

# Environmental Rule of Law: An Analysis of Data Availability

GGKP Working Group on Green Growth and the Law

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The Green Growth Knowledge Platform (GGKP) is a global community of organizations and experts committed to collaboratively generating, managing, and sharing green growth knowledge. Led by the Global Green Growth Institute (GGGI), the Organization for Economic Co-operation and Development (OECD), the United Nations Environment Programme (UN Environment), the United Nations Industrial Development Organization (UNIDO), and the World Bank Group, the GGKP now draws together 60 partner organizations. For more information visit [www.greengrowthknowledge.org](http://www.greengrowthknowledge.org).



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## Executive Summary

The GGKP Law Working Group was formed given the importance that rule of law and legal frameworks play in enabling green growth. Its hypothesis of departure was that failure of environmental rule of law seriously constrains the development of a more inclusive green economy. To test this hypothesis, it commissioned this review to identify indicator frameworks and datasets measuring environmental rule of law, which could in turn be compared with green growth outcomes.

While “environmental rule of law” entailed the existence of an environmental legal framework that was publicly promulgated, equally enforced, and independently adjudicated, the GGKP Law Working Group focused on the element of environmental enforcement. Building on the OECD approach, the group sought to cover all aspects of enforcement including compliance promotion, compliance monitoring, and non-compliance response over three types of indicators (inputs, outputs, and outcomes). The search was undertaken using on-line keyword searches in English and Spanish as well as visits to the websites of national environmental ministries and agencies.

The results were sobering. The review yielded no global datasets, few national datasets, and a non-comparable assortment of limited datasets published in individual reports. Relevant indicators focused mostly on compliance monitoring and enforcement outputs with little if any coverage of compliance promotion or environmental outcomes.

The silver lining was that there were notable efforts underway to develop global datasets on environmental rule of law. The World Justice Project recently compiled a pilot “Environmental Rule of Law Index” and was developing environment and energy indicators suitable for inclusion in future publications of its broader “Rule of Law Index”. Likewise, the World Resources Institute created the “Environmental Democracy Index”, which included indicators measuring how effectively laws granting access to information, public participation, and justice were being implemented in practice. Finally, the International Consortium on Combating Wildlife Crime’s “Indicator Framework for Combating Wildlife and Forest Crime” was a potential guide for assessing environmental rule of law more broadly.

Two further datasets measured rule of law without a specific focus on environment per se: the World Bank’s “Worldwide Governance Indicators” and the World Justice Project’s “Rule of Law Index”. Further analysis is needed to determine the suitability of these broader datasets for assessing environmental rule of law in the absence of environment-focused indicators.

Given the severity of the data gap for measuring environmental rule of law, this review recommends six actions to fill the gap or otherwise evaluate the relationship between environmental enforcement and green growth. These include developing a global statistical standard or harmonized practice for indicators development and data collection, engaging national authorities to improve local data collection and dissemination practices, and conducting a comprehensive review of national case studies to assess environmental enforcement and green growth in the absence of comprehensive global or national datasets.

**Keywords:** green growth, environmental rule of law, legal framework, enforcement, compliance

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## 1. Green growth and environmental rule of law

The Green Growth Knowledge Platform (GGKP) is a global network of international organizations and experts that identifies and addresses major knowledge gaps in green growth theory and practice. By encouraging widespread collaboration and world-class research, the GGKP offers practitioners and policymakers policy guidance, good practices, tools, and the data that is necessary to support the transition to a green economy.

The GGKP Green Growth and the Law Working Group (“GGKP Law Working Group”) was formed given the importance that rule of law and legal frameworks play in enabling green growth.<sup>1</sup> It found that “laws, alongside the institutions and legal systems that ensure their implementation and enforcement, are an essential component of an enabling environment for green growth”.<sup>2</sup> This recognition entailed two essential factors to enable green growth:

1. **A robust legal framework for green growth.** This relates to different areas related to the economy, such as fiscal law, property law, and corporate law as well as environmental law, each of which has an impact on natural resource use and environmental protection.
2. **Proper implementation of environmental laws.** Enforcement and compliance play a strong role in strengthening rule of law and delivering the intended outcomes of policymaking.

Taking this background into consideration, the goal of the GGKP Law Working Group was to collaboratively assess and, where applicable, identify knowledge or data gaps on how environmental rule of law relates to green growth. This was done to catalyze responses to the identified gaps.

The hypothesis of departure for the GGKP Law Working Group was that failure in environmental rule of law seriously constrains the development of a more inclusive green economy. In order to test this hypothesis, the group set out to identify indicator frameworks and datasets measuring environmental rule of law. With such data in hand, the group could evaluate the relationship between environmental rule of law on one hand, and green growth outcomes on the other.

The report is laid out as follows. This chapter explores the GGKP Law Working Group’s hypothesis and approach. It examines basic concepts of rule of law, environmental enforcement and compliance, and a typology of indicators to measure them. Next, the report reviews available indicators and data on environmental enforcement and compliance broadly and in specific legal areas. Because such data is scarce, Chapter 3 examines data measuring rule of law in general as a proxy for measures of environmental rule of law. Finally, the report concludes and provides suggested next steps for addressing the identified gaps in the future.

### 1.1 Relating rule of law to green growth

The link between rule of law and development, including for sustained and inclusive growth, has been recognized by major international bodies. The UN General Assembly has declared its conviction “that the rule of law and development are strongly interrelated and mutually reinforcing, that the advancement of rule of law at the national and international levels is essential for sustained and inclusive economic growth, sustainable development, the eradication of poverty and hunger

<sup>1</sup> The GGKP Law Working Group defines green growth as “promoting economic growth while reducing pollution and greenhouse gas emissions, minimizing waste and inefficient use of natural resources, and maintaining biodiversity” (GGKP Working Group on Green Growth and the Law (2015), page 1). Thus, it embeds decoupling economic growth from environmental degradation to achieve sustainable development.

<sup>2</sup> Ibid, page 2.

and the full realization of all human rights and fundamental freedoms, including the right to development, all of which in turn reinforce the rule of law”.<sup>3</sup>

It has been noted that “without rule of law, development cannot be sustained, nor can wealth and progress be shared in a fair and balanced way”.<sup>4</sup> The World Bank’s World Development Report 2017 showed a strong quantitative correlation between rule of law and national wealth, although the relationship with economic development was more complicated.<sup>5</sup>

Developing and developed countries have adopted a diverse set of perspectives and approaches to rule of law that reflect their cultures, histories, politics, institutions, and conceptions of justice. It has been noted that, “the rule of law is a multi-dimensional social and political reality that varies significantly by context”.<sup>6</sup> In addition, rule of law enables the sustainable use of natural resources by protecting environmental rights in constitutions and legislation; enforcing laws and regulations; requiring administrative procedures such as environmental impact assessments; and defining rules for natural resource exploitation and governance.

