

INDUSTRIAL WASTE MANAGEMENT IN BANGLADESH: AN EVALUATION ON POLICY IMPLEMENTATION

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Introduction

“Man may go, man may come, but I go on forever”, Alfred Tennyson’s vivid description of a River’s Peak and Troughs, found a huge acceptance in the land of river i.e. our Bangladesh. Now, a river faces numerous difficulties. Pollution of water, obstruction of flow, encroachment, sedimentation, and water is not only losing natural color and nutrients but also endangering marine life. And this is just a tip of the iceberg of environmental hazard. So an urgent wake-up call has become compulsory for taking up appropriate policy and its implementation.

As a thrust sector for industrialization, garments industries are causing significant scale of pollution of water, land and air. Now, Bangladesh is one of the 12 largest apparel exporters of the world, the 6th largest supplier in the US market and the 5th largest supplier of T-shirts in the EU market. Moreover, about 77% of the country’s foreign exchange earnings come from the garment sector. It accounts for 45% of all industrial work forces in the country and contributes 5% of the total revenue (Mustafa, 2016: 1). Therefore, sustaining pollution-free clean image is crucial for the industrialization in Bangladesh.

Apart from positive gains from industrialization, disorganized and unplanned industrialization over the years has triggered serious environmental pollution. The industries are directly discharging and or dumping their waste into the ecosystem without any regard to the environment conservation, thereby causing water pollution; air pollution and land/soil pollution.

According to the statistics of the Global Environmental Performance Index for 2014, Bangladesh is the ninth-most polluted country in the world. As such, ensuring social compliance is very important both for maintaining quality of products as well as meeting the environmental safety arising from waste of this sector.

The most problematic industries contributing in increasing pollution are fall in red category as per Environment Conservation Rules (ECR) 1997 and seating up of Effluent Treatment Plant (ETP) is the essential pre-requisite to get the Environment Clearance Certificate (ECC). But, many of the industries are not concerned about ECR 1997 and thus contributing to the creation of environment pollution. In most cases the ETPs are turned off deliberately to save operating cost or seem to be out of order (Mustafa, 2016: 5). However, a survey report of the Bangladesh Bureau of Statistics (BBS, 2013) mentioned that at least 37.6% of the country's industrial units do not have waste management system and 61% lack waste recycling facilities resulting in immense environmental pollution.

Bangladesh government, has adopted a number of policies so that red industries are not becoming environmentally harmful. Bangladesh adopted some important policies such as The Environment Conservation Act, 1995, The Environment Conservation Rules, 1997 and The Environment Court Act 2002. Despite the existence of these policies, their implementation remains unsatisfactory. Moreover, existing government policies are more titled towards top-down model of policy implementation which visibly ignores bottom-up initiatives. This research addresses this issue.

Policy Implementation: An Analytical Framework

Definition of Public Policy: Defining public policy helps us to understand the concept of policy implementation. Many scholars of public policy have defined policy. Of them, James Anderson's defined public policy as "a purposive course of action followed by an actor or set of actors in dealing with a problem or matter of concern" (Anderson 1990:4). Harold Lasswell, on the other hand, defines public policy as "a projected program of goals, values and practices" adopted by the government (Thomas, 1992).

Many types of public policies exist. Some policies seek to regulate behavior, such as crime policies or environment protection policies. Theodore Law's termed these policies distributive, redistributive, and regulatory policies. In this research, we see environment conservation policy as regulatory policy which targets to control waste releases from the factories.

Policy Implementation: Implementation viewed most broadly, means administration of the law in which various actors, organization, procedures, and techniques work together to put adopted policies into effect in an effort to attain policy or program goals (Anderson 1990: 172). In addition to these two definitions, implementation can be thought of as a process, an output and an outcome.

Approaches to Policy Implementation: Most recently, the debate has centered on two approaches:

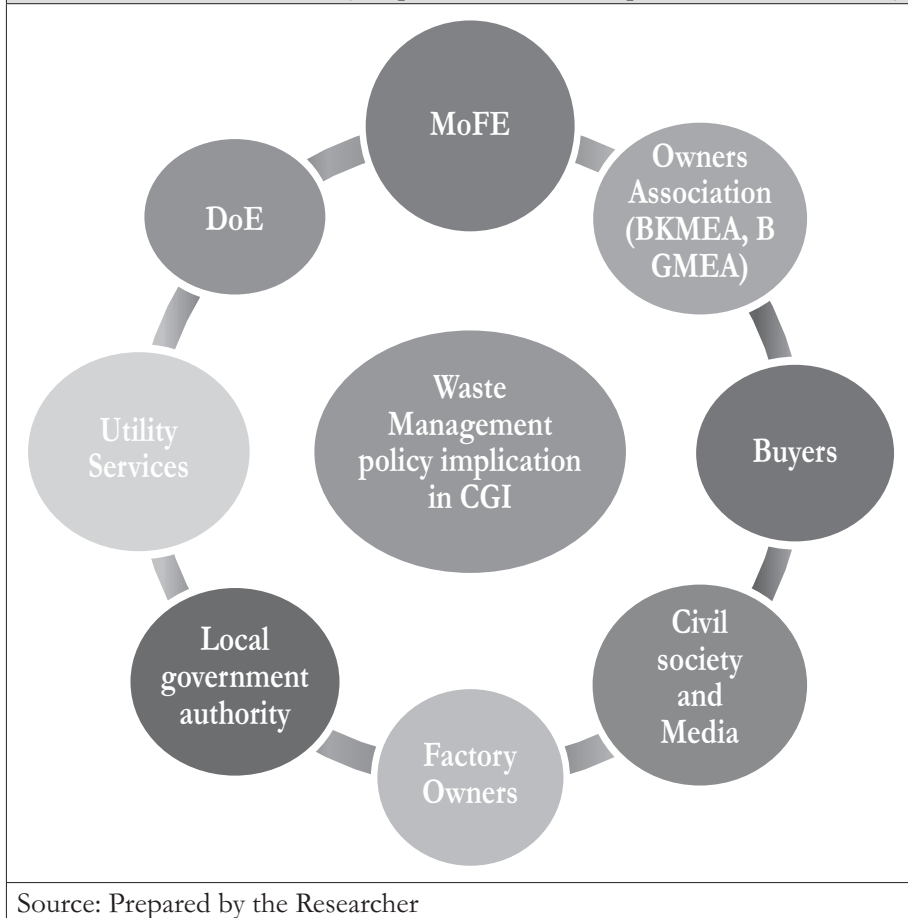
The Command and Control Approach: It involves the use of mechanisms that are somewhat coercive, such as standard setting, inspections, and the imposition of sanctions on violators.

The Economic Incentives Approach: It refers to the use of tax credits, subsidies, or other rewards or penalties to encourage private interests to comply.

Models of Policy Implementation: Two basic models are in policy implementation, those are: top down and bottom up model. Other model is hybrid of these models. Interactive model is a combination of top down and bottom up approaches. Although, it could be observed that no single model is adequate to explain the policy implementation scenario in a given society. The study, therefore, looks at the organizational effectiveness of the Department of Environment (DoE) and the industries concerned. Not only that, but also the study will examine the role of other stakeholders associated with policy implementation.

To examine the purpose of the above study at first we attempt to map the actors/stakeholders that influence the industrial waste management policy implementation in Bangladesh, than we tried to develop an analytical framework to analyze the findings of the study.

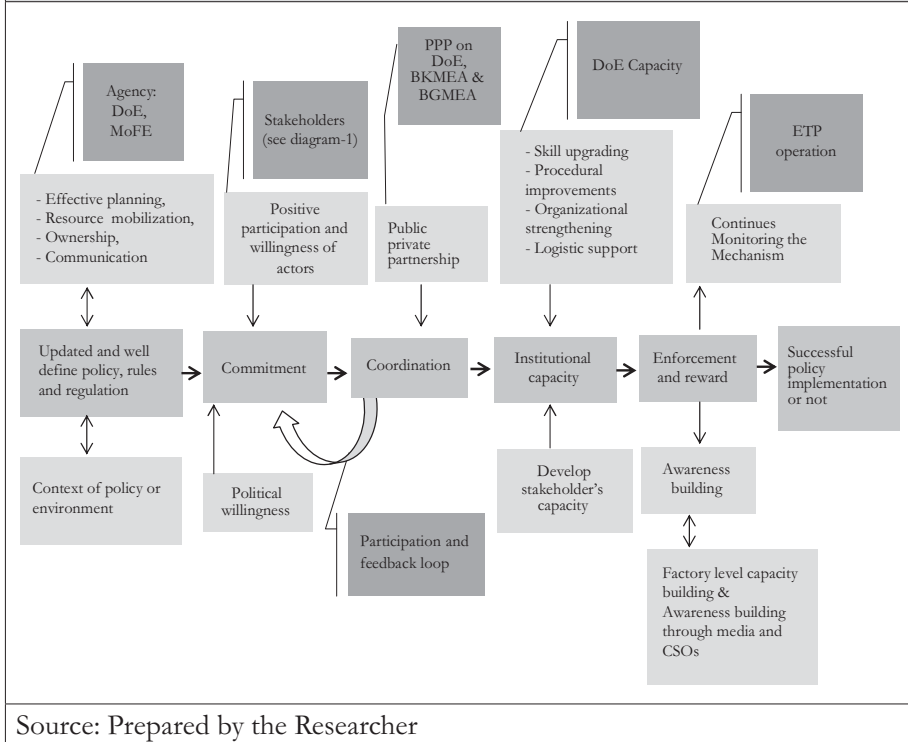
Chart 1: Stakeholders for Policy Implementation in Composite Garments Industry



Elmore's Models on Policy Implementation: Elmore (1978, 1979) proposed four specific models of implementation. No one model could provide the answer to every situation. His models include systems management, bureaucratic process, organizational development and conflict and bargaining.

The successful policy implementation depends on psychological and physical tangible and intangible functions of the actors. Now we try to conceptualize the waste management policy in CGI under the following analytical framework.

Chart 2: Waste Management Policy Analysis Framework in Composite Garments Industry



It appears from the above diagram, that commitment, co-ordination and institutional capacity fulfill a central role in successful policy implementation. While commitment is regarded as the core construct of policy implementation, it is directly dependent upon the co-ordination of the stakeholders involved. Whichever approach is used ultimately depends on good faith or willingness between the various stakeholders involved in implementation. No scheme for compliance will work if the implementers and those charged with compliance fail to agree on the goals of implementation.

