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Recovering Cables From Sustainability Policy:

Will Policy Hinder the Recovery and Recycling of Subsea Telecommunications Cables?

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About Isabelle and Michael

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Sustainable Subsea Networks

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- Academic-industry collaboration
- Assessing and determining pathways to enhance the sustainability of subsea networks
- Supports student research into sustainability

SUSTAINABLE SUBSEA NETWORKS

SUBOPTIC FOUNDATION

Internet Society Foundation

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Cable Recovery Companies

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Mertech Marine

Headquarters:
Gqeberha, South Africa
Established cable recycling in 2004

SUBSEA ENVIRONMENTAL SERVICES

Headquarters:
New York, USA
Established 2014

OEC

Headquarters:
Hamburg, Germany
Established 2021

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Overview

- **Recycling Subsea Cables** — A Sustainable Industry Practice
- **Frameworks** — Best Practices for Recovery and Recycling
- **Policies** — Regulations That Could Impact Recovery and Recycling
  - **Material Usage** — Import Bans and Regulations
  - **Marine Biodiversity** — EIAs and MPAs
- **Conclusion** — Holistic Sustainability Approaches

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Recycling

A Sustainable Industry Practice

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Step 1: Cable Recovery

Subsea Environmental Services recovering the TAT14 cable off New York

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Step 2: Cable Recycling

Mertech Marine subsea telecommunications cable recycling facility, South Africa

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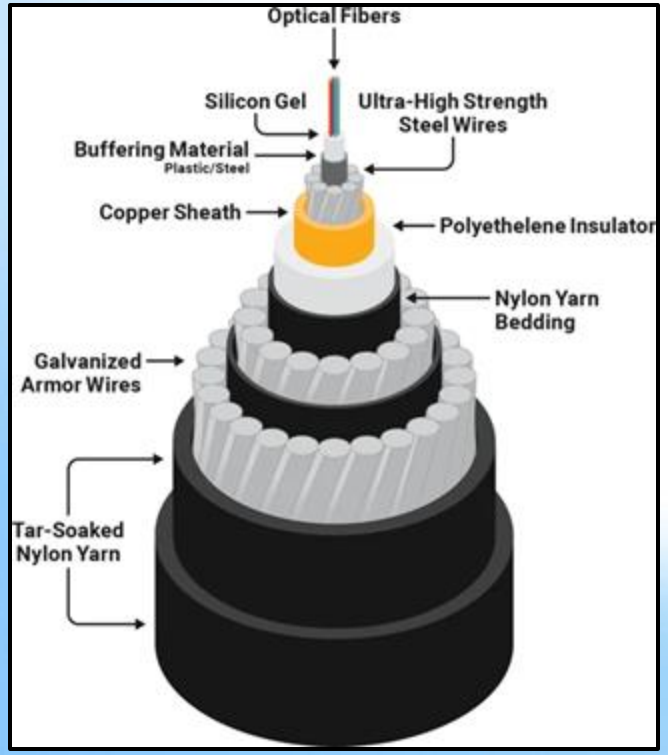
Components of a Cable



- Cables contain multiple valuable recyclable materials including **copper** and **steel**
- Nearly **100%** of an undersea cable can be recycled
- Potential products:
  - Copper: baled or chipped
  - Steel: wire or cable
  - Polyethylene: high quality pellets

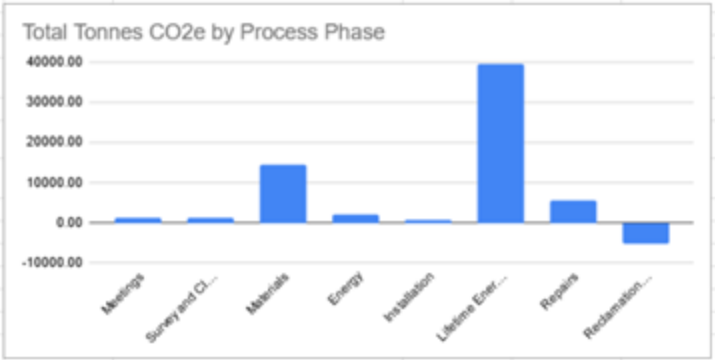
Subsea Carbon Emissions Calculator

Length of Cable (km):	6450	km	
Cable lifespan (yrs):	25	years	
% of path ploughed	8	%	
Repairs	0.4	per year	

		tonne CO2e	% of Total CO2e	
Planning Phase				
	Meetings	1182.79	1.990	%
	Survey and Clearing	1397.103	2.35	%
Installation				
	Materials	14538.58	24.46	%
	Energy	2056.14	3.46	%
	Installation	641.74	1.08	%
Usage				
	Lifetime Energy Use Emissions	39620.47769	66.66	%
	Repairs	5443.38	9.16	%
Decommissioning				
	Reclamation & Recycling	-5140.80	-8.65	%
	Total	59739.42	tonnes CO2e	
	Total per km	9.262	tonnes CO2e	
	Total per km, annualized	0.370477002	tonnes CO2e	
	Total per TBPS capacity	506.2662421	tonnes CO2e	

units: total CO2e (based on 100-yr Global Warming Potential)

