

Ecocide Law for the Paris Agreement

The role of Ecocide Law in limiting
global warming

Dedication

To pioneering barrister Polly Higgins (1968-2019), who was the first to realize the urgent need for, and transformative potential of, international ecocide law. Her visionary work paved the way for us to bring it about.

Special Thanks

This report was made possible by funding from Svenska Postkodstiftelsen (The Swedish Postcode Foundation) and pro-bono support from Azote AB. This report has been greatly improved through the generous help of several people, including Peder Karlsson, Robert Kautsky, Annika Laurén, Carolina Lindfors, Jojo Mehta, Fredrik Moberg, Professor Alasdair Skelton, Pella Larsdotter Thiel, Bonny Weaver-Laurén.



Authors:

Jonas Roupé, MSc Business Administration, BSc Political Science, Senior Business and Sustainability advisor at Mission anew.

Professor Kristín Vala Ragnarsdóttir, Institute of Earth Sciences, University of Iceland; Distinguished Fellow Schumacher Institute.

Editors: Monica Schüldt and Johan Beer.

Layout: Azote AB.

Graphics: Jonas Roupé and Azote AB.

Copyright – CC -No rights reserved.



ISBN 978-91-519-9188-7

END ECOCIDE SWEDEN

www.endecocide.se

SCHUMACHER INSTITUTE

www.schumacherinstitute.org.uk

Executive Summary

At present, there is no international criminal law that directly addresses acts of mass destruction of the environment. Many countries lack environmental laws and in many of the countries which do have national environmental laws, enforcement is lax. This makes attempts to fulfil the Paris Agreement ineffective at best, if not impossible.

The lack of hard, international, criminal law also creates a non-equal playing field in which unscrupulous actors take systematic advantage of legal loopholes, giving them a competitive edge over more sustainable competitors.

Time is of the essence. The latest IPCC report on Mitigation of Climate Change published on April 4th, 2022, shows that emissions must peak by 2025, and be reduced by 43% by 2030, in order to have a chance to keep global temperatures within a 1.5°C path. Already at a 1.2°C temperature increase, the hazards of warming are a harsh reality across the globe.

Making ecocide a crime in the Rome Statute can help us address climate change in time. The Rome Statute, which governs the International Criminal Court, currently contains four crimes: genocide, crimes against humanity, war crimes, and the crime of aggression. With the right political will and focus, adding Ecocide Law to the Rome Statute could be done within a few years.

Making ecocide an international crime – Ecocide Law - would make top decision makers personally accountable for decisions that cause, or risk causing, mass environmental damage or destruction. This will stop many potentially harmful activities before they happen.

Ecocide Law will help contain global warming by:

- a. supporting governments in shifting subsidies away from fossil fuels towards renewable sources of energy. This will accelerate the development of renewable sources of energy;
- b. compelling actors either to put safety rails in place for activities which put the environment at risk, or to develop and adopt better approaches. This is highly relevant for extraction of coal and unconventional oil, which currently represent 70% of the world's oil reserves. Some of these reserves cannot be accessed without risk of ecocide;
- c. protecting natural carbon sinks, on land and in the oceans. These are critical in order to contain global warming. Furthermore, most of the oceans are outside national jurisdiction which makes it particularly urgent to strengthen protection of them.

It is worth noting that Ecocide Law would not stop mining, but would demand responsible practices and more rigorous safety measures, which are needed in any case.

As soon as Ecocide Law is on the horizon, even before it comes into force, it will begin to curb emissions from wanton fossil fuel extraction since even the risk of the activities being deemed illegal will weaken the business case for them, and such business cases are discounted over decades. Sustainable options will thus become more profitable and gain further momentum.

Over time, Ecocide Law assists a shift in values, which is a powerful catalyst for change.

Content

Executive Summary.....	3
Introduction	5
The missing law	8
A safety rail is needed	16
Supporting the responsible shift	24
We need nature's help	34
Conclusions	42
Appendix I: Proposed definition of ecocide	43
Appendix II: The process for making ecocide a crime	45
Appendix III: Global warming	46

Introduction

”
Substantial
likelihood of
severe and either
widespread or
long-term
damage to the
environment.

Defining ecocide as an international crime

In November 2020, the Stop Ecocide foundation brought together an independent panel of 12 leading experts in international law to propose a definition¹ of ecocide as an additional crime within the Rome Statute of the International Criminal Court in The Hague. The Rome Statute currently contains four crimes: genocide, crimes against humanity, war crimes and the crime of aggression. War crimes includes a mention of ecocide but the definition is so weak that in practice it is almost impossible to convict.

Box 1 - The definition of ecocide as proposed by the expert drafting panel:

For the purpose of this statute, “ecocide” means unlawful or wanton acts committed with knowledge that there is a substantial likelihood of severe and either widespread or long-term damage to the environment being caused by those acts.

This report investigates how Ecocide Law as defined by the expert panel will assist climate related policy and efforts to mitigate and adapt to the escalating climate emergency.

Ecocide Law is not a new idea but the support is now growing fast

A growing global movement is advocating the inclusion of ecocide as a fifth crime in the Rome Statute, which is the treaty that governs the jurisdiction of the International Criminal Court. Amongst the many that support this idea are the European Parliament (January 2021), the International Parliamentary Union representing 179 parliaments around the world (May 2021), and the UN Secretary General (July 2021), the ICGN international network of major investors (Oct. 2021), Global Youth (May 2022), and the World Council of Churches (Sept. 2022).

Ecocide Law as the fifth crime in the Rome Statute is not a new idea. During the 1970s, 80s and 90s, making ecocide an international crime was considered by the United Nations International Law Commission (ILC) for inclusion in the Code of Crimes Against the Peace and Security of Mankind, which later became the Rome Statute.² A number of questions kept arising: should ecocide be a crime in peacetime as well as in wartime? Does the offender’s intent to commit the crime matter, or are the consequences of extensive destruction of ecosystems severe enough to warrant ecocide being a crime of strict liability, regardless of the offender’s intent?

See Appendix I and II for details on the definition and the process to amend the Rome Statute to include Ecocide Law.

¹ Independent Expert Panel for the Legal Definition of Ecocide, 2021. Commentary and Core Text. Stop Ecocide Foundation. Retrieved from: <https://static1.squarespace.com/static/5ca2608ab914493c64ef1f6d/t/60d7479cf8e7e5461534dd07/1624721314430/SE+Foundation+Commentary+and+core+text+revised+%281%29.pdf>

² International Criminal Court, ICC, 1998, (Last amended 2010). The Rome Statute of the International Criminal Court. <https://www.icc-cpi.int/resource-library/documents/rs-eng.pdf>.

Although there was considerable support for making ecocide a crime in international law, it was dropped by the ILC in 1996.³

Opposition in 1996 managed to stop ecocide from becoming a fifth crime under the Rome Statute for two main reasons.

1. The “seriousness” of threats to the environment were questioned. Such an objection would be difficult to uphold today.
2. There was an “apparent discomfort” felt among policymakers regarding the relationship between environmental degradation and humanitarian interests.⁴ In the ensuing 25 years, the relationship has been clarified and today there is an emerging recognition within the international community that the effects of environmental damage are as devastating as the effects of other international crimes.⁵

Including ecocide as an additional crime in the Rome Statute establishes a legal framework and binding rules to contain human activities within the outer limits of what global ecological systems are capable of carrying. The support for such a law - Ecocide Law - is growing very fast.⁶

Restoring hope

Numerous ^{7,8,9} surveys, including the World Economic Forum Global Risks report,¹⁰ show how the younger generations are losing hope for the future and in elected leaders’ ability to respond adequately. This is not so surprising. Global greenhouse gas emissions need to be halved by 2030 and cut to zero by 2050 to avoid the worst impacts,¹¹ but most countries are not on track to meet these targets.

The situation is dire. The 101 “stay within 2°C” IPCC scenarios presented in the 5th report rely on 2-3 per cent growth in the global economy. This means that the economy is envisaged to double in 24-36 years with associated need for energy and materials. The decoupling of emissions from economic growth, however, can only be achieved with widespread deployment of bioenergy with carbon capture and storage (BECCS) – which ecological economist Jon D. Erickson refers to as the metaphorical genie in the bottle.¹²

This decoupling would require planting, harvesting, and burning massive tree plantations for energy, then capturing and storing CO₂ emissions on site and underground for eternity. This solution requires fifteen thousand negative emission bioenergy plants worldwide,¹³ supported by tree plantations covering

3 Gauger, A., Mai, P., Rabatel-Fernel, P., Kulbicki, L., Short, D. and Higgins, P., 2012. Ecocide is the missing 5th Crime Against Peace, The Human Rights Consortium.

4 Abato, A., 2021. If the Shoe Fits, wear it (and Codify It as a Crime Against the Environment). Harvard International Law Journal.

5 Abato.

6 See for instance <https://www.stopecocide.earth/press-releases>

7 See for instance Futerra survey that shows “One out of four young people across the world has lost faith in the future”.

8 Marks, E., Hickman, C. et al., 2021 Young People’s Voices on Climate Anxiety, Government Betrayal and Moral Injury - A Global Phenomenon, University of Bath reported that: “Over half of those surveyed said they thought humanity was doomed and that governments were failing to respond adequately”.

9 Amnesty International, 2019. Generation Z Survey reported that: “Climate Change Ranks Highest as Vital Issue of Our Time”, a survey of more than 10 000 young people, and that “This is a wake-up call to world leaders that they must take far more decisive action to tackle the climate emergency or risk betraying younger generations further.”

10 McLennan, M., et.al., 2021. The Global Risks Report. World Economic Forum

11 IPCC, 2021. Sixth Assessment Report (AR6) Contribution from Working Group I. Climate Change 2021: The Physical Science Basis. Intergovernmental Panel on Climate Change, Geneva, Switzerland. Retrieved from: <https://www.ipcc.ch/report/ar6/wg1/>

12 Erickson, J.D., 2022. The Progress Illusion. Reclaiming Our Future from the Fairytale of Economics. Island Press, Washington DC.

13 Peters, G., 2017. Does the carbon budget mean the end of fossil fuels? Climate News, Center for International Climate Research Oslo, June 4.

land more than two times the size of India.¹⁴ Needless to say, these scenarios are metaphorical “genies in a bottle” that are massively unrealistic.

Only with truly transformative action will we bequeath our children a liveable planet.

Almost every child on earth (>99 per cent) is currently exposed to at least one climate and environmental hazard, shock or stress such as heatwaves, cyclones, air pollution, flooding and water scarcity. A record-breaking 1 billion children – nearly half of the world’s children – live in countries that are at an ‘extremely high risk’ from the impacts of climate change.¹⁵ These children face a deadly combination of exposure to multiple shocks with high vulnerability resulting from a lack of essential services. The survival of these children is at imminent threat from the impacts of climate change.

A particularly concerning aspect of these hazards is that they overlap and compound each other and interact with other social, political and health risks.¹⁶

Hope is a mobilising emotion and therefore it is crucial to restore hope, in order for us to do the things needed to mitigate and adapt to climate change. Ecocide Law can both help us curb climate change and help restore hope. With the right political will and focus, adding Ecocide Law to the Rome Statute could be done within a few years, which is relatively rapid for such an important step. The global youth movement understands this, and this is manifested in the Global Youth Policy paper for the UN Stockholm +50 conference:¹⁷

“In ‘Reflecting on the urgent need for actions to achieve a healthy planet and prosperity of all, we call on governments to... introduce large-scale environmental destruction, ecocide, as a crime in the Rome Statute of the International Criminal Court - as a means to hold governments and corporations accountable for their damage to our common planet.’ ”¹⁸

¹⁴ Heck, V., Gerten D., Lucht W., and Popp A. (2018) Biomass-based negative emission difficult to reconcile with planetary boundaries. *Nature Climate Change* 8:151-155.

¹⁵ Rees, N., Barkhof, M., Burdziej, J., et al. 2021. *The Climate Crisis is a Child Rights Crisis: Introducing the Children’s Climate Risk Index*. New York: United Nations Children’s Fund (UNICEF).

¹⁶ Rees, et al.

¹⁷ Global Youth, 2022. Policy Paper, draft 2. Retrieved from: https://drive.google.com/file/d/1QPdsjrE1ju_DvevZTQlyG1OO8BFsK6Vj/view

¹⁸ Global Youth.

The missing law

Ecocide Law, a law to guide us all

Two important terms in law are *malum in se*, which means 'wrong in itself' and *malum prohibitum*, which means 'wrong because it is prohibited'. There is a crucial difference between the two. The first is a moral premise; the second is a legal one, often based on a moral premise that has been adopted as law. When our laws are built from *malum in se*, so that criminal law reflects what society regards as morally wrong, we have the makings of a higher moral code.¹⁹

The destruction of the Amazon Forest and other primary carbon sinks such as the Canadian boreal forest or ecosystems in the oceans can all be termed *malum in se*. Given time, ecocide will become *malum prohibitum*, protecting the carbon sinks that can play a key part in containing global warming.

Ecocide Law will provide a safety rail for living systems which is currently missing. Making ecocide a crime brings a number of additional benefits, including supporting international peace-keeping, protection of human rights,²⁰ and protecting the living forms that constitute the ecosystems which sustain life on Earth.²¹

and adding a moral baseline to the world economy.²² It will also direct the power of tools like artificial intelligence toward the service of life,²³ and mitigate climate change.

Global warming continues despite climate laws and international treaties

Since around the 1990s and onwards, knowledge about climate change, the contribution of carbon emissions to climate change, and the consequences of climate change has been widely known and has been an increasingly key feature at global political forums.²⁴ Yet, even after several decades of generalised foreknowledge and heightened forewarning, CO₂ emissions and global warming continue to rise. In fact, the situation has worsened since the official recognition of global warming, as reported in a succession of IPCC reports.²⁵ In addition to warnings from the IPCC, the Club of Rome declared Climate Emergency with an action plan in 2018, and Planetary Emergency in 2019 and 2020, also with action plans.²⁶ Over 2275 jurisdictions across the world representing 1 billion people have also declared climate emergency.²⁷

19 Higgins, P., (2012). What will your legacy be? Resurgence and Ecologist.

20 Mackintosh, K., Oldring, L., 2022. Human Rights and the Crime of Ecocide. How do they relate?. Asser Institute. <https://internationalcrimesdatabase.org/upload/documents/20220531T164956-The%20Crime%20of%20Ecocide%20Through%20Human%20Rights.pdf>

21 Higgins, P., 2014. I dare you to be great. Clink Street Publishing.

22 Roupé, J., 2022. How Ecocide Law will contribute to a Circular Economy within Planetary Boundaries. End Ecocide Sweden. (Forthcoming).

23 Roupé, J., 2022. Artificial Intelligence in service to life on Earth. Artificial Intelligence within the framework of Ecocide Law. End Ecocide Sweden. <https://www.ecodelawalliance.org/wp-content/uploads/2022/03/AI-Ecocide-Law.pdf>

24 Edward Page, 'Distributing the Burdens of Climate Change' (2008) 17(4) Environmental Politics 556. For example, the 1992 United Nations Conference on Environment and Development (UNCED) (the 'Earth Summit' or 'Rio Conference') explicitly acknowledged the environmental rights of humans and presented a call to action on global environmental matters. It was at this conference that the United Nations Framework Convention on Climate Change was adopted as an international environmental treaty and opened for signature. It entered force in 1994 after a sufficient number of countries had ratified it. The Convention's objective is to 'stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system'. Problem and perpetrator were and are clearly identified. United Nations Framework Convention on Climate Change, opened for signature 3 June 1992, 1771 UNTS 107 (entered into force 21 March 1994) art 2.

25 See e.g. Intergovernmental Panel on Climate Change, Climate Change 2013; Intergovernmental Panel on Climate Change, Climate Change 2014 Synthesis Report. It has been noted that '[i]n the 25 years since nations resolved to act in 1992, the level of atmospheric carbon dioxide has continued to climb ever more rapidly.

26 Club of Rome. Planetary Emergency Plan. Retrieved from: <https://www.clubofrome.org/impact-hubs/climateemergency/>

27 Climate Emergency Declaration. Retrieved from: <https://climateemergencydeclaration.org/climate-emergencydeclarations-cover-15-million-citizens/>

To date, there are over 2 500 climate change laws and policies²⁸ in the world, out of which about 1 000 laws are emissions related, but their power to curb emissions and protect natural carbon sinks is clearly insufficient. Something more effective is needed.

