
Transformative Change through Digital Skills: Advocating for Sustainable Development

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Jan 10, 2024 @FJU



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WENZAO URSULINE UNIVERSITY OF LANGUAGES



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Facing the Twin Challenge

- 21st Century will be dominated by two major challenges: **digitalization** and **environmental crisis**

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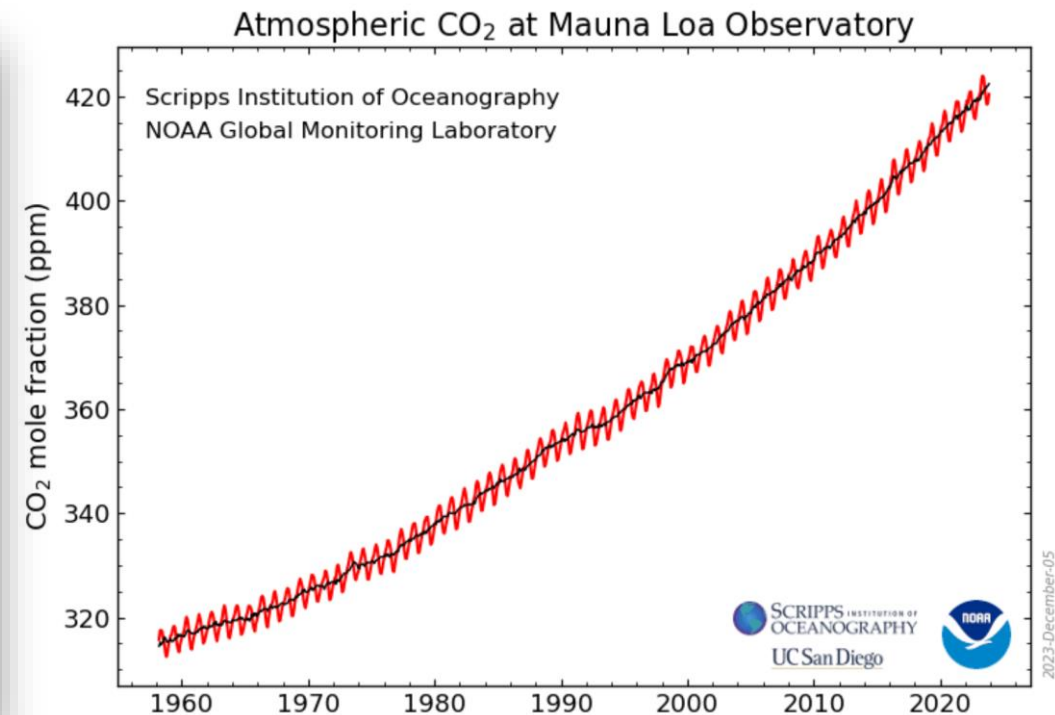
NEWS | 06 December 2023

Catastrophic change looms as Earth nears climate 'tipping points', report says

Polar ice, coral reefs and other Earth systems could cross irrevocable thresholds soon, but urgent action could stave off the worst effects.

By [Jeff Tollefson](#)

[Twitter](#) [Facebook](#) [Email](#)



Communities in Greece struggle to recover from devastating September floods



2024

with \$10 per month

The Guardian

ion Sport Culture Lifestyle More

Asia Australia Middle East Africa Inequality Global development

BBC Sign in Home News Sport Earth Reel Worklife

NEWS

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Hotter, drier air in Europe 'causing poor crops and greater wildfire risk'

Researchers looked at 400 years of tree ring data and found 'vapour pressure deficit' has got much worse this century