These ideas support the notion that rule of law, and particularly environmental rule of law, are important aspects in the pursuit of inclusive green growth.

## **1.2 Defining rule of law and environmental rule of law**

To identify measurement frameworks for rule of law and environmental rule of law and further test the group’s hypothesis, the scope of these terms was explored.

This review finds no universally agreed definition of **rule of law**. Legal literature considers rule of law either as a principle or as a system comprised of different elements.<sup>7</sup> The UN Secretary-General has stated that rule of law refers “to a principle of governance in which all persons, institutions and entities, public and private, including the State itself, are accountable to laws that are publicly promulgated, equally enforced and independently adjudicated, and which are consistent with international human rights”.<sup>8</sup> Thus, by this definition, we consider that rule of law depends on how laws are formulated, promulgated, enforced, and adjudicated.<sup>9</sup>

Similarly, there is no authoritative definition of **environmental rule of law**. For the purposes of this report, it can be considered in light of the definition above, that is, as the existence of a legal framework covering the protection of the environment and the regulation of natural resource use that is publicly promulgated, equally enforced and independently adjudicated and binds all persons, institutions and entities, public and private, including the State. This is the definition that will be used in this report to determine whether a framework is suitable for measuring environmental rule of law.

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<sup>3</sup> United Nations General Assembly (2012a), para. 7; (2012b), para. 10. See also World Bank (2012).

<sup>4</sup> Khan et al. (2016).

<sup>5</sup> World Bank (2017), page 96.

<sup>6</sup> Berg & Desai (2013).

<sup>7</sup> In its most basic form, it is the principle that no one is above the law. The Maureen and Mike Mansfield Foundation have identified the following elements: law governs the government; there is an independent judiciary; law is fairly and consistently applied; law is transparent and accessible to all; the application of the law is efficient and timely; property and economic rights are protected including contracts; human and intellectual rights are protected; and law can be changed by an established process which is transparent and accessible to all (Hager (2000)).

<sup>8</sup> United Nations Security Council (2004), para. 6.

<sup>9</sup> Another aspect of rule of law not considered here is the “practicability” of laws and regulations. In the field of environment, legal practicability helps authorities apply the norms and assists stakeholders in understanding and complying with their obligations (Institute for European Environmental Policy (2006)).



### 1.3 Measuring environmental enforcement and compliance for green growth

Environmental rule of law thus depends on how related laws are formulated, promulgated, enforced, and adjudicated. A country's progress in each of these elements can be measured. While some efforts focus on policy formulation, promulgation or the development of adjudicative systems,<sup>10</sup> this analysis focuses on the enforcement of environmental laws at country level.

Environmental enforcement plays a strong role in ensuring environmental rule of law and delivering green growth outcomes. As recognized by the European Commission, poor implementation of environmental laws gives rise to environmental, economic, and social costs.<sup>11</sup> For example, the costs of damage to health and environment caused by air pollutants from European industrial facilities exceed EUR 100 billion annually.<sup>12</sup> Full compliance with the EU waste policy by 2020 could erase these costs, create an additional 400,000 jobs, and result in an additional annual turnover of EUR 42 billion in the waste management and recycling industries.<sup>13</sup>

Enforcement is aimed at achieving compliance with environmental regulations.<sup>14</sup> *Compliance* is a behavioral response to regulations.<sup>15</sup> The OECD defines *enforcement* as the application of all available tools to achieve compliance, including the three pillars of compliance assurance.<sup>16</sup>

1. **Compliance promotion** covers activities to encourage compliance without sanctions. Examples include information dissemination, technical assistance, and financial incentives.
2. **Compliance monitoring** involves collecting and analyzing information on compliance. Examples include government inspections, audits, self- and citizen-monitoring.
3. **Non-compliance response** entails actions by governments or third-parties including sanctions to encourage the offender to comply and to remediate the damages.<sup>17</sup>

This analysis therefore focuses on environmental enforcement in the context of compliance, including all three pillars of compliance assurance.

### 1.4 A typology of indicators for environmental enforcement and compliance

Measuring environmental enforcement and compliance at national level requires the formulation of indicators and, in turn, data collection against those indicators. Indicators are indirect measures of elements that, taken together, can be used repeatedly and over time to assess progress toward specific goals and objectives, including the implementation of an environmental program or policy.<sup>18</sup> Indicators often have the dual role of spurring reform and holding agencies and individuals accountable for past performance.<sup>19</sup>

The UN has developed a set of "Rule of Law Indicators" for measuring rule of law at the national level. It points out that their usefulness lies in simplicity, but also warns that indicators "can simplify

<sup>10</sup> See for example the Environmental Democracy Index detailed in Section 2.2 below.

<sup>11</sup> European Commission (2016).

<sup>12</sup> European Environment Agency (2015), pages 19-20.

<sup>13</sup> BIO Intelligence Service (2011).

<sup>14</sup> "Enforceability refers to the suitability of the legislation in terms of the ability of the competent authorities to use legal and administrative means at their disposal under domestic law to encourage or, in the event of willful non-compliance, compel individual addressees to comply with their obligations under the legislation". (Ibid., page 13).

<sup>15</sup> INECE Expert Working Group on Environmental Compliance and Enforcement Indicators (2003).

<sup>16</sup> European Commission DG Environment (2016).

<sup>17</sup> Organization for Economic Co-operation and Development (2009a).