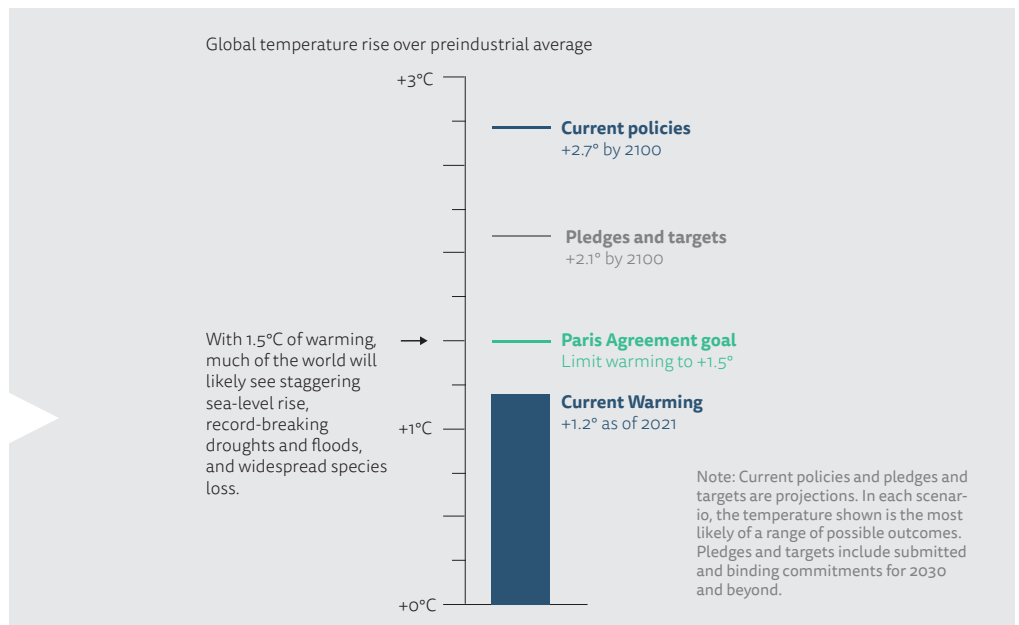
A key question, therefore, is, given knowledge of the problem and its consequences: why have things become worse rather than better? And how would making ecocide a fifth crime in the Rome Statute make a difference? This is explored below in a look into the limitations of the Paris Agreement, the differences between soft and hard law, the limitations of national law, how personal accountability makes a key difference, and the nature of systemic crime and how to address it.

The Paris agreement and its progress

Before the Paris agreement, the world was heading towards 4°C warming compared to pre-industrial levels.²⁹ One assessment done by the World Bank explored the risks, such as cascading global crop failures, and bluntly concluded that 4 degrees “simply must not be allowed to occur.”³⁰

In 2015, 195 nations³¹ signed the Paris Agreement, thereby agreeing to keep the increase in global temperature below 2°C, and try to limit it to 1.5°C. The agreement required every country to submit a plan for curbing emissions. While the plans were voluntary, they helped spur some new actions: The European Union tightened caps on industrial emissions.³² China and India ramped up renewable energy.

Figure 1
The Paris Agreement.
Data source: Carbon Tracker. Illustration adapted from Council of Foreign Relations³³



²⁸ Grantham Research Institute on Climate Change and the Environment. Climate Change Laws of the World. Retrieved 15 January, 2022 from: <https://climate-laws.org>

²⁹ Fekete, H., Vieweg, M., Rocha, M., et al 2013. Analysis of current greenhouse gas emission trends. Climate action Tracker. Retrieved from: https://climateactiontracker.org/documents/107/CAT_2013-11-30_GreenhouseGasEmissionTrendsFullReport_PolicyBrief.pdf

³⁰ World Bank. 2012. Turn Down the Heat: Why a 4°C Warmer World Must Be Avoided. Washington, DC. World Bank. <https://openknowledge.worldbank.org/handle/10986/11860> License: CC BY-NC-ND 3.0 IGO.”

³¹ Syria and Nicaragua are the only countries not signed up to the Paris Agreement. Carbon Brief, 2015. Paris 2015: Tracking country climate pledges. Retrieved from: <https://www.carbonbrief.org/paris-2015-tracking-country-climate-pledges>

³² Evans, S., 2017. Will the reformed EU Emissions Trading System raise carbon prices? Carbon Brief. Retrieved from: <https://www.carbonbrief.org/qa-will-reformed-eu-emissions-trading-system-raise-carbon-prices>

³³ Mazeland, L., 2021. Global Climate Agreements: Successes and Failures. Council of Foreign Relations. Retrieved from: <https://www.cfr.org/backgrounder/paris-global-climate-change-agreements>

Egypt scaled back subsidies for fossil fuels.³⁴ Indonesia began curbing illegal deforestation.³⁵ However, the pledges by governments were made for 3 degrees. After the Glasgow Pact, pledges and targets are down to 2.1°C but existing policies linger at 2.7 degrees³⁶ which is considered the most likely trajectory, although the Carbon Tracker have estimated current policies could also lead to warming of 3.6 degrees.³⁷

Soft law is not enough

International law is “soft” in several distinctive ways.³⁸ One useful and clear way to delimit the realm of “soft law” is to look at whether the legal arrangements are weakened along one or more of the dimensions of obligation, precision, and delegation.³⁹ Applying these three lenses to the Paris Agreement, in which the legally binding element is to communicate nationally determined targets, sets the agreement in the domain of soft law. Key elements such as top-down allocation of binding, individual emission reduction obligations, as well as enforcement mechanisms would have been a more “direct and predictable way of staying below that threshold.”⁴⁰

As argued by Professor Kenneth W. Abbott and Professor Duncan Snidal, soft law does not suffice when:

1. the benefits of cooperation are great but the potential for opportunism and its costs are high;
2. violations would impose significant externalities on others;
3. national actions have many external effects;
4. non-compliance is difficult to detect [and curb in time].⁴¹

These criteria summarise the shortcomings of existing climate laws and the Paris Agreement, both nationally and internationally, shortcomings that Ecocide Law can assist in addressing.

Personal accountability a missing piece

“The systems may be deemed blameworthy, but cannot be held accountable or prosecuted”.⁴² Individuals, by contrast, can be. A law with a global reach and a sufficiently strong deterrent effect has the power to bring about system change.

34 World Bank, 2019. Sustainable Energy Subsidy Reform in Egypt. <https://olc.worldbank.org/content/energy-subsidy-reform-facility-country-brief-egypt>

35 Fountain, H. 2017. A Season of Fire Tests Indonesia's Efforts to Curb Deforestation, New York Times. Retrieved from: <https://www.nytimes.com/2019/10/11/climate/indonesia-wildfires-season.html>

36 Maizland, L. 2021. Here is what countries have pledged. Council of Foreign Relations. Retrieved from: <https://www.cfr.org/in-brief/cop26-heres-what-countries-have-pledged>

37 Stockwell, C., Villafranca Casas, M.J., Geiges, A., et al. 2021. Warming Projections Global Update November 2021. Climate Action Tracker. https://climateactiontracker.org/documents/997/CAT_2021-11-09_Briefing_Global-Update_Glasgow2030CredibilityGap.pdf

38 See for instance, Olsson, I.A., 2013. Four Competing Approaches to International Soft Law; Hillgenberg, H. A., 1999. A Fresh Look at Soft Law. European Journal of International Law; Abbott, K.W., Snidal, D., 2000. Hard and Soft Law in International Governance. MIT; or Druzin, B.H., 2016. Why does Soft Law have any Power anyway? The Chinese University of Hong Kong.

39 These dimensions of legal “hardness” are used and analysed in Abbott, K.W., Snidal, D., 2000. Hard and Soft Law in International Governance. MIT.

40 United Nations, report of the Secretary General, 2018. Gaps in international environmental law and environment-related instruments: towards a global pact for the environment.

41 Abbott, K.W., Snidal, D., 2000. Hard and Soft Law in International Governance. MIT.

42 White, R., 2017. Carbon Criminals, Climate Change and Ecocide, Criminology and the Anthropocene, Routledge.

”
The world is currently falling very short of protecting the human right to a clean, healthy and sustainable environment.

At present the criminal sections of environmental laws are national laws only. Not all countries have strong environmental laws or the resources or willingness to prosecute violations. An additional difficulty lies in the fact that the recognition of the criminal liability of legal persons depends on domestic legislation and the diverse notions thereof existing in each country.

Those who are central in causing the problem are also those most able to escape the consequences of their actions, at least in the short term. For the perpetrators of the harm, justice is rarely applied; nor is the crime officially recognised as a ‘crime’.⁴³ The climate divide is not only between countries but reflects profound class and other social inequalities within countries and globally.⁴⁴

British Barrister Polly Higgins, the founder of the movement to end ecocide, argued that human-caused ecocide is a responsibility of governments and corporations, and therefore, that those of supreme responsibility within such entities should be legally bound to ensure that any business practice that causes extensive damage or destruction of an ecosystem is put to an end.⁴⁵

From the decision-maker’s point of view, there is a decisive difference between the risk of a fine paid by an organisation, and the risk of being held personally accountable for a crime. This key difference will have a strong pre-emptive effect, stopping many ecocidal activities before they are put into effect.

Global warming is a systemic crime and needs to be addressed as such

An international crime of ecocide targets the top decision makers who are most responsible. This is a tiny fraction of all people. Even though we are all, through our way of life, in some small way part of a systemic crime, very few individuals can be said to be personally creating a “substantial risk of severe and either widespread or long-term damage”. Ecocide as a crime within the Rome Statute would cover situations in which one individual or small number of individuals have created a substantial likelihood of severe and either widespread or long-term damage to the environment.

Systemic crimes are already dealt with in the Rome Statute. One example is the crime of apartheid which is a crime against humanity. It is in part analogous to ecocide. All sorts of people at all sorts of levels can be part of enforcing apartheid, which creates a similar issue regarding how to focus responsibility in terms of the international crime. Other examples of crimes that have already been prosecuted in international criminal courts, and that have systemic elements, are concentration or detention camps, but also when policies of ethnic cleansing, or indeed genocide, have been carried out. Thus, international criminal law has worked out a way to conceptualise and to institutionalise international criminal responsibility in these situations, and to attribute in particular responsibility to those most responsible, which is what the Rome Statute aims to prosecute.

⁴³ White, R., 2018. Ecocide and the Carbon Crimes of the Powerful, *The University of Tasmania Law Review*. Vol 37, No 2, 2018

⁴⁴ Oxfam, *Reward Work, Not Wealth* (Briefing Paper, January 2018).

⁴⁵ Polly Higgins, *Eradicating Ecocide: Laws and Governance to Prevent the Destruction of our Planet* (Shepherd-Walwyn Publishers Ltd, 2010); Polly Higgins, *Earth is our Business: Changing the Rules of the Game* (Shepherd-Walwyn Publishers Ltd., 2012).

”
The rule of law
means very
little until and
unless **those**
who cause the
harm or injustice
can be held to
account.

This jurisprudence is what the definition of ecocide builds on, and extends to the systemic crime of climate change.

**Ecocide Law is needed
to protect human rights**

The effects of environmental damage directly concern fundamental individual rights, and there is a growing body of international human rights jurisprudence affirming that the effects of prolonged environmental degradation may violate the right to life as protected by human rights conventions.⁴⁶

Kate Mackintosh, executive director of the Promise Institute for Human Rights and international human rights lawyer Lisa Oldring note in their review of the relationship between human rights and Ecocide Law that:

“As people around the world lose their homes, are forced to migrate, suffer hunger and thirst and see their way of life destroyed, the human consequences of climate and environmental destruction become increasingly clear. The understanding that human rights and the protection of the environment are not separate or even opposing goals, but closely interrelated, is gaining pace, and the adoption of a new international crime of ecocide is an expression of that understanding. Adding ecocide to “the most serious crimes of concern to the international community as a whole” recognises the climate and biodiversity crisis as one of the greatest threats to human rights of our era.”⁴⁷

States are obligated to respect, protect, promote, and fulfil all human rights for all people. This includes an affirmative obligation to prevent foreseeable harms including those caused by climate change. The UN Charter, the Universal Declaration of Human Rights, the International Covenant on Economic, Social and Cultural Rights (ICESCR), and the UN Declaration on the Right to Development all make clear that State obligations require both national action and international cooperation. According to the Universal Declaration of Human Rights, everyone is entitled to a social and international order in which the rights and freedoms therein can be fully realised, and everyone has duties to the community.

In July 2022, the UN General Assembly passed a resolution recognizing the right to a clean, healthy, and sustainable environment as a human right. The UNGA called upon States, international organizations, businesses, and other stakeholders to “scale up efforts” to ensure a clean, healthy, and sustainable environment for all. The resolution was adopted by a recorded vote of 161 in favour and zero against, with eight abstentions.⁴⁸ Similarly, the International Covenant on Economic, Social and Cultural Rights (ICESCR) declared that States should “take steps, individually and through international assistance and cooperation, especially economic and technical, to the maximum of [their] available resources, with a view to achieving progressively the full realisation of rights recognized in the present covenant”. States are currently falling very short of meeting these obligations.

⁴⁶ The Environment and Human Rights, Advisory Opinion OC-23/17, Inter-Am. Ct. H.R. (ser. A) No. 23, 109 (Nov. 15, 2017).

⁴⁷ Mackintosh, K., Oldring, L., 2022. Human rights and the crime of ecocide How do they relate?. Asser Institute/International Crimes Database. <https://internationalcrimesdatabase.org/upload/documents/20220531T164956-The Crime of Ecocide Through Human Rights.pdf>

⁴⁸ UN General Assembly; The human right to a clean, healthy and sustainable environment. Resolution A/76/L.75

Environmental harm can be committed with no consequences sufficiently unpleasant to the decision maker, or even to the organisation, to restrain the behaviour, because of lack of ambitious and binding laws and treaties, access to remedy, and deterrent sentences.⁴⁹

Many environmental principles are unclear both in terms of content and status.⁵⁰ International courts and tribunals often stress the lack of international consensus concerning environmental principles.⁵¹

Ecocide Law could also be pivotal in preventing and addressing environmental injustices which may not rise to the level of an ecocide crime, because when the top level crime has been established in the Rome Statute, two things are likely to happen:

1. Societal values will shift, making serious harm to the environment abhorrent to the public mind.
2. Decision-makers will want to keep a very safe distance from risking being accused of ecocide.

When ecocide is a crime in the Rome Statute, it is likely to bring on additional, national and regional, legislation regarding environmental harm that is serious, but which falls beneath the high threshold of the Rome Statute.

An international crime of ecocide that is informed in its definition and application by human rights holds the potential to enhance accountability for serious environmental harm, and deliver on climate and environmental justice.⁵²

Organised irresponsibility

Current international environmental governance and legislation are fragmented, lack coherence and are spread over a wide range of sectors, each with their own framework.⁵³ Many developing countries rely on income from extractive industry, but lack laws, legal systems and social structures to ensure that industrial activities are carried out in a safe way.

This places a great deal of responsibility on international companies, investors and buyers of the materials and products to ensure that industrial activities take place in an appropriate area and in an appropriate manner.⁵⁴ Perhaps too much responsibility, since the paying customers do not feel the hidden costs (referred to as externalities by economists) of the products related to health and environmental impacts caused where extraction and processing occur.

⁴⁹ Crasson, A. 2017. The case of Chevron in Ecuador: The need for an international crime against the environment? Amsterdam Law Forum.

⁵⁰ United Nations, 2018. Gaps in international environmental law and environment-related instruments: towards a Global Pact for the Environment. Report of the Secretary-General. A/73/419.

⁵¹ United Nations.

⁵² Mackintosh, Oldring. 2022.

⁵³ Report of the Secretary-General 2018. Gaps in international environmental law and environment-related instruments: towards a global pact for the environment. United Nations.

⁵⁴ Karlthrop, K, et al., 2008. Miljöpåverkan från gruvindustrin. Ethical Council. Retrieved from: <http://www.ap3.se/wp-content/uploads/2016/10/Miljöpåverkanfrångruvindustrinrapporten.pdf>

The highly profitable nature of ecocide and eco-crimes has resulted in what professor Mireille Delmas-Marty calls 'organised irresponsibility',⁵⁵ in which "eco-mafia" and certain multinational corporations take systematic advantage of the legal loopholes. In the absence of Ecocide Law as a fifth crime in the Rome Statute, Professor Laurent Neyret notes that an additional difficulty lies in the fact that the recognition of the criminal liability of legal persons depends on domestic legislation and the diverse notions thereof existing in each country.⁵⁶

Many of these activities result in emissions of greenhouse gases, either because they destroy ecosystems which are important carbon sinks, or because their activities extract fossil fuels or emit CO₂, or a combination of these. Stopping or halting eco-crimes will therefore also have a significant impact on global warming.

