ghana Environmental Protection Agency (EPA) embarked on a project under the National Implementation Plan (NIP) to eliminate PCBs in Ghana, with funding from the Global Environmental Facility (GEF). Other assistive organizations collaborating in the project include; The United Nations Development Program (UNDP), United Nations Institute for Training and Research (UNITAR), and United Nations Environmental Program (UNEP) (Ghana News Agency, 2012). The NIP is a holistic plan that sets out how nations will implement their obligation to the elimination/destruction of POPs under the Stockholm Convention. In Ghana, the project was to “ensure [the nation] has the capacity and capabilities to manage PCBs in a manner consistent and compatible with the Stockholm’s Convention’s goal of PCBs elimination from use in equipment by 2025” (UNDP, 2008, p.4). During a stakeholders meeting in Ghana, UNITAR pointed out that the NIP project aimed to “significantly improve power production and distribution and to strengthen the management of the [electricity] sector” (UNITAR, 2013, website). Legislatively, the project also seeks to “strengthening [*sic*] the legal framework and the management capacity both within government institutions and among PCB holders” (ibid). It further pointed out that the PCBs elimination project in Ghana called for “increased project visibility at the local level and for decision makers” (ibid). In response to the NIP deadline for elimination of PCBs, the Environment, Health and Safety Manager of ECG, Peter Asigbee, pointed out that “it would be difficult for the company to change all transformers with PCBs within the limited time” (Ghana News Agency, 2009, website). He explained that “some of the transformers in use by ECG have been in service since the 1950s and the company does not even have the capacity to test those transformers for PCBs” (ibid). Philip Owiredu Yeboah, a lecturer at the Graduate School of Nuclear and Allied Sciences, Ghana, also pointed out “PCBs were scattered in many places including hospitals, schools and market places thus, putting everybody at risk” (Ghana News Agency, 2009, website). He further stated “some entrepreneurs even buy the PCBs oil from the Volta River Authority (VRA) and Electricity Company of Ghana (ECG) to be used in making hair pomade for women” (ibid). According to a news report by Edmund

Smith-Asante of Graphic corporations, Ghana, the Ghana EPA have pointed out that "...[transformer oil] are siphoned by people from both functioning and broken down transformers and sold as edible oil" (Obour, 2013, Daily Graphic Newspaper Website). This chilling revelation showed a long-standing lack of willingness on the part of government to address the issue and a willful oblivion of the electricity companies to respond by taking preventive actions to protect people's health and the environment.

During a 'High Level Sensitization on the Management of PCBs in Ghana' on October 3<sup>rd</sup> 2013, a keynote address read on behalf of the Deputy Minister for Environment, Science, Technology, and Innovation (MESTI) by Sylvester Anemana, Chief Director of the Ministry, the Deputy Minister, Bernice Heloo confirmed that Ghana did not have any law on PCBs however, the Environmental Protection Agency Act 490, 1994 "had adequate provision for their control" (Obour, 2013, Daily Graphic Newspaper Website). The Deputy Minister, through the keynote address also acknowledged that, mainly the ECG and the VRA are the major custodians of PCBs tainted equipment, power transformers, and capacitors in Ghana (ibid).

A nationwide transformer inventory conducted in 2006 as part of the National Implementation Plan (NIP), estimated that about "12,000 transformers were to be sampled and analyzed for PCBs" (ibid). According to Anemana, out of the reported 12,000 units, about 9,000 had been so far sampled and analyzed for PCBs (ibid). It is reported that the ECG, VRA and GRIDCO have jointly contributed about \$1.6 million in 'kind' donation towards the NIP project (ibid).



**Figure 8 Pictures of PCBs tainted transformers at the ECG training School, taken during fieldtrip to the site in February 2014.**

As part of the measures to control PCBs, the ECG training school in Tema is being used to store old PCBs-tainted transformers for final disposal. According to MESTI, about 116 contaminated transformers and capacitors are in storage awaiting shipment for disposal (Ghana News Agency, 2012).



# FIELDWORK AND ANALYSIS

## METHODOLOGY

This chapter describes my fieldwork, approach, justification for the selection of actors for interviews and administration of questionnaires, and their relevance to the paper. It also points out the limitations that may be inherent in the research and how these limitations are mitigated and compensated for in the research. The policy network analytical framework used to establish my research case is also noted and justified in the chapter.

### Data Collection

I spent six (6) weeks in the Greater Accra Region of Ghana to interview and administer questionnaires to relevant actors contributing to the PCBs issue in Ghana, or facilitating in the development of Policy to control PCBs. Environmental policy documents such as the existing Environmental Protection Agency Act (490) 1994, and a yet-to-be enacted “Draft Policy on Contaminated Sites in Ghana” were reviewed and analyzed, where necessary. I also drew information from online news reports, major newspapers, and declassified online court documents. Actors reports posted on websites were also sourced and used. I utilized data from conference presentations made by government officials to make my case. Typically, academic books and peer reviewed journal articles formed a backbone to my paper and analysis.

### Research Tools and Techniques

#### Questionnaires

Closed and open-ended questionnaires were submitted to actors identified for this research. Open-ended questions were given out to corroborate interview responses, and also to give respondents the flexibility to answer questions based on their understanding of the situation in their own ideas and/or experience. Questionnaires were simply structured to require minimum literacy to complete. Questionnaires were handed to respondents in person. Respondents were given sufficient time to complete the questionnaire. Collected questionnaire responses were put together in groups according to actors and analyzed as such. Questionnaire responses for the entire

fieldwork were received from three government officials in different institutions, three industry officials in different parastatal companies, and 28 community members from three different communities (see appendix 4 for questionnaires sample).

### **Interviews**

Two senior government officials in different institutions, and three senior industry officials in different companies were interviewed. Interviews were arranged with interviewees through emails and telephone calls, to agree on interview dates and time. One interview was however conducted on the spot without schedule, but upon permission. Some of the interview questions asked were: What is your perspective on the PCBs issue in Ghana? What is your understanding of the policy process in Ghana and how does it function? What are some of the major challenges encountered during policymaking process? [See appendix 3: for interview questions]. Interview time was usually less than thirty-minutes. Interview responses were shorthand written in a dedicated research book. The interview responses were later typed in Microsoft Office 2011 Word document. Interviewees were sent copies of the typed responses via email to verify for correctness and accuracy. Interviewees corroborated typed responses via email to confirmed captured information before analyzing.

### **Reason for Interview and Questionnaire Administration**

The purpose of interviewing and administering questionnaires to relevant government ministry and agencies, corporate entities, communities and other actors who were deemed relevant in this research is to gain a multi-level perspective on the PCBs issue in Ghana. The Interviews and administered questionnaires are to allow for constructive analysis and objective comparison of the policy actors, allowing for a better understanding of the policy process in Ghana. This provides a clearer understanding of the policy dynamics around the PCBs issue and the environmental justice perspectives that emerges. It also provides a basis to make meaningful comparison to the case in the U.S.

## Actors Consulted during Fieldwork

### *Ministry of Environment, Science, Technology and Innovation (MESTI)*

Established in 1993, MESTI is the overseeing government ministry that is responsible for environmental policy formulation, implementation and enforcement in Ghana. It is mandated to “...ensure accelerated socioeconomic development through the formulation of sound policies and a regulatory framework to promote the use of appropriate environmentally-friendly, scientific and technological practices and techniques” (MESTI, 2014, at ghana.gov.gh).

According to the ministry’s website, one of the approaches it seeks to do this is through the “intensification of the application of safe and sound environmental practices” with a mandate “to pursue the implementation of government policies...” (Ibid).

### *Environmental Protection Agency (EPA)*

EPA, which is under MESTI, is mandated as a policy and regulatory agency to ensure “sound environmental stewardship” (MESTI, 2014, ghana.gov.gh). The EPA is empowered to achieve this through;

...an integrated environmental planning and management system established on a broad base of public participation, efficient implementation of appropriate programs and technical services, giving good counsel on environmental management as well as effective and consistent enforcement of environmental laws and regulations (MESTI, 2014, ghana.gov.gh).

A copy of an introductory letter from the Faculty of Environmental Studies, York University was submitted to MESTI and EPA in support of emails and telephone calls requesting permission to conduct interviews and administer questionnaires to their officials. These interviews and administered questionnaire were aimed at understanding the environmental policy process in Ghana through the eyes of the core policymakers.

### *The Ghana Custom and Excise Preventive Service (CEPS)*

CEPS is one of the oldest government institutions in Ghana established by the British colonial masters in 1839, to serve as the policing agency at all entry points in Ghana. The institution’s current mission is to;

...design and implement effective strategies and programmes to collect, account and protect customs, excise and other assigned tax revenues at a minimum cost, while facilitating trade, investment and the movement of people across the borders of Ghana through efficient and transparent service delivery (Ghanadistrict.com, 2006).

CEPS is a custodian of data of every item imported or exported out of Ghana.

I consulted CEPS for data on Electric Transformers imported into Ghana since 1979. A formal request for data together with a copy of an introductory letter from the Faculty of Environmental Studies, York University, were submitted to The Commissioner, CEPS, on January 26, 2013 for permission to retrieve data for research purpose. Excel data on transformers stored on CEPS database was copied to my dedicated USB flash drive on 14<sup>th</sup> of February 2014, for the purpose of this research only. Data was received from the Monitoring and Research Department of CEPS in Accra, Ghana. Data received from CEPS begun from 2003 to 2013, as this is the period CEPS initiated a system of computerized record keeping. The data received was filtered using Microsoft Office 2011 Excel filter tool to exclude all imported goods not specifically described as transformers.

### *Ghana Energy Commission*

The Ghana Energy Commission is mandated by an Act of the Ghanaian Parliament, the Energy Commission Act, 1997 (Act 541) to;

...regulate and manage the development and utilization of energy resources in Ghana as well as to provide the legal, regulatory and supervisory framework for all providers of energy in the country, specifically by granting licenses for the transmission, wholesale, supply, distribution and sale of electricity and natural gas and related matters (Energy Commission, 2014).

The mandate of the commission empowers it “to formulate national energy policy, enforce legislative instruments, license public utilities for the transmission, wholesale supply, distribution and sale of electricity” (ibid).

I submitted an open-ended questionnaire on Institutional Perspective to the Environmental Department of the Energy Commission in Accra, together with a copy of

an introductory letter from the Faculty of Environmental Studies, York University. The Program Officer responsible for Environment at the Energy Commission completed the questionnaire in ink, and returned it to me on the same day. The perspective of the Ghana Energy Commission on the PCBs issue is deemed relevant to this research. This is because, as an independent government regulatory body on energy, the Commission plays a key role in streamlining the operations of the electricity companies who are deemed to be major importers of transformers into Ghana.

