

*Review Article*

# Command and control approach as a policy option for the protection of environment in Ethiopia: Standards as a major tool

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## ABSTRACT

This paper evaluates the effectiveness of the Command and Control (C&C) approach, particularly through the use of standards, in protecting the environment in Ethiopia based on a desktop literature review. While various policy options, including C&C and Economic Instruments (EIs), have their respective strengths and weaknesses, the choice of approach largely depends on a country's governance structure, economic framework and societal attitudes. In the case of Ethiopia, the C&C approach is especially pertinent. Standards play a pivotal role in promoting sustainable development by mitigating the environmental impacts of economic growth. They regulate environmental degradation at multiple stages, such as controlling sulfur dioxide emissions through fuel content regulations and air quality standards. By implementing these standards, Ethiopia can achieve comprehensive and sustainable development, ensuring that economic progress does not come at the cost of environmental harm to both flora and fauna. However, the effectiveness of this approach hinges on robust enforcement mechanisms within the policy framework. This study highlights the benefits and limitations of the C&C approach and underscores its importance in the Ethiopian context, advocating for its strategic application to safeguard the environment.

**Keywords:** Ethiopia, Environment, Command and control, Standards, Policy

## INTRODUCTION

Despite the environment being a precious resource for the survival of both living and non-living organisms, it is now exposed to degradation and is the next global agenda and threat. By this time, the major causes of environmental degradation are urbanization, industrialization, the surge in population, deforestation, environmental pollution, etc. As a panacea, environment users shall use it efficiently and the government, on the other hand, has to codify workable

policies, laws and strategies (Berck, 2005).

At the juncture of policies, governments have two main policy options: C&C or standards and "Market-based economic instruments" or EIs. Though these two policy options have their own merit and demerits, C&C is as good as the other policy options because of the government's direct involvement.

C&C, which includes standards, bans, permit requirements and sanctions, requires firms to implement specific technologies and practices or reach certain emissions levels through technology-based or performance-based standards,

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collectively termed environmental standards. For implementing the standards, the hand of the government is needed and as David S. and Richard E. stated, understanding C&C is no longer an option; it is a requirement.

In Ethiopia, environmental degradation is becoming an imminent danger. It is often blamed on "acts of god" or "acts of irrational peasants" and there has been little attempt to assess the real causes of the problem until very recently. The studies reveal that the increasing population has resulted in extensive forest clearing for agricultural use, overgrazing and exploitation of existing forests for fuelwood, fodder and construction materials. Forest areas of the country have been reduced from 40% a century ago to an estimated less than 3%, albeit reforestation revives recently. The current rate of deforestation is estimated to be 160,000 to 200,000 ha per year. It is estimated that fertile topsoil is lost at one billion cubic meters per year, resulting in massive environmental degradation and a serious threat to sustainable agriculture and forestry (Austin, 1999).

Moreover, the degradation is influenced mainly by government policies. Although the government has codified various environmental policies and legal regulations, most lack clarity and focus only on specific issues, such as ownership rights. The ownership of the environment is given to the government, which takes responsibility for ensuring a clean and healthy environment for the people. From this constitutionally guaranteed responsibility of the government and other evicts, though it is not sufficient, we can understand the existence of standards as a policy option to protect the environment.

Therefore, this paper aims to study the advantages and drawbacks and the importance of C&C for protecting the environment in Ethiopia, focusing on standards through doctrinal analysis. In effect, the paper is divided into three parts. The first part delineates C&C and other policy options, while the second and third parts discuss C&C policies and legal instruments and the importance of practicing C&C in Ethiopia.

## LITERATURE REVIEW

### **CAC and other policy options for the protection of the environment**

As Mc Cormick defined, environmental policy is any action deliberately taken to manage human activities to prevent, reduce or mitigate harmful effects on nature and natural resources and ensure that human-made changes to the environment do not have harmful effects on humans or the environment. It also benefits society by protecting human health and the environment (Bengtsson, 2018).

Although there are other policy options for environmental protection, CAC and EIs are the two well-known and widely practiced options. Despite the similarities, the two approaches have significant differences. While EIs, encompassing a range of policy tools from pollution taxes and marketable permits to deposit-refund systems and performance bonds, encourage or discourage activities by

manipulating market signals, CAC uses explicit directives concerning pollution control levels or resource utilization methods.