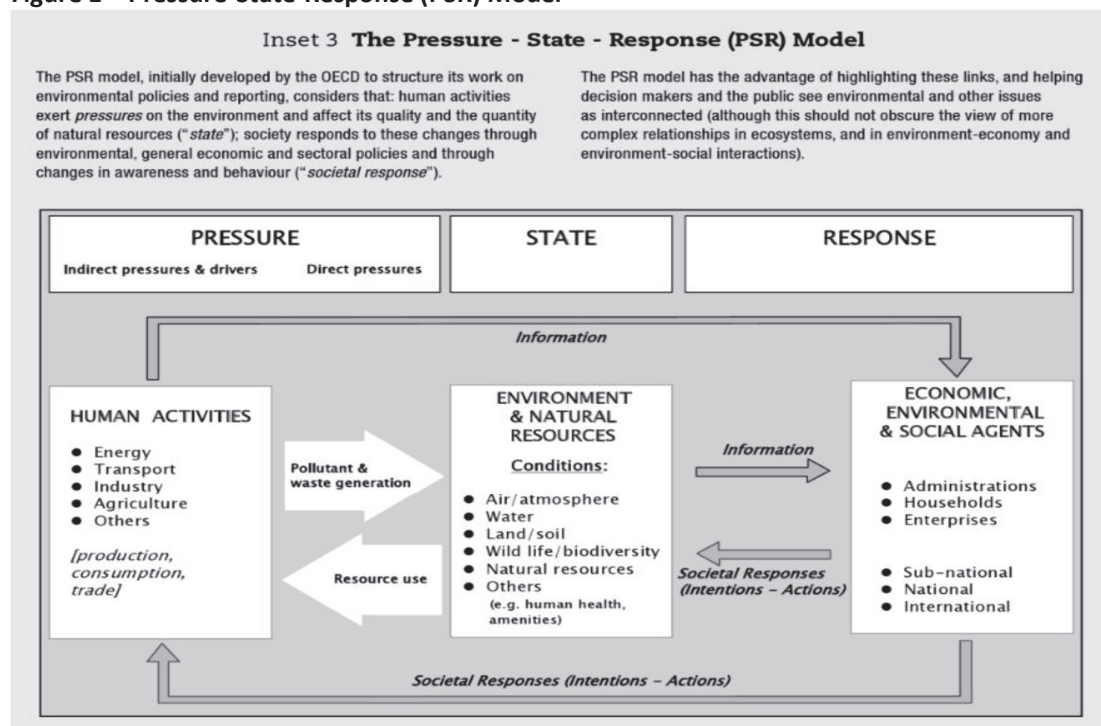
<sup>18</sup> Vera Institute of Justice (2003).

<sup>19</sup> United Nations (2011).

complex information to the point where it loses context”.<sup>20</sup> In order to develop robust indicators, information used in their formulation should be drawn from rich, diverse data sources. Thus, the data used in creating the UN Rule of Law Indicators come from multiple sources: administrative data as well as field data, expert surveys, public surveys, and document reviews. As data is collected and tracked, it should be used in the occasional reformulation of indicators to ensure their accuracy.

According to the OECD,<sup>21</sup> environmental indicators are measurable pieces of information that inform about an area’s environmental health. The Pressure-State Response model (**Figure 1**) by the OECD classifies them into indicators of *environmental pressures, conditions, and societal responses*.

**Figure 1 – Pressure-State-Response (PSR) Model**



Source: Environment at Glance, OECD Environmental Indicators

Environmental enforcement and compliance are examples of societal response. *Compliance indicators* measure behavioral responses while *enforcement indicators* measure compliance promotion, compliance monitoring, and non-compliance response.<sup>22</sup> These indicators include inputs, outputs, and outcomes:

- Inputs refer to the allocation of financial and human resources such as by a government.
- Outputs are those activities that are actually carried out. Each output should have an intended reach. A reach is a listing of the intended audience for the specific output.
- Outcomes are the results or effects achieved of output activities.

Outcomes may be immediate, intermediate, or final. Immediate outcomes include any instantaneous effects of the output activity on the intended audience. Intermediate outcomes, on

<sup>20</sup> United Nations (2011), page 1.

<sup>21</sup> Organization for Economic Co-operation and Development (2005), page 142.

<sup>22</sup> INECE Expert Working Group on Environmental Enforcement and Compliance Indicators (2003), page 4.

the other hand, are changes in behavior or conditions in the intended audience requiring more time to observe. Final outcomes are the ultimate results of the output activity or program<sup>23</sup>.

**Table 1 – Types of environmental enforcement and compliance indicators**

Examples	Inputs	Outputs	Reach	Lesser Outcomes	Final Outcomes
Actions taken or intended effects	More compliance promotion staff hired	More compliance promotion campaigns	All known regulatees	Industry better understands how to comply	Reduction in discharges
	More enforcement officers hired	More inspections	Relevant industry sectors	Industry invests in more environmentally friendly equipment	Reduction in environmental impact
	Enhanced training	More prosecutions		Improved corporate philosophy	Cleaner air and water
	More extensive technological support				
Performance Measures	Number of compliance promotion officers	Number of compliance promotion campaigns		Investment in “greener” industrial processes	Ambient concentrations of pollutants in air and water
	Number of enforcement officers	Number of inspections		Compliance rates	Environmental effects monitoring (e.g. pollutants in herring gull eggs)
	Training budget (\$)	Number of prosecutions		Recidivism rate	
	Investment in IT	\$\$ of fines / penalties		Concentration of pollutants from effluent pipes	

Source: INECE Expert Working Group on Environmental Enforcement and Compliance Indicators (2003)

**Table 1** presents a useful typology of indicators for measuring environmental enforcement and compliance. This analysis builds on this typology for the identification of relevant frameworks. An example of a comprehensive environmental enforcement and compliance program is as follows. First, the government funds the environmental agency and it, in turn, hires three compliance investigators (inputs). The officers conduct fifty new annual investigations into the air filtration compliance systems of private companies and issue 10 warning notices to those not in compliance (outputs). The companies become aware of their non-compliance (immediate outcome). The companies hold educational training seminars with their staff (intermediate outcome). The ambient air quality level improves (final outcome). These activities can each be measured and form the basis of a set of environmental enforcement and compliance indicators.

<sup>23</sup> INECE Expert Working Group on Environmental Enforcement and Compliance Indicators (2003), page 10.

## 2. Indicators and data on environmental enforcement and compliance

### 2.1 Method of this report

Given the scope laid out in Chapter 1, the GGKP Law Working Group commissioned this report to analyze the availability of indicators and data on environmental enforcement and compliance. An extensive search was carried out for relevant indicators at the global, national, and sub-national levels including specific environmental areas such as biodiversity and water. The review was completed using on-line keyword searches in English and Spanish as well as visits to the websites of environmental ministries and agencies.<sup>24</sup> The findings received expert feedback from members of the GGKP Law Working Group and external partners.

This chapter shows the results of this search, analyzing existing global, national, and sub-national datasets on environmental enforcement and compliance. It highlights numerous data gaps in this area as well as existing efforts to fill these gaps.

### 2.2 Result 1 – No global datasets with some emerging initiatives

The review yielded no global sets of indicators or data on environmental enforcement and compliance. However, there were notable efforts underway to develop them.

The **World Justice Project (WJP)** and American Bar Association (ABA) Section of Environment, Energy and Resources (SEER) were developing<sup>25</sup> rule of law measures for environment and energy issues to include in future publications of the Rule of Law Index.<sup>26</sup> The WJP has recently completed a pilot Environmental Rule of law Index for five countries which examines nine factors of environmental rule of law, including administrative and judicial enforcement and procedures, and compliance and enforcement in select issue areas such as water and waste management.