Colour key:	User input required
	User input allowed, default estimate provided
	Set value
	Calculated value
	Knowledge gaps
*	notes on cells contain info on data source



The Subsea Cable Carbon Emissions Calculator
A project of Sustainable Subsea Networks
Version 1.8, Released 19 November 2024
Compiled by Anne Pasek and Meg Congram

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Developed by Anne Pasek (Trent University), with Meg Congram and Kaihui Song (UC Berkeley)

Recovery and Recycling - A Good Sustainability Practice

- According to the calculator and industry assessments, cable recovery and recycling is a carbon **net negative** practice
- Over **18 million metric tons of carbon** could be saved by recovering and recycling **half** of coaxial and fiber-optic cables installed before the 2000

Of the **3,000,000 km** of cables deployed from 1850 - 2019:

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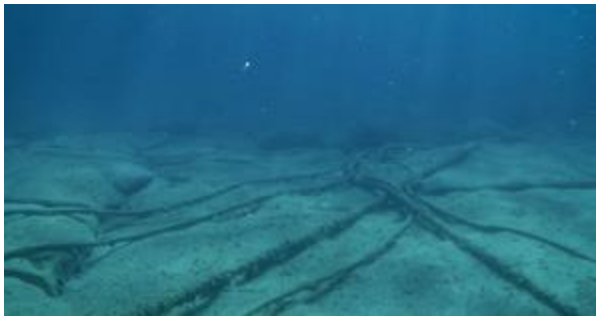
Recovery and Recycling - A Good Industry Practice

- Recovering and recycling undersea cables **decreases** the global demand for raw materials
- It also **declutters the seabed**, making the laying of new cables and maintenance of existing ones in the same area less difficult
- Proactive recovery may also:
  - Allow for reuse of cables and laying them as new ones **without the need for additional permits**
  - **Reduce emissions from cable ships** by creating a scheduling opportunity to complete several projects in one trip



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Frameworks

Best Practices for Recovery and Recycling

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International Cable Protection Committee (ICPC) - Best Practices

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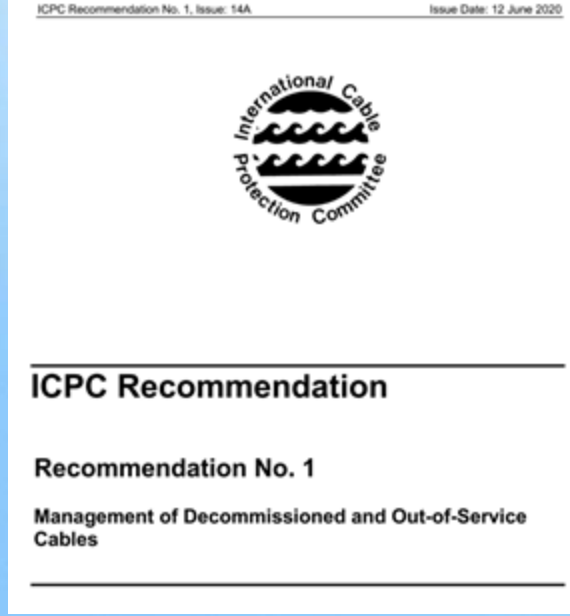
ICPC Recommendation No. 1, Issue: 14A — Issue Date: 12 June 2020

International Cable Protection Committee

ICPC Recommendation

Recommendation No. 1

Management of Decommissioned and Out-of-Service Cables

Environmental Considerations

The ICPC is committed to ensuring the sustainable use of the seafloor. Within the following text, we have endeavoured to include reference to environmental considerations pertinent to each specific recommendation; however, we recognise that unique environmental considerations may be required for different cable routes, marine settings and/or activity interactions and thus the recommendations will inevitably not provide a comprehensive overview of all plausible environmental scenarios or potential impacts. As a result, cable operators and owners should ensure they are cognisant of any potential environmental impacts from the earliest planning stages and should strive to minimise those impacts throughout the full project lifecycle.

3.2.2. Present and possible future effects on the marine environment. The comparative environmental impact of leaving the cable in place compared to the disruption caused by attempting to remove the cable should be considered, including consideration of composition and condition of cable materials, burial and sedimentation conditions, and the benthic environment.