As Duncan Austin said, EIs were initiated and practiced widely in the USA before four decades ago that aim to control pollution by harnessing market incentives' power. Despite its importance, EIs have the following crux drawbacks: Its impact is unpredictable, sometimes the pollutant may choose to pollute and pay charges and it requires sophisticated technologies. Consequently, governments started to intervene to correct the adverse effects of EIs and C&C standards triggered to be practiced widely.

C&C standards are often applied to large groups of firms, individuals or pollution sources (the target will depend on the problem's nature). Depending on various criteria, C&C are classified into different segments. Depending on the role of standards, C&C is classified into three: Ambient, emission and technology standards. Ambient standards refer to the allowable level of pollution in a particular environment. On the other hand, Emissions or Effluent standards are endeavored to seek and limit the number of emissions released by a firm, industry or area. The third type is a technology-based standard that would force polluters to use a particular pollution control technology that they deem reasonably cost-effective, such as installing scrubbers on smokestacks.

Moreover, the CAC approach requires firms to implement certain technologies and practices or reach certain emissions levels through technology-based or performance-based standards, restrictions or bans. Additionally, based on the scope of the application, standards can also be classified into three broad categories. Company standards: Defines companies' standards about how they act and build their brands better. They can be guidelines that describe the quality, performance, safety, terminology, testing or management systems, to name a few.

Second, National standards are designed by countries for the goal they are interested in achieving. For instance, the National Standards Strategy for the United States (NSS) is a roadmap to developing reliable, market-driven standards in all sectors. International standards. It is the other type of standard that results from intergovernmental negotiations. However, a group of experts recommend standardizing the product or the services because of their very nature and their technical standards.

C&C has several advantages and disadvantages. Its main benefits include providing clear outcomes, being relatively simple to monitor for compliance and requiring less sophistication. C&C is ideal when dealing with highly toxic pollutants where their impact outweighs economic efficiency concerns. It works best when Marginal Abatement Cost Curves (MAC) are uniform across regulated industry firms, allowing the government to determine the MAC curve quickly. Additionally, C&C is preferred when initial pollution reductions significantly benefit society, even if further reductions offer diminishing returns due to inelastic marginal benefits (Gilbert, 2013).

C&C is a distinct approach with interconnected functions, making it applicable to various organizational levels and

activities, whether strategic or tactical. It is straightforward for governments to implement because it involves direct regulation. Once a standard is set, all firms must comply with that level.

Among the limitations of C&C in it, firms are given similar shares of the pollution-control burden through uniform standards, regardless of the relative control costs. Second, it is very costly for regulators to gather necessary information. They often have to collect it from the sources that they are regulating-creating the possibility for inaccurate or dishonest reporting. Third, standards are popular, as they appear simple and straightforward in targets. However, there are complications as they go through the political/administrative process where other considerations have to be addressed. There are problems regarding setting standards, the uniformity of standards, equity effects and enforcement (Birhane, 2002).

Furthermore, cross-cutting issues and systemic flaws need to be addressed in order for advancement to be made across environmental policy areas (whether air quality, water, waste or biodiversity). In addition to having well-designed and packaged policy instruments, clear, feasible and enforceable laws and regulations are essential to make the policies touch the ground.

## DISCUSSION

### Command and control approach in Ethiopia

**Policies:** The environmental policies in Ethiopia have attempted to cover standard issues although more issues need to be incorporated. For instance, the 1997 Environmental Policy of Ethiopia (EPE) and the 1999 Water Policy are the two documents that talk about standards. EPE's overall goal is to improve and enhance all Ethiopians' health and quality of life through environmentally sound management in consideration of future generations. Specifically, part 3.7/g of the policy states that the policy is aimed to set regulatory standards to ensure housing and sanitation technologies at a level and cost that are within reach of the users and flexible enough to be adaptable to the very varied socio-economic, epidemiological, climatic and physical site conditions. Part 3.8 g and i are other provisions that state about standards under EPE (Gruber, 2005).

The other environmental policy is the 1999 water policy. It came into effect with the overall goal to enhance and promote all national efforts towards the efficient, equitable and optimum utilization of the available water resources of Ethiopia for significant socio-economic development on a sustainable basis.

Under this policy, many provisions recognize standards as a policy option to protect the water sector well. Some of the issues covered under the policy are provisions that talk about the necessity of establishing and adapting water quality standards for aquatic resource preservation and the establishment and classification of water standards for various water uses (Kesicki, 2011)

In addition to the above two policies, Ethiopia has other policies, such as the land use policy, that have given equal

attention to standards.