### *Volta River Authority (VRA)*

The Volta River Authority, established under an act of government, Act 46 of the Volta River Development Act, Republic of Ghana, has the core business mandate “to generate and supply electrical energy for industrial, commercial and domestic use in Ghana” (VRA, 2013). VRA mainly generates its electric power from the Akosombo dam, and in later years from the Kpong Dam, all in the eastern region of Ghana (as indicated in earlier chapter). It currently generates electric power from thermal facilities at Tema and Aboadze “to complement [the] hydro generation” energy (ibid).

Even though VRA’s main mandate is to generate electric power for national use, it functions as an energy distribution entity responsible for distributing electricity to the Northern Sector of Ghana through one of its subsidiary business entity, the Northern Electricity Department (NED) (ibid). As a result of the company’s mandate to generate and supply electricity energy, it imports substantial quantities of electric transformers for its operational needs. As an industry leader, VRA’s perspective is important for a better understanding of the policy network and dynamics on the PCBs issue in Ghana.

An open-ended questionnaire on industry perspective on the PCBs issue in Ghana, including a copy of an introductory letter from the Faculty of Environmental Studies, York University, was submitted to VRA’s Corporate Head Office in Accra. Request was sent to VRA’s Office in Akosombo for response from the VRA Public Relations office in Accra. Questionnaire response was typed onto a separate sheet by respondent, sent back to VRA’s Corporate Office (Public Relations Department) in Accra, and returned to me in sealed envelope.

### *Electricity Company of Ghana (ECG)*

The ECG, according to its online homepage is a wholly owned company by the government of Ghana, and operates under the Ministry of Energy ([www.ecgonline.info](http://www.ecgonline.info), 2013). It began operating in 1947 under the name Electricity Department, which has metamorphosed under different names to the current Electricity Company of Ghana. ECG is the main and largest electricity distributing company in Ghana. In 1987 however, the Northern Electricity Department (NED) of the Volta River Authority (VRA) took over the distribution of electricity to the northern sector of Ghana. Currently, ECG distributes electricity to the entire southern part of Ghana. As the largest electricity distribution entity in Ghana, ECG imports substantial quantities of electric transformers into Ghana to serve its operational needs. Due to this, ECG's perspective on the PCBs issue in Ghana is important towards providing a better understanding of the policy network and its dynamics in Ghana.

An open-ended questionnaire on industry perspective on the PCBs issue in Ghana, including an introductory letter from the Faculty of Environmental Studies, York University, was submitted to ECG Environment, Health and Safety (EHS) department at the ECG office in Circle-Accra. The Safety Manager of ECG, Accra was also interviewed for his views on the PCBs issue in Ghana. An Environment Officer at ECG, Circle-Accra, completed the questionnaire.

### *Polyeco Waste Management, Greece*

Polyeco Waste Management is a company based in Greece that is specialized in integrated waste management. Polyeco is contracted through the NIP project in Ghana to facilitate the shipment of PCBs tainted equipment to Greece for high temperature incineration and disposal. I met Polyeco's project manager who offered to give me a perspective on the PCB issue in Ghana, as he understands it. My interview with him was extempore, however, helpful to the paper.

### *Public Perspective*

Ninety-three (93) closed-ended questionnaires were issued to individuals in Ashaiman, Sakumono and Tema (all in the Greater Accra Region), to elicit for general

understanding of the PCBs issue, potential exposure to PCBs, knowledge of environmental policy in Ghana, and interest in participation in environmental policy-making. The communities selected are closely connected by distance but set apart by income level, educational level, and social life. Ashaiman is considered one of the economically deprived communities in Ghana. Sakumono and Tema have moderate middle-income earners and also tend to have a higher percentage of literates than Ashaiman. Tema is the largest industrial city in Ghana. The Tema harbor is the main entrance point to many goods that are imported to Ghana. Sakumono is home to many Members of Parliament in Ghana. Questionnaires were issued and respondents were given two weeks to complete it.

## **Research Limitation**

### ***Biases***

Due to the vast number of individuals importing transformers into Ghana, I selectively focused on the two major parastatal electricity companies in Ghana. This inadvertently places undue focus on their activities rather than from the perspective of a wider scope of the general importers of transformers. This bias is justified by the recognition of these companies by MESTI, Ghana EPA and researchers as the major importers of transformers into Ghana.

### ***Time Constraint on Research***

There are several actors both nationally and internationally involved in the PCBs issue in Ghana. Due to time constraint, only actors considered directly relevant and readily available and willing to participate in this research were contacted.

### ***Government***

Due to the decentralization of MESTI, policies on specific environmental issues are managed by one of its four satellite agencies with a coordinator at the MESTI being responsible for liaising between the Ministry and its satellite agencies. There is the likelihood that vested interest existing among the ministry and its agencies may cloud objectivity and undermine understanding of the issue, due to individual or institutional

biases. Asking more specific questions relevant to the ministry's role in the subject matter mitigates this bias.

### **Industry**

Due to difficulty in reaching the right person to speak to at GRIDCO, which is one of the main electricity providers in Ghana, only persons from VRA and ECG were contacted for this research. The industry perspective of VRA and ECG is considered most important to this research, as they have been identified as the main custodian of most electric transformers in Ghana. Even though GRIDCO's perspective would have given a brighter overview, this may only flood the views of the two main identified custodians of electric transformers in Ghana. Besides, GRIDCO became a limited liability company under the Companies Code, Act 179 (1963) in 2006. This excludes GRIDCO from the period of supposedly high importation of tainted PCBs transformers in the 1970s to the early 2000s.

### **Communities**

More than 50% of the Community Perspective questionnaires were not returned due to participants' continual request for time to complete the questionnaire. Because of time constraints, only twenty-eight (28) out of a total of ninety-three (93) questionnaires were collected for analysis. Admittedly, the number of respondents from these communities may not sufficiently represent the true opinion of the communities and Ghana at large. However, analysis on public perspective will be based on the responses from these respondents for the sake of research time constraint. Corroborating with data from research done in this area will compensate for this limitation.

### **Analytical Approach**

Even though still considered by some scholars as metaphoric, policy network analysis continues to gain strength as a formalized tool for conceptualizing the behavior of independently but mutually interacting actors within the policy network. It also provides rationale for the policy decisions that are made by these actors.

I will utilize policy network analytical model to perform my analysis. This will offer a better view of the underlying behaviors of the actors and the policy dynamics in Ghana



and in the U.S. The analytical framework prescribed by Marsh and Rhodes (1992) will be used as the basis upon which I will analyze the policy networks. This model is expected to highlight the behavior of the actors, how environmental issues have been treated, and the underlying factors promoting actors' interests and behavior. This is expected to shape the logic behind the analysis and be able to establish the differences and similarities that underpin the situation in Ghana and that of the U.S. It is this analytical approach that is expected to lead to the causes of policy failures and the forces behind these failures in Ghana. The Marsh and Rhodes approach addresses policy network within the confines of interest intermediation, which relates the policy dynamics among State, Corporations, and Society. Marsh and Rhodes perceives policy networks as a "meso-level concept that links micro-level of analysis" of government interest in a particular policy decision, and a macro-level of analysis, which is concerned with broader questions about the distribution of power in modern society (Rhodes, 2006, p. 4; emphasis on Marsh and Rhodes, 1992). According to Börzel, this approach "embraces the different types of state/interest relations"(1997). My analysis will involve a critical look at the policy network in Ghana, thus the policy communities and the issue network. As Rhodes put it;

- Networks can vary along a continuum according to the closeness of the relationships in them.
- Policy communities are at one end of the continuum and involve close relationships,
- Issue networks are at the other end and involve loose relationships (2006, p.4).

This approach has been proven to be effective by many policy network analysts, as it accentuates actions, reactions, and/or inactions of actors (Börzel, 1998; Dowding, 1995).

## ANALYSIS

### Overview

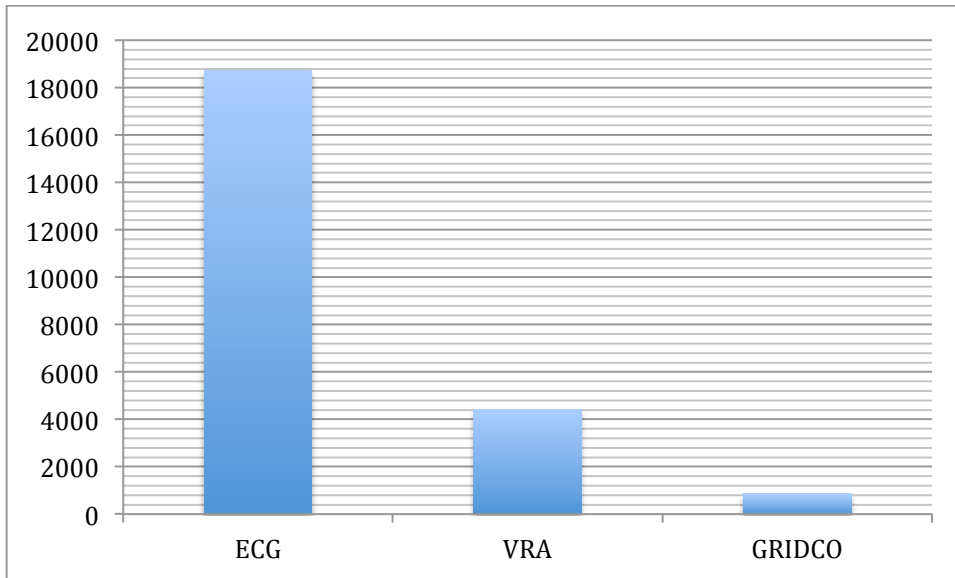
This chapter critically assesses the responses and data derived from my fieldwork. I analyze these responses in conjunction with relevant literature, institutional documents, newspaper reports, and court documents in the context of the policy network and its dynamics relating to PCBs issues in Ghana and the U.S. My analysis looks through the interest proposition of actors and the relationship that exist among them and the impact of their decisions on the public. This is to underscore the underlying motives and behaviors of the actors in the policy networks relevant to the PCBs issue in Ghana. An environmental justice frame is derived from the analysis by making reference to the TSCA bill, which banned the production of PCBs in the U.S. This is performed through the lenses of corporate and government intent to pursue economic goals to the detriment of the environment and human safety. The chapter also throws light on the environmental policy dynamics in Ghana through the eyes of the policy networks, and then contrasted with the case in the U.S.