The **Environmental Democracy Index (EDI)** of the World Resources Institute (WRI) measured the degree to which countries have enacted legally binding rules covering the three “access rights” under Principle 10 of the Rio Declaration: access to information, public participation, and justice. The EDI evaluated countries across 75 legal indicators based on the Bali Guidelines to determine whether the law contained appropriate requirements to implement the three access rights. While these indicators focused on whether the appropriate laws were in place, a supplemental set of 24 indicators measured a country’s performance in implementation, which related to enforcement and compliance.<sup>27</sup>

Finally, the **International Consortium on Combating Wildlife Crime (ICWC)** created an indicator framework for countries to self-assess their legal responses to combating wildlife and forest crime, including trends over time.<sup>28</sup> An essential element of this framework was the set of 50 indicators arranged according to eight desired outcomes for effective law enforcement.

<sup>24</sup> Main keywords used: “environmental compliance and enforcement indicators (index)”, “compliance assurance indicators (index)”, “environmental inspections”, “environmental rule of law indicators”, “environmental performance report”, “environmental performance review”, “environmental compliance statistics”, and “environmental enforcement statistics”.

<sup>25</sup> Dapolito & Stillman (2015).

<sup>26</sup> See: <https://worldjusticeproject.org/our-work/wjp-rule-law-index>.

<sup>27</sup> See: [http://environmentaldemocracyindex.org/about/background\\_and\\_methodology](http://environmentaldemocracyindex.org/about/background_and_methodology).

<sup>28</sup> ICWC Indicator Framework for Combating Wildlife and Forest Crime. Partners of this consortium include CITES, INTERPOL, UNODC, the World Bank Group, and the World Customs Organization. See: <https://www.cites.org/eng/prog/iccwc.php> and <https://cites.org/sites/default/files/eng/prog/iccwc/ICWC-Ind-FW-ASSESSMENT-GUIDELINES-FINAL.pdf>.

The ICCWC Indicator Framework could serve to measure environmental rule of law with some alterations. **Table 2** presents selected outcomes from the Framework (Column 1) together with suggestions as to how indicators for measuring those outcomes could be adapted to suitably measure some aspects of environmental rule of law (Column 2).

**Table 2 – Suggested ICCWC Indicator Adaptations for Measuring Environmental Rule of Law**

Selected ICCWC Outcomes (2 of 8)	Suggested ICCWC Indicator Adaptations
<p><b>OUTCOME 1</b></p> <p>Proactive enforcement is deterring wildlife crime.</p> <p><i>Adaptation:</i> Proactive enforcement is deterring infringements to environmental law.</p>	<p><b><u>Enforcement priority</u></b></p> <p>The recognition of combating wildlife crime as a high priority for national law enforcement agencies.</p> <p><i>Adaptation:</i> The recognition of environmental protection as a high priority for national law enforcement agencies.</p> <p><b><u>National enforcement strategy</u></b></p> <p>The existence of a national enforcement strategy and/or action plan for wildlife crime.</p> <p><i>Adaptation:</i> The existence of a national environmental law enforcement strategy and/or action plan for the different environmental media and natural resources.</p> <p><b><u>National cooperation</u></b></p> <p>The extent of inter-agency cooperation among national law enforcement agencies to combat wildlife crime.</p> <p><i>Adaptation:</i> The extent of inter-agency cooperation among environmental law enforcement agencies.</p> <p><b><u>Strategic risk management</u></b></p> <p>The extent to which strategic risk management is used to target operational enforcement planning and the implementation of measures to combat wildlife crime.</p> <p><i>Adaptation:</i> Strategic risk management is used to undertake environmental law enforcement planning such as to list the facilities to be inspected or fishing vessels by a risk rate.</p>
<p><b>OUTCOME 3</b></p> <p>Wildlife crime is thoroughly investigated using an intelligence-led approach.</p> <p><i>Adaptation:</i> Infringements to environmental laws and environmental crimes are thoroughly investigated using an intelligence-led approach.</p>	<p><b><u>Investigative capacity</u></b></p> <p>The capacity of national law enforcement agencies to investigate wildlife crime cases.</p> <p><i>Adaptation:</i> The capacity of national environmental law enforcement agencies to investigate infringements to environmental laws and environmental crimes</p>

Source: ICCWC Indicator Framework and Author

### 2.3 Result 2 – Few national datasets publicized

At the national level, only two environmental enforcement and compliance datasets were identified. These included the US Environmental Protection Agency (EPA) and the Chilean Sistema Nacional de Información de Fiscalización Ambiental (SNIFA).

The **US EPA's Enforcement and Compliance Assurance Program** compiles numerous datasets to assess the performance of its work program. The data is presented in different databases, including:

- *Enforcement and Compliance History Online (ECHO).*<sup>29</sup> This database allows for integrated searches of US federal and state data for more than 800,000 regulated facilities to assess their compliance with environmental regulations. It includes data for the Clean Air Act (CAA), Clean Water Act (CWA), Resource Conservation and Recovery Act (RCRA), Safe Drinking Water Act (SDWA), and Toxics Release Inventory (TRI). ECHO also includes tools to explore pollution sources, create enforcement-related maps, and analyze environmental performance trends at the national and state levels.<sup>30</sup> Types of indicators used include<sup>31</sup>:
  - a) Air data: facilities, compliance evaluation, violations, high priority evaluations, enforcement actions, and penalties;
  - b) Drinking water data: public water systems, site visits, violations, serious violators, enforcement actions, and return to compliance;
  - c) Hazardous waste data: facilities, inspections, violations, significant non-compliance, enforcement actions, and penalties;
  - d) Pesticides data: facilities, workers/handlers, inspections, violations, violations types, enforcement actions, establishments regulated, and penalties;
  - e) Water data: facilities, inspections, violations, serious violations, enforcement actions, and penalties.
- *Enforcement Annual Results.*<sup>32</sup> This database contains the results of enforcement activities published at the end of each fiscal year. The data are presented in different formats:
  - Interactive case map, which includes civil enforcement actions and criminal cases prosecuted by EPA under federal statutes and the U.S Criminal Code as well as cases in which EPA provided support to cases prosecuted under state criminal laws;
  - A list of key results called “Numbers at a Glance”;
  - Sub-national results on EPA’s enforcement activities in 10 US regions;
  - “Analysis and Trends” in meeting performance targets in each fiscal year.