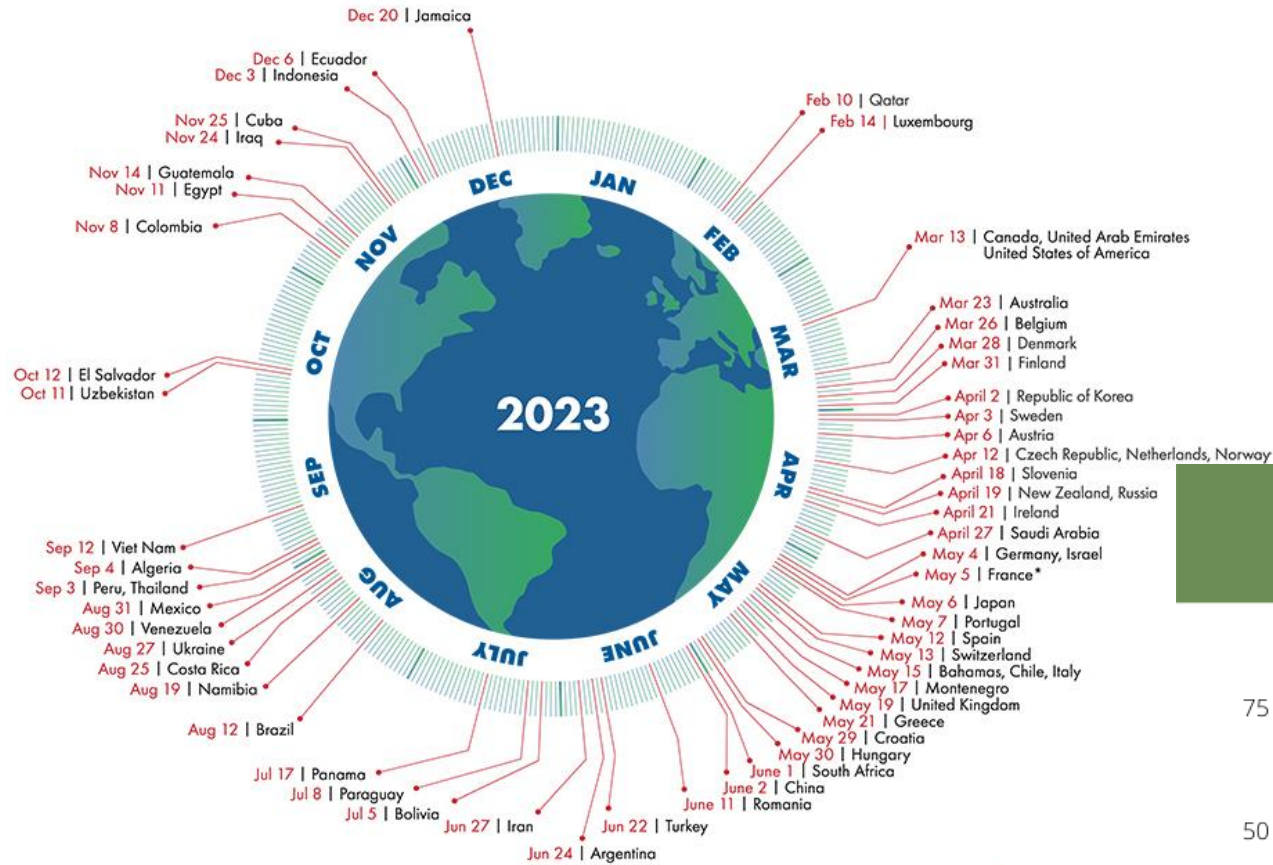
Sixty-seven researchers looked at 400 years of tree ring data in Europe. Photograph: EAQ/Getty Images/iStockphoto



German city hit by massive hail storm

Country Overshoot Days 2023

When would Earth Overshoot Day land if the world's population lived like...



For a full list of countries, visit overshootday.org/country-overshoot-days.
 *French Overshoot Day based on nowcasted data. See overshootday.org/france.