### Interest Intermediation

According to the Ghana EPA there are currently an estimated 12,000 transformers in Ghana, largely owned by ECG and VRA. Based on Microsoft Excel data received from the Ghana Custom and Excise Preventive Services (CEPS) on imported transformers into Ghana from the period of 2003 to 2013, the 12,000 pieces of transformers estimated by the Ghana EPA can be considered as an underestimation. From the Microsoft Excel spreadsheet data, about 818,420 pieces of equipment specifically identified and described by CEPS as transformers were imported into Ghana from 2003 to 2013 (this data is filtered using Microsoft Office 2011 Excel filter to capture accurate imported product description). This numbers does not include items that were classified as transformer parts, or Uninterrupted Power Supply (UPS) equipment. According to the data, thousands of individuals, communities, government organizations, non-government organizations (NGOs), parastatals, small and large-scale industries etc., were responsible for these importations. Some of the countries these

transformers were imported from included; the U.S., Britain, Italy, Canada, France, Denmark, India, China, United Arab Emirate, Belgium, Finland, South Africa etc.

Within the period under review, thus 2003-2013, ECG imported 18,728 transformers, VRA imported 4,421 transformers, while GRIDCO imported 857 transformers, all from various countries across the globe. In total the three electricity companies imported 24,006 transformers, representing a small fraction (3%) of the total transformer importation into Ghana from 2003 to 2013. Whereas VRA indicated in the administered questionnaire that they purchased most of their electric transformers between 2004 and 2005, ECG failed to answer that question. However, ECG states that it replaces its transformers “as and when there are transformer damages or load demand,” while VRA states it replaces its transformers “when ratings are exceeded” (i.e. when the generators are updated during retrofit projects). Undoubtedly, conventional correlation point to the fact that, *ceteris paribus*, the period when Ghana actually imported most transformers was probably from 1985 to 2010 when the nation embarked on aggressive national electrification projects. Data indicates that prior to the nationwide electrification project only 15% of the country was covered; however, by 2010 the national access rate had jumped to 72% with corresponding population growth (Ahiataku –Togobo, 2012). Also it was around this period that the World Bank financially supported Ghana to facilitate the electrification project to reinforce the infrastructural backbone of VRA and ECG. Besides, the VRA undertook a number of expansion projects such as the Northern Electrification and System Reinforcement Project (NESRP) in 1985, which of course required a significant increase in transformer importation. Even though the CEPS data was short of providing information stretching from the 1970s through to the 1990s, it is evident that the peak periods of the electrification project (1985-2010) were also periods of phenomenal importation of transformers into Ghana by the electricity companies.



**Figure 9** Quantity of transformer importation by the electricity companies in Ghana from 2003-2013

In the “Draft Policy on Contaminated Sites in Ghana”, section 3.4.1, the authors pointed out that a research conducted in 2006 on PCBs inventory and possible PCBs-containing equipment by the Ghana EPA revealed that;

- Majority of the equipment that tested positive were those manufactured before 1972.
- The quantity of PCBs contaminated equipment is, however, not decreasing after 1985 as expected. This trend is probably due to cross contamination through the filtration process of mineral oil and topping up with PCB contaminated mineral oil.
- Majority of equipment found to contain pure PCBs (concentration greater than 500ppm) were those installed after 1985.
- Most surprisingly, equipment installed as recent as 2003 [was] found to contain pure PCBs.
- Some of the equipment that tested positive for PCBs were located in sensitive areas such as schools, water treatment works, markets, hospitals and hotels with some of them unprotected (pp. 15-16).

Building on what is accessible, it is easy to conjecture that even for the 818,420 transformers imported into the country from 2003 to 2013, many of them still contained PCBs, especially with evidence of pure PCBs (greater than 500ppm) identified in 2003 manufactured transformers.

In interview, the EHS Manager of ECG - Peter Asigbee confirmed that ECG stopped buying transformers with PCBs since 1972, a period when PCBs production

were unrestricted and were heavily being used in electric transformers as dielectric fluid. Asigbee further stated that “[ECG] also changed the specifications [for its] transformers to be less than 50 ppm” during this period. Even though ECG claimed to have halted the purchase of PCBs tainted transformers as far back as 1972, the company seems not to be aware if their imported electric transformers contained PCBs or not (Asigbee, and his colleague who completed the questionnaire pointed this out). This makes it difficult to believe the assertion made by the ECG official regarding ECG’s changing the specification of its transformer oil to be ‘less than 50ppm’ PCBs. When VRA was asked a similar question if it is always aware that its imported electric transformers contain PCBs or not, Ebo-Amoah, the VRA Electricals Manager, did not say yes or no. He rather pointed out that he is aware VRA follow its ‘strict Technical Service Standard specifications’. When Asigbee was asked if he is aware that electric transformers produced before 1979 might contain PCBs, he answered in the affirmative but said, ECG is more concerned about the “quality of the transformer and not on PCBs [content].” On environmental and human factors that are considered prior to purchasing transformers, ECG wrote that “noise level of transformers” was what it considers. For the same question, VRA states among other reasons that “PCBs content in new oil, which by its Technical Service Standards has a zero content,” is the criteria they use to make their purchasing decisions. While ECG claimed the ban of PCBs in the U.S. had no influence on their purchasing of transformers, VRA said the ban obviously had an influence on their purchasing of Transformers. VRA claimed, as a result of the ban none of its transformers had PCBs in its oil effective since 1995. Ebo-Amoah stated that through a task force, the VRA “Technical Services Department puts up standards for transformer oil specification, [citing] example (VOLTESSO N36 Transformer oil has zero PCBs), [which] meets CSA C 50-1976 and IEC 296 specification for all type II oil”). According to him, “this Standard is religiously followed.”

By the responses of ECG and VRA, Ghana should have been relatively less burdened with PCBs contamination, which unfortunately is not the case.

It is logical to conjecture that ECG despite their administrative directives in 1972 (ECG), and VRA's 1995 decision to stop buying PCB-tainted transformers, these companies continued to do so unabated. This is confirmed by the identification of PCBs in relatively newer equipment as in manufacturing year 2003 (Ghana EPA, 2006), and 2005 (Buah-Kwofie *et al*, 2011). The Ghana Energy Commission affirmed that the PCBs ban in the U.S. did not have any influence on how Ghana imported transformers in the 1980s "because there is no specific law or regulation with regard to PCBs issues [in] Ghana". It is indeed this non-existent policy on PCBs in Ghana that the electricity companies in Ghana exploited to willfully neglect the environment and human health for such an extended period.

### **Public Exposure to Harm and the Art of State Corporate Silence**

It is a scientifically proven fact that when PCBs burn they produce polychlorinated dibenzodioxin (dioxins), and polychlorinated dibenzofurans (furans), which have been identified to be more toxic than unburned PCBs (EPA, 2012; McKay, 2002; Rappe, 1984). Literatures on PCBs have shown that major quantities of PCBs reached the environment through improper disposal and transformer fires (Fiedler *et al*, 1994). Respondents from the selected communities for this research pointed out that they have witnessed electric transformers catching fire in their communities. Corroboratively, ECG and VRA have all indicated (in this research) that there have been cases of their transformers catching fire. A recent transformer explosion, which occurred at an ECG substation in Achimota, Accra on May 14 2014, clearly indicates the dangers the public face (Dartey, 2014). In the event these transformers contain PCBs, furans and Dioxins which are considered dangerous by-products of burnt PCBs (also pointed out by Panayiotis Manolopoulos of Polyeco Waste Management, during interview) will be released; thus exposing the general public and the environment to extreme toxic harm.

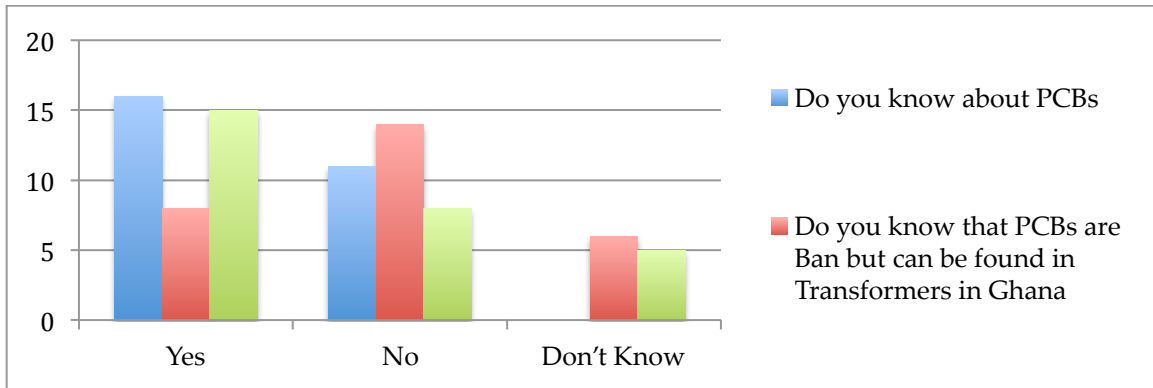


Figure 10 Public awareness of PCBs

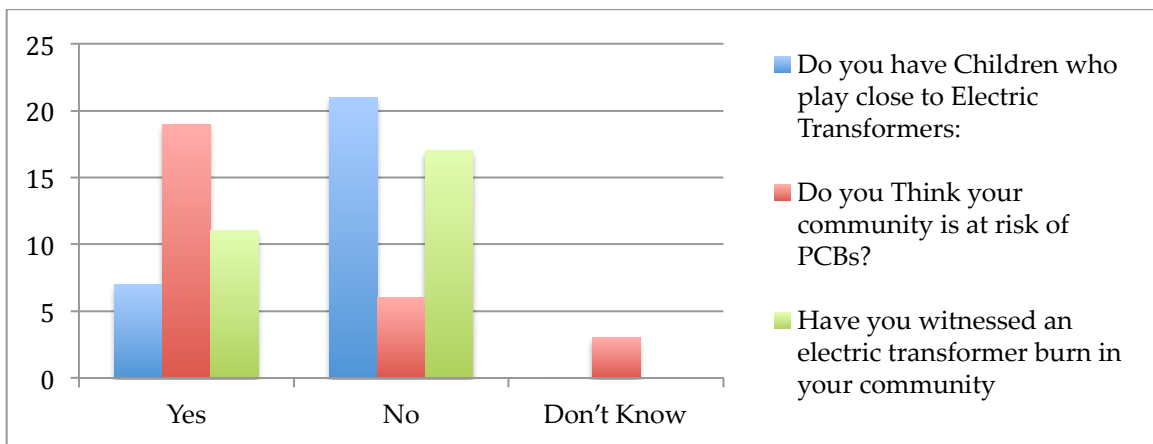


Figure 11 Public exposures to PCBs

Bempah *et al.* (2012), as well as the Ghana EPA 2006 report have all noted that transformers were located in sensitive places like schools, markets, hospitals etc., which expose vulnerable people to potential PCBs harm. My fieldwork corroborated this assertion as some few transformer sites I visited in Ashaiman had people sitting next to installed equipment to sell food in the open space. In fact, this is a normal practice that is never questioned by anyone, not even the owners of the equipment (ECG in this case). Equally, community respondents indicated they had children who played around electric transformers, and believed they might be exposed to the risk of PCBs. This indeed is the case considering the ubiquity of PCBs in Ghana.