Institutional Capacity is a major component in policy implementation. The concept and definition of capacity building encompasses three main activities: (i) skill upgrading (ii) procedural improvements and (iii) organizational strengthening.

Policy Evaluation Framework: Policy evaluation is the final part of policy process. Accordingly to Wholey (1970), 'policy evaluation is the assessment of the overall effectiveness of a national program in meeting its objectives, or an assessment of the relative effectiveness of two or more programs in meeting

common objectives'. There are two types of evaluation model exist– process evaluation/formative evaluation and summative evaluation (Cited in, Hudon and Low 2004: 231; Bate and Robert 2003: 252).

However, another thinker, Pawson and Tilley (1997) argue that successful outcomes are not straight forward product of a policy or programme, but, rather, result from the underlying policy mechanisms and their interaction with the context in which they operates. As such, a simple equation to express policy evaluation model is;

$$O=M+C$$

Where,

O= Outcomes

M= Mechanisms

C= Context

Policy Guidelines in Bangladesh for Environmental Conservation: Many supporting policies, Acts and Rules have evolved from time to time with a view to creating awareness toward environmental conservation. The following Acts and laws support the activities of DoE: for conservation and protection of environmental standards.

- **Bangladesh Environment Conservation Act, 1995 (Amended in 2002)** As per the Rule-3 of BEC Act 1995, the “Government shall, for carrying out the purpose of this Act, establish a Department to be called Department of Environment and headed by a Director General”.
 - **As per Rule-4,** “the Director General may take such measures as he considers necessary and he may issue necessary directions in writing to any person for the discharge of his duties under this Act”.
 - **As per Rule-4A of the BEC Act 1995:** “The Director General or a person authorized by him may, request any law enforcing agency, to render necessary assistance, and upon such request that agency or authority shall render the assistance”.
 - **Moreover, as per 4A:** “Where the Director General issues a direction for closure, prohibition or regulation of an industry, the Director General may direct the provider of electricity, gas, telephone, undertaking or process to disconnect the service”.

- **As per the Rule-12:** “No industrial unit or project shall be established or undertaken without obtaining an Environmental Clearance Certificate from Director General.”
- **The Rule-15** of BEC Act 1995 prescribes 13 types of punishment including the measures of imprisonment and fines (cited in Ahmad-ullah 2011: 117-35).

The Environment Conservation Rules, 1997 (Amended in 2003): According to Environment Conservation Rules (ECR) 1997, the industrial units and projects based on their sites and impacts on the environment are classified into Green, Orange (A), Orange (B) and Red category. The Red category is highly polluting, Orange (B) category is polluting and Orange (A) category is less polluting and all these three categories need Location Clearance Certificate (LCC).

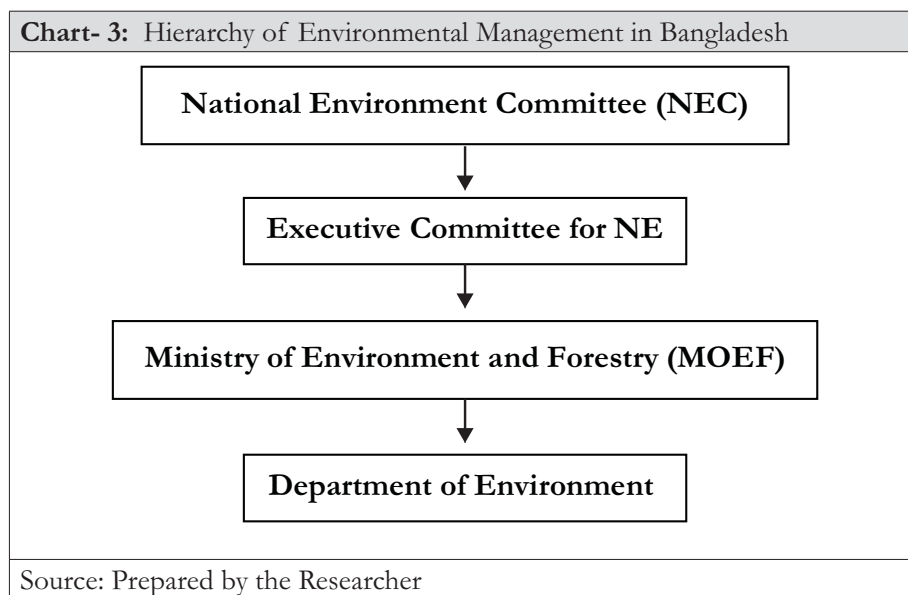
- **As per ECR, 1997:** the industries belonging to the categories Orange-A require layout plan for Effluent Treatment Plant (ETP), Orange-B also requires the same and Red category requires Environment Clearance Certificate (ECC) from the DoE.
- **Environment Court Act, 2000 (Amended in 2002, 2010):** The purpose of this Court is to enforce the punishment sanctioned by the DoE in violation of the environment policies by any industries mentioned in the above categories

The policy implementation does not solely depend on the top-down efforts of the government. It requires rather multi-stakeholders collective efforts. It is further argued that creation of appropriate institution is not enough for policy implementation. Good intention and faith amongst the stakeholders are also important. In the second part of the chapter, Government Environment policies have been highlighted. One can reasonably guess from these policy highlights is that these are structurally top-down putting more emphasis on the command and control. So in the government policies there is a missing link. These policies do not provide enough incentives to the industry owners. Finally, this chapter presents the extent of pollution of the industries and its nature.