**The constitution:** Federal Democratic Republic of Ethiopia's (FDRE's) constitution incorporates key provisions relevant to the protection, improvement and sustainable use of the environment. For instance, Art. 44 declares about "the right to a clean and healthy environment and Art. 43 pledges "the right....to sustainable development."

The Constitution introduces important environmental policy objectives as a framework for other laws and policies. Art. 89 gratifies the government to protect and promote the country's working population's health, welfare and living standards and hold, administer and deploy the resources for people's common benefit and development (Hadfield, 2017).

Moreover, according to Article 91, the government has a duty to ensure all Ethiopians live in a clean and healthy environment and that the design and implementation of development programs and projects wouldn't damage or destroy the environment.

Though the Constitution doesn't explicitly provide standards, after the readings of the above specific provisions, we can infer two basic concepts: The Constitution recognizes environmental rights as human rights and this right is a right that has to be protected and safeguarded with, to the extent the country's resources permits, strict supervision and command of the government, which is one of the profiles of C&C (Growth, 2012).

**Environmental laws:** According to the FDRE constitution, the federal government has the power to enact laws for the utilization and conservation of the environment. On the other hand, regions have the power to administer land and other natural resources in accordance with federal laws. The federal government has prepared the following laws based on this constitutionally guaranteed right.

- Proclamation on the establishment of environmental protection organs No. 295/2002;
- Environmental pollution control proclamation No. 300/2002, regulation and directives for emission standards of selected industries (2008);
- Environmental impact assessment proclamation, No. 299/2002 and following directives;
- Awash National Park establishment order No. 54/1969, Simien National park establishment order No. 59/1970 and similar other parks establishment laws;
- Institute of biodiversity conservation proclamation No. No 381/2004;
- Water Resource management proclamation No. 197/2000;
- Public Health proclamation No. 200/2000;
- Criminal code of Ethiopia No. 414/2004 (penalizes pollution and related offenses);
- Federal rural land administration and land use proclamation No. 456/2005;
- Access to genetic resources and community knowledge and community rights proclamation No. 482/2006;

- Solid waste management proclamation No. 513/2007;
- Development conservation and utilization of wildlife proclamation No. 541/2007;
- Forest conservation, development and utilization proclamation No. 542/2007.
- Radiation protection proclamation No. 571/2008;
- Ethiopian wildlife development and conservation authority establishment proclamation No. 575/2008; and
- Biosafety proclamation No. 655/2009.

Under almost all of the above laws, establishing quality standards is the duty of the respective governing body. To list few:

- Art. 8/1/e Water resource management proclamation No. 197/200 states that one of the powers and duties of the supervisory body is "... establish quality standards for surveys, design and specification of waterworks as well as standards for the construction of waterworks, necessary for the development of water resources ..."
- Art. 4/5 of environmental pollution control proclamation No. 300/2002, gives power and duty to the environment protection authority to "... in consultation with competent agencies, the Authority shall formulate practicable environmental standards based on scientific and environmental principles ..."
- Art. 14/1 of solid waste management proclamation No. 513/2007, states about the power and duties of each urban administration that "... it shall, in conformity with the relevant federal environmental standards, ensure that solid waste disposal sites are constructed and properly used..."

In addition to national laws, international laws where Ethiopia is a signatory have incorporated environmental standards. Hereunder are some of them:

- The convention on international trade in endangered species of wild (Art. XII/2/c);
- The Basel convention on the control of transboundary movements of hazardous wastes and their disposal and Basel ban amendment (Art. 4/7/b);
- The Bamako convention on the ban of the import into Africa and the control of transboundary movement and management of hazardous wastes within Africa (Art. 10/2/a);
- The Cartagena protocol on biosafety to the convention on biological diversity (Art. 6/2); and
- The Stockholm convention on persistent organic pollutants (Principle 23).

### **Why is C&C important for environmental protection in Ethiopia?**

As states above, while the C&C regulatory framework has its advantages and drawbacks, this paper argues that C&C remains the most suitable environmental policy option for Ethiopia due to the country's unique socio-economic and political context. Several key factors make C&C

particularly effective in Ethiopia's current circumstances:

#### **Economic structure and government dominance:**

Ethiopia is transitioning towards a free-market system; however, the state still retains substantial control over the economy. Many large companies and major investment areas are owned or heavily influenced by the government. This system of the economy is a fertile ground for C&C to be implemented easily, especially for environmental protection and implementing environmental standards. Moreover, the existing Ethiopian standard institute to oversee pollution control and work on standards further underscores the government's leading role. In such a context, a C&C approach is more effective than market-based mechanisms, which may require a fully liberalized economic system to function optimally.