In response to the question on how ECG and VRA store their old transformer oil or dispose them, ECG writes that it “stored [them] in drums [and] sometimes recycle”

them, while VRA stated that it “stored [them] in dirty oil tanks and dispose of them through drums which were forwarded to [its] procurement department”. Interestingly, ECG has claimed in this research that it sells off its old transformers as scrap to scrap-dealers. This directly opens up a case of deliberate intent to harm. Scrap dealers in Ghana may not be properly equipped to handle PCBs tainted old transformers sold to them by ECG. The mishandling of PCBs tainted transformers by scrap dealers potentially transfers harm to society. Panayiotis Manolopoulos, Project Manager of Polyeco based in Greece was in Ghana to assist in the shipment of stock piled of old PCB-laden transformers and pure PCBs capacitors for high temperature incineration. Manolopoulos explained to me that equipment containing PCBs demand skilled handling to avoid potential harm to self and the environment. It is for that reason that old transformers need to be exported for incineration in countries with the capacity to do so, he stressed.

The UNDP have pointed out that it was going to cost the electricity companies in Ghana from US\$3-15million to replace PCBs tainted transformers and disposal (UNDP Report, 2008). The large population of low-income clients, however, makes it difficult for the electricity companies to transfer additional cost to citizens (ibid). For this reason it makes business sense for ECG and VRA to remain silent about what they know about PCBs (ibid). According to the Ghana Energy Commission and EPA, the government of Ghana was equally aware of PCBs for a long time. John Pwamang stated in the administered questionnaire that Ghana became aware of PCBs in electric transformers through a collaborative work with the government of Canada in the 1980s. Socioeconomically, almost all governments in Ghana have considered electricity access a high priority on the governmental agenda (Kemausuor *et al*, 2012). This directly underscores the core relationship that traditionally exists between state and corporation for socioeconomic reasons, while relegating environmental and human health consequences. Carson point out that this “intimately entwined” relationship makes governments “subservient to corporate capital” and at the same time empowers the relationship to present a “united front that [makes it] difficult for citizens to



confront”(2009, p.1636; similar position by Tabb, 2001). This at once promotes unchecked environmental injustice while it simultaneously creates the condition for the defiance of national constitution<sup>19</sup>.

ECG and VRA defensively posit that proactive measures were taken to stop the importation of PCBs tainted transformers even far before the ban in the U.S. in 1979, as in the case of ECG; and before the Stockholm Convention on POPs in 2004, as in the case of VRA. Yet research has established that employees of VRA and ECG were uninformed about the harmful effects of PCBs for a long time (Bempah *et al*, 2012). Also ECG and VRA had no available records on the maintenance of transformers identified as PCBs contaminated (ibid). The absence of records of transformer maintenance regime and records of certificates indicating that imported transformers did not have PCBs is disturbingly evident of willful burdening of the environment with PCBs. The cases of ECG and VRA staffs illegally selling transformer oil to entrepreneurs for making pomade for women, and selling them as edible oil by recalcitrant citizens grossly depicts the level of negligence on the part of the electricity companies as well as the government to act. While the U.S. case showed waste haulers sold PCBs containing oils as “fuels in low temperature boilers” (Hesse, 1976), the example in Ghana is a sad one that at once paints a picture of poverty, ignorance and neglect by policy makers. Whether the electricity companies and government were aware of this or not, their long-standing silence depicts a case of willful social and environmental negligence.

### **Corporate Strategy to Conceal Harm: Internalized Environmental Injustice Paradigm**

Monsanto upon realizing the widely publicized toxicity of PCBs in late 1960s and early 1970s began taking steps by transferring risk to its direct customers who were made responsible for warning their customers of the risk of PCBs exposure (Francis,

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<sup>19</sup> Excerpt of the 1992 constitution of Ghana relating to the environment: Article 36 (9); The State shall take appropriate measures needed to protect and safeguard the national environment for posterity; and shall seek co-operation with other states and bodies for the purposes of protecting the wider international environment for mankind; Article 36 (10): The State shall safeguard the health, safety and welfare of all persons in employment, and shall establish the basis for the full deployment of the creative potential of all Ghanaians;

Article 41 (k): The exercise and enjoyment of rights and freedoms is inseparable from the performance of duties and obligations, and accordingly, it shall be the duty of every citizen to Protect and safeguard the environment.

1994). In a legal transcript between Owens v. Monsanto, posted on the website of Chemical Industry Archives, Monsanto reportedly said; "...the truth is that in 1966 when we found out that PCBs were in the environment, we started an investigation journey and we tried to gather information and we acted responsibly."<sup>20</sup> Another transcript reads; "When Monsanto learned that PCBs could possibly be in the environment, it acted promptly and responsibly and continues to do so."<sup>21</sup>

Interestingly, court evidence showed that Monsanto knew of PCBs toxicity far before Soren Jansen's scientific finding in 1966 (Chemical Industry Archives, 2009). In the case of Owens v. Monsanto, Plaintiff Exhibit No.561, a Monsanto internal memo between Elmer P. Wheeler and Don Otoo, dated August 6 1971, in which Wheeler wrote to Don; "I can say that we have probably the world's best reference file on the PCB situation. This includes reprints from the literature beginning in 1936 to reports issued last week."<sup>22</sup> The Monsanto approach of protecting the interest of the corporation is no different from what the electricity companies in Ghana have pursued.

Even though ECG and VRA had information about PCBs toxicity, it did not take any proactive measure to educate its employees or the general public about the effects of exposure until the NIP project came in. As Pwamang clearly puts it, "people and institutions don't really care..." This is actually the case in Ghana. In fact, the case of ECG's administrative directive in 1972 to stop the purchase of PCB-tainted transformers was constructively perched on a well-established public relations strategy adopted by corporations (as seen in the case of Monsanto). This strategy eliminates public fear and builds "false" confidence and trust that the corporation is acting to remedy the situation, when in reality it is not doing so.

The year 1972 was when environmental issues became internationalized through the Stockholm Conference on Human Environment and Development in Sweden. Prior to this period, most countries did not even have governmental ministries specifically responsible for the environment. The U.S. for instance had just instituted the National

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<sup>20</sup> Trial Transcript, Owens v. Monsanto CV-96-J-440-E, (N.D. Alabama April 4, 2001), p. 454, line 6

<sup>21</sup> Trial Transcript, Owens v. Monsanto CV-96-J-440-E, (N.D. Alabama April 4, 2001), p. 455, line 14

<sup>22</sup> Court Exhibit No. 561: Monsanto Internal Memo, 1971

Environmental Policy Act (NEPA) of 1969, which was enacted in 1970. It is also important to point out that it was around this same period that the Environmental Protection Agency (EPA) was established in December 1970 by the Nixon administration. As pointed out in an earlier chapter, Ghana did not even have any governing framework that guided environmental issues such as the release of toxic substance like PCBs into the environment. The U.S. was even grappling with how to regulate their industrial toxic release including PCBs specifically. Looking through PCBs historical archives in the early 1970s we see the environmental (in)justice frame emerging, which challenged the very powerful polluting industries like Monsanto. Because of public outcry and high evidence of PCBs contamination around its Anniston plant, Monsanto closed the plant in 1971 as a way of silencing its critics (especially the media), and covering up for vast harm done to the community. Ironically, while Monsanto was going through these challenges with the public for environmental quality and human safety, its key customers, General Electric and Westinghouse, were also vigorously trumpeting that PCBs were safe to use.

Scientific literatures on PCBs toxicity in the late 1960s and early 1970s were also widely discussed in international media. From these occurrences, I conjecture that most of the nations that were buying electric products such as transformers and capacitors from General Electric, Westinghouse etc., were informed of PCBs toxicity and the need to take administrative measures to reduce risk to public in order to avoid potential legal implications. If this hypothesis is the case, then it gives credence to why ECG had to take an administrative directive to “stop the purchase of PCBs tainted transformers”. The polemic approach by ECG also fits into this position. The environmental injustice that emerges out of this is the passivity of ECG not to act on its administrative decision. This can be attributed to its closely-knit relationship with the government in pursuit of socioeconomic agendas rather than environmental quality and human safety.

#### **Distributing harm through policy: Externalized Environmental Injustice Paradigm**

The PCBs ban policy under the TSCA bill in the U.S. permitted the import and export of PCBs waste through an open-border policy (National Service Center for

Environmental Publications, 1980). The PCBs ban policy also permitted PCBs usage in totally enclosed equipment such as transformers. The open-border policy and the totally enclosed permit directly gave the U.S. government and its corporate enterprises the leeway to detoxify their natural environment by transferring PCBs burden of harm to other nations. This allowed transformers that were manufactured before the ban to be shipped to other parts of the world with ease.

The period of the PCBs ban in 1979 was a period when most developing nations were vigorously pulling out of colonialism, and many more nations were experiencing corrupt military regimes after their independence from colonial rule. As already pointed out, Ghana experienced a couple of coup d'états around this period. The complex mixture of poverty and poor governance, and the quest for industrialization through electrification projects created a perfect atmosphere for an era of what I called 'legitimately concealed transfer of harm.' With the stringent PCBs ban Policy under the TSCA bill in force in 1979, corporations in the U.S. began looking for markets for their stockpile in developing countries. Because many more developed nations around this period had instituted stringent policy to check PCBs, exporting PCBs tainted equipment to these nations was more costly and unattractive considering the time consuming bureaucratic process involved. The trading relationship that emerged between corporations in the developed nations and government and their parastatals in the developing nations indirectly shifted harm to the developing nations.