Institutions for Policy Implementation: The Case of Department of Environment (DoE) and other Stakeholders

Environmental Management Structure: In Bangladesh the industrial development has taken place without proper attention to the environmental issues. The pollution level of environment in some localized areas has reached to an alarming stage. A National Environment Committee (NEC) headed by the Prime Minister, Government of the People’s Republic of Bangladesh was formed in 1997 (DoE, 2007).

To provide necessary support to NEC, there is an “Executive Committee” of 9 members with the minister of Ministry MOEF as convener. Hence the hierarchy of environmental management in Bangladesh looks like as below (DoE, 2017).



Department of Environment (DoE): The present DoE came into existence through evolution since 1989. It is a technical organization of the MOEF with a mandate to ensure conservation of the environment. To administer the process, there are at present six regional offices situated in six administrative divisions. Recently the government has considered the expansion of regional offices from the divisional levels to 21 district levels with 730 staff (DoE, 2007).

DoE Activities. The activities and functions of DoE cover wide range and

authority. Basically the power and functions of DG as spelt out in section 4 of ECA, 1995 is good enough to ensure conservation of environment. Some of the salient activities of DoE are listed here¹:

- **Regular Environmental Quality Monitoring:** It includes monitoring of surface water, ground water, and drinking qualities, air quality and noise level on a regular basis as well as on request from citizens.
- **Environmental Clearance and Certification (ECC):** As specified in the ECR, 1997 all new industries, including the existing ones which operate without any clearance from the department are under legal obligation to apply for ECC. Industries belonging to moderately polluting Orange (B) and highly polluting “Red” categories must submit Environmental Management Plan (EMP) for obtaining ECC.
- **Enforcement and Compliance:** The department enquires about the polluting industries being run with or without environmental clearance and evaluates the information received from and submitted by these industries.
- **Right to Entry and Investigate:** DoE has the right to enter, investigate, test, examine and seize industrial plants, equipment, records, registers, documents or other significant objects.
- **The Citizen’s Charter:** The Citizen’s Charter provides a unique opportunity of expressing views, complaints and suggestions on DoE.
- **Audit and Inspection:** The Monitoring and Enforcement Team (MET) of DoE is empowered to undertake these tasks to identify polluting industries, as well as compel the industries to comply with environmental regulations.

Other Important Functions of the DoE: The other few mentionable functions of the DoE are appended below:

- To take necessary measures for the conservation of the environment.
- Approving designs for factories waste management plant.
- Issuing and renewing Environmental Clearance Certificates.
- Impose penalty who violate the provision.

1. Rule- 4, Bangladesh Environment Conservation Act, 1995

- Maintaining liaison with different organizations to increase awareness.

Issuing Environmental Clearance: Environmental clearance from the DoE is mandatory for all categories of industries. A study shows that more than 63% of the industries in greater Dhaka did not take any clearance from the DoE.

Environmental Impact Assessment (EIA): Environmental Impact Assessment (EIA) is very essential and should be carried out before setting up any industry.

DoE's Enforcement Activities to Control Environmental Pollution: According to the Rule-7 of Bangladesh Environment Conservation Act 1995, if any act or omission of a person is causing to break the ecosystem, the Director General of DoE may determine the compensation; and that person shall be bound to comply with the direction.

In FY 2015-2016 DoE operated 484 enforcement activities on various sectors and found that 68% remedial measures taken on fabric dyeing and washing factories.

Figure 1: Enforcement Activities on Various Sectors in Fiscal Year 2015-2016 by DoE