Ecocide Law complements and reinforces UNFCCC

Ecocide Law complements and can even reinforce existing efforts to address climate change, such as the UN Framework Convention on Climate Change and it can do so relatively quickly.

The process of amending the Rome Statute to include ecocide does not require every State Party to the Rome Statute to agree: a qualified majority suffices. Although there are a number of states and governments that stand to gain in the short term by obstructing protection of the environment, the vast majority of nations are already suffering from the consequences of climate change.

Ecocide Law can enter into force less than three years from when the proposal is put to the vote. Ecocide Law thus provides a backbone for the decision processes of the UNFCCC, boosting its work to accelerate action on climate change mitigation, work that has been going on since 1995,⁵⁷ while time is running out.

⁵⁵ Delmas-Marty, M., *Les forces imaginantes du droit (IV) – Vers une communauté de valeurs ?*, Paris, ed. du Seuil, 2011, p. 99.

⁵⁶ Neyret, L., 2014. *From Ecocrimes to Ecocide Protecting The Environment Through Criminal Law*. Cambridge Centre for Environment, Energy and Natural Resource Governance. Retrieved from: <https://www.cenrg.landecon.cam.ac.uk/system/files/documents/report-002.pdf>

⁵⁷ UNFCCC, Conference of the Parties (COP). Retrieved from: <https://unfccc.int/process/bodies/supreme-bodies/conference-of-the-parties-cop>

”

Adding Ecocide as a fifth crime in the Rome Statute would record publicly that **the international community does not regard behaviour that is ecocidal as acceptable**. On the contrary, it regards it as something that is abhorrent and something that should be sanctioned, and that will be sanctioned.⁵⁵

The Missing Law

Key Take-Aways

- ▶ The highly profitable nature of ecocide and eco-crimes has resulted in a situation in which “eco-mafia” and certain multinational corporations take systematic advantage of the legal loopholes. The situation is aggravated by the fact that the recognition of the criminal liability of legal persons currently depends on domestic legislation which is fragmented and not seldom upheld by a weak justice system.
- ▶ Ecocide Law can reinforce existing efforts to address global warming, such as the UN Framework Convention on Climate Change.
- ▶ Establishing ecocide as the fifth crime in the Rome Statute does not require consensus: a qualified majority suffices.
- ▶ Ecocide Law provides law also where national law is lacking and it establishes individual criminal liability for those most responsible for global warming.
- ▶ Ecocide Law could be pivotal in preventing and addressing climate and environmental injustices by supporting mechanisms for achieving justice at local levels and acting as a catalyst for systemic change.
- ▶ Adding Ecocide Law to the Rome Statute will establish a legal baseline that helps establish a moral one. Both will help shift practices. This will – over time – assist in shifting values to a global economy that puts the wellbeing of people and planet first.

⁵⁵ Eleanor Sharpston. Retrieved from: <https://youtu.be/N2gxyIGHsD8?t=9>

A safety rail is needed

7 % of GDP effectively takes us the wrong way

Globally, fossil fuel subsidies were \$5.9 trillion or 6.8% of GDP in 2020, and they are expected to increase to 7.4% of GDP in 2025 as the share of fuel consumption in emerging markets (where the gap between price and full costs is generally larger) continues to climb.⁵⁹ Just 8% of the 2020 subsidies reflect undercharging for supply costs (explicit subsidies) and 92 per cent for undercharging for environmental costs and foregone consumption taxes (implicit subsidies).⁶⁰

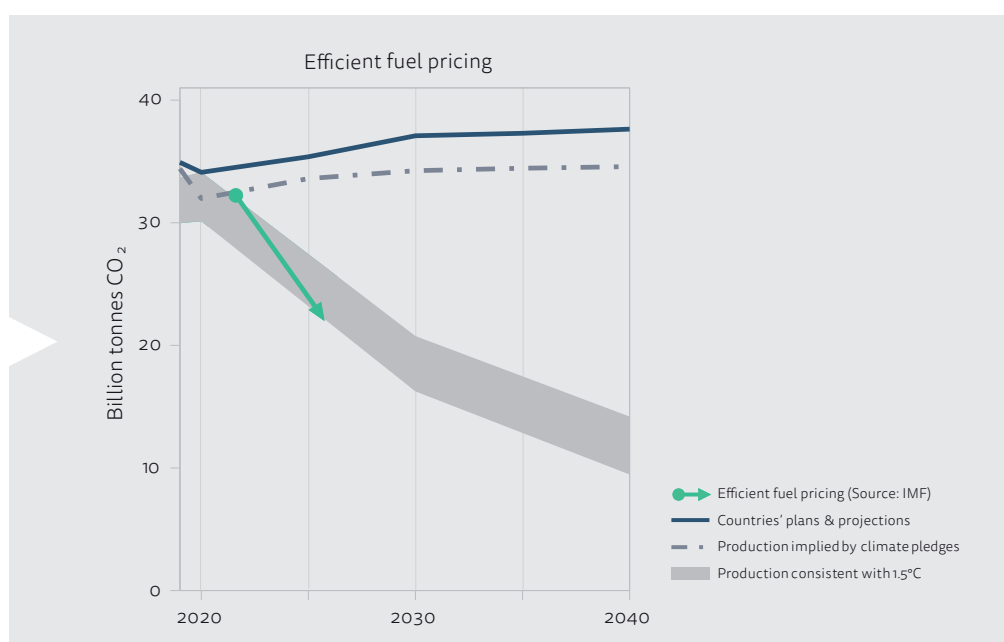
The IMF⁶¹ holds that efficient fuel pricing is necessary in order to limit global warming. Figure 2 shows IMF calculations on the effect that full-price of fossil fuels

would have on CO₂ emissions, effectively reducing emissions to get in line with, or below, the 1.5-degree target of the Paris Agreement. The hiccup in the curve 2020-2021 is due to the covid restrictions.

Fossil subsidies create a lock-in to continued fossil dependency

Subsidies create “zombie energy”: production from fields that would be economically unviable without government support.⁶² The oil, gas, and coal in already-producing fields and mines are more than we can afford to burn while keeping likely warming below 2°C.⁶³

Figure 2
Global CO₂ emissions with the effect of full pricing of fossil fuels as a green arrow. Illustration: Adapted from IMF⁶⁴ IPCC⁶⁵ and SEI⁶⁶.



59 Black, S., Perry, I., Vernon, N., 2021. Still Not Getting Energy Prices Right: A Global and Country Update of Fossil Fuel Subsidies. IMF. Retrieved from: <https://www.imf.org/-/media/Files/Publications/WP/2021/English/wpiea2021236-print-pdf.ashx>

60 Black, S., et. al.

61 Black, S., et. al.

62 Gerasimchuk, I., Bassi, A.M., Ordonez, C.D., et al., 2017. Zombie Energy: Climate benefits of ending subsidies to fossil fuel production. International Institute for Sustainable Development

63 Muttitt, G., 2016. The sky's limit, Why The Paris Climate Goals require a managed decline of fossil fuel production. Oil Change International: Washington, D.C. Retrieved from <http://priceofoil.org/2016/09/22/the-skys-limit-report/>

64 Black, S., et. al.

65 IPCC, 2021. Sixth Assessment Report (AR6) Contribution from Working Group I. Climate Change 2021: The Physical Science Basis. Intergovernmental Panel on Climate Change, Geneva, Switzerland. Retrieved from: <https://www.ipcc.ch/report/ar6/wg1/>

66 SEI, IISD, ODI, E3G, and UNEP, 2021. The Production Gap Report 2021. Retrieved from: <http://productiongap.org/2021report>

”
Job transition is both possible and desired. **The skills needed for renewable energy** are similar to the skills in use for fossil energy.

Production subsidies skew energy markets—they artificially lower the costs of producing more oil, coal and gas, that can be passed through in the form of lower market prices, encouraging more fossil fuel consumption and emissions.⁶⁷ These market distortions delay the transition to sustainable alternatives. Government backing also acts as a confidence trick: without it, fossil fuel projects would be less attractive for private investment.

Government support to fossil fuel production locks in fossil dependency. Once investments are made, there is a strong incentive for producers to continue production to recoup them.⁶⁸ After capital costs are sunk, a field or a plant is likely to continue operating as long as the income from production covers the ongoing operating costs.

Workers in fossil and mining industry want a net zero economy

The skills needed for renewable energy at industrial scale are extremely similar to those skills in use for fossil energy. Many times, no or very limited additional training is needed.⁶⁹ As an example, the same type of welding skills are needed for an oil pipeline as for a wind turbine. It is therefore no surprise that a vast majority of fossil fuel workers are in support of a migration from fossil energy to renewables, for instance, in Canada 61% of oil, gas and coal sector workers are in favour for pivoting to a net zero economy.⁷⁰

Ecocide Law can create a safety rail for the transition – at source

Ecocide Law would create limits for the strain we are putting on nature. The highly profitable nature and the disproportionate effects of ecocide and eco-crimes are a systems problem, not a problem consumers or individual actors can solve. This is relevant regarding fossil fuel subsidies, and also when it comes to wanton ways of mining for raw materials and reckless practices for refining. As Greta Thunberg puts it, the rules have to be changed.⁷¹ Behaviour needs to shift at source. Information, soft law and voluntary agreements will not be enough, in our globally interdependent system with obscure relations between action and consequence.

Direct material consumption is a key indicator in national statistics, also frequently used by the OECD, the EU and the UN, to track resource use related to economic activity (measured as GDP). However, this key indicator is limited to the materials used within the economy (raw materials extracted, minus exports, plus import). The full resource consumption is rarely monitored, and is not visible in statistics.

Through the Extraction Industries Transparency Initiative, environmental impact for participating countries is sometimes monitored, but in many places neither mining waste nor the indirect resource withdrawals required for extraction and processing are taken into account.

⁶⁷ Gerasimchuk, I., et al.

⁶⁸ Erickson, P., 2015. Carbon lock-in from fossil fuel supply infrastructure, Seattle: Stockholm Environment Institute. Retrieved from <https://www.sei-international.org/mediamanager/documents/Publications/Climate/SEI-DB-2015-Carbon-lock-in-supply-side.pdf>

⁶⁹ Iron&Earth, 2021. Climate Emergency polling & transition to renewable sources with oil & gas sector workers. Retrieved from: https://d3n8a8pro7vnm.cloudfront.net/ironandearth/pages/1702/attachments/original/1635867551/Abacus_-_Iron___Earth_poll_July_13_.pdf?1635867551

⁷⁰ Iron&Earth.

⁷¹ https://www.ted.com/talks/greta_thunberg_school_strike_for_climate_save_the_world_by_changing_the_rules/transcript?language=en

”
Ecocide Law
provides a
safety rail also
for extraction
of minerals
needed for
renewable
energy.

For metals that are imported, the difference can be one million tonnes of natural rock mined for one kilo of metal (for instance silver or gold) that is reported as import in the EU, OECD and UN statistics. We do not measure – hence do not see – the environmental and climate burden we generate.⁷²

Top-down mitigation efforts aim to ensure that extraction and production are environmentally sound. Some examples are Mandatory Due Diligence (MDD), harmonised and improved LCA such as the European Platform for Life Cycle Assessment (EPLCA), and Environmental and Social Governance (ESG). In contrast and in complement to such efforts, Ecocide Law addresses the potential environmental harm at source: where – and before - the activities are commissioned, and starting with the worst potential causes of environmental damage.

Ecocide Law brings individual criminal responsibility. Unlike financial damages, the risk of prosecution cannot be discounted in a business case. The law creates a pre-emptive reflex already at the decision table for those responsible. Alternatives that do not entail ecocide become a more attractive choice. Introducing Ecocide Law into the decision makers' equation will have an important deterrent effect. In the words of Eleanor Sharpston, KC, and Advocate General at the EU Court of Justice 2006 - 2020: "The existence of the crime and the real possibility that in appropriate circumstances, there will be a prosecution and there will be sanctions, that has a big effect as a deterrent. Even if the crime is not actually ever prosecuted

for in the first two years that it's there, it still has a deterrent effect and it is also sometimes actively helpful to people who have to make choices between different policies."⁷³

A safety rail is also needed for renewables

The International Energy Agency has estimated that the extraction of critical raw materials for renewable energy is to sevenfold over the years leading up to 2030.⁷⁴ These materials include elements such as lithium (Li), indium (In), copper (Cu), gallium (Ga), cobalt (Co), gold (Au), and platinum (Pt). All these raw materials are of concern for both climate and ecosystems if they are not mined responsibly. This constitutes a problem that will increase as the ore grade of most of these materials are in decline. This means that more mining waste will be generated in the future than in current mining, with higher energy and land use requirements. In some cases - for instance gold - industrial demand is greater than the quantities still in the ground. This means that substitution will be necessary (where possible), which also tends to require more metals, even more energy and higher CO₂ emissions for the same function. The recycling rates are very low for most materials, with the exception of gold (95%), which makes a significant opportunity for recycling and more sustainable - and circular - use.

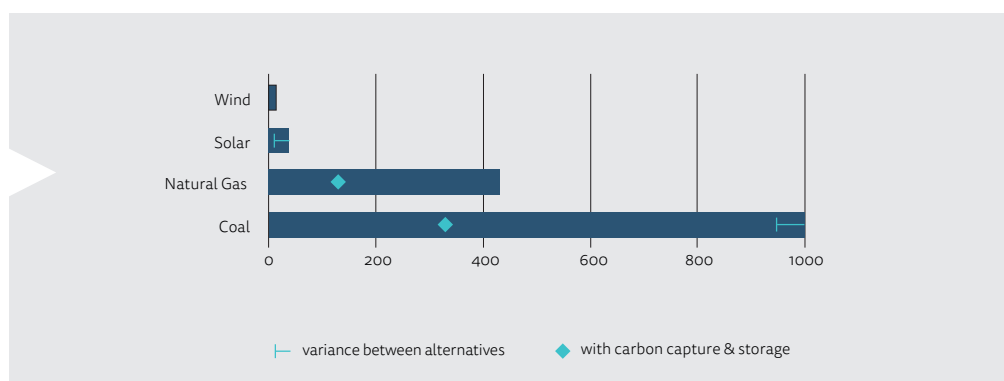
Ecocide Law provides a safety rail not only for fossil extraction, but for all activities that risk causing ecocide, including extraction of minerals needed for renewable energy. We cannot afford to leave fossil fuels and make a "transition" to renewables while still contributing

⁷² Breitholtz, A., Roupé, J., 2019. Morgondagens cirkulära flöden. RE:Source. Retrieved from: [http://databas.resource-sip.se/storage/Morgondagens%20Cirkulära%20Flöden%20Final%20\(web\)_YaG2q9.pdf](http://databas.resource-sip.se/storage/Morgondagens%20Cirkulära%20Flöden%20Final%20(web)_YaG2q9.pdf)

⁷³ Eleanor Sharpston, KC, Advocate General 2006-2020 Court of Justice of the EU. Webinar, Dec. 11, 2020. Excerpt retrieved from: <https://www.youtube.com/watch?v=mcGXhyXsahw>. From webinar "Will ecocide as a crime help protect biodiversity?". End Ecocide Sweden. 2020. Full recording here: <https://www.youtube.com/watch?v=tDaleCIEJjo>.

⁷⁴ International Energy Agency, 2021. NetZero by 2050, A Roadmap for the Global Energy Sector.

Figure 3
Lifecycle CO₂e
emissions per kWh,
EU28 countries.
Adapted from
UNECE 2020.



to environmental destruction through irresponsible mining or production.

The global warming potential (GWP) in metal production is a common indicator when evaluating environmental impact. In addition, both processing and the waste generated from mining have a significant impact on land use, ecosystems and cultural diversity, which varies greatly between different types of metals.

Several large studies indicate that existing statistics and also life cycle assessment do not fully cover the impact of metal mining on the environmental systems.