In the case of Ghana, the construction of the Akosombo hydroelectric dam fostered a strong relationship between Ghana and the U.S. This relationship served as a bridge for bilateral business relationships, which again created the conduit for exploitation, as in the case of VALCO. Noticeably, when Ghana first initiated its rural electrification project in 1970, the project could not achieve any substantial success, with a poor national access rate of just 15%. However, in the mid-1980s VRA was able to connect all three northern regions to the national grid. By 2010 the national access rate had jumped to 72%, by far one of the most enviable achievements in the Sub-Saharan region. Even though this feat is remarkable, it is important to pause and define the underlying factors to the cause of

the relapse up until 1970 (15% access); and the significant progress from 1985 to 2010 (72%). I hypothesize that the strong relationship between the U.S. and Ghana as a result of the Akosombo dam deal and VALCO, positioned Ghana to be a dumping ground for the U.S. products, particularly electrical equipment that were branded as development inputs during the 1980s. It is possible PCBs tainted transformers were priced down to make them affordable for Ghana and other developing nations to purchase, particularly after the ban in 1979. I surmise that the expansive electrification project, which took root in the mid-1980s, was a direct by-product of the PCBs ban policy in the U.S. This transferred PCBs toxic burden that the U.S. citizens protested against to developing nations in the guise of international marketization. In essence, the policy created a geographically stretched environmental injustice by concentrating benefits to the U.S. environment, and distributing harm to poor and vulnerable nations in the name of trade. I surmise that the environmental injustice that emerged out of this process is pitched on exploitation. A process that continues to widen the chasm of social, economic, and environmental quality between developed nations like the U.S. and developing nations like Ghana.

#### **Internationalism: Role-playing in Environmental (In)Justice in Ghana**

PCBs have been found to travel long range crossing oceans apart. Research has shown that, PCBs have been detected in places far from where they were manufactured or have been heavily exposed (Breivik *et al*, 2002, Larsson, 1984). This implies, by eliminating PCBs in Ghana through the NIP project, Ghana indirectly works towards the elimination of PCBs in other countries. For this reason, it is worth the investment by international conventions, organizations and their supporting developed nations like the U.S. to assist in projects that aim to eliminate PCBs in places that have been identified as hotspots.

In my interview with Peter Dery, the National Coordinator, Clean Development Mechanism (CDM), of MESTI, he pointed out that in many cases African leaders (emphasis on Ghana) sign on to many international conventions, which does not necessarily merit the nation's immediate environmental concerns but only helps to

resolve the environmental concerns of other nations. Hens and Boon have similarly stated that “[f]or many years Ghana has been a very reliable partner in international conventions” (1999). In fact Hens and Boon pointed out that “prior to the Stockholm Conference, [Ghana] had participated in sign[ing] at least 15 international conventions and treaties on environmental issues” alone (1999, p. 27). While not downplaying the NIP project to eliminate PCBs, Dery mentioned e-waste dumping (some of which contain PCBs in small quantities) as one of the pressing local environmental concerns in Ghana, which should receive equivalent international attention as PCBs.

According to Pwamang, during a stakeholder’s meeting to develop a draft policy for e-waste in Ghana for instance, international actors such as Hewlett Packard and Dell Computers, and other giant electronic companies that were present, pushed for “Ghana to continue being a dumping ground.” While the position of these international actors calls for resistance from local actors, Pwamang points to the passivity of local institutions to act against such proposition of dumping e-waste in Ghana. The lukewarm attitude portrayed by government institutions in stopping international actors from dumping their waste in Ghana introduces a hegemonic order of neo-colonization within the framework of globalization and market liberalization. This kind of hegemony compels weaker nations to consistently respond to the demands of stronger nations, thereby provoking the dependency theory with its remnants of injustices (social, economic, and environmental).

### **Current Control Mechanisms and Challenges**

On how PCBs can be controlled in Ghana, Ebo-Amoah (VRA) and Peter Asigbee (ECG) respectively point out that compliance with regulations, and sampling of imported transformers by CEPS at the port of entries through the use of newly purchased PCB analyzers called “L-2000” can control PCBs in Ghana. These propositions risk being ineffective because the EPA by its current state is poorly resourced, as pointed out by John Pwamang during my interview with him. Read equally pointed this out that the EPA has a little over 150 staff (2007). What delimits the use of the L-2000 by CEPS at the port of entry is that, it removes focus on the myriads of

transformers already imported into the country that have not (may never) been checked for PCBs. Wynne argues that “even between rich, technically advanced countries, customs officials have neither the expertise, time nor resources to check even a small proportion of the consignments of wastes, or wastes recorded as goods or resources...” (1989, p. 128).

During a stakeholders meeting held on March 20, 2009 in Accra, on ‘Strengthening Chemical Information Exchange Network (CIEN) in Ghana, the EPA listed twenty-three constraints undermining its operations (Ghana EPA, 2009). Some of the constraints mentioned were “poor enforcement of import returns, improper labeling of imports/products, lack of facilities for quality control analysis of chemical/products...”(ibid). All of these provide support to the fact that checking for PCBs with the current idea of a PCB analyzer at the port of entry may not effectively solve the problem of importing PCBs tainted transformers. More subtly, the process will increase the concealment of tainted equipment as some other goods to avoid regulatory checks. Compliance of regulations can prove effective; however, this will be dependent on institutional reinforcement and unobstructed powers through autonomous operation. With the current powers vested in the EPA, it lacks the autonomy to fully and effectively enforce certain environmental laws, as it rightly states poor enforcement regime as one of the constraints to its operation. For these reasons, a more innovative approach is required which must incorporate the public and other civil groups with the ability to influence policy and its enforcement regime.

### **The PCBs Policy Network in Ghana**

Pwamang directed me to the NIP report for the full list of all the stakeholders in the PCBs case in Ghana (see appendix 2, or the Ghana EPA NIP Report, 2007, pp.36-37). Out of over forty active institutions that formed the policy network, eighteen were directly governmental, which included the ECG, VRA, Ghana EPA, CEPS, and MESTI. Eight of these stakeholders were classified as academic and research institutions, which in fact are all governmental in nature. Media classification comprised the Ghana Broadcasting Corporation (GBC) and “other public and private media”, as stated in the

list. Another eight were regional and international organizations, which include The World Bank, UNIDO, WHO, UNEP and ECOWAS. Representatives from these organizations usually have direct influence over the policy network because of a traditional recognition of them by local actors as subject matter experts. This role critically disables the ability of issue networks to question proceedings. It is interesting to note that in the list of non-governmental groups (NGOs), only three environmental groups (Green Earth, Friends of the Earth-Ghana, Green Club of Ghana) were mentioned. The Ghana Chemical Society (GCS) is also the only group identified as a “public interest group” in the list. While the list mentions “Women and Children Activists”, it did not point to any specific group or organization. The list mentions the Petroleum and Chemicals Workers Union of the Trade Union Congress (TUC). The remaining actors classified as NGOs are all industry associations, such as Pesticide Industry Associations (PIA), Association of Ghana Industries (AGI), and Ghana National Association of Farmers and Fishermen (GNAFF). This kind of policy network at once points to a swayed dynamics of the policy process. Evidently there is no power balance since there are largely government and international institutions forming the network. The only institution considered as representing the interest of the public, the Ghana Chemical Society (GCS), by its elitist nature (comprising of professorial technocrats) is passive and excessively bureaucratic in operation. As a former national editor-in-chief of the Ghana Students’ Chemical Society (GSCS), my interactions with the GCS confirm these characteristics. While the three environmental groups possess some social powers to mobilize the public, they are handicapped politically to change the dynamics of the policy process. Their influence is better felt outside the policy network rather than inside due to their weak political position. Even though the Trade Union Congress (TUC) is unquestionably the most formidable workers organization in Ghana, its primary interest has been economic rather than environmental. The TUC is less active in environmental policymaking process in Ghana. The TUC fight for workers health and safety concerns usually occur after an event has happen and there is significant evidence others could be



at risk. As a result of these the TUC lacks the drive to effectively influence environmental policy.

The large number of government and international actors overshadows the non-governmental groups and thus relegates the latter as mere observing participants. This is especially so when these international actors effectively participate as experts in the policy process. It is important to note that the members of the issue network (taken to be the non-governmental organizations) are in themselves weak from different angles with divergent interest. This also makes it almost impossible for them to mobilize their respective resources to gain influence in the policymaking process. It is this weakness of the issue network that legitimates and reinforces the traditional relationship between government and its allies to make policy, which have mostly failed to adequately address specific environmental concerns such as PCBs in Ghana.

#### **The Process towards the Drafting of the Policy to Regulate POPs (PCBs)**

In developing the Draft Policy as a “retool” of the existing environmental policy in Ghana, the authors acknowledged the development of the policy through a participatory process involving all stakeholders including ‘civil society’.

According to Pwamang, the foundational policy frameworks used to develop the Draft Policy were those prescribed by the Stockholm Convention, the Rotterdam Convention, the Basel Convention, and the Oslo-Paris Accord. Because Ghana is a signatory to all these conventions, beside the Oslo-Paris Accord, it is obligated under the principle of *pacta sunt servanda*, to abide by the conventions to ensure the core objectives of these conventions are achieved domestically.

Despite the fact that the Draft Policy promises to be the legal framework to manage PCBs and other POPs in Ghana, it is still not enforceable because it has not yet been accepted by parliament. Pwamang pointed out that even the “parliament wants to be paid to enact laws.” According to Pwamang, whereas it is the normal way to have a policy on an issue before the law, the converse is true in the case of Ghana. This revelation point to the fact that environmental policies do not necessarily matter a lot to the government as far as it can easily pass laws it finds fitting for any environmental

situation at any material need or emergency. Whereas environmental policies linger on the governmental backburner, socioeconomic policies consistently receive prompt government attention. In the case of the national electrification project for instance, “political will” on the part of government was pointed out as a factor to its success (Barfour, 2013). On the other hand, the EPA state “lack of political commitment and backing” as one of the hindrances to its operational effectiveness (CIEN Report: Ghana EPA, 2009, p. 6).

As the lead author of the Draft Policy, Pwamang outlined what I term the ‘bureaucratic’ policy process that the document had to undergo to become a legal instrument in Ghana. He pointed out to me that as a starting point, a technical team from the policy network developed a framework by drawing from conventions. The team also utilized pockets of institutional frameworks in the country, which provided some basis for the management of POPs, and also materials from UNITAR’s Chemical and Waste Management Program. After the development of the framework with all the required information and recommendations, a sub-committee is instituted to work on the framework to develop a Draft Policy. The Draft Policy is first submitted to the Attorney General’s office for review, changes and recommendations. From the Attorney General’s office, a stakeholder’s workshop is held to review and amend the draft base on the attorney general’s recommendations. The Attorney General’s office finally approves the Draft Policy, which goes to Cabinet for adoption. The Draft Policy then goes to parliament for deliberation, where it is eventually passed into law after acceptance by parliament<sup>23</sup>.