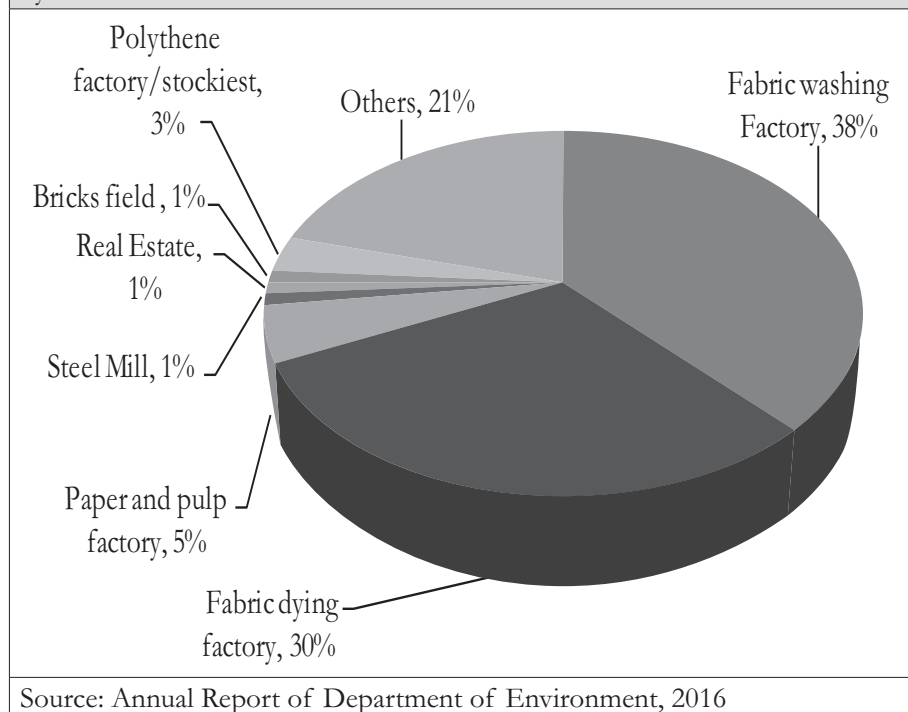
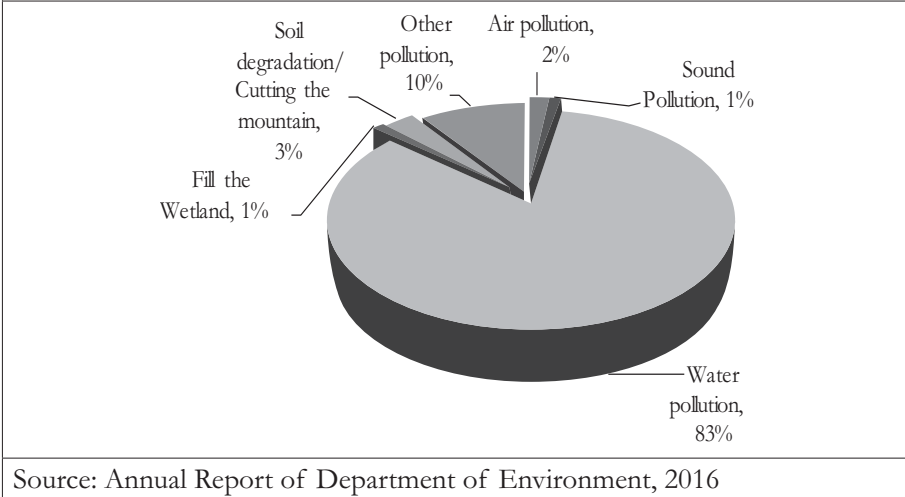


Figure 2: Remedial Measures by Enforcement Team of DoE in Fiscal Year 2015-2016 by Nature of Environmental Pollution or Degradation



Other Stakeholders: The analysis regarding other stakeholders' matter is offered in details in chapter five.

The formation of the DoE under the 1995 BEC ACT 1995 falls in line with the top-down approach of the policy implementation. A careful reading of 1995 Act suggests that the 1995 Act, ECR 1997 kept no scope for bottom-up actors' performance in the policy implementation. In other words, the DoE acts as a bureaucratic model of policy implementation. It appears from the above discussion that the DoE has reinforced enforcement activities. However, with the growing pace of industrialization, it is still fraught with many handicaps to achieve success. Finally, this chapter has touched on the importance of the role of other stakeholders for policy implementation.

Implementation of ETP and Waste Management in Composite Garments Factory in Bangladesh

Environmental Scenario in Textile Industries of Bangladesh: The private sector is the fastest growing sector in the country. Most of these industrial units are located along the banks of the rivers, which provide transportation for incoming raw materials and outgoing finished products. Unfortunately, as a consequence, industrial units drain effluents directly into the rivers without any consideration of the environment.

Textiles and dyeing unit of garments factory are one of the most problematic industries for the water sector. A complex mixture of hazardous chemicals, both organic and inorganic, is discharged into the water bodies from all these industries, usually without treatment.

ETP in Waste Management: By provisions of ECR, 1997 establishment of ETP is mandatory for Orange and Red category of industries. The recent available data of BKMEA shows that there are total running CGIs is 4550, out of them only 3185 factory have ETP, that means 30% of factories have no ETP set-up. Out of 3185 factory only 1000 factories (22%) have active (24 hours running) ETP, rest 2185 factories (48%) do not run ETP properly.² From the data analysis the state of compliance of environmental requirements set by DoE is not encouraging.

We find that quite a good number of Composite garments industries especially its Textiles and dyeing have been causing pollution to the rivers due to disposal of their toxic chemicals. For, a considerable number of these industries are yet to introduce ETP mandatory for their operations according to the Environment Conservation Rules 1997. It is alleged that some industry owners deliberately avoid the running of ETP as they want to avoid the operational cost of ETP.