In addition, the US EPA has a database of Civil Cases and Settlements<sup>33</sup> as well as summaries of criminal prosecutions resulting from environmental investigations.

The second national-level database identified is **Chile’s SNIFA**, developed under the Superintendencia del Medio Ambiente (SMA).<sup>34</sup> It provides information on SMA compliance assurance activities, including inspection procedures, interim enforcement measures, infringement procedures, public registry of sanctions, environmental enforcement and compliance statistics, and court judgments in environmental cases.

<sup>29</sup> See: <https://echo.epa.gov/>.

<sup>30</sup> EPA makes the following disclaimer: State performance is a complex and difficult matter to analyze and explain. Data alone cannot provide a complete picture of performance.

<sup>31</sup> See: <https://echo.epa.gov/trends/comparative-maps-dashboards/state-air-dashboard?state=National&view=activity>.

<sup>32</sup> See: <https://www.epa.gov/enforcement/data-and-results>.

<sup>33</sup> See: <https://cfpub.epa.gov/enforcement/cases/>.

<sup>34</sup> See: <http://snifa.sma.gob.cl/v2>.



## 2.4 Result 3 – Non-comparable datasets in individual reports

Although there were limited numbers of comprehensive, publicly available datasets at the global or national levels, other environmental authorities produced reports containing relevant indicators. **Table 3** lists several such entities and the input, output, and outcome indicators used by their competent national authorities.<sup>35</sup> Various input and output indicators, such as number of inspectors or inspections, were identified in the reviewed reports. None of the reviewed reports included outcome indicators. Moreover, as Table 3 shows, sample indicators focused on compliance monitoring and non-compliance response rather than on compliance promotion. The Annex lists all sources of identified national environmental enforcement and compliance indicators.

Another important source of environmental enforcement and compliance data are country reports of international organizations, notably the environmental performance reviews (EPRs) of the OECD and UNECE. The EPRs analyze countries' relevant activities, indicators, and data sources. In the case of UNECE EPRs, a range of output indicators were found in a sample of reviewed reports.<sup>36</sup> For example, the Croatia EPR presented data on the total number of inspections performed and the total value of administrative fines imposed per year, while the EPR for Serbia provided figures for the number of installations closed due to legal violations as well as the number of misdemeanor and criminal charges filed by the environmental inspection agency between 2007 and 2013.

In 2009, the OECD published a list of indicators for environmental regulation and compliance assurance.<sup>37</sup> A review of recent OECD publications, which included a range of EPRs<sup>38</sup> as well as Environmental Compliance and Enforcement (ECE) assessments for China (2006a) and India (2006b), showed clear disparities in data coverage. The EPRs for Hungary, the Czech Republic, and the Republic of Korea, for example, provided information on the total number of inspections performed and violations detected per year. The EPR for Peru provided data on the total value of fines imposed, the number of major infraction cases resolved, and the number of corrective measures imposed on a per-year basis. The EPRs for Hungary and New Zealand provided data on non-compliance rates and infringement notices, respectively, by environmental domain (e.g. air quality, water). Finally, the EPRs for Canada and Switzerland provided no numerical data for compliance monitoring and non-compliance response indicators.

Many of these EPRs also included compliance promotion chapters, wherein data on the number of ISO 14001 Environmental Management System certificates issued per year was often provided. Details on compliance promotion programs, such as green procurement efforts and information campaigns, were generally presented, but with little accompanying numerical data. Compounding the issue, any data provided were generally not comparable between countries. The Korean EPR, for example, provided data on the change in voluntary sustainable management reports produced in 2014 versus 2003 as part of a program designed to reward corporate social responsibility.

In China, the ECE assessment states that environmental enforcement and compliance indicators, such as the number of enforcement officers and the number of non-compliance actions undertaken, were used in environmental reporting.<sup>39</sup> In India, the ECE assessment showed that while some State Pollution Control Boards used environmental enforcement and compliance indicators, the lack of a standardized set of national indicators was a key constraint.<sup>40</sup>

<sup>35</sup> This search should be seen as preliminary rather than comprehensive.

<sup>36</sup> Belarus (2016), Croatia (2014b), Morocco (2014a), Serbia (2015), and Uzbekistan (2010).

<sup>37</sup> Organization for Economic Co-operation and Development (2009b).

<sup>38</sup> Hungary (2018a), Czech Republic (2018b), Canada (2017a), New Zealand (2017b), Estonia (2017c), Korea (2017d) Switzerland (2017e), Peru (2017f), and Colombia (2014).

<sup>39</sup> Organization for Economic Co-operation and Development (2006a), page 48.

<sup>40</sup> Organization for Economic Co-operation and Development (2006b), page 25.

**Table 3 – Indicators found in various national environmental enforcement and compliance reports<sup>41</sup>**

National report	Indicators used		
	Input	Output	Outcome
Environment Canada – Departmental Performance Report 2014-15	Budgetary financial resources spent Number of human resources	<ul style="list-style-type: none"> <li>Percentage of inspected regulated communities compliant with regulatory requirements under the 1994 Migratory Birds Convention Act</li> <li>Number of inspections, investigations, convictions, successful prosecutions, non-compliance enforcement measures, fines imposed (for wildlife and pollution programs only)</li> </ul>	N/A
Environment Protection Authority South Australia	N/A	<ul style="list-style-type: none"> <li>Number of inspections and written ‘cautions/warnings’ issued, investigations conducted by the investigations unit, matters with the Crown Solicitor’s Office (CSO) for adjudication, briefs prepared for adjudication by the CSO, investigations concluded, expiations finalized, prosecutions, civil penalties</li> </ul>	N/A
Malta Environment and Resources Authority – 2014 Annual Report	N/A	<ul style="list-style-type: none"> <li>Number of enforcement complaints received, site inspections of the complaints received, complaint cases closed, enforcement notices issued, fines imposed, compliance certificates issued</li> </ul>	N/A
México Procuraduría Federal de Protección Ambiental (PROFEPA) – Programa de Procuración de Justicia Ambiental 2014-2018	Percentage of technical means available to inspectors Number of officials and of inspectors trained	<ul style="list-style-type: none"> <li>Number of inspections</li> </ul>	N/A
Perú Organismo de Evaluación y Fiscalización Ambiental (OEFA) – Informe sobre el nuevo enfoque de la fiscalización ambiental 2011- 2015	Budget allocated to enforcement and compliance	<ul style="list-style-type: none"> <li>Number of inspections, administrative decisions in first instance, administrative decisions in second instance, facilities inspected, adopted interim or injunction measures, received citizens environmental reports, imposed sanctions</li> </ul>	N/A

<sup>41</sup> For references, see Annex under “National Reports”.