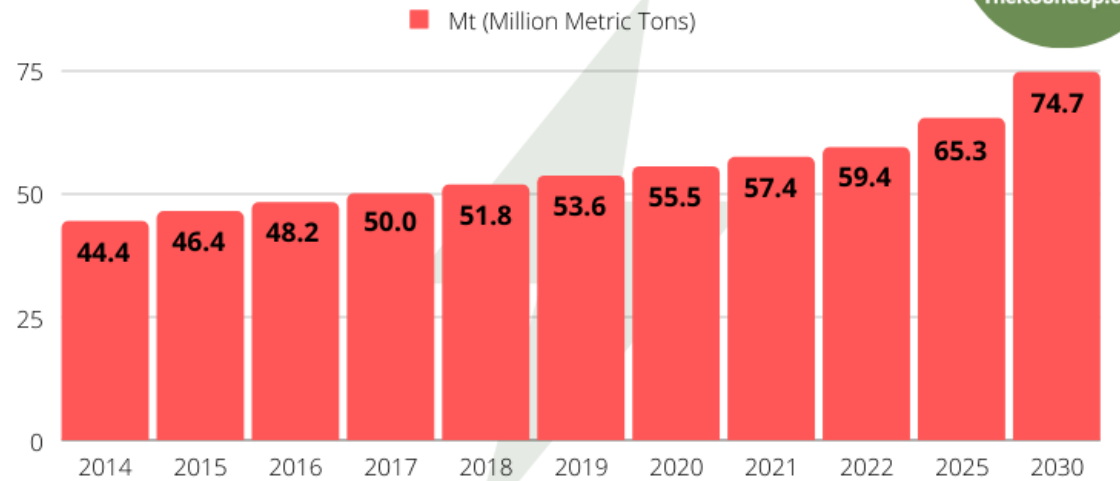
Source: National Footprint and Biocapacity Accounts, 2022 Edition
data.footprintnetwork.org