Renewables are, however, superior to fossils

By comparison, and including the climate change impacts from raw materials, renewable energy solutions are still superior to fossil fuels. Only battery electric and hydrogen fuel cell electric vehicles have the potential to achieve the magnitude of life-cycle GHG emissions reductions needed to meet Paris Agreement goals. For combustion engine vehicles, there is no realistic path to reach deep decarbonisation.⁷⁵

Comparing climate change impact per kilowatt hour generated, there is a factor of 10 - 100 in favour of renewables. See figure 3 above. Hard coal emits 950 - 1000 grammes CO₂e without Carbon Capture Storage (CCS), natural gas emits 430 grammes compared to solar and wind that have emissions as low as 12 grammes of CO₂e per kWh generated.

As land-based sources become exhausted oceans urgently need stronger protection

Commercial interest in the ocean is increasing quickly as land-based sources become fully exploited or exhausted.^{76, 77} The figure on the next page shows the development of deep-sea mining for minerals. Humans are increasingly carrying out on the sea floor all of the activities we traditionally associate with terrestrial industrial uses and processes.⁷⁸

The expanse of ocean which makes up all marine areas beyond national jurisdiction has been characterized as the last frontier of exploitation on the planet, a new "Wild West". The marine ecosystems today face unprecedented cumulative pressures from human activities.^{79, 80, 81}

⁷⁵ Bieker, G., 2021. A global comparison of the life-cycle greenhouse gas emissions of combustion engine and electric passenger cars. ICCT – International Council on Clean Transportation Europe

⁷⁶ Jouffray, J.B., Blasiak, R., Norström, A.V., et al. 2020. The Blue Acceleration: The Trajectory of Human Expansion into the Ocean. *One Earth* 2, January 24 <https://doi.org/10.1016/j.oneear.2019.12.016>

⁷⁷ OECD, 2016. *The Ocean Economy in 2030*.

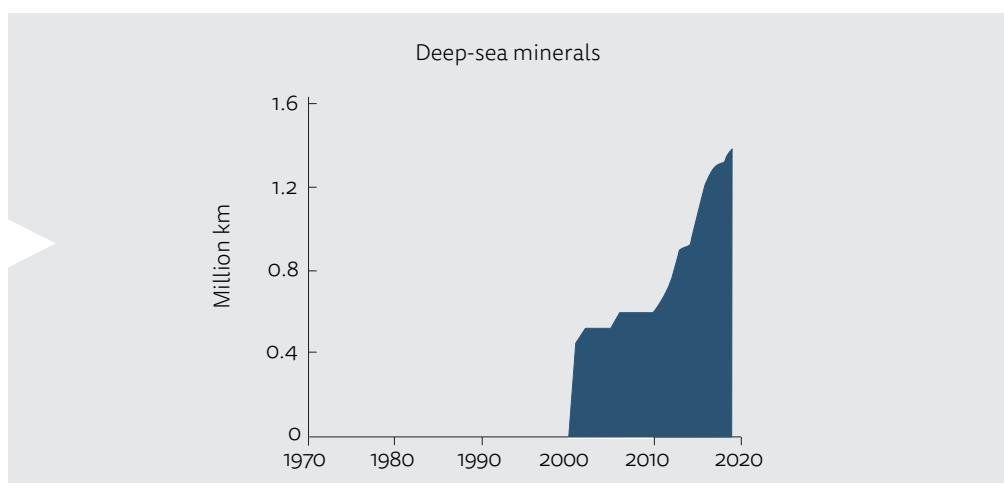
⁷⁸ Golden, J.S., Virdin, J., Nowacek, D., 2017. Making sure the blue economy is green. *Nature Ecology and Evolution*. McMillan Publishers Ltd.

⁷⁹ Watson, R.A., Nowara, G.B., Hartmann, K., et al. 2015. Marine foods sourced from farther as their use of global ocean primary production increases. *Nat. Commun.* 6, 7365.

⁸⁰ Costello, C., Ovando, D., Clavelle, T., et al. 2016. Global fishery futures under contrasting management regimes. *Proc. Natl. Acad. Sci. U. S. A.* 113, 5125–5129.

⁸¹ Irigoien, X., Klevjer, T.A., Røstad, A., et al. 2014. Large mesopelagic fishes biomass and trophic efficiency in the open ocean. *Nat. Commun.* 5, 3271.

Figure 4
Total area of seabed
under mining contract
in areas beyond
national jurisdiction.
Source: The Blue
Acceleration.⁸²



This is not unlikely to create both slow burning emergencies and 'rude surprises'⁸³ that can be extremely challenging from a governance perspective.⁸⁴

The UN and its established framework The United Nations Convention on the Law of the Sea (UNCLOS) remains the institution with the highest likelihood of success to integrate ocean industrialization with other ocean priorities to meet established global Sustainable Development Goals (for example SDG 14). However, the capacity of national government agencies to utilize the UNCLOS and exercise control over the use of the ocean under their jurisdiction, including multiple and overlapping uses of the same three dimensional space, will need to be strengthened in much of the world in order to keep up with industrialization.⁸⁵

Ecocide Law can strengthen the protection of oceans (and ocean sinks)
Considering the importance of protecting the oceans from a climate perspective, not to mention their own inherent – non anthropocentric – value, Ecocide Law can assist in protecting oceans by making the

worst crimes prosecutable by the ICC, creating a pre-emptive reflex for decision makers in activities that risk being considered to be ecocide or associated with it.

The proposed definition of ecocide says that "severe" involves very serious adverse changes, disruption or harm to any element of the environment, including grave impacts on human life, or natural, cultural, or economic resources. Very importantly, it would thus be possible to prosecute for ecocide without having to prove any kind of harm to humans, provided the other criteria in the definition are met.

At both the national level for ocean spaces under countries' jurisdictions and in areas beyond national jurisdictions (ABNJs) governance could be - and needs to be - strengthened.

Further, in order to keep pace with industrialization and transition to a blue economy, new technologies need to be harnessed to increase data on ocean activities.⁸⁶

⁸² Jouffray, J.B., Blasiak, R., Norström, A.V., et al.

⁸³ La Porte, T.R., 2007. Anticipating rude surprises – reflections on "Crisis Management" without end. In: Gibbons, D. (Ed.), *Communicable Crises: Prevention, Response, and Recovery in the Global Arena*. Information Age Publishing, Charlotte, NC.

⁸⁴ Merrie, A., Dunn, D.C., Metian, M., et al., 2014. An ocean of surprises – Trends in human use, unexpected dynamics and governance challenges in areas beyond national jurisdiction. *Global Environmental Change* 27 19–31. <http://dx.doi.org/10.1016/j.gloenvcha.2014.04.012>

⁸⁵ Golden, J.S., Virdin, J., Nowacek, D., 2017. Making sure the blue economy is green. *Nature Ecology and Evolution*, McMillan Publishers Ltd. <https://doi.org/10.1016/j.oneear.2019.12.016>

⁸⁶ Golden, J.S., Virdin, J., Nowacek, D., 2017.

Ecocide Law in combination with artificial intelligence offers interesting opportunities to supply exactly that.⁸⁷

A good disruption that is picking up speed at an exponential rate

Solar and wind are already the cheapest new generation options, and cost less than existing coal, gas, and nuclear power plants in many areas. In Zambia, for example, tariffs for recent solar photovoltaic facilities are less than half those of competing coal plants.^{88, 89} Falling costs shift flows of investments, decimating costs for the users, which drives volumes up, which further accelerates the displacement of the obsolete fossil energy regime.

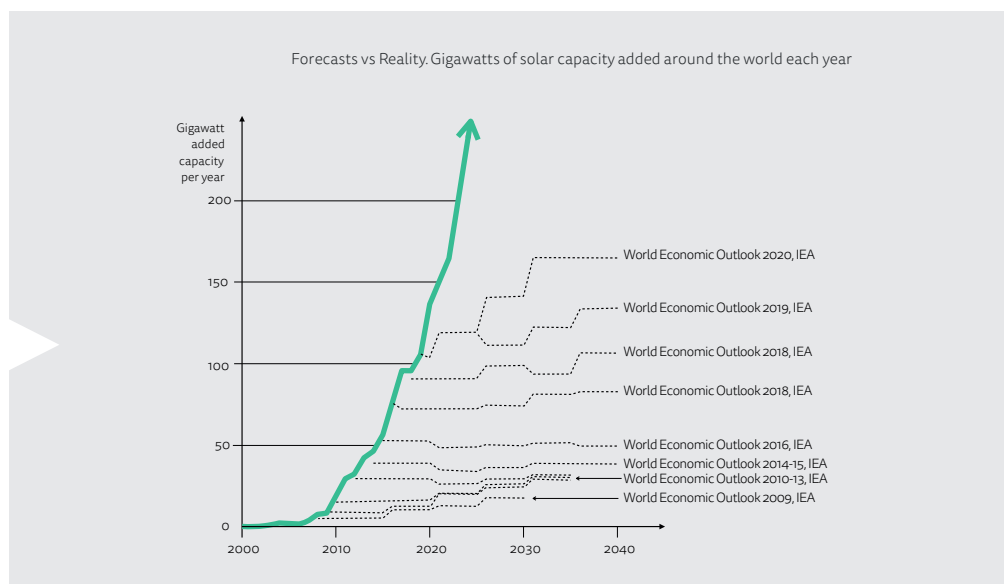
Exponential disruption tends to unfold with surprising swiftness. The inevitable shift will become more dramatic in the markets that obstruct the shift. The inability to keep up with the exponential development can be illustrated by

comparing the actual development with forecasts over time, for instance solar cell capacity added compared to the forecasts of the International Energy Agency, IEA. See figure 5 below.

Support fossil and you slow down renewables (in your country), and vice versa

Technology disruptions such as the shift from fossil to renewables are non-linear because they are driven by reinforcing causal feedback loops. Both energy regimes are simply connected to the same market. If you artificially decrease prices for fossils, you delay the transition for renewables. The markets interact with and amplify one another, accelerating the adoption of new technology in a virtuous cycle while at the same time accelerating the abandonment of old technology.

Figure 5
Forecasts vs Reality.
Gigawatts of solar
capacity added,
world-wide, each
year. Adapted from
Evans 2021.⁹⁰



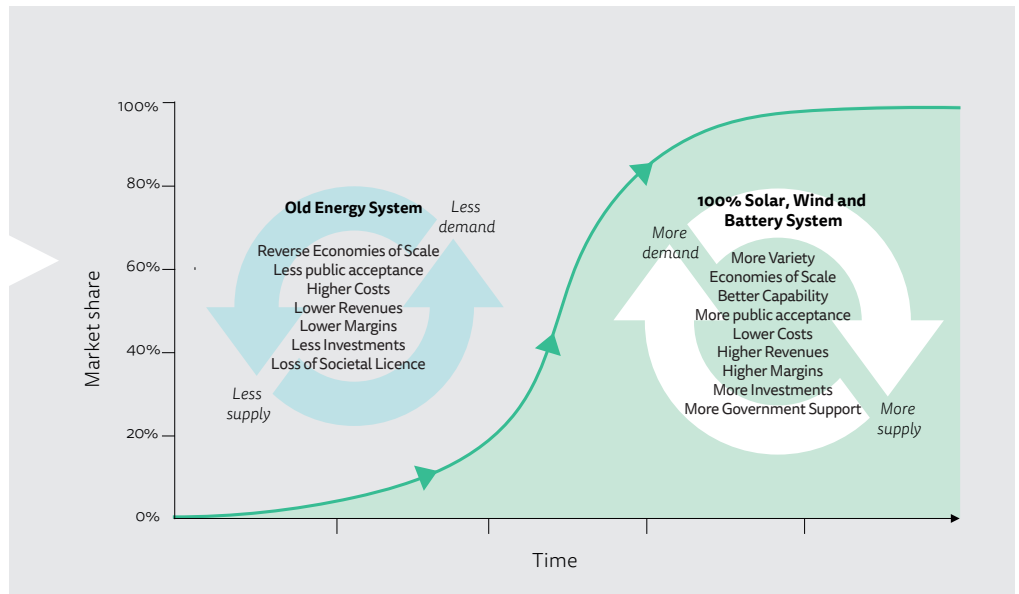
⁸⁷ Roupé, J., 2022. Artificial Intelligence in Service to Life on Earth, Ecocide Law as a framework for governance. EndEcocide Sweden. <https://www.ecocidelawalliance.org/wp-content/uploads/2022/03/AI-Ecocide-Law.pdf>

⁸⁸ Henze, V., 2020. Scale-up of solar and wind puts existing coal, gas at risk. BloombergNEF Press Release. <https://about.bnef.com/blog/scale-up-of-solar-and-wind-puts-existing-coal-gas-at-risk/>

⁸⁹ UNU-INRA, 2019. Africa's Development in the Age of Stranded Assets. United Nations University - Institute for Natural Resources Africa. https://i.unu.edu/media/inra.unu.edu/publication/5247/Discussion-paper-Africas-Develop-ment-in-the-age-of-stranded-Assets_INRAReport2019.pdf

⁹⁰ Evans, S., 2021. Exceptional new normal: IEA raises growth forecast for wind and solar by another 25%. Carbon Brief. <https://www.carbon-brief.org/exceptional-new-normal-iea-raises-growth-forecast-for-wind-and-solar-by-another-25>

Figure 6
Reinforcing Causal
Feedback Loops.
Reducing subsidies
and externalities of
the old energy system
expedites the shift to
the new. Adapted from
Dorr & Seba (2020).⁹¹



The various factors that are at play in exponential disruption are in effect reinforcing causal feedback loops, as depicted in figure 6, above.

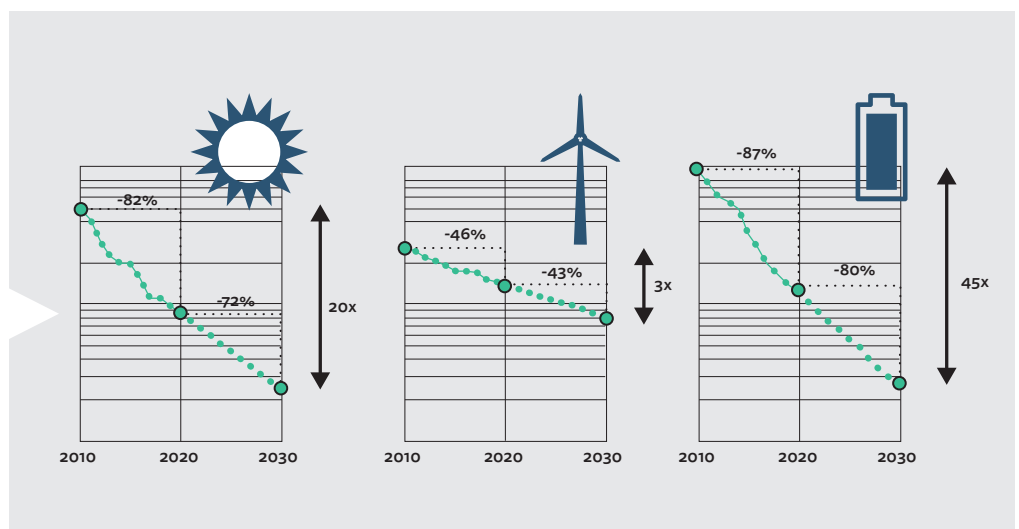
Ecocide Law will upgrade and level the playing field

As described above, Ecocide Law will support the transition and level the playing field by encouraging a shift away from subsidising fossil fuels. The charts in figure 7 below show on a logarithmic

scale the very rapid progress solar, wind and battery technologies are making in terms of efficiency gains.

By 2030 – measured over 20 years – solar power is predicted to have dropped in price by 95%, wind-power by 67 % and battery technologies that are essential to harvest this power will have dropped by 98%. 100 % solar, wind, and batteries is forecast to be the cheapest system by 2030.⁹²

Figure 7
Solar, Wind, and
Batteries \$ / kWh
(logarithmic plot)
Adapted from
Dorr & Seba (2020).⁹³



⁹¹ Dorr, A., Seba, T., 2020. Rethinking Energy 2020-2030, 100 % Solar, Wind, and Batteries is Just the Beginning. RethinkX.

⁹² Dorr, A., Seba, T.