South Africa Department of Environmental Affairs – The National Environmental Enforcement and Compliance Report 2014-2015	Number of inspectors (disaggregated by level of authority: local, national and by the administrative body)	<ul style="list-style-type: none"> <li>• Number of facilities inspected (disaggregated by brown, blue and green legislation and also by number of reactive and proactive inspections), non-compliances detected during inspections, inspections reports, inspections conducted</li> <li>• Number of criminal dockets, admission of guilt fines, criminal dockets provided to the National Prosecuting Authority, arrests by Environmental Management Inspectorate, acquittals, convictions reported, plea and sentence agreements, warning letters issued, administrative notices issued, civil court applications</li> <li>• Total value of admission of guilt fines, section 24G administrative fines paid</li> </ul>	N/A
Scottish Environmental Protection Agency – Enforcement Report 2014-2015	N/A	<ul style="list-style-type: none"> <li>• Number of cases referred to the Procurator Fiscal disaggregated by numbers on the legal regime (waste, water, offences, etc.), served statutory notices, final warning letters, convictions secured disaggregated by numbers on the kind of sanction (e.g. fine, community service, imprisonment) imposed</li> </ul>	N/A
Uganda Ministry of Water and Environment – Water and Environment Sector Performance Report	N/A	<ul style="list-style-type: none"> <li>• Number of site inspections, improvement notices to wetland degraders, compliance agreements reached, convictions, arrests (all for wetland degradation sites program)</li> <li>• Total value of fines imposed on wetland degraders</li> </ul>	N/A
US Fish and Wildlife Service – 2015 Office of Law Enforcement Report	N/A	<ul style="list-style-type: none"> <li>• Number of wildlife crime investigations pursued</li> <li>• Total value of penalties imposed</li> </ul>	N/A

Source: Author

### 3. Rule of law indicators as a proxy

Given the paucity of global and national datasets measuring environmental enforcement and compliance, this review sought to identify proxies by assessing rule of law indicators more generally. Two comprehensive rule of law datasets were identified: the **World Bank Worldwide Governance Indicators (WGI)** and the **World Justice Project's Rule of Law Index**. These indices included very different indicators measuring the elements of rule of law, such as human rights or property rights, and the performance of institutions such as by courts (see **Table 4** below). A number of more limited sets of indicators were also identified by Berg & Desai (2013):

- *Indicators of elements of rule of law.* Several indices measured specific elements of rule of law, such as security of property and individuals (e.g. Index of Economic Freedom<sup>42</sup>, World Bank's Country Policy and Institutional Assessment<sup>43</sup>); contract rights and enforcement (e.g. the World Bank's CPIA and Doing Business<sup>44</sup>); compliance with human rights and civil liberties (e.g. Cingranelli-Richards CIRI Human Rights Dataset<sup>45</sup>, Freedom House<sup>46</sup>); constraints on the executive (e.g. Bertelsman Transformation Index<sup>47</sup>); and corruption (e.g. Global Corruption Barometer of Transparency International<sup>48</sup>, Global Integrity Index<sup>49</sup>). These indices often rely on perception as measured by expert surveys.
- *Measures of institutional performance.* Several measures such as the Legal Profession and Judicial Reform Indices<sup>50</sup> and the CEPEJ-STAT database<sup>51</sup> focus on the performance of specific government institutions related to justice or alternative and non-state dispute resolution. Focusing on the elements of government performance such as court efficiency can support more direct and accurate measures of rule of law.

The **United Nations Rule of Law Project** also offers a tool to monitor the performance of criminal justice institutions in conflict and post-conflict situations.<sup>52</sup> It entails 135 indicators grouped around institutions: the police (41 indicators), judicial system (51 indicators), and prisons (43 indicators). For each institution, indicators are grouped into one of four dimensions: (1) performance; (2) integrity, transparency, and accountability; (3) treatment of members of vulnerable groups; and (4) capacity. This data informing the indicators comes from four sources including both the supply and demand sides. Unfortunately, no publicly available data under this project was found.

Conceptual confusion over rule of law affects the various indicators that purport to measure it.<sup>53</sup> The *Fondation pour le droit continental* (Civil Law Initiative)<sup>54</sup> "Index of Legal Certainty" report recently found a variety of indices measuring rule of law without an agreed definition. This could form the basis of an attempt, e.g. by the GGKP Law Working Group, to explore bringing these diverse frameworks together in a standardized set of measures. Further analysis would also be required to determine the suitability of the above selection of rule of law indicators as proxies for environmental rule of law.

<sup>42</sup> See: <http://www.heritage.org/index/>.

<sup>43</sup> See: <http://data.worldbank.org/data-catalog/CPIA>.

<sup>44</sup> See: <http://www.doingbusiness.org/rankings>.

<sup>45</sup> See: <http://www.humanrightsdata.com/p/data-documentation.html>.

<sup>46</sup> See: <https://freedomhouse.org/report/freedom-net/freedom-net-2016>.

<sup>47</sup> See: <https://www.bti-project.org/en/home/>.

<sup>48</sup> See: [http://www.transparency.org/research/gcb/gcb\\_2015\\_16/0/](http://www.transparency.org/research/gcb/gcb_2015_16/0/).

<sup>49</sup> See: <http://www.globalintegrity.org/>.

<sup>50</sup> See: [http://www.americanbar.org/advocacy/rule\\_of\\_law/publications/assessments/lpri.html](http://www.americanbar.org/advocacy/rule_of_law/publications/assessments/lpri.html).

<sup>51</sup> See: <https://www.coe.int/t/dghl/cooperation/cepej/evaluation/2016/STAT/>.

<sup>52</sup> United Nations (2011).

<sup>53</sup> Møller & Skaaning (2011), cited by Versteeg & Ginsburg (2016).

<sup>54</sup> See: <http://www.fondation-droitcontinental.org/en/>.