Clearly, the dynamics of this bureaucratic policymaking process is unfriendly to public participation. The only time the public is privileged to see into the process is during stakeholders’ workshops, where the media is invited to cover proceeding for news headlines. This is what Rowe and Frewer (2005) describes as “public communication.” The process whereby information flow is “one-way” and public opinion is not necessarily required as a feedback, making the public “passive recipients

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<sup>23</sup> As at the time of conducting this research in February 2014, the Draft Policy was still awaiting parliament review and acceptance, even though Cabinet adopted it in May 2013.

of information from regulators or governing bodies" (ibid). As pointed out by Mostert, "the lowest level of [public engagement] is information supply" (2003, p. 182). Similarly Fishkin argues that passive citizenry are conducive channels through which the public is manipulated by policy proponents, through "misinformation" or the consideration of superficial aspects of an issue (2009). According to Fishkin, in such a process it is evident large group of the public will be uninformed about the policy process leading to poor opinion about specific policy issues (ibid). This can be clearly pointed out in the Ghana case, where even the few civil and non-governmental organizations that are allowed to participate in the process are cherry picked thereby weakening their strength to stage an effective presence in the policy process. Their selective inclusion by government is to ensure the policy network is not destabilized. A process that fosters uninformed passive issue networks and discourages effective public participation in the policymaking process.

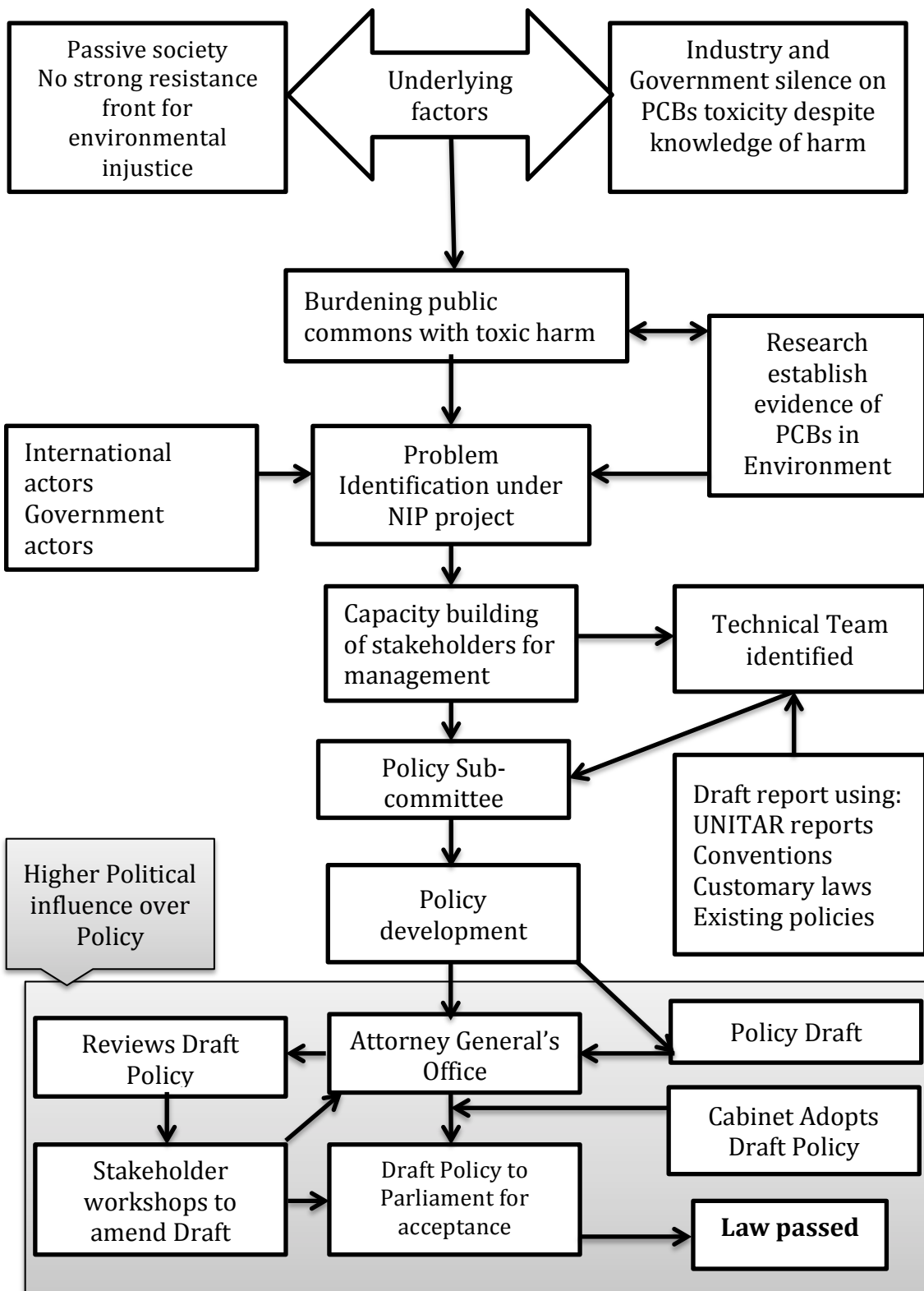


Figure 12 The policy process towards PCBs management in Ghana

## Reviewing the Policy Process in Ghana

The environmental policy networks and drivers in Ghana, like in many others developing nations, have narrow views and most times deeply entrenched monopolized interest groups. This is because the policy networks are predominantly fraught with government institutions, international organizations, and often times, 'government funded' non-governmental organizations (NGOs). These institutions in many cases have equal political powers, and depending on the policy agenda, they build effective alliance through consensus or wield their political powers in situations that impact their operational or resource base. As R.A.W Rhodes relates, "behavior in [the] policy networks is game-like..." (2006). The manifestation of higher political powers controlling the policy process undermines the policy outcomes. Hens and Boon who have done substantial policy evaluation work in Ghana have pointed out that "the main drivers of environmental policy in [Ghana] are the government, international organizations, and non-governmental organizations (NGOs)" (1999, p. 21). Interestingly, these actors formulate policies to affect the public, yet the public have always either directly or indirectly been cut off from the policy network.

In my interview with Pwamang, he pointed to the issue of vested interest by policy actors interfering with policy goals. Pwamang asserts this creates delays and short-circuits the true purpose of policy agenda. The marginalization of the public in the policy process invariably contributes to policy failure. This is because those who are affected by the policy may not value the potency of the policy to effect a change, especially when the incentives of doing so are not rewarding in anyway or there is no clarity in the policy.

The presence of transnational actors in the NIP project meant the electricity companies have little choice but to support the project. This is especially so because of the international dimension of the project and the potential implication to the image of the nation as a signatory to the Stockholm Convention. It is interesting to know that ECG, VRA and GRIDCO together "contributed about \$1.6 million in kind towards the success of the PCB [elimination] project" (Obour, 2013).

Whereas these industrial giants possess the financial wherewithal and political powers to influence policy decisions, these assets are used to relegate and/or repress potential peripheral actors like environmental groups and the public from the policy network. For instance, because the electricity companies financially contributed to support the NIP project, that gesture is used as a tool to manipulate political powers and authorities in influencing policy formulations. This indirectly reduces the influence of issue groups to effectively change the dynamics of the policy network. The power dynamics that underpin this process shifts policy benefits to the advantage of those with the resources and political power. Such localized industry network shifts blame to neutrality and creates the impression that causation is “natural” rather than a willful or systematic failure to act. The money donated to the project could have been used for training staff or educating the public far earlier before the NIP project was initiated. This could have been credited as environmental and social responsiveness of the electricity companies. Indeed, acts of magnanimity exhibited by corporations after causality of harm is established and room for escaping responsibility is closed exposes hypocrisy within the policy network.

With the clear absence of the public in the policy process and stable passive issue networks within the Ghanaian environmental policy network, I surmise that the policy network in Ghana is not well formed to accommodate issues of environmental justice, hence providing grounds for failure. The policy network is bureaucratically clouded with what R.A.W Rhodes (2006) refers to as “monopolistic” policy community, which promotes policy failure when substantive issues are relegated to the backburner to make way for vested interest of actors. The current Draft Policy, which is yet to be reviewed by parliament, thrives on traditional consensus developed by an already established policy community, who are all nearly governmental actors in nature.

From my fieldwork findings, it is evident that Ghanaians want to be given the opportunity to be part of the policy process to contribute their quota to the development of environmental policies that affects their lives. Opening the policy network to include

the public has the potential of strengthening the process with innovative ideas, and offering a more democratic regime of policy development.

### Making Public participation Count in the Policy Network

My fieldwork community survey showed that the public believe in their ability to add value to the environmental decision making processes that affect them. As a result, they seek to be part of the policy network. There is clear indication from the survey that the public have lost faith in the government when it comes to its ability to make stringent environmental laws and enforce them. It is this lack of faith in the government that calls for public participation.