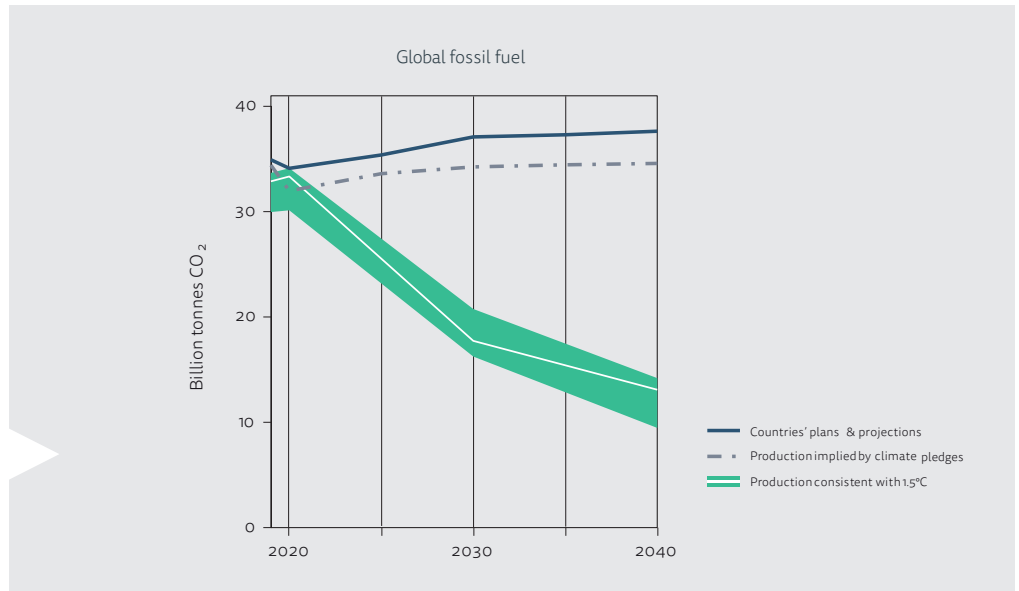
⁹³ Dorr, A., Seba, T.

A safety rail is needed

Key Take-Aways

- ▶ Fossil subsidies are a major obstacle to achieving the Paris Agreement. They also skew energy markets, are ineffective to protect the disadvantaged, and lock in fossil dependency. Ecocide Law will give governments solid support for moving away from fossil fuel subsidies, and supporting better forms of energy. This will speed the transition.
- ▶ Ecocide Law creates a pre-emptive reflex already at the decision table for those responsible. One important reason for this is individual criminal responsibility. Alternatives that do not risk bringing about ecocide become the more attractive choices.
- ▶ Ecocide Law offers a safety rail also for renewables. The extraction of critical raw materials for renewable energy is to sevenfold over the years leading up to 2030. This is of concern for ecosystems, unless the minerals are mined responsibly. As the ore grade of many of the critical materials are in decline, even higher energy and land use requirements along with further strain on ecosystems and climate are on the rise, which underscores the need for Ecocide Law.
- ▶ The marine ecosystems face unprecedented cumulative pressures as land-based sources become fully exploited or exhausted. The expanse of the ocean has been characterized as a new 'Wild West', and includes areas beyond national jurisdiction. Ecocide Law can help the efforts to speed up the protection of oceans which is essential also for climate stabilisation. The law may be particularly helpful because it would strengthen protection of areas beyond national jurisdiction.
- ▶ The way that severe damage is defined in the proposed definition of ecocide, it would be possible to prosecute for ecocide without having to prove harm to humans. Fascinatingly, this improves protection for humans.
- ▶ Harnessing artificial intelligence in combination with Ecocide Law offers interesting opportunities to further strengthen governance and protection of the oceans.
- ▶ The exponential development of renewables offers environmental performance superior to fossils and will reshape energy markets but are development is hampered by policies and fossil subsidies of some governments. Ecocide Law will accelerate the transition.

Figure 8
Global fossil
fuel emissions.
Adapted from SEI.⁹⁴



Supporting the responsible shift

”
Our industrial past provides many lessons of the harsh consequences for local communities when governments **have supported the dying industry for too long**; funding as well as capacity for transition are then gone.

The ills of supporting a dying energy regime

Many producing countries still plan on increasing their oil and gas production until at least 2030. See figure 8. This is clearly counterproductive when it comes to global warming, since the global use of fossil fuels needs to decline sharply in order to limit warming to 1.5°C or 2°C.⁹⁵

The difference between on the one hand delaying its demise, and on the other hand shifting to support the transition, is the difference between severe or even catastrophic climate impacts on the one hand and a safer and just transition on the other. The impacts of climate change to our lives, access to food, fresh water and basic infrastructure are well documented.

In the Production Gap report of 2020,⁹⁶ Stockholm Environment Institute (SEI) lays out considerations and strategies for the countries with a higher capacity to fund a transition, as well as for countries that face a harder transition: countries with lower capacity for a just transition in combination with a higher dependency on fossil fuels. There are a host of examples from our industrial past of the harsh consequences for local communities when governments have supported a dying industry for too long, rather than promoting a transition forward. Strategies to shift the world from fossil fuel dependency exist, but something is needed to impel action. Ecocide Law can play a significant role in several ways. The following paragraphs touch upon a few of these.

⁹⁴ SEI, IISD, ODI, E3G, and UNEP, 2021. The Production Gap Report 2021. Retrieved from: <http://productiongap.org/2021report>

⁹⁵ SEI, IISD, ODI, E3G, and UNEP, The Production Gap Report 2021.

⁹⁶ SEI, IISD, ODI, E3G, and UNEP, 2020. The Production Gap Report: 2020 Special Report. <http://productiongap.org/2020report>

Subsidies could be considered ecocide

In some cases, it can be argued that continuing to finance and subsidise fossil fuels is wanton according to the proposed definition of the crime of ecocide: "Wanton" means with reckless disregard for damage which would be clearly excessive in relation to the social and economic benefits anticipated".

Subsidies of fossil extraction and fuels include: transfer of risks for environmental damage to governments, transfer of risks related to occupational health and accidents, as well as direct transfer of government funds, revenues foregone, under-pricing of goods and services and favourable market regulation.⁹⁷

Establishing an international crime of ecocide supports decision makers to stop authorising and subsidising the most harmful activities. This will give the economic system a healthy nudge towards sustainable solutions.

The many politicians who ardently wish to leave their children a liveable planet will find ecocide law (in the words of the late Queen Elizabeth II), their "strength and stay": it will provide them with a firm rail to hold on to and refer to, as they do the urgent work to redirect us towards sustainable alternatives.

The 2030 Agenda for Sustainable Development, an ambitious "plan of action for people, planet and prosperity", aiming to "transform our world", was adopted in September 2015 by heads of state. Rationalising inefficient fossil fuel subsidies is one of the targets in Sustainable Development Goal (SDG) 12 "Ensure sustainable consumption and production patterns" (see box below). The scale and impact of fossil fuel subsidies presents challenges but also, as touched upon in this paper, opportunities for achieving the goals of the 2030 Agenda on Sustainable Development. The SDGs are not legally binding, nor is national review of their progress mandatory. Ecocide Law would support reaching a number of SDGs, including climate action (goal 13), and sustainable production and consumption patterns (goal 12). Analyses⁹⁸ of the correlations of the various SDGs clearly indicate that SDG 12 is the SDG with the strongest positive effects on the attainability of the other SDGs, indirectly affecting no less than 14 of the 16 other SDGs.

⁹⁷ The various aspects of subsidies are presented in the UNEP 2019 report *Measuring Fossil Fuel Subsidies in the Context of the Sustainable Development Goals*. UN Environment. Note, however, that the focus of the report is to establish coherent measurements across the world. The IMF report, as well as the SEI Production gap report from 2020, both referenced in this paper, are therefore good complements.

⁹⁸ LeBlanc D., 2015. *Towards Integration at Last? The Sustainable Development Goals as a Network of Targets Sustainable Development* - Wiley Online Library



Figure 9 below shows how governments' COVID-19 recovery plans continue to commit more funds to fossil fuels than to clean energy.⁹⁹

As shown in the figure, not only are vast sums of public money spent on delaying the transition away from fossil fuels: the majority of such funds come from countries, as classified by SEI, with higher capacity to fund a just transition.¹⁰⁰

According to a report from UNEP,¹⁰¹ one of the challenges for sustainable development is that the use of fossil fuels, and their promotion through subsidy schemes, adversely affects the ability of governments to attain key goals, such as reducing poverty, improving health, reaching gender equality, providing access to energy, and addressing climate change. At the same time, there is a need to ensure that poor households that are particularly vulnerable to price increases obtain or retain access to energy.

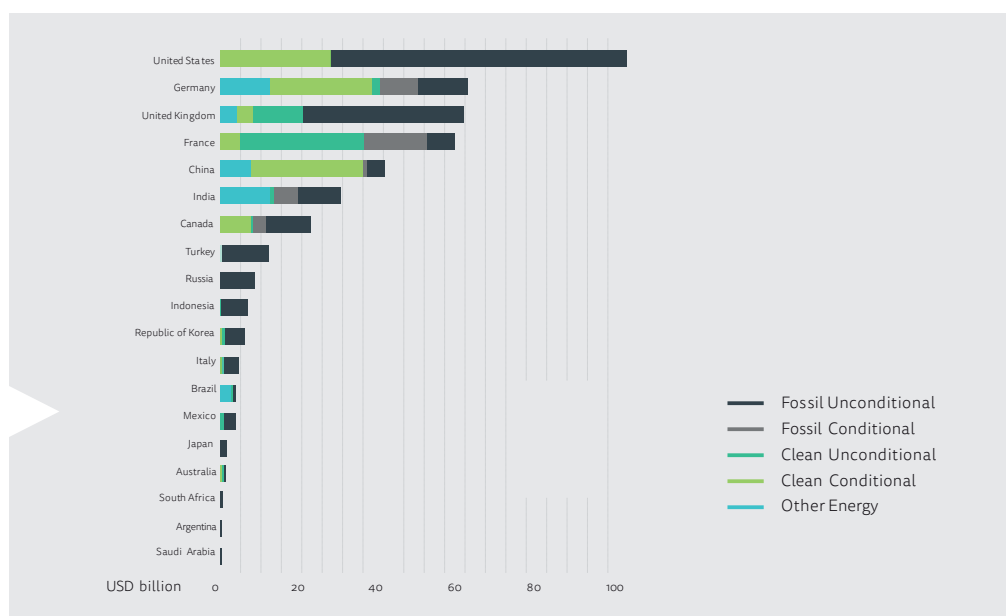
Box 2 - Target 12.c

Rationalise inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimising the possible adverse impacts on their development in a manner that protects the poor and the affected communities.

Indicator 12.c.1 Amount of fossil fuel subsidies per unit of GDP (production and consumption) and as a proportion of total national expenditure on fossil fuels.

UN General Assembly Resolution A/RES/71/313

Figure 9
Public money
commitments to fossil
fuels and cleaner energy
in recovery packages.
Adapted from SEI.⁹⁹



⁹⁹ SEI, IISD, ODI, E3G, and UNEP, 2020. The Production Gap Report: 2020 Special Report. <http://productiongap.org/2020report>

¹⁰⁰ SEI, IISD, ODI, E3G, and UNEP, The Production Gap Report: 2020.

¹⁰¹ UNEP, 2019. Measuring Fossil Fuel Subsidies in the Context of the Sustainable Development Goals. UN Environment, Nairobi, Kenya.

”
The richest 20%
of households
gain more than **six**
times the benefit
of fuel subsidies
compared to the
poorest 20%.

A clean and just transition in a complex reality, which is accounted for in the definition of ecocide

As wanton is defined, fair uses of fossil fuels are not ecocide. There are cases where the transition to renewables can be unfair. According to Timipre Sylva, Nigeria's Minister of State for Petroleum Resources, some 900 million people in the world, most of them in Africa, still have no access to energy for basic needs, and the most reliable and inexpensive option for many of them would be natural gas. Their transition might then be from wood to gas.¹⁰² Nicholas Kusnetz, ICN's oil and gas reporter notes that the pressuring of wealthy nations on less developed nations to transition from fossil fuels, including efforts to cut off international finance for fossil fuel development, can be unjust. The point is that building a handful of natural gas power plants will make a negligible impact on the climate.”¹⁰³

Developed countries that make up just 12% of the global population are responsible for 50% of all the planet-warming greenhouse gases related to fossil fuels and industry over the past 171 years, and just 38 of the world's richest nations account for more than two-thirds of the world's oil demand. Yet it is the world's poorest countries, and in particular developing nations in the Global South, that are affected by the consequences of climate change the most. Rich nations have tried to respond to these complex realities by offering to help poorer nations in their efforts to adapt to the climate crisis.

In 2009, the world's wealthiest nations pledged to give poorer nations \$100 billion a year to adapt to climate change, starting in 2020. Delivery on that promise, however, has so far come up short.

Untargeted fossil subsidies are an extremely costly way to support the poor

A frequently used argument in favour of fossil fuel subsidies is that they are necessary, because higher fuel prices would harm those in need. However, studies show that a large proportion of subsidies do not reach the poorest households. The richest 20 % of households gain more than six times the benefit of fuel subsidies compared to the poorest 20%.¹⁰⁴ This phenomenon is most pronounced for petrol, but can also be observed for fuels like kerosene.¹⁰⁵ Untargeted fossil fuel subsidies are thus an extremely costly approach to protecting the welfare of poor households, which can be better supported by targeted social programmes. Governments could, thus, get more effect by removing or reducing subsidies and targeting the money directly to programs that help only the poor.

The IMF calculates that a comprehensive reform to make fuel reflect the true costs in 121 emerging market economies and developing countries in 2025 would generate revenues of \$3 trillion. See figure 10 below. This is broadly in line with their additional spending needs to reach the Sustainable Development Goals.¹⁰⁶

¹⁰² Valle, S., 2022. Energy Transition? Leave Us Out,' Say African Energy Leaders. Reuters. <https://money.usnews.com/investing/news/articles/2022-03-09/energy-transition-leave-us-out-says-nigeria-oil-minister>

¹⁰³ Tighe, K. 2022. March 11, 2022 Some Leaders in the Developing World Want Out of the Clean Energy Transition <https://insideclimatenews.org/todayclimate/some-leaders-in-the-developing-world-want-out-of-the-clean-energy-transition/>

¹⁰⁴ Coady, D., Flamini, V., & Sears, L., 2015. The Unequal Benefits of Fuel Subsidies Revisited: Evidence for Developing Countries. IMF Working Papers (Vol. WP/15/250)

¹⁰⁵ Garg, V., Sharma, S., Clarke, K., Bridle, R., 2017. Kerosene Subsidies in India, Policy Brief. International Institute for International Development.

¹⁰⁶ Gaspar, Vitor, David Amaglobeli, Mercedes Garcia-Escribano, D. Prady and M. Soto, 2019. "Fiscal Policy and Development: Human, Social, and Physical Investment for the SDGs." IMF Staff Discussion Note 19/03, Washington, DC. See also Wooders, P., Zinecker, A., & Steenblik, R., 2019. Measuring Fossil Fuel Subsidies in the Context of the Sustainable Development Goals. UN Environment, UNEP.



”
By making fuel
prices reflect
their true cost,
governments
can afford the
Sustainable
Development
Goals.