**Table 4 – Analysis of the two leading rule of law indicator frameworks**

Index	Elements measured	Example of indicators used	Methodology for data collection	Coverage
World Bank Worldwide Governance Indicators (WGI)	1. Voice and accountability 2. Political stability and absence of violence/terrorism 3. Government effectiveness 4. Regulatory quality 5. Rule of law 6. Control of corruption	For rule of law: - enforceability of contracts - degree of enforcement of court orders - timeliness of judicial decisions - judicial independence  For government effectiveness: - quality of bureaucracy/institutional effectiveness - excessive bureaucracy/red tape	“Demand” side of governance <sup>55</sup>  Compiles and summarizes information from over 30 existing data sources	200 countries and territories over the period of 1996-2015
World Justice Project’s Rule of Law Index <sup>56</sup>	1. Constraints on government powers 2. Absence of corruption 3. Open government <sup>57</sup> 4. Order and security 5. Regulatory enforcement 6. Civil justice 7. Criminal justice 8. Informal justice	For regulatory enforcement: - government regulations are effectively enforced - government regulations are applied and enforced without improper influence - administrative proceedings are conducted without unreasonable delay - due process is respected in administrative proceedings - the government does not expropriate without adequate compensation	Demand side  Based on questionnaires to general public, legal professionals, and experts	The 2016 index covers 113 countries

Source: Author

<sup>55</sup> It measures the perceived level of governance (based on subjective opinions) rather than the real level of governance (in objective terms) (Albers (No date)).

<sup>56</sup> See: <http://worldjusticeproject.org/rule-of-law-index>. On methodology, see: [https://worldjusticeproject.org/sites/default/files/documents/rolindex2016\\_methodology.pdf](https://worldjusticeproject.org/sites/default/files/documents/rolindex2016_methodology.pdf).

<sup>57</sup> It relies on the WJP Open Government Index 2015; see: <http://data.worldjusticeproject.org/opengov/>.

## 4. Conclusion

This report revealed the near absence of publicly available global or national indicator frameworks and datasets measuring environmental enforcement and compliance as a proxy for environmental rule of law. Some countries made relevant data publicly available through individual reports, but the data were not comprehensive or comparable across studies. Country reports such as environmental performance reviews were equally constrained by the absence of standardized national data. Of the three types of indicators reviewed (inputs, outputs, and outcomes), reports were typically limited to output indicators. While some included input indicators, the sample reviewed here suggested that information on outcomes was rarely if ever provided.

The data gap is a key barrier to improving environmental progress worldwide and to assessing the link between environmental rule of law and green growth. This chapter explores the challenges behind this gap and, on that basis, suggests new pathways for future progress.

### 4.1 *Interpreting the results*

The most important concern in this paucity of data is that it may be due to a lack of adequate environmental enforcement and compliance programs, which in turn prevent green growth. It suggests that, in some countries, the data may not be reliably collected at all, particularly if the competent authorities lack the capacity or resources to track progress. In other countries, authorities may measure environmental enforcement but fail to publish the results, perhaps due to a lack of progress. It is important to note that these challenges exist in both developing and developed countries.

What is clear is that without publicly available information, we cannot assume that a given country is making progress on implementing its environmental laws. Moreover, it could signal a breakdown in environmental democracy, including access to environmental information and public participation under Rio Principle 10. Thus, the priority for next steps is to determine a clear pathway for improving the measurement of environmental enforcement and compliance.

Several challenges remain to achieve this goal. First, in the absence of global or national datasets, relevant data must be compiled from individual reports. Often, these are prepared separately by different enforcement ministries. In the US, for example, the EPA is an independent federal agency with statutory competence in areas such as water, air, and hazardous waste. Meanwhile, it is the US Fish and Wildlife Service in the US Department of the Interior that collects data on flora and fauna<sup>58</sup> and the National Oceanic and Atmospheric Administration (NOAA) in the US Department of Commerce that collects data on more than 30 marine protection laws.<sup>59</sup> Similarly, relevant data collection could be delegated to sub-national authorities, the judiciary, and the public prosecutor's office. This leads to gaps and inefficiencies in compiling national and trans-national data for a more comprehensive look at progress.

Next, the existing environmental enforcement and compliance data are collected and produced by enforcement authorities without the involvement of the public. This leads to additional data gaps. Of the three pillars of enforcement, existing indicators focus on compliance monitoring and non-compliance response with little or no data on compliance promotion. The “supply side” rather than “demand side” focus is one reason why available data focus on input and output indicators rather than on environmental outcomes.

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<sup>58</sup> For the US Fish and Wildlife Service's Office of Law Enforcement, see: <https://www.fws.gov/le/>.

<sup>59</sup> For the NOAA's Office of Law Enforcement, see: <http://www.nmfs.noaa.gov/ole/faqs.html>.



## **4.2 Next steps**

Six potential solutions exist for addressing the gap. First, global initiatives compiling indicators and data at national or sub-national levels should be supported. These include the World Justice Project, Environmental Democracy Index, and ICCWC as well as assessments carried out by international organizations such as the OECD or UNECE environmental performance reviews.

Second, an effort is needed to develop a global statistical standard or set of harmonized practices for indicator development and data collection on environmental enforcement and compliance. Such an effort would bring together experts from leading global data providers such as those mentioned above, national data collectors (i.e. the “supply side”), and data end users, including the public or “demand side” stakeholders. Ultimately, the goal would be to develop a commonly agreed indicator framework measuring environmental enforcement and compliance at the national level.

Third, more information is needed to assess how extensive the practice of collecting environmental enforcement data is at the national and sub-national levels. Such information could initially be sought via a survey of in-country stakeholders including environmental regulators, public representatives, and international experts. The survey would serve the dual purpose of identifying relevant new indicators applied in practice for a more comprehensive indicator framework.

Next, national and sub-national authorities should be directly engaged to improve local measures of environmental enforcement and compliance and their subsequent publication. This engagement could be conducted through virtual outreach and in-person workshops focused on information gathering, awareness-building, and capacity-building. Such an outreach process could be helpful in catalyzing the development of an international measurement standard.

Fifth, a comprehensive review of case studies should be conducted to explore national and sub-national environmental enforcement practices in context. Although the research would be limited to certain countries, it would provide a new avenue of analysis for assessing the link between environmental enforcement and green growth in the absence of a comprehensive global or national dataset. Moreover, the research would consider actual in-country experiences with far greater contextual depth than can be achieved with a focus on national indicators and data alone.

Finally, efforts to measure environmental rule of law could be directly linked to efforts to measure rule of law in general. Such an expansion could provide a more accurate and comprehensive measurement framework for environmental rule of law and eliminate some duplication of indicators. It would be important to ensure however that the expansion did not over-aggregate environmental indicators and lose measurement depth relevant to environmental enforcement. The Index of Legal Certainty could provide a useful starting point.

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## Annex – National environmental enforcement and compliance indicators

This annex contains the main sources of national environmental enforcement and compliance indicators found in the internet search.