Total Annual Global E-WASTE GENERATION



TheRoundup.org

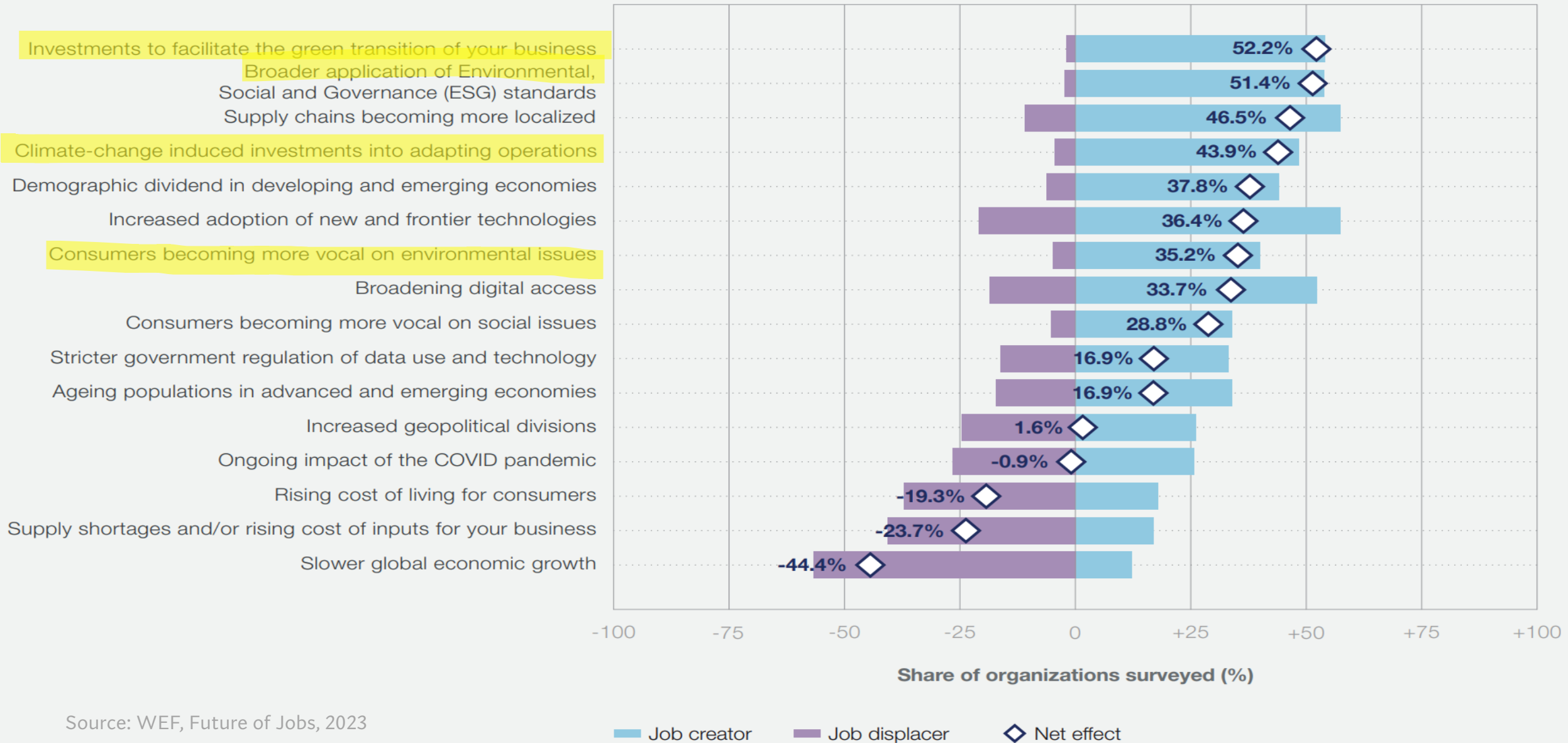


E-Waste Monitor

Expected impact of macrotrends on jobs, 2023–2027

Share of organizations surveyed that expect each trend to create or displace jobs, ordered by job creation net effect.

The shares of organizations which expect the impact of these macrotrends to be neutral are not plotted.



Source: WEF, Future of Jobs, 2023

Future of Jobs Report 2023 (WEF, 2023)

“**Technology adoption** will remain a key driver of business transformation in the next five years.”

“The **largest job creation and destruction** effects come from **environmental, technology** and **economic** trends.”

“The fastest-growing roles relative to their size today are driven by **technology, digitalization** and **sustainability**.”

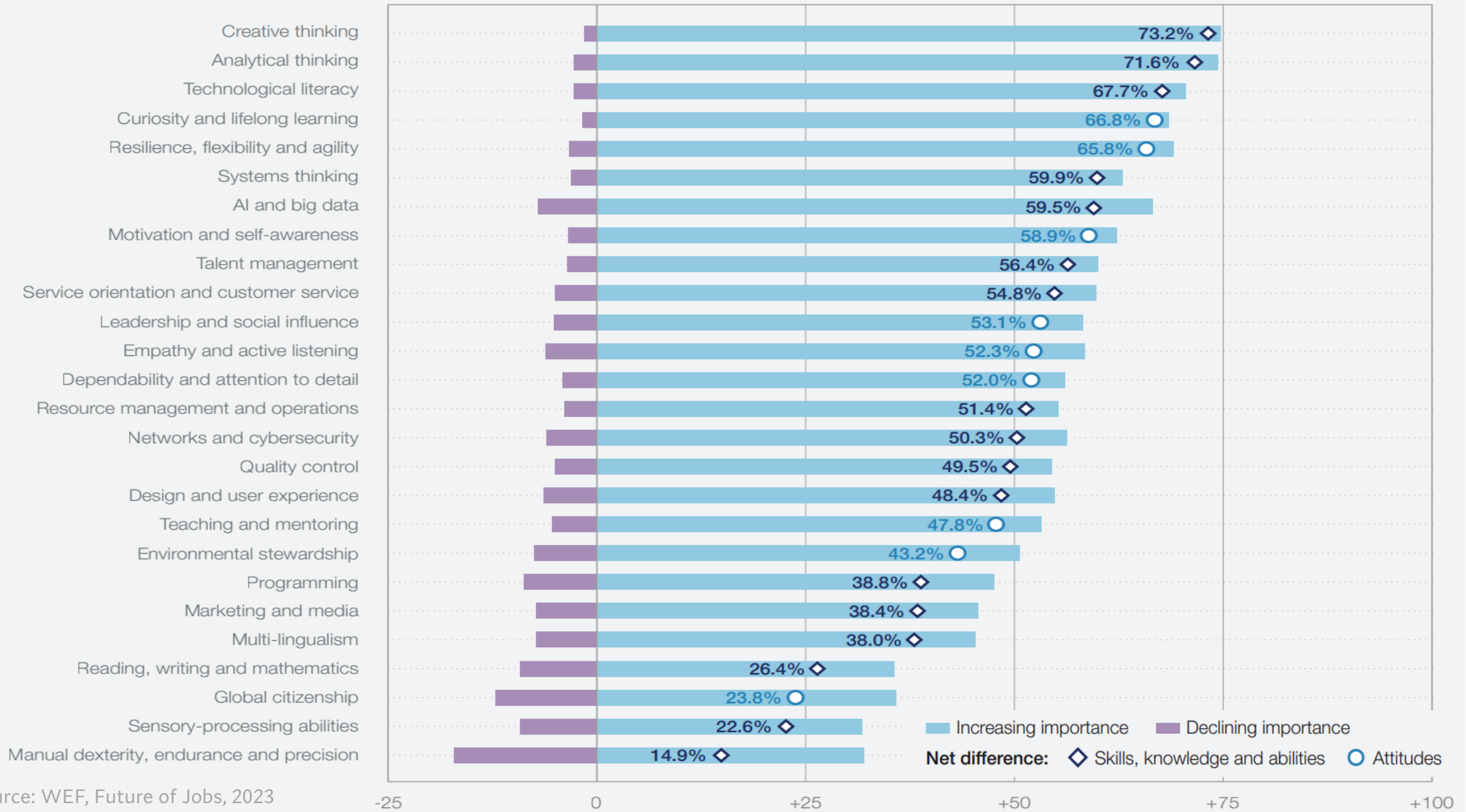
Future of Jobs Report 2023 (WEF, 2023)