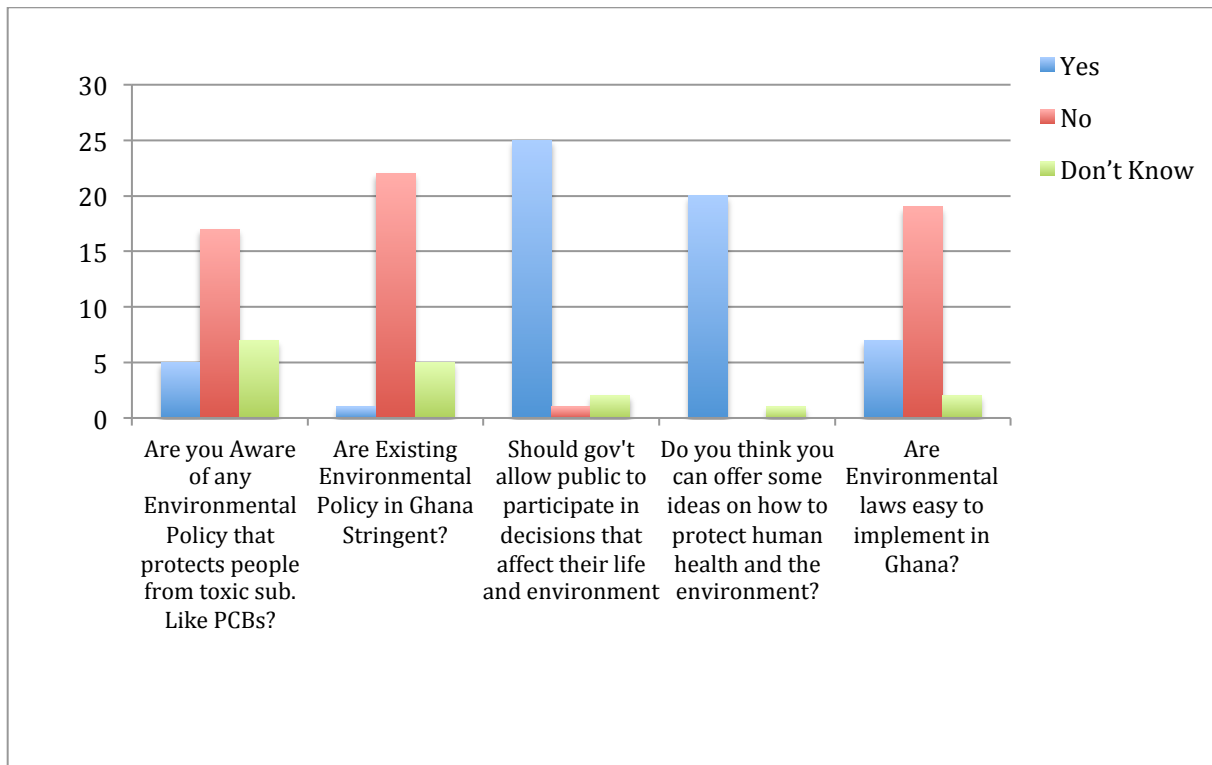


Figure 13 Public responses on policy and participation

While it is important to seek the views of the public through public participation in the policy process, it is equally important to acknowledge the challenges that the bureaucratic nature of the policy process will present. It is this bureaucratic process that has led to an explicitly passive society, but inherently active and passionate citizens who desire to participate in decisions that affect them.

Whereas governments and their parastatal institutions have in most cases succeeded in keeping vital information from the public and preventing the public from actively participating in matters that affect their lives through the policy process, Blumler *et al.* ask the following questions: “whose failure is it? Are the citizens at fault for being uninterested, lazy, stupid or negligent in the pursuit of their citizenship duty to be politically informed (1995, p. 4)?” To answer these questions, they point to the root of the crisis as “systemic”- that is, “inher[ent] in the very structures and functioning of present-day political communication systems” (ibid).

Even though it lacked adequate enforcement mechanisms, The Aarhus Convention On Access To Information, Public Participation In Decision-Making and Access To Justice In Environmental Matters recognizes the importance of giving citizens the right to participate in environmental decisions that affect their health, wellbeing and their environment (UNECE, 2013). To this end, it is equally worth pointing to the principle<sup>10</sup> of the 1992 United Nations Rio Declaration on Environment and Development, which states;

Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided (Rio Declaration On Environment And Development, 1992; pp. 2-3).



# CONCLUSION

## Overview

This Chapter provides a summary of my research and makes recommendations that I deem relevant in moving towards an effective environmental policy in Ghana. I first of all point to the issue of poverty and its role in the current state of environmental injustice and policy failure in Ghana. Even though Ghana's poverty rate is currently sitting at 28.5%, rural poverty rates are far higher than the national rate. I point to the relevance of issue networks towards achieving successful policy. I conclude with my recommendations, which becomes part of my small contribution to the broad sea of knowledge in the environmental policy field.

## Towards an Effective Policymaking

In contrast to Ghana, the U.S. environmental policy network is well formed with active issue networks. This is because the fundamental needs of life are fairly met, hence mobilizing for environmental quality becomes a given. Historically governments have worked closely with corporations in the policymaking processes to promote socioeconomic agendas. For instance, in the U.S. policymaking process, during the difficult economic times Congress did not find it appropriate to deliberate on the recommendations of CEQ's TSCA report. Congress feared that by adhering to the recommendations of CEQ to pass the TSCA bill, it would be worsening the already bad economic situation the nation was facing at the time. Despite this decision taken by Congress, increased public pressure however forced the TSCA bill to be passed leading to the eventual PCBs ban in 1979. The effective role of the public in the construction of products of harm by industries, and reliable legislative apparatus, served as the bedrock upon which Congress acted to pass the TSCA bill. Whereas the public, environmental groups, scientist and the media became key actors in bringing to the fore environmental issues in the U.S., and press towards the passage of policies that ensured environmental quality and human health, it is hard to point out that stream in the Ghanaian environmental policy narrative. This has led to many silent years of environmental injustices. A situation that has been directly promoted by government and corporate

silence on important information and indirectly by the passage of the ban on PCBs in 1979 in the U.S., which led to the marketization of PCBs tainted transformers to developing nations. There is therefore the need for solidarity among Ghanaian scientist, media, and civil organizations such as environmental groups to work closely together in order to form a strong knowledge base issue network that can challenge and break through the dominant policy network.

I surmised that the environmental policy dynamics between the U.S. and Ghana is not just a matter of policy processes and outcomes. I am of the view that environmental policy effectively progress towards success when basic human needs are met.

We can say that the environmental policy process leading to the PCBs ban in the U.S. progressed successfully because basic necessities of life are consistently met. This provides the energy for the society to problematize environmental needs by framing them as “justice” issues. In his consideration to this, Clarence Davis reveals that environmental issues receive attention in the U.S. because of affluence (1971). In a recent rating of 157 nations for population living below the poverty line, Ghana came 78<sup>th</sup> at a rate of 28.5 % (The World Bank, 2014). Even though this placed the nation in a ‘lower middle-income’ status, the situation is different in terms of regional demography. For instance, rural poverty around this same period was 39.2%, while the poverty rate in the northern regions of the country was 60% (USAID, 2012). Even though there is indication poverty is marginally reduced nationally, the situation in rural and the northern regions means many people are still battling with survival issues and would give little attention to environmental injustices that are meted out by external sources, or their own actions. This can be seen in the cases of people selling transformer oil as edible oil and for making pomade for women in Ghana. Clearly, a majority of the citizens of Ghana who live below the poverty line will continue to show lukewarm desire to address environmental injustices, until their basic needs are met adequately. By this I point out that poverty is blind to environmental policy, deaf to environmental injustice, and insensitive to environmental consciousness. It is this proposition that calls for issue

networks to arise and represent the needs and interest of the public. The absence of active issue networks is a boon to government and corporations to make and manipulate policy. Stringency of environmental laws and policy can only be effective when issue networks become consistently active and can frame environmental quality as an opportunity or “game changer” for socioeconomic prosperity, or actively frame environmental issues as justice issues, while pressuring governments and corporations to act responsively and responsibly through the policy networks or the court systems, as in the case of the U.S. In Ghana, the absence of strong issue networks has directly legitimated environmental decision-making by government and its allies; thus, the parastatals and international bodies that finance socioeconomic projects in Ghana. This underlies the subtlety of environmental injustice in the country. The knowledge of PCBs toxicity by both government and the electricity companies and their collective silence about it by itself was a policy formed and failed at once. Dye argues that “whatever government chooses to do or not to do,” thus action and inaction on the part of government constitutes public policy (Dye, 1995, p.4). This policy failure has prevailed for an extended period because the policy network has been too stable due to the absence of issue networks to contest non-existent policy on substantive environmental issues.

By the generality of the Environmental Protection Act 490 (1994), instead of specificity, failure is built into the Act. The Act provides enough room for legal and regulatory exploitation, leading to environmental injustice perpetuated by corporations, government and in fact, citizens alike. In reemphasizing Peter Dery’s point on Ghana signing on to many international conventions that do not really matter to the country’s most pressing environmental concerns, it is important that governments officials prioritize environmental issues and properly align them to the international conventions they commit to. The U.S. for instance has refused to ratify the Basel Convention because it puts its national economy and indeed environmental interest first. By signing on to the Basel Convention, the U.S. losses the opportunity of exporting toxic substance to poor

nations like Ghana. Its core environmental interest of flushing its territory of toxic waste will be challenged should it sign to such convention. As a result it decided not to.

Finally, I point to the leadership of Ghana to look through the nation with the eyes that sees into the future of generations yet unborn. Good policies makes good politics, good politics builds a sustainable nation. It is the policy decisions of today that will define the future polity of the nation with the ability to solve socioeconomic issues. To this end, I put it out that Ghana's environmental policy network should be effectively integrative from the most powerful to the least powerful, opening up substantive national environmental issues in a manner that allows for the permeation of innovative alternative solutions to problems from diverse avenues. This process builds responsiveness and help to foster an active environmental policy network with healthy public participation, which can prove novel within the policy paradigms. This also has the potential of breaking the traditional process of policy bureaucratization that is visibly characterized in the Ghanaian policy process.

### **Recommendations**

- From this research paper it can be shown that whereas state-corporate relationships and state-society relationships can be easily formed, the relationships between corporation and society are weak in the U.S. case, and virtually absent in the Ghana case. Understanding corporation-society relationships especially in the case of Ghana can potentially give a better perspective of actor behavior within the policy networks in Ghana. I recommend that researchers look into this area to identify how this relationship can lead to environmental justice.
- The U.S. policy process is effective because of highly effective issue networks within the policy network. Whereas it is evident the Ghanaian government will be hesitant to allow active issue groups into the policy process, there are opportunities for technological innovations:
  - Government can be creative by using technological tools such as the Internet to encourage the public to review and comment on policies

online. This online portal can provide avenue for policy recommendations, report issues of violation and environmental injustices and assist with implementation of policy.

- With Internet accessible to a majority of people in Ghana today, public participation in the policy process should be a possible thing, provided inputs will not be maligned. Online forums should give people a voice in the policy that affects their lives, in a fair and transparent manner that incorporates citizen opinions, ideas, beliefs and concerns.
- Government must be willing to make information readily available, and make it criminal offence when information is willfully kept secret from the public by corporations, groups, or individuals who are in the position to influence society with their actions or inactions.
- Further research should be done to establish environmental justice in Ghana within the government institutions and their continual relationship with international organizations, bilateral and multilateral treaties.
- In order to give the Ghana Environmental Protection Agency (EPA) the powers it deserves to do its work more effectively, I add my voice to empowering the agency with autonomous capabilities to strengthen its stakes. In the case of the U.S., the Advisory Council on Executive Organization, led by Roy Ash, realized that in order to have a stronger regime of environmental policy regulation in the U.S., it was important to bring environmental regulatory powers under one agency. That enabled the agency to operate without conflicting with other government departments which may possess similar regulatory powers.
- I surmised that poor societies tend to be passive towards environmental quality hence have high tolerance for environmental injustice. As indicated in the Rio Summit, effective environmental management can lead to wealth creation. As a result of this proposition, Ghana should focus on environmental quality as a catalyst for its socioeconomic growth. This will strategically build sustainability in its socioeconomic and political ethos.