### Datasets

#### National Datasets

##### Chile

Sistema Nacional de Información de Fiscalización Ambiental - Superintendencia del Medio Ambiente  
<http://snifa.sma.gob.cl/v2/Estadisticas>

##### United States

US Fish and Wildlife Service, Law Enforcement Office:  
<https://www.fws.gov/le/pdf/2015-Office-of-Law-Enforcement-Annual-Report-web.pdf>  
 Enforcement Annual Results for Fiscal Year (FY) 2015 - EPA  
<https://www.epa.gov/enforcement/enforcement-annual-results-fiscal-year-fy-2015>  
 Enforcement data - EPA  
<https://www.epa.gov/enforcement/data-and-results>

#### National Reports

##### Australia

Environment Protection Authority of South Australia. Retrieved 09/02/2018 from:  
[http://www.epa.sa.gov.au/about\\_us/corporate\\_reporting/annual\\_compliance\\_plan](http://www.epa.sa.gov.au/about_us/corporate_reporting/annual_compliance_plan)

##### Canada

Departmental Performance Report 2014-15 – Environment Canada  
<https://www.canada.ca/en/environment-climate-change/corporate/archive/archived-departmental-results-reports/2014-2015.html>

##### Ireland

Enforcement Performance Framework - Environmental Protection Agency  
<http://www.epa.ie/enforcement/pa/performanceframework/>

##### Malta

Annual Report 2014 of the Environment and Resources Authority – Environment and Resources Authority  
<http://era.org.mt/en/Pages/Annual-Reports.aspx>

##### México

Vigilancia y cumplimiento de la normatividad ambiental - SEMARNAT  
<http://www2.inecc.gob.mx/publicaciones/libros/256/3.html>  
 PROFEPA, Programa de Procuración de Justicia Ambiental 2014-2018  
[http://www.profepa.gob.mx/innovaportal/file/5796/1/ppja\\_2014-2018.pdf](http://www.profepa.gob.mx/innovaportal/file/5796/1/ppja_2014-2018.pdf)

##### Perú

Informe Anual de Fiscalización Ambiental 2011-2015 – Ministerio del Ambiente  
<http://sinia.minam.gob.pe/documentos/fiscalizacion-ambiental-peru-2011-2015>

##### Republic of South Africa

National Environmental Compliance and Enforcement Report 2014 - 2015 - Environmental Management Inspectorate (EMI)  
[https://www.environment.gov.za/sites/default/files/reports/201415\\_necer\\_report.pdf](https://www.environment.gov.za/sites/default/files/reports/201415_necer_report.pdf)

##### Tanzania

Performance Audit Report on Compliance Monitoring and Enforcement of Environmental Policies, Laws and Regulations as regards to Petroleum Exploration Activities in Tanzania - Directorate of Environmental enforcement and compliance [http://www.nao.go.tz/?wpfb\\_dl=184](http://www.nao.go.tz/?wpfb_dl=184)

##### Uganda

Water and Environment Sector Performance Report 2014 - The Ministry of Water and Environment of Uganda  
[https://washwatch.org/uploads/filer\\_public/a1/81/a181582f-1f9a-410f-b385-8f7692a50264/draft-ugandasectorperformancereport.pdf](https://washwatch.org/uploads/filer_public/a1/81/a181582f-1f9a-410f-b385-8f7692a50264/draft-ugandasectorperformancereport.pdf)

##### United Kingdom

Enforcement Report 2014-2015 - Scottish Environmental Protection Agency (SEPA)  
[http://www.sepa.org.uk/media/163496/enforcement\\_report\\_2014\\_2015.pdf](http://www.sepa.org.uk/media/163496/enforcement_report_2014_2015.pdf)

### Environmental Enforcement and Compliance Networks

East African Network for Environmental Compliance & Enforcement  
<http://www.eanece.org/eanece/>

**Asian Environmental Enforcement and Compliance Network**

<https://www.aecen.org/index.php/>

**Red Sudamericana de Fiscalización y Cumplimiento Ambiental – South American Network of Environmental Enforcement and Compliance**

<http://www.redsufica.org/>

**North American Agreement on Environmental Cooperation (NAAEC) - NAFTA-Enforcement and Compliance Working Group of the Commission for Environmental Cooperation**

<http://www.cec.org/resources/enforcement-and-compliance-working-group>

**Environmental Enforcement Authorities**

**Belgium (Flanders)**

Flemish Environment Inspections Division  
<https://www.lne.be/inspecteren-en-maatregelen-nemen>

**Cameroun**

Ministry for Environment, Nature Protection and Sustainable Development  
[http://www.minep.gov.cm/index.php?option=com\\_content&view=article&id=46&Itemid=20&lang=fr](http://www.minep.gov.cm/index.php?option=com_content&view=article&id=46&Itemid=20&lang=fr)

**China**

Ministry of Environmental Protection  
[http://english.sepa.gov.cn/About\\_SEPA/Internal\\_Departments/?COLLCC=1770720255&](http://english.sepa.gov.cn/About_SEPA/Internal_Departments/?COLLCC=1770720255&)

**Egypt**

Egyptian Environmental Affairs Agency, Central Department for Inspection and Environmental Compliance  
<http://www.eeaa.gov.eg/en-us/aboutus/aboutagency/structure.aspx>

**Gambia**

National Environmental Agency  
<http://www.accessgambia.com/information/nea.html>

**India**

Ministry of Environment, Forest and Climate Change  
<http://envfor.nic.in/about-ministry/chart1-environment-wing>  
National Green Tribunal:  
<http://www.greentribunal.gov.in/>  
National Environment Assessment and Monitoring Authority (NEAMA)  
<http://www.indiaenvironmentportal.org.in/category/39887/thesaurus/national-environment-assessment-and-monitoring-authority-neama/>

**Japan**

Ministry of Environment  
<http://www.env.go.jp/en/index.html>

**Kenya**

Kenya Forest Service, Enforcement and Compliance Division  
[http://www.kenyaforestservice.org/index.php?option=com\\_content&view=article&id=491&Itemid=687](http://www.kenyaforestservice.org/index.php?option=com_content&view=article&id=491&Itemid=687)  
National Environmental Management Authority of Kenya  
<https://www.nema.go.ke/>

**Philippines**

Department of Environment and Natural Resources, Environmental Management Bureau  
<http://emb.gov.ph/>

**South Korea**

Ministry of Environment  
<http://eng.me.go.kr/eng/web/index.do?menuId=9&findDepth=1>

**Tanzania**

National Environment Management Council of Tanzania, Directorate of Environmental Enforcement and compliance (DECE)  
<http://www.nemc.or.tz/pages/directorates-and-units>

**Zimbabwe**

Environmental Management Agency  
<http://www.ema.co.zw/index.php/2014-06-12-03-49-33/2014-06-12-03-50-38/ema-services/48-environmental-inspection.html>





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