“**Large-scale job growth** is expected in education, agriculture and digital commerce and trade, **largest losses** are expected in **administrative roles** and in traditional **security, factory** and **commerce** roles” (data entry, accounting, cashiers, payroll, etc).

“Employers estimate that **44% of workers’ skills will be disrupted in the next five years.**”

“**Six in 10 workers will require** training before 2027”

Share of organizations surveyed which consider skills to be increasing or decreasing in importance, ordered by the net difference.



Source: WEF, Future of Jobs, 2023

Digital Upskilling for Sustainability?

- **Digital technology can support sustainable economy** (decarbonization, dematerialization, circular economy, resource efficiency, ...)
- **no automatism** for solving our sustainability problems
- **directions and guidance needed!**

⚡ **Digital technologies trigger fundamental long-term paradigm shifts**

(political, social, economic)

⚡ **Digital technologies often increasing challenges** (inequality, power concentration, civil right/privacy, governance issues, etc.)

→ **Align digitalization and sustainability?**

Digitalization and Sustainability

Future graduates are required to be able to navigate in and contribute to these new and challenging realities.

Are universities equipping graduates with the adequate knowledge, skills & mindset necessary for this challenge?



Transformative Change and Sustainable Development

“**transformative change** (...) comprehensive reconfiguration of established norms, reflecting profound shifts in attitudes, behaviors, and societal constructs.” (IPBES, 2023)

- **alterations** in the way previous **beliefs and norms are perceived**, marking a *shift away from traditional modes of thinking and acting*
 - **capacity to question current practices and norms** and reconfigure main structures and systems of societies, economies, and environmental interactions
-

Transformative Change and Sustainable Development

requires a **broad set of abilities and competencies** :

- environmental literacy
 - green technology proficiency
 - communication skills
 - critical thinking
 - ethical decision-making
 - social responsibility
 - system thinking
 - data literacy
 - collaboration skills
 - innovation and creativity
 - policy advocacy
 - adaptability & resilience
- **not only** in the spectrum of **work** but **also** in **daily life**
-