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## APPENDICES

### Appendix 1. The Policy Cycle, Problem Solving; Howlett and Ramesh, 1995.

Five stages of the policy cycle and their relationship to applied problem solving		
Stages in policy cycle	Phases of applied problem solving	Description and comments
Agenda setting	Problem recognition	How an issue comes to the attention of policy makers. The process is not always rational, and it can often be difficult to see why some issues rise to the top of political agendas while other, seemingly more important issues, remain unaddressed
Policy formulation	Proposal of solution	Decision-makers (governments, health regions, hospitals, care teams etc.) formulate policy options. Government policy-making usually occurs behind the scenes and is carried out by professional policy analysts
Decision-making	Choice of solution	How decision-makers decide what to do or not do about an issue
Policy implementation	Putting solution into effect	Putting the decisions into effect. Not as simple as it sounds, as it usually entails changing habits and ingrained ways of doing things
Policy evaluation.	Monitoring results	(all too often neglected) Examining implementation and outcomes to check if the policy has been properly implemented and if the desired outcomes were achieved

### Appendix 2. Stakeholder Institutions involved in the PCBs issue in Ghana.

<p><b>Government Ministries and Agencies:</b></p> <ul style="list-style-type: none"> <li>i) Ministry of Environment and Science (MES)</li> <li>ii) Environmental Protection Agency.</li> <li>iii) Ministry of Food Agriculture (MOFA) (Plant Protection and Regulatory Services Directorate, Veterinary Services Department),</li> <li>iv) Customs, Excise and Preventive Service (CEPS)</li> <li>v) Ministry of Finance and Economic Planning</li> <li>vi) Ministry of Health (Ghana Health Service, Food and Drugs Board)</li> <li>vii) Ministry of Trade, Industry and Presidential Special Initiative</li> </ul>	<p><b>Academic and Research Institutions</b></p> <ul style="list-style-type: none"> <li>i) Council for Scientific and Industrial Research</li> <li>ii) Ghana Atomic Energy Commission</li> <li>iii) University of Ghana (Chemistry Department, Biochemistry Department)</li> <li>iv) Kwame Nkrumah University of Science and Technology (Chemistry Department, Electrical Engineering)</li> <li>v) University of Cape Coast (Chemistry Department)</li> <li>vi) Water Resources Commission</li> <li>vii) Cocoa Research Institute of Ghana</li> <li>viii) Water Research Institute</li> </ul>
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<ul style="list-style-type: none"> <li>viii) Ghana Standards Board</li> <li>ix) Ministry of Employment and Manpower Development (Factories Inspectorate Department)</li> <li>x) Ministry of Roads and Transport</li> <li>xi) Ministry of Education, Youth and Sports</li> <li>xii) Ministry of Justice (Attorney Generals Department)</li> <li>xiii) Ministry of Local Government and Rural Development</li> <li>xiv) Ministry of Women and Children’s Affairs</li> <li>xv) Ministry of Works and Housing (Ghana Water Company Limited)</li> <li>xvi) Ministry of Interior (Ghana Police Service)</li> <li>xvii) Electricity Company of Ghana</li> <li>xviii) Volta River Authority</li> </ul>	<p><b>Regional Economic Integration</b></p> <ul style="list-style-type: none"> <li>i) ECOWAS</li> <li>ii) NEPAD</li> </ul> <p><b>International organizations</b></p> <ul style="list-style-type: none"> <li>i) United Nations Industrial Development Organization (UNIDO)</li> <li>ii) United Nations Development Programme (UNDP)</li> <li>iii) United National Environment Programme (UNEP)</li> <li>iv) World Bank</li> <li>v) Food and Agricultural Organization of the United Nations (FAO)</li> <li>vi) World Health Organization (WHO)</li> </ul>
<p><b>Non-Governmental Organizations</b></p> <ul style="list-style-type: none"> <li>i) Environmental Interest Groups (Green Earth, Friends of the Earth-Ghana, Green Club of Ghana)</li> <li>ii) Pesticide Industry Associations</li> <li>iii) Industrial Chemicals Associations</li> <li>iv) Trades Union Congress (Petroleum and chemicals workers union)</li> <li>v) Public Interest Groups (Ghana Chemical Society)</li> <li>vi) Ghana National Association of Farmers and Fishermen</li> <li>vii) Association of Ghana Industries</li> <li>viii) Women and Children Activists.</li> </ul>	<p><b>Media (Electronic and Print)</b></p> <ul style="list-style-type: none"> <li>i) Ghana Broadcasting Corporation</li> <li>ii) Other public and private media</li> </ul>
<p><b>(Culled from Ghana EPA Report, “National Implementation Plan Of The Stockholm Convention On Persistent Organic Pollutants”, 2007, pp.36-37)</b></p>	

### Appendix 3: Interviews

*Some of the questions asked:*

1. What is your perspective on the PCBs situation in Ghana?
2. Are you aware some old transformers made before 1979 may be tainted with PCBs?
3. Are there policies in place to check PCBs in Ghana?
4. Are current environmental policies stringent enough to manage PCBs contamination in Ghana?
5. What is your understanding of the policy process in Ghana and how does it function? What are some of the major challenges encountered during policymaking process?
6. Who are the main policy actors related to the PCBs issue in Ghana?

### Appendix 4: Questionnaires

#### Appendix 4a. Industry Perspective On PCBs In Ghana

Questions	Response
1. What factors influences your company’s purchase of electric transformers for national usage?	
2. Which period did your company purchase most of its electric transformers for national usage?	
3. How often do you replace old transformers?	

4. How do you store or dispose of transformer oil?	
5. What do you do with your old unusable transformers?	
6. Did the Ban of PCBs in the U.S. in 1979 have any influence on your purchase of transformers?	
7. At the time of purchasing, are components and material toxicity of transformers explained in product manuals, or to your outfit in some other form?	
8. Are you always aware if your imported electric transformers contained PCBs or not?	
9. What are some of the environmental and human factors your company considers before purchasing transformers?	
10. Are there regulations on PCBs in Ghana that affects your use of electric transformers or operations?	

#### Appendix 4b: Institutional Perspective On PCBs In Ghana

Questions	Response
1. Researchers in Ghana have shown that, many electric transformers in the country contain PCBs. Have you chance upon such knowledge?	
2. In 1979, the U.S. ban the use, distribution, trade in commerce and disposal of PCBs nationally. Do you think the ban of PCBs in the U.S. have any influence on how Ghana imported transformers for its electricity needs especially in the 1980s? [Elaborate on response]	
3. PCBs were globally ban in 2001 under the Stockholm Convention on Persistent Organic Pollutant. Did this ban have any influence on how Ghana imported transformers for its electricity needs within the last couple of years? [Elaborate on response please]	
4. Do you think the government knew prior to the PCB ban in the U.S. that Electric transformers might contain PCBs?	
5. Do you think the Electricity industry were aware of PCBs in transformers before or after the ban in 1979 in the U.S.?	
6. Did government take pro-active measure to deal with the PCBs issue? If Yes, at what time and what action was taken?	
7. In your opinion, do you think the PCB issue in Ghana may have socio-economic and environmental consequences on the nation? [Elaborate on response please]	
8. Are current environmental laws and regulations sufficient enough to deal with the PCB crisis in Ghana? [Elaborate on response please]	
9. Can you elaborate on some of the key consideration made in formulating environmental policy in Ghana?	
10. Who are some of the major stakeholders traditionally involved in the environmental policy process in Ghana?	
11. Does academic findings in anyway have influence on public policy decision in Ghana?	

#### Appendix 4c: Public/Community Perspective on PCBs in Ghana

<b>Questions:</b> 1. Name (optional)/ Code: 2. Sex: M/F 3. Age range: [18-24], [25-35], [36-45], [46-up] 4. Education level completed: <ul style="list-style-type: none"> <li>• Primary</li> <li>• Secondary</li> <li>• Tertiary [vocational, technical,</li> </ul>	<ul style="list-style-type: none"> <li>• Self employed</li> <li>• Management</li> <li>• Clerical Service (Eg, Teaching, nursing, driving etc.)</li> <li>• Manufacturing</li> <li>• Labor</li> </ul> 7. How long have you lived here (in years)? <ul style="list-style-type: none"> <li>• Less than 1 year</li> </ul>
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<p>polytechnic, university]</p> <p>5. Employment:</p> <ul style="list-style-type: none"> <li>• Employed full time</li> <li>• Employed part time</li> <li>• Unemployed / Looking for work</li> <li>• Student</li> <li>• Homemaker</li> <li>• Retired</li> </ul> <p>6. If you are employed, what is the nature of your job:</p>	<ul style="list-style-type: none"> <li>• 1-2</li> <li>• 3-5</li> <li>• 6-10</li> <li>• 11-up</li> </ul> <p>8. How would you describe your community:</p> <ul style="list-style-type: none"> <li>• City</li> <li>• Town</li> <li>• Residential</li> <li>• Metropolis</li> <li>• Slum</li> <li>• Ghetto</li> </ul>
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<b>Community Environmental Justice and Participatory Governance Perspective</b>	Yes	No	Don't Know	Comments
9. Do you know about the toxic chemical Polychlorinated Biphenyls (PCBs)?				
10. Do you know that transformer oil may contains a dangerous chemical call Polychlorinated Biphenyls (PCBs)				
11. Do you know that PCBs are ban but can be found in most transformers in Ghana				
12. Do you know that transformer oil may leach into the ground and reach the environmental and biological medium through food chain?				
13. Do you know PCBs are harmful to human health and the environment?				
14. Are the electric transformers in your community self-contained?				
15. Have you ever witness an electric transformer burn in you community?				
16. Has the government or the electricity company educated your community on the dangers of PCBs in their transformers?				
17. Is your house close to an electric transformer site? [Less than 1KM is considered close]				
18. Do you have children who play close to electricity transformer sites in your community?				
19. Do you think your community may be at risk of PCB exposure because of transformers that may contain PCBs?				
20. Are you aware of any environmental policy in Ghana that protects people from harmful toxic Chemicals like PCBs?				
21. Do you think existing environmental regulations in Ghana are stringent enough to protect people and the environment?				
22. Are environmental laws easy to implement/enforce in Ghana?				
23. Do you think you can offer some ideas on how to protect human health and the environment?				
24. Should the government allow local people to participate in decisions that affect their life and the environment?				
25. Should Government penalize those who continue to use PCB-contaminated transformers like ECG and VRA?				