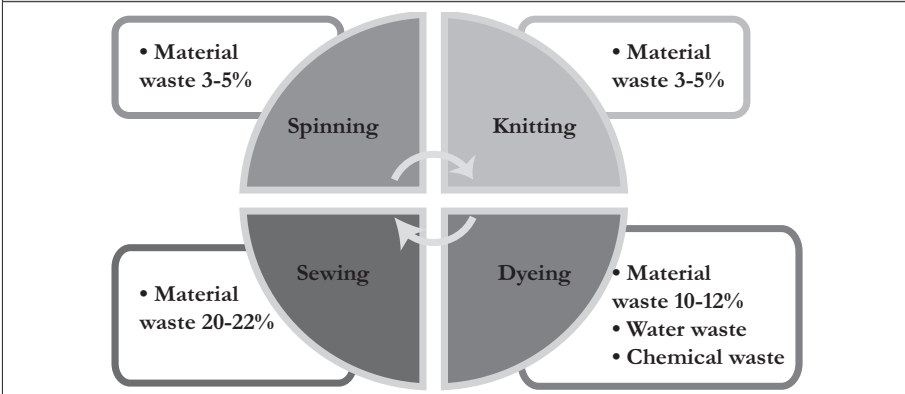
Limitations of Waste Management Policy Implementation: A Reality Check

Factory Owners: It is the prime responsibility of the owners and the organization of the owners to ensure safe work environment, rights and interests of the workers and insure environmental compliance. But, analysis of the causes reveals that owners were responsible for irregularities, mismanagement and misconduct at various levels of operations in the factories including ETP.

Environmental Practice in Composite Garments Industries by Owners: Bangladesh is the second largest supplier of knit wear just after China. Most commercial banks allocate loans with lower interest charge for ETP installation. As a result, 190 knit industries already installed ETP in 2015-16. And installation process is ongoing for more 181 knit industries. In total 74% of liquid waste discharge industries installed ETP in the country (DoE, 2016). Different types of waste in a CGI is shown below:

2. Source: Farjana Yasmin, Sr. Assistant Secretary, Green Industry Development Cell, BKMEA and Journalist & Freelance writer, 12 September, 2017, Dhaka.

Figure 3: Waste in a Full Fledge Composite Garments Industry



Source: Based on FGD at BKMEA

Though 74% of the factories in the country set up ETP for waste water management (DoE, 2016), regular operation of ETP in those factories remains low in reality due to high cost of the ETP maintenances. Different nature of irregularities to use ETP has been stated below:

Discontinuing Operation of ETP Plant: Many factories usually not operate ETP plant the whole day. Rather less time they often fix to operate ETP within a day due to cost involvement.

Avoid Important Chemical Agent into ETP Operation: Some agent likely Sulfuric acid, Poly electron ide, and watery color, anti-form, Hydro caloric acid etc mainly important for managing waste water through ETP. But most factories are not eager to use those agents due to having high import tax exhibited by government.

Pipeline of Dyeing Machine Organized by Hidden Way: Research found that some factories set two pipe lines for waste disposing. One pipeline is used to connect ETP and other is used for disposing directly water into the river canal which is mainly organized in disguise.

Lack of Willingness on Recycling of Water: In term of using water in Biochemical ETP, water cost becomes 18 tk to 25 tk per cubic meter which may cost 35 tk to 40 tk per cubic meter in chemical ETP, which is only 10 tk when it uses from surface water. Because of this cost benefit most owners are not interested to run ETP.

Irregularities in Disposing Sludge: Huge amount of sludge generally produced by dyeing factories and also from ETP operation. There is no strict provision according to law about this material. Only a guideline issued on 2015 by DoE has been using softly to dispose sludge in a suitable place in dry season which is not truly maintained by most of the factories.

Lack of Eagerness to Maintain Environment Management Plan: Each factory has obligation to provide environment management plan to DoE before factory establishment. In this plan they have to assure authority about reusing water which would be increased proportionally. The increase in first year would be 30% then 40% and 60%. But in practice this plan often shifted to the dark room.

Absence of Self-regulatory System: Export oriented composite factories usually set a separate environmental compliance unit on buyer demand. But small and non-export oriented factories have no self-regulatory system to overlook this issue. Some of them are not having engineer or technician to run ETP.

The Tendency of Owners to Earn Extra and Quick Profits: Due to the quota system imposed on the East Asian countries and their improvements in labor quality, Bangladesh became an attractive place for buyers. On the other hand, the buyers' motive of low price creates tendencies to neglect many irregularities including environmental conservation.

Owners' Association: An owners' association protects the interests of the owners and lobbies for policy benefits. BKMEA (Bangladesh Knits Manufacturer and Exporters Association) have provided some good initiatives to their member industry for environmental conservation like, mandatory to ETP setup for in listing membership, adopt 3R policy, monitoring the operational activity of ETP but more need to be done on awareness builders activities.

Department of Environment (DoE): The responsibility of DoE is to implement the environmental conservation, bio diversity, sound pollution, and waste management etc. To inspect environmental compliance issues, as the only government office, DoE has been facing many challenges to perform its responsibilities.

Lack of Updated Rules and Regulations: The environment act of 1997 was not up to date in last 20 years, meanwhile, technology is changing day by day. Factory owners take advantages and the inspectors also receive personal benefits from this situation.

Lack of National Effluent Quality Standards (NEQS): Key environmental constraints in the development of textile section of composite industries in Bangladesh are the lack of a National Effluent Quality standards (NEQS).

Infrastructural Limitations: The DoE conducts its activities through its Dhaka headquarters and six divisional offices (Dhaka, Chittagong, Khulna, Rajshahi, Sylhet and Barisal) out of 8 divisions and 21 districts offices out of 64 administrative districts. It is quite unmanageable to oversight environmental conservation.