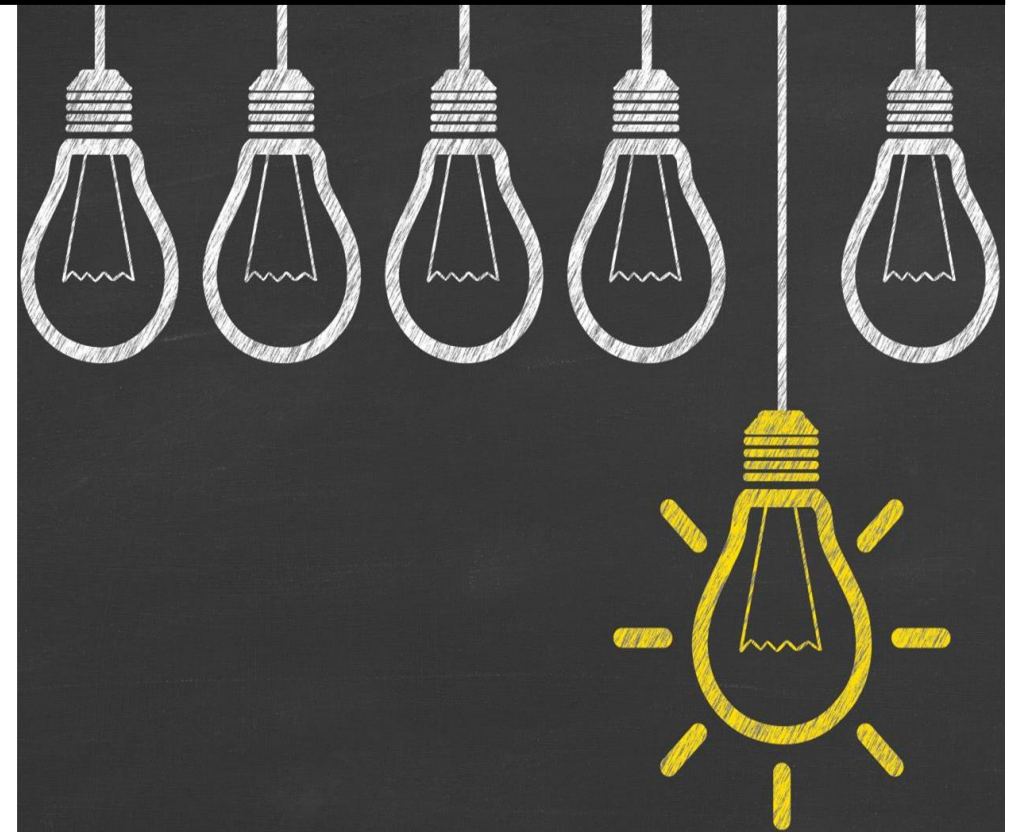
Transformative Learning

- learners can **adjust thinking based on new information** (Clark, 1991; Mezirow, 1997)
- learning opportunities linked to past experiences
- process of deep, constructive, and meaningful learning **going beyond mere knowledge acquisition**

Central elements for transformative learning:

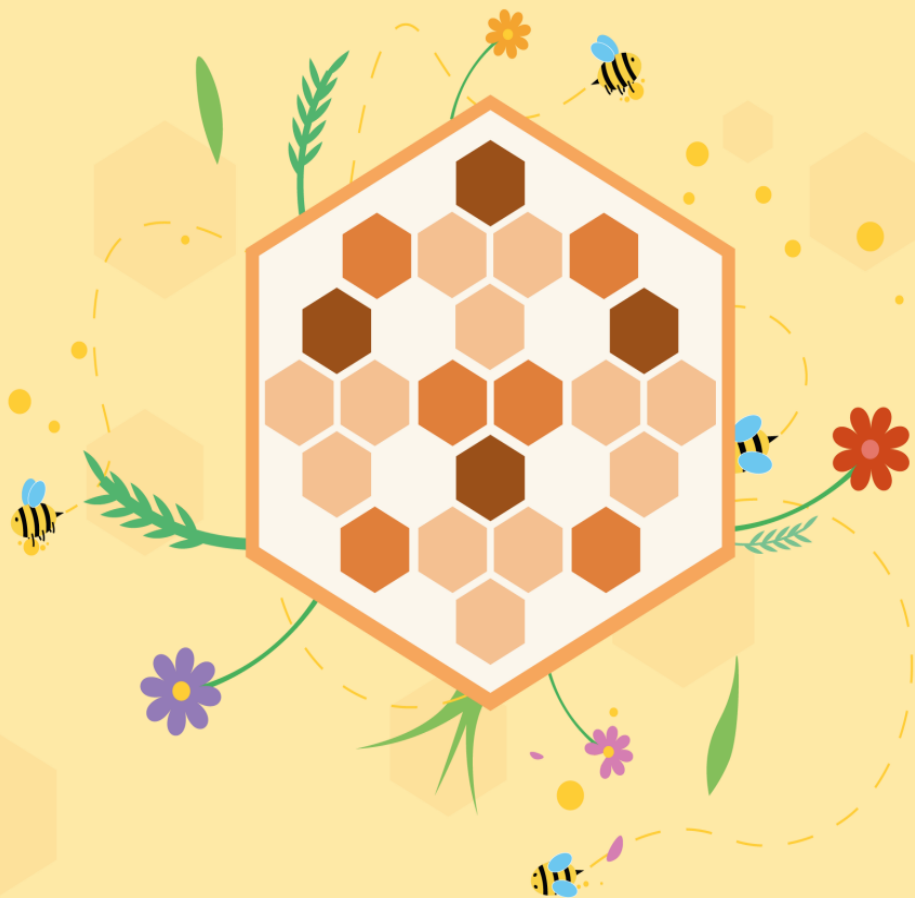
- **critical reflection and action,**
- **dialogue with others,**
- and **experience**