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UNCLOS Framework for Undersea Cables

THE LAW OF THE SEA

- In the The United Nations Convention on the Law of the Sea (UNCLOS), no articles specifically address cable **recovery** operations
- UNCLOS nonetheless **sets conditions for how States can regulate, facilitate, or inhibit recovery**

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UNCLOS Designations Of Maritime Zones

In the EEZ, UNCLOS provides for the “laying of submarine cables and pipelines, and other internationally lawful uses of the sea related to [those] freedoms”

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Policies

Regulations That Could Restrict Recovery and Recycling

Material Usage

Uncertainty Surrounding Waste Regulations

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Regulation of Waste

- Before a cable can be recycled it has to be imported to a country. This requires an import permit
- Obtaining an import permit has become a complex process
- China was responsible for half of solid waste imports in 2016, but starting in 2018, they banned the importation of all solid waste

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Import Bans and Regulations

- This led to dramatic restructurings of waste policies across the world
- By prioritizing reducing waste countries are potentially increasing global carbon emissions
- This may hinder cable recovery and recycling efforts in the future

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Marine Biodiversity

EIAs and MPAs

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Environmental Impact Assessments (EIAs)

- Required by UNCLOS and BBNJ Agreement
- Information required in an EIA may vary between **AND** within a single State
- Some States may require extensive assessments that may take anywhere from weeks to years to complete
    - If EIAs were required for the recovery of subsea cables, this could substantially disincentivize cable recovery and subsequent recycling

UNCLOS:
Required

Article 206
Assessment of potential effects of activities

When States have reasonable grounds for believing that planned activities under their jurisdiction or control may cause substantial pollution of or significant and harmful changes to the marine environment, they shall, as far as practicable, assess the potential effects of such activities on the marine environment and shall communicate reports of the results of such assessments in the manner provided in article 205.

BBNJ Agreement:
Required

Article 30
Thresholds and factors for conducting environmental impact assessments

1. When a planned activity may have more than a minor or transitory effect on the marine environment, or the effects of the activity are unknown or poorly understood, the Party with jurisdiction or control of the activity shall conduct a screening of the activity under article 31, using the factors set out in paragraph 2 below, and:

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Marine Protected Areas (MPAs)

- Areas with special protections focused on preserving biodiversity or re-establishing ecosystem function
- Protections typically impact cable operations
- EIAs are commonly mandated in these areas

UNCLOS:
Recommended

Article 61
Conservation of the living resources

2. The coastal State, taking into account the best scientific evidence available to it, shall ensure through proper conservation and management measures that the maintenance of the living resources in the exclusive economic zone is not endangered by over-exploitation. As appropriate, the coastal State and competent international organizations, whether subregional, regional or global, shall cooperate to this end.

BBNJ Agreement:
Recommended

PART III
MEASURES SUCH AS AREA-BASED MANAGEMENT TOOLS, INCLUDING MARINE PROTECTED AREAS

Article 17
Objectives

The objectives of this Part are to:

(a) Conserve and sustainably use areas requiring protection, including through the establishment of a comprehensive system of area-based management tools, with ecologically representative and well-connected networks of marine protected areas;

(c) Protect, preserve, restore and maintain biological diversity and ecosystems, including with a view to enhancing their productivity and health, and strengthen resilience to stressors, including those related to climate change, ocean acidification and marine pollution;

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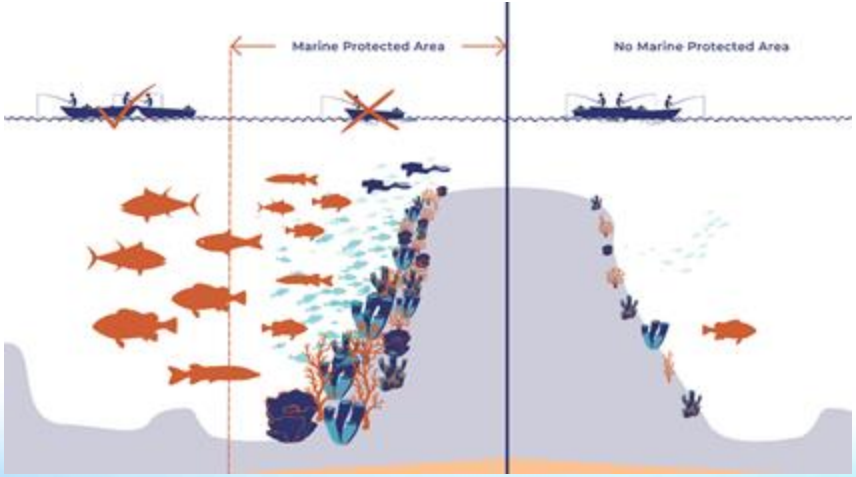
MPAs in the High Seas: Uncertain Future for Cable Recovery

- Cables in the high seas are easier to recycle since they are typically unarmored and unburied
- High seas largely under regulated before BBNJ Agreement
- BBNJ Agreement may lead to inefficient and complicated policies or leave legality of recovery unclear



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Conclusion

Holistic Sustainability Approaches

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Sustainability as CO2 Reduction

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Sustainability as Material Usage Reduction

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Sustainability As Marine Biodiversity

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Key Takeaways on Sustainability

- Sustainable policies must:
  - Consider **multiple** environmental issues and goals
  - Address social, economic, **AND** environmental needs
  - Be created through **collaboration** between policymakers, environmental experts, and members of the telecommunications industry

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Thank you

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