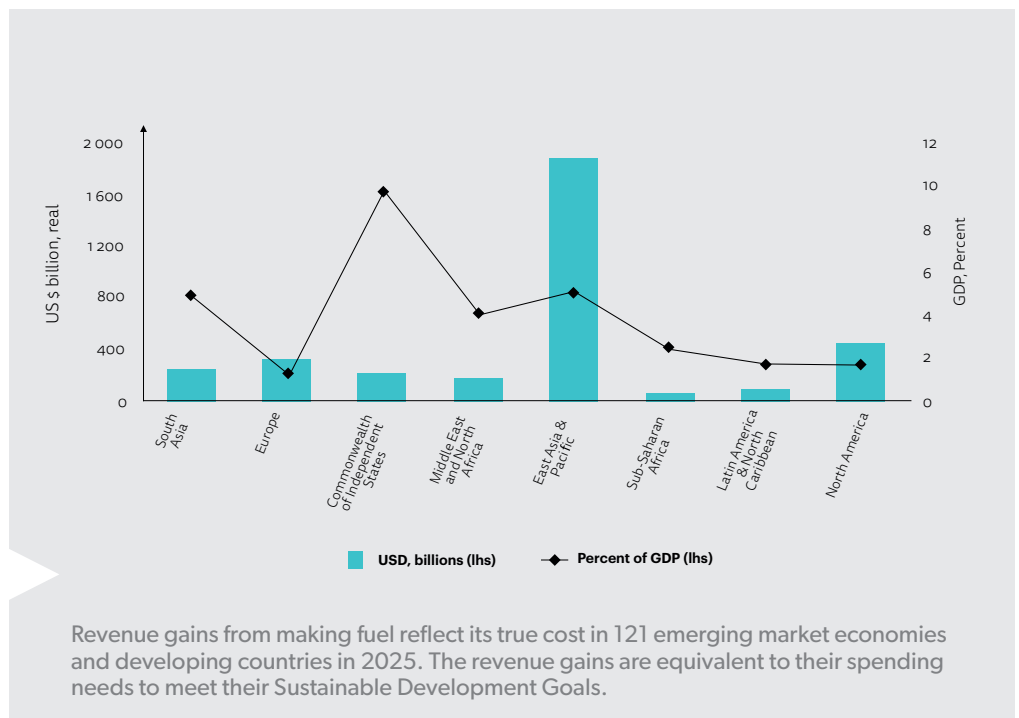
Figure 10
Revenue gains from full-
price reform. Illustration
adapted from: IMF.¹⁰⁹

The right price, according to IMF, is the socially-efficient price that reflects the full societal costs of fuel use—not just the supply costs (e.g. labour, capital, and raw materials) but also the environmental costs, including carbon dioxide emissions, local air pollution, and broader externalities associated with fuel use (e.g. road congestion), as well as general taxes applied to household products. Under-pricing fossil fuels not only undermines domestic and global environmental objectives but, as noted above, is also a highly inefficient policy for helping low-income households.¹⁰⁷ In addition, it carries a sizable fiscal cost—too little revenue is raised from fuel taxes, implying other taxes or government deficits must be higher or public spending lower.

Addressing wanton subsidies

Ecocide is unlawful or wanton acts committed with knowledge that there is a substantial likelihood of severe and either widespread or long- term damage to the environment being caused by those acts.

Wanton is reckless disregard for damage which would be clearly excessive in relation to the social and economic benefits anticipated. This means that acts that violate principles of sustainable development also qualify as ecocide. 70% of the World’s oil reserves are unconventional.¹⁰⁸ The term “unconventional oil” refers to crude oil that is obtained through methods other than traditional vertical well extraction.



¹⁰⁷ Across a wide range of countries, around 90 per cent or more of the benefits from lower fuel prices accrue to households in the top four income quintiles (e.g. Coady et.al., 2015).

¹⁰⁸ Alboudwarej, H., Felix, J., Taylor, S., et al. 2006. Highlighting heavy oil, Oilfield Review.

¹⁰⁹ Black, S., Perry, I., Vernon, N., 2021. Still Not Getting Energy Prices Right: A Global and Country Update of Fossil Fuel Subsidies. IMF. Retrieved from: <https://www.imf.org/-/media/Files/Publications/WP/2021/English/wpia2021236-print-pdf.ashx>

Examples of such methods include developing oil sands, directional drilling, and hydraulic fracturing (known as “fracking”).

Many of these fossil sources require extraction that is highly destructive to the environment, which means that those sources would need to be closed down or – if there is a legitimate human development need – the practices of extraction will be compelled to adopt better ways. Today, the consideration of our shared environment weighs too little in the decision making, and a weak and fragmented legal system allows for wanton acts.

Since ecocide is a crime of individual criminal responsibility, the individuals whose decisions in and of themselves could cause a substantial risk of the kind of severe and widespread or long-term damage would be the people who were criminally responsible before the International Criminal Court. This individual criminal responsibility is likely to foster a pre-emptive reflex against subsidies and many fossils extraction projects. This is likely to foster such a deterrent reflex also in cases that are on the fringe, due to the personal consequences of – even being associated with – activities that fall within the definition of ecocide. As Professor Philippe Sands puts it, criminal law has a tendency to help people to concentrate their minds¹¹⁰ [on adopting a better way].

Box 3 - What does “wanton” signify?

The intent or mens rea aspect of the crime is one of recklessness – the perpetrator acted in the knowledge that there was “substantial likelihood” of serious harm arising from their conduct, but they acted anyway. If the act was unlawful, that is the only test. If the conduct was lawful, then it could still be ecocide if another level of recklessness was involved, i.e. the act was “wanton”- the perpetrator disregarded that the harmful outcome would be clearly excessive compared to the anticipated social and economic benefits.

The term uses a balancing approach which is common in environmental law, as many human activities involve some level of damage to nature. The question is, was that balance considered and approached reasonably and were the damaging effects likely to outweigh the benefits? A project might benefit a few people and concentrate profits for them but if the damage created will severely harm many others (e.g. local or indigenous communities) or disrupt ecosystems then this criterion could be met.

*Expert Panel for the Legal Definition of Ecocide, Commentary and Core Text*¹¹¹

¹¹⁰ Swart, M., 2021. 'The Revolution does not happen overnight': Philippe Sands on ecocide and its links to Nuremberg. Al Jazeera. <https://liberties.aljazeera.com/en/the-revolution-does-not-happen-overnight-aj-speaks-to-philippe-sands-on-ecocide-and-a-life-in-environmental-lawyering/>

¹¹¹ Independent Expert Panel for the Legal Definition of Ecocide, 2021. COMMENTARY AND CORE TEXT. Stop Ecocide Foundation. Retrieved from: <https://www.ecocidelawalliance.org/wp-content/uploads/2021/10/SEFoundationCommentaryandcoretextrevised1.pdf>

Ecocide Law could get everyone involved on the same side of the table

The dominant paradigm of growth through fossil extraction (GFE), combined with the lack of credible alternative socio-economic development strategies, is a powerful barrier to transitioning away from fossil production. This is especially true for countries with higher dependence on fossil extraction income and lower capacity for a just transition.¹¹² Even though norms are changing, many multilateral development banks, donor agencies, and private investors have historically promoted the GFE paradigm, which can be reinforced domestically by rent-seeking behaviour and patronage networks.^{113, 114}

Ecocide as a crime in the Rome Statute will remove or at least reduce the current freedom from accountability for the multilateral actors that commission acts of mass damage and destruction of ecosystems. It will therefore direct their minds into better avenues, for themselves as well as for people and planet. Ecocide Law can thus, a bit surprisingly perhaps, bring the powerful actors - national and international - to the same side of the table: the side that wants to support a just and sustainable transition without further delay.

The pre-emptive influence of Ecocide Law has the positive consequence that it does not make villains of individuals but compels people, regardless of their past, to now contribute to shifting the system, giving everyone an opportunity to become a leader for positive change.

Ecocide Law will open the door for better instruments than fossil subsidies

Ecocide Law will make it more uncomfortable to subsidise fossil energy if there is any risk that the subsidies are leading to something that could be considered ecocide.

The more fine-tuned instruments, suggested by for instance the IMF,¹¹⁵ would then become more attractive to governments. For example, local air emissions from coal plants promote use of end-of-pipe abatement technologies as well as switching from coal to other fuels, while coal taxes promote only the latter response.

¹¹² SEI, IISD, ODI, E3G, and UNEP, The Production Gap Report: 2020.

¹¹³ Lahn, G., and Bradley, S., 2016. Left Stranded? Extractives-Led Growth in a Carbon-Constrained World. Chatham House, London, UK. <https://www.chathamhouse.org/sites/default/files/publications/research/2016-06-17-left-stranded-extractives-bradley-lahn-final.pdf>

¹¹⁴ Peck, S., and Chayes, S., 2015. The Oil Curse: A Remedial Role for the Oil Industry. Carnegie Endowment for International Peace, Washington, DC, US.

¹¹⁵ Black, et al.

”
Ecocide Law
will add a layer
of protection
for investments
in sustainability
which is likely to
further **speed up**
the redirection
of investments.

The financial system is shifting toward sustainability

There is already significant will for sustainable, responsible investments – arguably from the vast majority of investors, as the following examples will illustrate. It is also important to notice that the support is growing fast, probably owing to a growing concern over the dire, and shared, consequences of non-responsible investments. Major multilateral development banks (MDBs) and G20 countries have significantly decreased new international public finance for fossil production since 2017. Ecocide Law is likely to accelerate this shift, even before it comes into force, because it takes time to plan and implement operations before they yield return on the investments. Ecocide Law, already before it is put to vote, is increasing the risk for investments which might fall within the scope of the law. This will also reduce the payback time acceptable to investors in such projects.

A recent global survey of funds representing \$7 trillion reports that managers of these funds believe that Environmental and Social Governance (ESG) integration will lead to sustainable alternatives outperforming traditional ones, which is also reflected in their efforts to integrate ESG in their investment process.¹¹⁶ Although there are several flaws in current ESG systems, including failure to account for externalities and companies' full footprint,¹¹⁷ the mainstreaming of ESG indicates a willingness to make investments good for the planet, not vice versa.

G20 development finance institutions holding a total of over \$2 trillion in assets have adopted policies that exclude fossil fuel production activities from future finance.¹¹⁸ These are examples of how capital is already shifting away from activities that are destructive for people and planet. The movement aiming to put international law in place to criminalise ecocide is not occurring in a vacuum. Ecocide Law will support and speed up the necessary transition. Also, Ecocide Law will add a layer of protection for investments in sustainability which is likely to further speed up the redirection of investments to sustainable practices.

Ahead of the UN climate conference COP26, the International Corporate Governance Network, ICGN, whose members include the world's largest public pension funds and asset management companies, recommends governments to collaborate internationally to criminalise ecocide.¹¹⁹ ICGN is led by investors responsible for assets of over \$59 trillion, which is more than half of the world's total assets under management. The increased support for Ecocide Law and sustainable investments is certainly encouraging.

¹¹⁶ Saklatvala, K., Adamson, L., Bhogal, T., 2021. ESG Asset Owner Survey: How Are Investors Changing? Bfinance. Retrieved from: https://www.pensionsforpurpose.com/assets/PDFs/2021_02_12_11_28_30_bfinance_esg_asset_owner_survey_-feb_2021.pdf

¹¹⁷ Crona, B., Folke, C., Galaz, V., 2021. The Anthropocene reality of financial risk. *One Earth*, Vol. 4, Issue 5, P618-628, <https://doi.org/10.1016/j.oneear.2021.04.016>

¹¹⁸ Clarke, P.

¹¹⁹ See ICGN Statement of Shared Climate Change Responsibilities to the United Nations Climate Change Conference of the Parties 26 20 October 2021: https://www.icgn.org/sites/default/files/ICGN%20Statement%20on%20COP%2026_ENG_Oct_20_2021.pdf

Ecocide Law will be actively helpful not only for those trying to do the right thing, but also for those under heavy pressure to take a short cut to profit. To quote Eleanor Sharpston:

“Let’s take the example of a CEO who is responsible for the conduct of his company, and who is also responsible to the shareholders who expect to see a nice dividend on their shares. If you have no high-level crime there is a lot of pressure on the CEO to take a shortcut, which may be environmentally a very bad idea but which may be a good way of making a lot of money for the company.

If, on the other hand, you have in place the big crime, that does enable the CEO to say at the board meeting, at the big discussion where they’re deciding what to do: ‘Listen guys: maybe it may look to you we could make a lot of money like that, but actually we can’t do that, we cannot do that because that will be considered, or may risk being considered, to be ecocide and we’re just not going to go there, we’re not going to take that risk’.

So, it has a useful deterrent effect as well as the effect if it’s ever actually prosecuted.”¹²⁰

Eleanor Sharpston’s example is, of course, relevant to individuals not only in companies, but also in other organisations.

¹²⁰ Eleanor Sharpston, KC, Advocate General 2006-2020 at the Court of Justice of the EU. Webinar, 2020. Excerpt retrieved from: <https://www.youtube.com/watch?v=mcGXhyXsahw>

Supporting the responsible shift

Key Take-Aways

- ▶ Fossil fuel assets and income typically benefit an elite associated with oil companies. Ecocide Law in the Rome Statute holds the potential - even before the law comes into force - to enhance accountability for these individuals and thus to speed up transition away from fossil fuels.
- ▶ Untargeted fossil fuel subsidies are an extremely costly approach to protect poor households. The richest 20% gain more than six times the benefit compared to the poorest 20%. Fossil subsidies in emerging market economies and developing markets approximately equal the funding these countries need to reach the Sustainable Development Goals. Ecocide Law could make the more fine-tuned instruments, suggested by for instance the IMF, attractive to governments.
- ▶ Ecocide Law will make it more uncomfortable to subsidise fossil energy if it can be considered wanton – “reckless disregard for damage which would be clearly excessive in relation to the social and economic benefits anticipated”.
- ▶ Subsidies of fossil extraction and fuels in cases that meet the definition thresholds will be uncomfortable for the directing minds. More sustainable options will thus become more attractive.
- ▶ 70 % of the world’s oil reserves are unconventional, such as oil sands and reserves that are extracted by fracking. Many of these fossil sources are accessed through methods that are severely destructive of the environment, which means that any extraction will need to be shifted to less destructive methods, so as to avoid the risk of falling within the definition of ecocide.
- ▶ The financial system is shifting toward sustainability. Ecocide Law will add a layer of protection for investments in sustainability, which will also further speed up the redirection of investments to sustainable practices.

We need nature's help

”

Carbon sequestered by nature is proven and **affordable at scale**, and has the added benefit of fueling life.

As our carbon budget runs out, reductions are not enough – we need to draw down carbon from the atmosphere

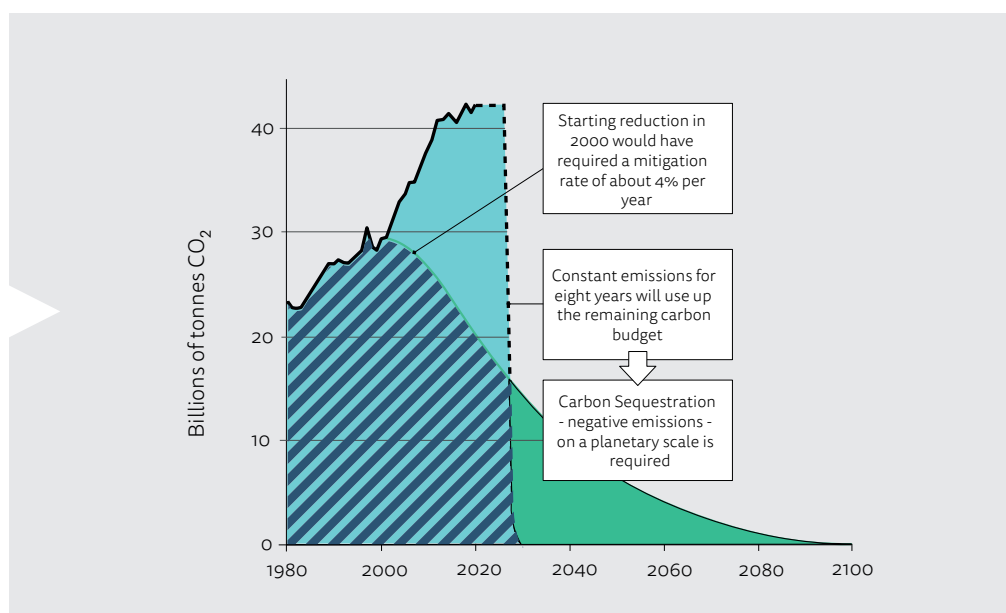
If we are to have a two in three chance to contain global warming to 1.5° C, or even 2°C, minimising emissions will not be enough. See figure 11 below. Had we managed to put the 1997 Kyoto protocol into action, a mere 4 percent reduction per year would have sufficed, but with the continual increase in fossil fuel use, it is increasingly hard to stay within the carbon budget. Reducing emissions is no longer sufficient. Carbon dioxide also needs to be removed – sequestered – from the atmosphere. There is a method that captures carbon from the atmosphere exceptionally well and that is well proven, having been in operation for hundreds of millions of years: photosynthesis, an essential part

of the natural carbon cycle. When carbon dioxide is captured by a plant, it releases oxygen into the air and combines carbon and water into sugars that feed the plant, the roots, and underlying soil organisms.

Virtually all ecosystems, including grasslands, ocean algae, mangroves, forests, and peat lands, are actively sequestering carbon. There are also artificial methods being developed to sequester carbon, such as direct air capture. These may be important in certain applications but it is still too early to determine whether these techniques will prove to be practical and affordable at scale. Regardless of what stance you take on the dependability of artificial sequestration methods, we need to work with nature as an ally in curbing climate change.¹²¹

Figure 11
Mitigation for a > 66 % chance of staying below 420 Gt CO₂, represented by the areas in the diagram.