→ **shift of individual 's beliefs, perspectives, and reference framework**



GreenComp

The European sustainability
competence framework



Authors: Guia Bianchi, Ulrike Pisiotis, Marcelino Cabrera
Editors: Yves Punie, Margherita Bacigalupo

GreenComp (2022)

- **European sustainability competence framework** is one of the policy actions set out in the *European Green Deal* (2019) as a catalyst to promote learning on environmental sustainability
- guidance to educators, providing a definition of what sustainability as a competence entails



Embodying sustainability values



Embracing complexity in sustainability



Envisioning sustainable futures



Acting for sustainability

1.1 **Valuing sustainability**

1.2 **Supporting fairness**

1.3 **Promoting nature**

2.1 **Systems thinking**

2.2 **Critical thinking**

2.3 **Problem framing**

3.1 **Futures literacy**

3.2 **Adaptability**

3.3 **Exploratory thinking**

4.1 **Political agency**

4.2 **Collective action**

4.3 **Individual initiative**

EU Digital Competence Framework 2.2

(March 2022)



Information and data literacy

- 1.1. Browsing, searching and filtering data, information and digital content
- 1.2. Evaluating data, information and digital content
- 1.3. Managing data, information and digital content

Communication and collaboration

- 2.1. Interacting through digital technologies
- 2.2. Sharing information and content through digital technologies
- 2.3. Engaging in citizenship through digital technologies
- 2.4. Collaborating through digital technologies
- 2.5. Netiquette
- 2.6. Managing digital identity

Digital content creation

- 3.1. Developing digital content
- 3.2. Integrating and re-elaborating digital content
- 3.3. Copyright and licences
- 3.4. Programming

Safety

- 4.1. Protecting devices
- 4.2. Protecting personal data and privacy
- 4.3. Protecting health and well-being
- 4.4. Protecting the environment

Problem solving

- 5.1. Solving technical problems
- 5.2. Identifying needs and technological responses
- 5.3. Creatively using digital technologies
- 5.4. Identifying digital competence gaps



- **project-based** learning, **hands-on**, **problem solving**
- **group based** learning (collaborative, communicative)
- increase **environmental literacy**
- digital **upskilling**
- enable **critical thinking**, question current practices



Erasmus+ | Jean Monnet Module

歐盟與環境衛生：政策、成就與主要挑戰

EU & Environmental Health: Policy, Achievements and main Challenges

Vincent Rollet & Armin Ibitz
Graduate Institute of European Studies
Wenzao Ursuline University