Insufficient Human Resource: The allocated total staff in DoE is 720. Where at present 468 posts are occupied and 252 are vacant.

Lack of Skilled Inspectors: The lack of capacity in the workforce, absence of knowledge in modern industrial technology and global standards leave the directors (inspectors) unable to take proper initiatives to solve new problems working with industrial owners or officials who are trained in modern education.

Lack of Training: Foundational training of officials, 100 hours (annual) capacity building training and divisional trainings are irregular. Officials sometimes receive training on different conventions and standards through WTO and other international initiatives. But they have no specialized training on ETP or textile related environmental pollution.

Lack of Smart Technology and Insufficient Logistic Support: Officials do not feel motivated to do routine inspections as their work areas are spread over large areas and they do not have any personal transport. Similarly, they have no modern tools to collect sample for test and also mismanagement in preserving documents is observed due to the shortage of interactive ICT facilities.

Lack of Technical Tools for Inspecting ETP: Usually the officials of DoE inspect the ETP plant of factory physically and they don't have any smart technical checking tools. This kind of inspection is unable to fulfill the purpose of the monitoring.

Absence of Policy Feedback Loop and Public-Private Partnership: Opinion and policy feedback from stakeholders and negotiation is necessary for stability of the competitive market and for overall growth of this sector with environmental sustainability.

Absence of Awareness Building Activities: There are some awareness development programs already on-going from DoE for Air pollution, sound pollution or forest conservation, but there is no similar mentionable program for industrial water pollution. Research shows it is a lack of awareness building and cooperation between DoE, Mills owners and BKMEA.

Lack of Latest Technology Based Scientific Crosscheck Lab: At present DoE have only two scientific labs at Dhaka Head Quarters and Chittagong office which are remaining busy for research purposes. So, some private scientific labs is needed for cross checking.

Imposition of Fine Rather than Factory Level Capacity Building: DoE is not responsible for revenue collecting authority, but most of the cases inspectors of the DoE busy with imposing and collecting penalty. Researcher's case study in an industry of Gazipur shows that DoE's penalty of one core taka due to a leakage of wastewater pipe line. Factory officials said that it was an unintended case. Big amount of penalty decreases their ETP's development budget.

Lack of the Use of 3R: Absence of the use of 3R refers to the new approaches of waste management and mitigation. Waste generation can be considerably minimized through an efficient management circle which primarily focuses on reduce, followed by reuse and then recycle.

Role of Buyers: In the garments sector, there are three major parties, owners, workers and consumers (end user or buyers). In most cases, buyers only audit to check product quality and ignore compliance issues. Like quality check, buyers may impose compliance of environmental issues to factory level during buying the item.

Role of External Actors: Two international associations such as Accord on Fire and Building Safety in Bangladesh (Accord) and Alliance for Bangladesh Worker Safety have been working to monitor the internal social compliance of the garment factories in tandem with the BUET. However, these initiatives are only focusing on improving the internal working environment and they are evidently not concerned with the industrial waste. Foreign buyers may put pressure on the government and the industry owners' to comply with regulations related to the waste management

Role of the Bangladesh Bank: Bangladesh has been giving loans in order to turn the industry more green. To that effect, it is offering 2 crore takas loan for setting

up ETP in the industry for liquid waste management. Banks give loans at 9% rate of interests. Following the policy, many industries have set up ETP but few are utilizing the money for other purpose. In this context, we recommend that the Banks' refinancing to the industries be continued by the certificate of the DoE.

Role of the Local Government Organizations (Rajuk, Union Parishad and Pourashava): Local government is involved in providing trade licenses to conduct business. Moreover 'no objection' certificate is required for approval of using land. However, conflict between Rajuk and the local government organizations under Rajuk on approval of building plan is a basic policy overlapping hindrance to ensuring compliance in factory level³. Irregularities in giving land clearance certificates and irregularity in inspection during construction are major hindrances to implementing environmental conservation and structural compliance in factory level.

There is a serious lacuna of policy implementation regarding waste management in the composite garments industry. We epitomize this lacuna as the weak institutional capacities in both the DoE and the composite garments factories. However, we identify weak institutional capacities of the DoE with top-down model or command and control approach for policy implementation. Both DoE and the factories have suffered from skill, availability of smart technology and training. As a result, the DoE appeared to the industry owners as simply 'police'. No partnership developed between the two sides. This model seems to have failed to generate spontaneous to the environmental conservation amongst the industry owners. The BEC Act 1995 and EC rules 1997 leave no room for economic incentives for the industry owners. The policies could have supported tax holiday to those industries which complied the environment conservation rules.

The theoretical framework suggested above argues that environment policy implementation regarding waste management in the composite garments is a collective undertaking involving multi-stakeholders. However, there has been visible absence of coordination and commitment amongst these stake-holders. Media reports on environment conservation in isolation, so does the civil society organizations. An engaged social movement is a necessity on sustainable basis. There has been absence of advocacy network for environment conservation.

3. Maula, Sharif Chowdhury and Mina (2013), Readymade Garments Sector: Problems of Good Governance and Way Forward, Transparency International Bangladesh, Dhaka, page-24-27.