Source: Mitigation curves based on Raupach, et al (2014).¹²² Emissions budget from IPCC SR 1.5.¹²³ Illustration adapted from Dyke, J (2021).¹²⁴



¹²¹ Rockström, J., Beringer, T., Hole, D., et al., 2021. Opinion: We need biosphere stewardship that protects carbon sinks and builds resilience. PNAS September 21, 2021 118 (38) e2115218118; <https://doi.org/10.1073/pnas.2115218118> <https://www.stockholmresilience.org/research/research-news/2021-10-17-paris-climate-goals-unattainable-without-rich-biodiversity-and-ecosystems.html>

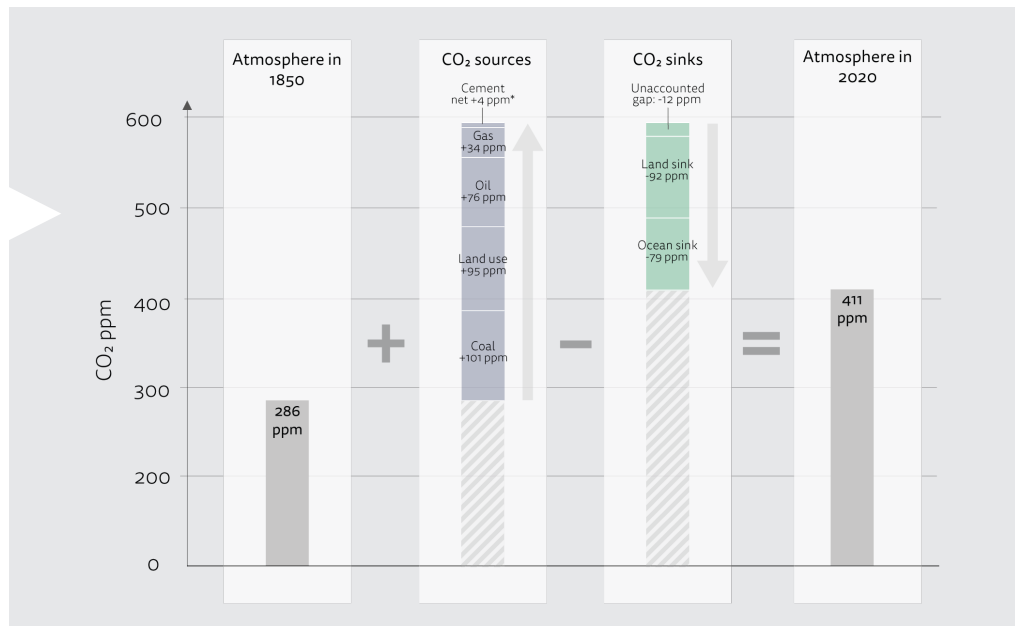
¹²² Raupach, M. R., Gloor, M., Sarmiento, J.L., 2014. The declining uptake rate of atmospheric CO₂ by land and ocean sinks. Biogeosciences. Retrieved from: <https://bg.copernicus.org/articles/11/3453/2014/bg-11-3453-2014.pdf>

¹²³ Masson-Delmotte, V., Zhai, P., Pörtner, H.-O., 2018. Global warming of 1.5°C An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. IPCC. In Press. Retrieved from: https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Full_Report_Low_Res.pdf

¹²⁴ Dyke, J., 2021. Climate scientists' concept of net zero is a dangerous trap. The conversation.

Figure 12

The cumulative contributions to the global carbon budget from 1850 to 2020. Protecting and restoring natural sinks are critical to limit climate change. Chart adapted from Friedlingstein, et al, 2021.¹²⁵



Carbon sequestered by nature has the added benefit of fuelling life, as all forms of life are based on carbon. Life needs carbon to grow, to multiply. We don't have to create this impulse or design the physio-chemical sequestering sequences: it comes naturally to all life forms by design. All we need to do is to work with the miraculous force of nature, and decide where and how we want to support it.

Only the world's ecosystems are ready and able to do the job on the scale that is necessary

The important role of ecosystems in balancing climate change is easy to see when summarising the carbon dioxide sources and sinks. Coal and land-use are the biggest sources of carbon dioxide, followed by oil, gas and cement. The only substantial sinks in existence are the land and ocean sinks.

Regardless of what conclusion you reach on the possibilities to affordably scale up robust methods of carbon capture and storage via technical methods, the ecosystem-based sinks, on land and under water are of critical importance for a liveable climate. And as figure 12 also shows, emissions must be reduced and extractive land use curbed. Nature is simply a key ally. We need laws that assist us to manage ourselves rather than further disrupt a nature previously in perfect balance.

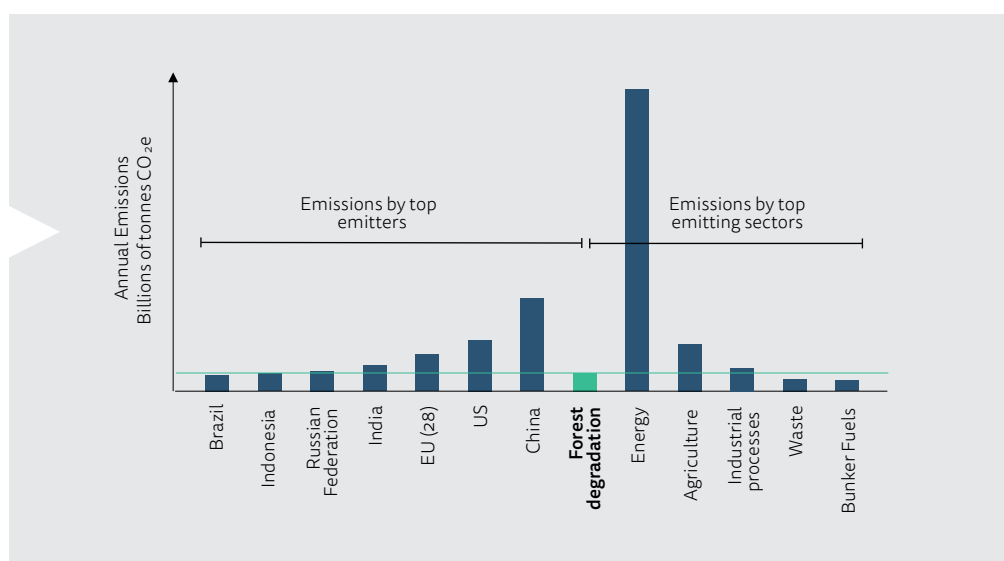
The overlooked importance of forest degradation

Forest degradation emissions are significant, but emitting countries fail to report this. Emissions from forest degradation are overlooked and not accounted for in any complete or systematic way.

¹²⁵ Friedlingstein, P., Jones, M. W., O'Sullivan, M., 2021. Global Carbon Budget 2021, Earth Syst. Sci. Data Discuss. [preprint], <https://doi.org/10.5194/essd-2021-386>, in review, 2021.

Figure 13
Degradation of
forest ecosystems
compared with
emissions.

Data source:
World Resource
Institute¹²⁶, Pearson,
et al. (2017).¹²⁷



By way of illustration, the significance of forest degradation is compared with emissions by country, as well as by sector¹²⁸. As illustrated in figure 13 above, degradation emissions are only significantly exceeded by the energy and agriculture sectors. On a by emitter basis, total emissions from forest degradation exceed all but the seven highest emitters.

The primary ways by which human beings can support sequestration of atmospheric carbon are through regenerative agriculture, managed grazing, pro-forestation, degraded land restoration, replanting mangroves, bringing back wetlands, and protecting existing ecosystems.¹²⁹ Soil has more carbon than the atmosphere and biosphere combined. This can easily be increased vastly, so increasing soil organic matter is crucial and that is what regenerative and organic agriculture do.

Urgent and possible to protect and restore the ecosystems of the oceans

More than 90% of the heat from global warming gets absorbed into the sea.¹³⁰ As oceans heat up, nutrient cycles are being disrupted, food chains broken, and vast stretches of marine habitat are dying off.¹³¹ The ocean also plays a critical role in carbon storage, as it holds about 50 times more carbon than the atmosphere. Roughly 30 percent of our carbon emissions are absorbed by oceans¹³² and transformed into fish, plankton, kelp, whales, shells, seals, and bones, but it is increasingly being converted to carbonic acid, which is slowly killing sea life by acidification and leading to a dead ocean. One example is the Great Barrier Reef, the only living structure visible from outer space. It is home to fifteen hundred species of fish, four thousand molluscs, and five hundred types of seaweed, making it one of the most biologically diverse environments on Earth. It is now under severe threat due to acidification and warming.

¹²⁶ World Resource Institute, Sector and country emissions from WRI CAIT database (<http://cait.wri.org>) for 2010.

¹²⁷ Pearson, T.R.H., Brown, S., Murray, L., Sidman, G., 2017. Greenhouse gas emissions from tropical forest degradation an underestimated source. Carbon Balance and Management. DOI 10.1186/s13021-017-0072-2

¹²⁸ World Resource Institute.

¹²⁹ Hawken, P., 2021. Regeneration, ending the climate crisis in one generation. Penguin Books.

¹³⁰ Laure Zanna, L., Khattiwala, S., Gregory, J.M., Ison, J and Heimbach, P. 2019. Global reconstruction of historical ocean heat storage and transport. PNAS, January 22, 2019, vol. 116, no. 4.

¹³¹ Marine life depends on temperature gradients that circulate nutrients from the seafloor to the surface. As oceans warm, those gradients are breaking down and nutrient cycles are stagnating.

¹³² National Oceanic and Atmospheric Administration (NOAA), 2020. Ocean Acidification. <https://www.noaa.gov/education/resource-collections/ocean-coasts/ocean-acidification> Accessed 2021 01 15

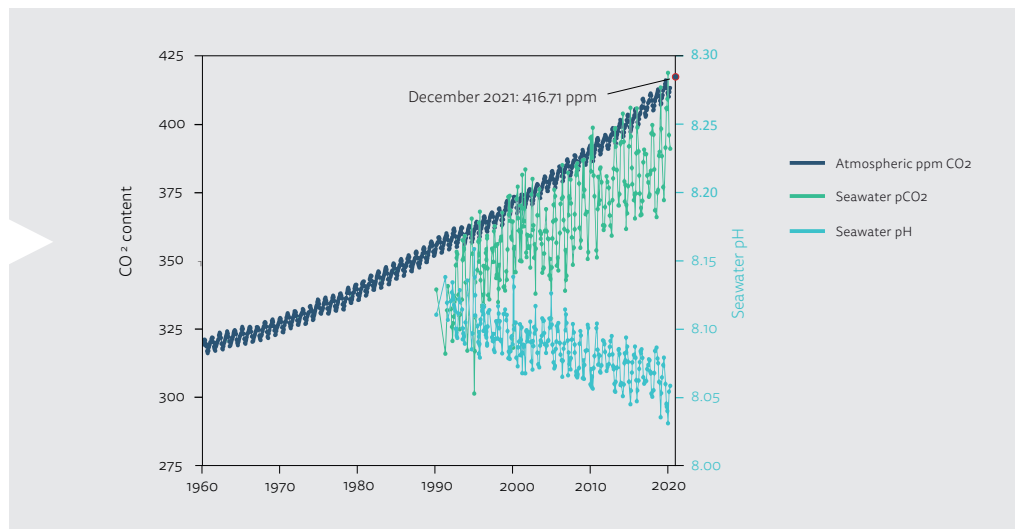
A massive infusion of marine kelp platforms could reverse its demise, and potentially¹³³ help reverse climate change.^{134, 135} The unnerving development of ocean acidification and CO₂ is illustrated in figure 14 below. Measurements from Aloha and Mauna Loa in the North Pacific.¹³⁶

Ocean acidification has driven mass extinction events a number of times in the past. It played a major role in the most recent mass extinction, 66 million years ago, when ocean pH dropped by 0.25 units.¹³⁷ Acidification also played a major role at the end of the Permian period. The surface ocean pH levels dropped 0.6 to 0.7 pH units

causing nearly every form of ocean life to disappear during this “Great Dying”, some 252 million years ago.¹³⁸ On our present emissions trajectory, ocean pH will drop by 0.4 by the end of the century.¹³⁹

The seas can turn carbon into brown forests at a rate exceeding that of the lushest parts of the Amazon. Giant kelp is a type of brown forest - forming “macro algae”, a designation that encompasses 14,000 species of brown algae but also red and green algae such as the nori of sushi fame and the wakame of seaweed salads. Every year, a single square foot of healthy macro algae forest can draw down more than two pounds of carbon dioxide from the atmosphere.

Figure 14
CO₂ and sea water pH development. Massive infusion of marine kelp platforms is a key action that could reverse the development. Adapted from PMEL.¹⁴⁰



¹³³ There are uncertainties in how much CO₂ is captured by Kelp, earlier estimates may be too optimistic, Gallagher, J.B., Shelamoff, V., Layton, C., 2022 Seaweed ecosystems may not mitigate CO₂ emissions, ICES Journal of Marine Science. fsac011, <https://doi.org/10.1093/icesjms/fsac011>

¹³⁴ Hawken.

¹³⁵ Froehlich, H.F., Afflerbach, J.C., Frazier, M., Halpern, B.S., 2019. Blue Growth Potential to Mitigate Climate Change through Seaweed Offsetting. *Current Biology*. <https://doi.org/10.1016/j.cub.2019.07.041>

¹³⁶ PMEL Carbon program, 2021. Hawaii Carbon Dioxide Time-Series. National Oceanic and Atmospheric Administration (NOAA). Retrieved 15 Jan 2021 from: <https://www.pmel.noaa.gov/co2/file/Hawaii+Carbon+Dioxide+Time-Series>. The Dec 2021 reading is retrieved from <https://www.co2.earth/monthly-co2>

¹³⁷ Henehan, M.J., Ridgwell, A., Thomas, E. et al. 2019. Rapid ocean acidification and protracted Earth system recovery followed the end-Cretaceous Chicxulub impact. *PNAS* Vol 116, No 45. <https://doi.org/10.1073/pnas.1905989116>

¹³⁸ Clarkson, M.O., Kasemann, S.A., Wood, R.A., Lenton, T.M., Daines, S.J., Richoz, S., Ohnemüller, F., Meixner, A., Poulton, S.W., Tipper, E.T. 2015. Ocean acidification and the Permo-Triassic mass extinction. *Science*. 2015 Apr 10;348(6231):229-32. doi: 10.1126/science.1251933. PMID: 25859043.

¹³⁹ Henehan, M.J., Ridgwell, A., Thomas, E., Zhang, S., Algret, L., Schmidt, D.N., Rae, J.W., Wlits, J.D., Landmann, N.H., Greene, S.E., Huber, B.T., Super, J.R., Planavsky, N.J., Hull, P.M., 2019. Rapid ocean acidification and protracted Earth system recovery followed the end-Cretaceous Chicxulub impact. *PNAS* November 5, 2019 116 (45) 22500-22504; first published October 21, 2019; <https://doi.org/10.1073/pnas.1905989116>

¹⁴⁰ Ibid, PMEL Carbon Program 2021.

”
Ecocide Law
will increase
the **likelihood**
of success for
the numerous
projects around
the world aiming
to assist nature
to sequester
carbon.

There is, however, a key difference between the carbon fixed by marine forests and the carbon stored in their terrestrial counterparts. On land, much of the carbon is eventually returned to the atmosphere via the decomposition of leaves and wood. Marine forests shed small particles of organic carbon and dissolved organic carbon just as humans shed skin. Consequently, marine forests can be likened to “carbon conveyor belts”, exporting carbon that ends up plummeting down into the ocean depths, where it won’t contribute to the greenhouse effect for centuries or millennia (if not longer). The upshot is that efforts to increase the coverage of marine forests may restore this natural process regionally and have a larger potential to draw down carbon than growing plants on land.¹⁴¹

Value shift is a matter of our survival

In 1985, the United Nations established the “Global Forum of Spiritual and Parliamentary Leaders on Human Survival”. This forum was charged to promote dialogue between religious and political leaders in order to turn the tide of the growing environmental crisis. Members included the Dalai Lama, Mother Theresa, the Archbishop of Canterbury, Senator Al Gore, President Mikhail Gorbachev, Oren Lyons, and Akio Matsumura.¹⁴²

In 1993, this forum agreed their work could be distilled into these four words: Value Change for Survival. We either change our values or we won’t survive. Adding ecocide to international criminal law as a fifth crime in the Rome Statute is likely to be a strong contributing factor to this value change.