#### **Low public awareness and literacy:**

The rural population of Ethiopia constitutes about 89%, with the adult literacy rate standing at 51.77%. Many people, particularly in rural areas, are less exposed to media and environmental education, making them less likely to engage voluntarily in pollution reduction initiatives. Since economic incentives or market-based approaches require active participation and a level of environmental awareness, its practice is limited in Ethiopia. C&C regulations, which impose mandatory standards, ensure compliance even among those who may lack awareness of the environmental issues at hand easily. Hence, C&C is recommended for Ethiopia (Balisacan, 2008).

#### **Simplicity and accessibility of C&C:**

Given the high illiteracy levels in the country, it is crucial that environmental protection policies be straightforward and easy to understand. C&C regulations, which set clear standards and obligations, are less complex than market-based instruments that require comprehension of trading schemes. The simplicity of C&C ensures that even those with limited education can comply, as it does not demand sophisticated technological or financial literacy. Moreover, Ethiopian standards, which can be published by the Negarit Gazetta in the form of proclamation and regulations, are outreach for all through different mechanisms, including government sponsored free distributions for the concerned bodies.

#### **Cost-effectiveness:**

C&C regulations can be a cost-effective solution for the government. Establishing strict environmental standards is a relatively low-cost intervention that enables the state to manage pollution without the complexities involved in administering market-based instruments. Furthermore, by enforcing clear and uniform rules, C&C can help reduce bureaucratic inefficiencies, making it easier for foreign investors to navigate the regulatory environment. At the same time, these regulations provide clarity and predictability, which can enhance Ethiopia's attractiveness for Foreign Direct Investment (FDI). It can also reduce corruption that may come due to the subjective nature of EIs that probably set the environment cost through the market (Tyagi, 2014).

**Job creation potential:** As C&C regulations provide clear frameworks for environmental standards, they can encourage investment in industries that are compliant with these standards, which in turn can generate employment opportunities. By setting clear pollution limits, the government creates a business environment that favors investments, thereby fostering economic growth and employment.

**Government's strong role in policy enforcement:** Currently, the Ethiopian government wields more power and influence than the private sector. This centralized power enables the state to implement C&C policies more effectively, as it can mobilize resources and enforce regulations with less resistance from businesses. Additionally, strong government intervention in enforcing environmental policies can act as a deterrent to corruption, ensuring that businesses adhere to the established standards rather than attempting to bypass them through illicit means (Scholz, 2011).

**Limited public focus on pollution:** At present, environmental pollution is not a primary concern for most Ethiopians, particularly in comparison to more immediate needs like food security. In such a scenario, market-based mechanisms, which rely on public demand for cleaner environmental practices, may not be as effective. C&C regulations, on the other hand, can impose necessary environmental protections without relying on public pressure or demand. This makes C&C an optimal approach in a context where environmental issues are not yet a top priority for the population (Mee, 2005).

## CONCLUSION

The current environmental degradation has significant implications for human health and property, necessitating effective policy interventions. While both C&C and EIs are established policy frameworks for environmental protection, C&C is more aligned with Ethiopia's current economic, social and political landscape. Given the government's prominent role, low public awareness and immediate economic challenges, C&C is a more practical solution compared to market-based approaches. However, the C&C approach should not be a permanent strategy. As Ethiopia transitions towards a free market economy, it is advisable for the government to gradually adopt EIs and other flexible policy options with C&C to address environmental challenges more effectively. Besides, the following are key outputs and recommendations:

## RECOMMENDATIONS

**Government intervention:** Intervention levels must be legally defined and clearly demarcated between federal and state governments to prevent conflicts and inefficiencies.

**Institutional strengthening:** Establish and empower institutions with well-codified laws, adequate resources and qualified personnel for effective administration of environmental standards.

**Political commitment:** Prioritize environmental issues within government agendas, ensuring policies are supported by robust strategies, laws and regulations.

**Checks and balances:** Enhance inter-agency collaboration and accountability, particularly between the Ethiopian Environmental Protection Authority (EPA) and the Ethiopian Standards Agency (ESA).

**Policy flexibility:** Regularly update environmental standards in response to global economic changes and consider transitioning to economic instruments as Ethiopia's economic system.

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