Recommendations and Action Plan

Basing on the observations and analysis of the research on composite garment industries the following recommendations can be suggested for the proper implementation of environmental conservation policy.

Recommendations	Actions Plan		
	By whom	When	Monitoring
Legal Issues			
Updating the legal (Act, Rules and Regulation) measures as per present constitutional obligation	GOB, DoE	6-12 months	MoEF
Introduce interactive policy	GOB, Owners	6 months	MoEF
Ensuring 3R- policy in waste management	DoE, Owners and BKMEA	6 months	MoEF
Organizational Issue			
Restructuring DoE	GOB, MoEF	1-2 years	MoEF
Strengthening local government institutions	GOB	1-5 years	MoEF, MoLE
National Monitoring Cell to protect environmental degradation	GOB, DoE	6 months	MoEF
Setting up of special wing of police	GOB, MoHA, MoEF	6-12 months	MoHA
Technical Issues			
A technical process to assess and determine the vulnerability of infrastructure/ETP	DoE, Owners, BKMEA	1-2 years	MoEF
Setting up new industries within industrial zones with central ETP	MoC, MoI, DoE, PPP	Long term	MoI, MoEF
Ensure environment friendly standards	GOB, DoE	Midterm	MoEF

Introduce ICT base monitoring	DoE, MoICT	1 year	MoICT
Establish Cross check lab	DoE, PP	1-2 years	MoEF
Human Resource Development			
Skill development	DoE	1-2 years	MoEF
Involve Environmental specialists in every level	GOB, Owners	1-3 years	MoEF
Awareness Program			
Ensuring multilevel awareness program	DoE, BKMEA, Media and CSOs	6 months	MoEF
Incentive Regime			
Rearward for environmental conservation, including Tax holiday	GOB, DoE	1-3 years	MoEF
International Cooperation			
Buyer should take responsibility on environmental conservation	Buyers Orgs, INGOs, IOs	1-5 years	CSOs
Welcome foreign grants/ investment to improve the environment of the industries.	GOB, Owner, IOs	1-2 years	GOB

Conclusion

The main objective of this research was to evaluate the implementation of environmental policies that specifically target the liquid waste management in the composite garments industries. I emphasized the ‘process’ evaluation of the policy in which multiple stakeholders involved in the policy implementation. I found that liquid industrial waste of composite garments industry has been one of the visible sources of water and soil pollution. Despite having significant policy guidelines, industrial pollution continues to affect the environment, due to lack of institutional capacities inflicting the performance of the government bodies such as the DoE and the factories (composite garments industries). Both the DoE and the factories have faced shortfall of skill, smart technology and the

required training. Policy implementation in environment conservation required multi-stake holders' participation with commitment and co-ordination amongst them.

Things turn worse with the growing phenomenon of politics-business nexus. A significant section of our political elites comes from the business sector which allows them use politics as profit making venture. This development prevents the industrialist cum politicians from investing in the environmental pollution. Despite this fact continues, for the sake of sustainable development, the industrial elites will come forward to stop environmental pollution. If not, they will be facing tremendous pressure from the people and the donors when things will go out of control. The governing elites cannot be overwhelmed with the profit motive. They must bring the environment pollution agenda into the centre of policy implementation. At present, the environment is getting only the marginal attention. From the above discussion comes to the fact the present initiatives taken by the government are not adequate, suffering from infrastructural and budgetary support. All the problems could be overcome if the government, the private sector and the industry owners, buyers and the people who are affected by the industrial waste engage in the collective action.

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Author

Group Captain AKM Enayetul Kabir, Engg was commissioned in Bangladesh Air Force on 01 July 1990 (ante-dated, 29 January 88) in Engineering Branch. He was graduated from Bangladesh University of Engineering & Technology (BUET) in the discipline of Mechanical Engineering. Later on he accomplished his MBA degree from Trinity University.

Group Captain AKM Enayetul Kabir served in various command and staff appointments of BAF as well as in Prime Minister's Office (Special Security Force). He served as Officer Commanding of Officers' Training School, BAF (OTS, BAF) and Maintenance Wing of BAF Base Birsresho Matiur Rahman, Jessore. Having specialization on aircraft structural maintenance & overhauling, he served as Officer Commanding of 208 MRO, BAF (responsible for Maintenance Repair and Overhauling of Bell-212 Helicopter) and 210 MRO, BAF (responsible for Maintenance Repair and Overhauling of PT-6 Aircraft). In both the MROs, he is having the achievement of carrying out highest no of aircraft/ helicopter overhauling in a year. The officer also served at Air HQ as Deputy Director of Engineering and Training Directorates.

Beside few mandatory courses, he attended various technical courses at home and abroad including Aerospace Technology Course from OTS, BAF, Flight Safety Course from FSI, BAF, Squadron Commanders' Course in BAF, Aircraft Maintenance Officers' Course (AMOC) in USAF, Helicopter Management Course in Lithuania and Aircraft Maintenance Course in Ukraine etc. He attended Safety Management Course at Engineering Staff College, IEB and Senior Staff Course at BPATC, Savar. He is a registered professional Engineer (PEng) as examined by BPERB of IEB and also a BAF Sports Colour holder. He served twice as Military Observer and Contingent Member at DR Congo as UN peacekeeper. The officer is a widely travelled person.