Chief Oren Lyons, Faith Keeper of the Onondaga Nation, upstate New York, observed in a conversation in Tällberg in Sweden in 2010 that the rising number of people on the planet created a problem, not because Earth’s resources will not be enough but because: “Half of what you need to know as a human, you already know from birth. Half you need to be taught. The problem today is that we have 7.9 billion people, most of which have not received this teaching about how to be careful with the natural world that sustains our life. This is why the number of people is increasing our predicament.”

The combination of an Earth full of people, equipped with powerful tools, but not enough knowledge about how to take care of the living natural systems on which we all depend, increases the urgency of adding ecocide as a fifth crime to the Rome Statute. An international criminal law will protect the people of the Earth from the most unacceptable acts, and at the same time start shifting the norm.

¹⁴¹ Hawken.

¹⁴² Interview with Chief Oren Lyons, 2021. Retrieved from: <https://www.sugarpeel.com/2021/03/18/interview-with-oren-lyons-faithkeeper-on-onondaga-nation/>

”
Ecocide Law
will protect the
people of the
Earth from the
most despicable
acts, and at the
same time start
shifting
the norm.

**Law shapes our values
and guides our behaviour**

Law shapes our societies, our values, our way of thinking, and thus our behaviour. Traditionally, our laws have been built on the premise that humans have superior rights to the planet and it is these laws that have given us the unspoken agreement to take and to pollute so extensively. The concept of Earth as a living system has been forsaken. As a consequence, the imbalance in our biosphere is now so great that it threatens to destabilise all of Earth's ecosystems and life forms including humankind. Destroy our Earth, and we destroy ourselves. Take away the very world that feeds us and gives us all we need to live in peace and harmony, and very soon we too will perish.¹⁴³

Unfortunately, we have been increasingly disconnected from nature and the signs of its disruption, and we have forgotten how to pay attention to the relationships between things: insects necessary for pollination; birds that control crop pests, grubs and worms essential to soil fertility; mangroves that purify water; the corals on which fish populations depend. These living systems are not 'out there', disconnected from humanity. On the contrary: our fates are intertwined. We are eroding the very foundations of our economies, livelihoods, food security, health and quality of life worldwide. As we have lost touch with this, laws are needed to guide us back to a state where our actions are respectfully attuned to the living natural world.

We have to redress the imbalance and bring the scales of ecological justice back into equilibrium.¹⁴⁴ Starting with the worst most wanton actions is a good place to start, not the least to buy us more time to shape up.

**Ecocide Law as a primary
crime to protect all life**

The adoption of ecocide as a fifth crime under the jurisdiction of the ICC, would require States Parties to the Rome Statute and individuals therein to abide by their international legal responsibility to prevent ecocide under their tenure-ship. In doing so, the prevention of ecocide would attract the legal status of erga omnes (Latin: 'towards all') meaning an obligation flowing to all. Erga omnes obligations are owed to the international community as a whole. When a principle achieves the status of erga omnes, then the rest of the international community is under a mandatory duty to respect it in all circumstances in their relations with each other. An erga omnes obligation exists to prevent the breach of a primary crime. Ecocide would be included as an example of an erga omnes norm, alongside piracy, genocide and crimes against humanity, such as slavery and racial discrimination.¹⁴⁵

¹⁴³ Higgins, P, 2012. What will your legacy be? Resurgence and Ecologist.

¹⁴⁴ Higgins, What will your legacy be?

¹⁴⁵ Higgins, P, 2010. Eradicating Ecocide. Laws and governance to prevent the destruction of our planet. Shephard-Walwyn Ltd.

”
The prevention
of ecocide
would **attract**
the legal status
of erga omnes
alongside piracy,
genocide and
crimes against
humanity such as
slavery and racial
discrimination.

Ecocide Law to bring carbon back to life

Ecocide Law will lead to solutions that bring carbon back from the atmosphere by protecting ecosystems and human-made practices that are conducive to life on earth. Ecosystems absorb carbon to build more life, on land and in water, then to sequester it. Ecocide Law will support this in direct and indirect ways by:

1. Disrupting the circle of harm to the environment and improving the conditions for solutions that are beneficial for people and the planet. One of the most powerful forms of carbon capture is to leave forests and wetlands alone¹⁴⁶ and ensure that they are managed holistically. Ecocide Law increases the likelihood that the numerous projects around the world aiming to assist nature to sequester carbon will not be outcompeted by degrading activities which do not carry their true costs. Ecocide Law will thus support enabling the natural carbon cycle to sequester more carbon than it emits.
2. Shifting the norm in our societies to one that puts people and the planet first. Adding Ecocide Law to the Rome Statute may not by itself compel all decision-makers to take immediate action. Over time, however, shifting our fundamental attitude regarding ecological degradation is a powerful agent.

¹⁴⁶ Griscom, B., Adams, J., Ellis, P., et al., 2017. Natural climate solutions. *Proceedings of the National Academy of Sciences*. 114. 10.1073/pnas.1710465114.

We need Nature's help

Key Take-Aways

- ▶ Ceasing emissions is no longer enough: we need nature's help to remove CO₂ from the atmosphere.
- ▶ Virtually all ecosystems actively sequester carbon.
- ▶ Ecocide Law protects ecosystems, which in itself is a powerful way to protect the climate.
- ▶ Over time, Ecocide Law assists a shift in values, to put people and the planet first. An international criminal law will protect the people of the Earth from the most unacceptable acts, and at the same time start shifting the norm.

Conclusions

It is blatantly clear that existing national and international laws and agreements are insufficient to protect the environment.

Ecocide Law holds the promise to help us change course.

Given the political will, adding ecocide to the Rome Statute is a relatively rapid process that will require months or years rather than decades to achieve.

Furthermore, the law will impact decisions already before it is ratified.

The law will upgrade and level the playing field in a way that accelerates a sustainable transition.

While the environmental and climate crises pose risks to us all, the impacts of severe environmental destruction are experienced on top of deeply embedded inequalities. This begs the question of what a sustainable and just transition is, and if we can realistically achieve a just transition, given that our time is running out to avoid dangerous climate change, which will aggravate the climate and environmental injustices.

The proposed definition of ecocide does not deny people in developing countries and emerging economies a fair choice between fossil and clean energy. Rather, it contributes to ending impunity for the perpetrators of the most serious crimes of international concern and - in doing so - deliver on climate and environmental justice.

Appendix I: Proposed definition of ecocide

In June 2021, an independent panel of experts (IEP) in international law presented a definition of ecocide as an international crime.

The proposed amendment to the Rome Statute to include a crime of ecocide

1. For the purpose of this statute, “ecocide” means unlawful or wanton acts committed with knowledge that there is a substantial likelihood of severe and either widespread or long-term damage to the environment being caused by those acts.

2. For the purpose of paragraph 1:

a) “Wanton” means with reckless disregard for damage which would be clearly excessive in relation to the social and economic benefits anticipated;

b) “Severe” means damage which involves very serious adverse changes, disruption or harm to any element of the environment, including grave impacts on human life or natural, cultural or economic resources;

c) “Widespread” means damage which extends beyond a limited geographic area, crosses state boundaries, or is suffered by an entire ecosystem or species or a large number of human beings;

d) “Long-term” means damage which is irreversible or which cannot be redressed through natural recovery within a reasonable period of time;

e) “Environment” means the earth, its biosphere, cryosphere, lithosphere, hydrosphere and atmosphere, as well as outer space.

Commentary on the definition

More information on the reasoning behind this proposed definition can be found below.¹⁴⁷

The definition is crafted in such a way that only those practises that are the most damaging for the environment are covered.

First, there must exist a substantial likelihood that the conduct (which includes an act or omission to act) will cause severe and either widespread or long-term damage to the environment.

The Panel recognised that this threshold may, taken on its own, be overly inclusive. There are activities that are legal, socially beneficial and responsibly operated to minimise impacts that nonetheless cause (or are likely to cause) severe and either widespread or long-term damage to the environment. Therefore, the Panel considers it necessary to include a second threshold.

The second threshold requires proof that the acts are unlawful or wanton. This additional threshold draws upon environmental law principles, which balance social and economic benefits with environmental harms through the concept of sustainable development.

With these two thresholds, the prosecution would need to prove a substantial likelihood of causing severe and either widespread or long-term damage through acts or omissions that are either unlawful or wanton.¹⁴⁸

The crime of ecocide is formulated as a crime of endangerment rather than of consequence. It is the commission of acts with knowledge of the substantial likelihood that they will cause severe and either widespread or long-term damage that is criminalised. This is pertinent with regards to climate change. If certain thresholds are crossed, greenhouse gas emissions or destruction of large carbon sinks can trigger possibly catastrophic collapse of ecosystems through feedbacks in the natural Earth System itself.

¹⁴⁷ <https://static1.squarespace.com/static/5ca2608ab914493c64ef1f6d/t/60d7479cf8e7e5461534dd07/1624721314430/SE+Foundation+Commentary+and+core+text+revised+%281%29.pdf>

¹⁴⁸ Sands, P., Fall Sow, D., Mackintosh, K., et al., 2021. Independent Expert Panel for the Legal Definition of Ecocide Commentary and Core text, June 2021. Stop Ecocide Foundation.

Appendix II: The process for adding ecocide to the Rome Statute

The governing document of the International Criminal Court, the Rome Statute, currently lists four crimes: genocide, crimes against humanity, war crimes and the crime of aggression. The proposal is to amend it to include a fifth crime: ecocide.

The procedure for amending the Rome Statute is set out in Article 121 thereof,¹⁴⁹ and has already been put to use when the crime of aggression was added.

There are four steps to include an additional crime:

The process to amend the Rome Statute

1. Proposal

Any state which has ratified (officially agreed to) the Rome Statute of the International Criminal Court (ICC) may propose an amendment. There are currently 123 of these “States Parties”.

2. Admissibility

A majority of those present and voting at the next annual assembly of the ICC need to agree that the proposed amendment can be considered. One state, one vote.

3. Adoption into the Statute

At least a 2/3 majority of States Parties (currently 82/123) need to be in favour of the amendment. As with any international agreement, the precise formulation of the text adding ecocide as the fifth crime to the Rome Statute would be discussed and agreed amongst the States Parties.

4. Ratification

States Parties can then ratify (officially indicate their willingness to be bound by) the amendment (that is, the new article of the Statute). One year after a State Party has ratified the amendment, activities covered by the new crime of ecocide committed by that State Party’s nationals or on its territory will be brought within the jurisdiction of the ICC. Prosecution for such activities before the ICC will then become possible. The State Party will also be expected to adapt its national legal system so as to reflect the State’s new obligations under international law.

¹⁴⁹ The Rome Statute of the International Criminal Court, Article 121, p 55. <https://www.icc-cpi.int/sites/default/files/RS-Eng.pdf> Retrieved: December 2022.

Appendix III: Global warming

”
The climate emergency is already upon us - and is **getting worse for every tenth of a degree Celsius** - even without us passing any tipping point.

The climate emergency is not the warming of the planet. It is what it will do to life on the planet.

On the one hand, some scientists are arguing that there is uncertainty regarding the likelihood of activating global climate tipping points. Based on that uncertainty, some economists have suggested that 3°C warming is optimal from a cost-benefit perspective.¹⁵⁰

On the other hand, there is no doubt that activating climate tipping points would be catastrophic.

Any serious risk assessment must take into account:

1. their huge impact;
2. their irreversible nature.

In the words of Johan Rockström, director of the Potsdam Institute for Climate Impact Research: “To err on the side of danger is not a responsible option.”¹⁵¹

Cascading effects might be common. Research in 2018¹⁵² analysed 30 types of regime shifts (or tipping points) spanning physical climate and ecological systems, from collapse of the West Antarctic ice sheet to a switch from rainforest to savanna. This indicated that exceeding tipping points in one system can increase the risk of crossing them in others. Such links were found for 45 percent of possible interactions.¹⁵³

However, the climate crisis is not dependent on whether or not we pass any global tipping points. Every 10th of a degree of warming makes the climate crisis worse.

Warming will upset weather patterns. So, places that were dryer may become drier. Places that were wet may become more wet and some places that were wet will become dry. As temperatures continue to rise, heat waves will become worse and more common. When heat waves and droughts are combined, you have the perfect situation for bushfires, they will therefore become worse. Losses already include more frequent droughts in the tropics that would convert the world's rainforests into fire-prone savannas.¹⁵⁴

The increase of temperature will cause and is causing ice to melt. Whenever ice melts on the land, it causes the sea level to rise. The increase in temperature also makes water molecules expand, so they take more space, which also makes the sea level rise. So, there are two factors making the sea level rise.

All of these things are unfolding and getting worse.

¹⁵⁰ Lenton, T.M., Rockström, J., Gaffney, O., et al., 2019. Climate tipping points — too risky to bet against. The growing threat of abrupt and irreversible climate changes must compel political and economic action on emissions.

¹⁵¹ Lenton, et al.

¹⁵² Rocha, J.C., Peterson, G., Bodin, Ö. & Levin, S. Cascading regime shifts within and across scales. *Science* 362, 1379–1383 (2018). Doi: 10.1126/science.aat7850

¹⁵³ Rocha et al.

¹⁵⁴ IPCC, 2021. Sixth Assessment Report (AR6) Contribution from Working Group I. Climate Change 2021: The Physical Science Basis. Intergovernmental Panel on Climate Change, Geneva, Switzerland. Retrieved from: <https://www.ipcc.ch/report/ar6/wg1/>

As temperature rises and carbon dioxide in the atmosphere increases, so is the ocean heating and becoming more acid. This is already threatening¹⁵⁵ every coral reef in the world,^{156, 157} and is wiping out marine life. Most evident is perhaps the effect on any life forms that have the misfortune of having a shell: since shells are made out of calcium carbonate, the increased acidity of the oceans dissolves their shells.

Healthy land and ocean-based ecosystems are critical to keeping other climate-forcing factors in relative balance. However, warnings are coming: land-based sinks such as the Amazon are turning into net emitters due to unsustainable use¹⁵⁸ and ocean circulation is weakening.¹⁵⁹

Both the ocean and the atmosphere circulation will be affected and that will lead to changes of weather patterns. Higher temperatures energise storms, so storms become worse. Also, rivers will dry up because of vanishing glaciers. Loss of ice in glaciated mountain landscapes will cause major problems with the water supplies for these major rivers that are dependent on the ice to make them stable.

Due to all of these factors the Club of Rome declared both Climate Emergency with an action plan in 2018 and Planetary Emergency in 2019 and 2020, also with action plans.¹⁶⁰ Also, over 2275 jurisdictions across the world representing 1 billion people have declared climate emergency.¹⁶¹

¹⁵⁵ Approximately 50 % have been degraded and 99 % will be lost if > 2 degrees C warming according to the IPCC 1.5 report: Díaz, S., Settele, J., Brondizio, E., et al., 2019. Report of the Plenary of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services on the work of its seventh session. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, IPBES.

¹⁵⁶ Eddy, T.D., Lam, V.W.Y., Reygondeau, G., et al., 2021. Global decline in capacity of coral reefs to provide ecosystem services. *One Earth* 4, 1278–1285. doi: <https://doi.org/10.1016/j.oneear.2021.08.016>

¹⁵⁷ Díaz, S., Settele, J., Brondizio, E., et al., 2019. Report of the Plenary of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services on the work of its seventh session. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, IPBES.

¹⁵⁸ Brien, R., Phillips, O., Feldpausch, T. et al., 2015. Long-term decline of the Amazon carbon sink. *Nature* 519, 344–348. <https://doi.org/10.1038/nature14283>

¹⁵⁹ Caesar, L., Rahmstorf, S., Robinson, A. et al., 2018. Observed fingerprint of a weakening Atlantic Ocean overturning circulation. *Nature* 556, 191–196. <https://doi.org/10.1038/s41586-018-0006-5>

¹⁶⁰ Club of Rome. Retrieved from <https://www.clubofrome.org/impact-hubs/climate-emergency/>

¹⁶¹ Climate Emergency Declaration. Retrieved from: <https://climateemergencydeclaration.org/climate-emergencydeclarations-cover-15-million-citizens/>



<https://postkodstiftelsen.se>



www.endecocide.se

The  Schumacher Institute

www.schumacherinstitute.org.uk