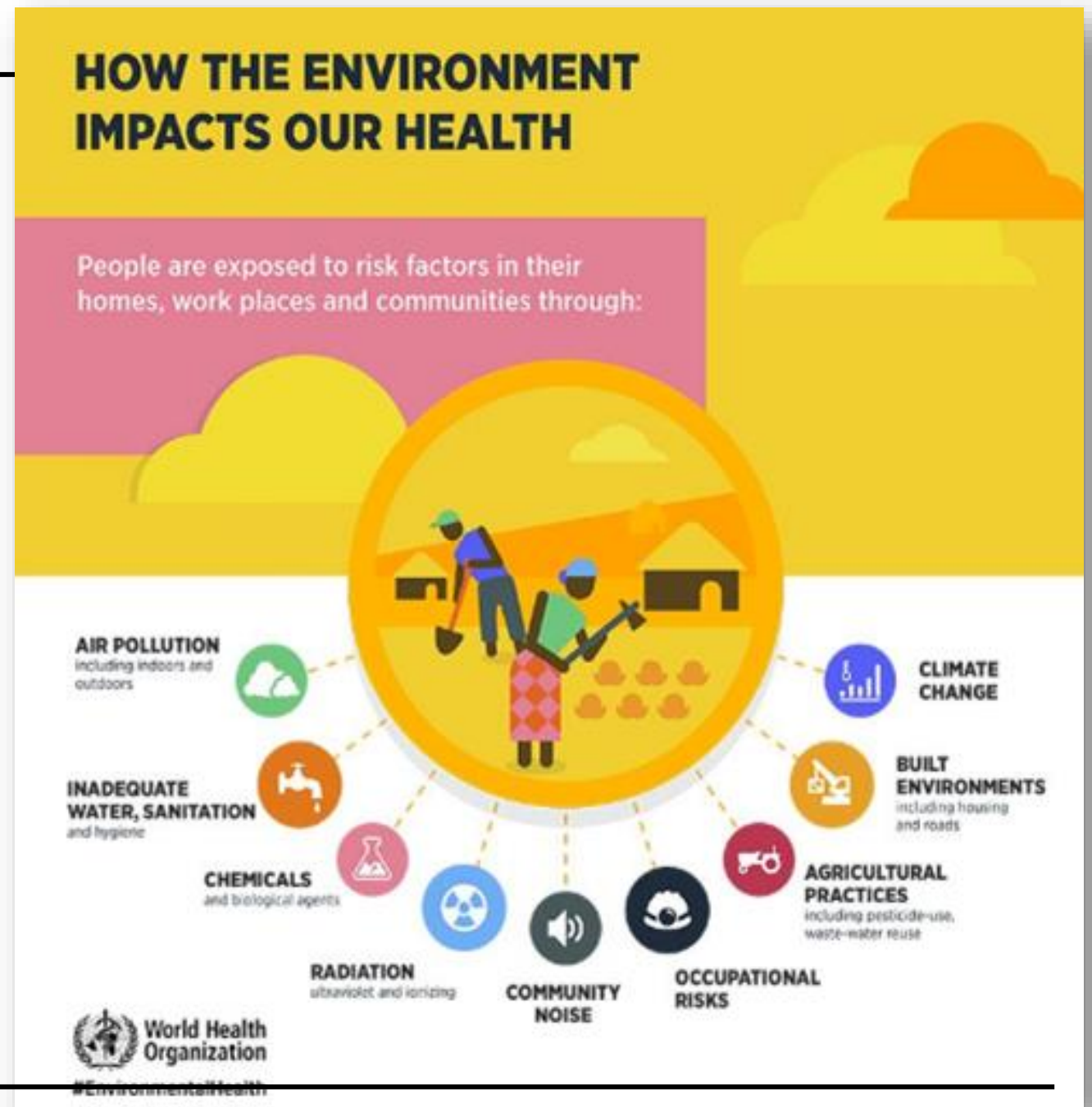




Course:

EU and Environmental Health: Policy, Achievements and main Challenges

- tailor-made course on policies and concrete actions in the field of **Environment & Health**





EU's regional and international responses to most urgent and common global issues linking environment & health, such as:

chemical hazards, air pollution, climate change, water quality, indoor pollution, plastics use, light pollution, noise pollution, e-waste, ...



DRINKING WATER 飲用水

Human beings consist of about 60% water without drinking they can only survive a few days.
人類只有60%是水由構成，一旦缺水即很快死亡

Origin of drinking water in Europe
歐洲飲用水來源

- An adult needs 1.5-2L water per day to be sustainably healthy
成年人一天需要喝1.5-2公升的水才可以維持健康的體態
- 20% of the global population has no access to a safely managed drinking-water service (2017).
2017年全球仍有20%的人無法獲得安全的飲用水服務
- >8000 people in Europe die from the consequences of contaminated water every year (2020).
2020年共有>8000名歐洲人死於污染飲用水

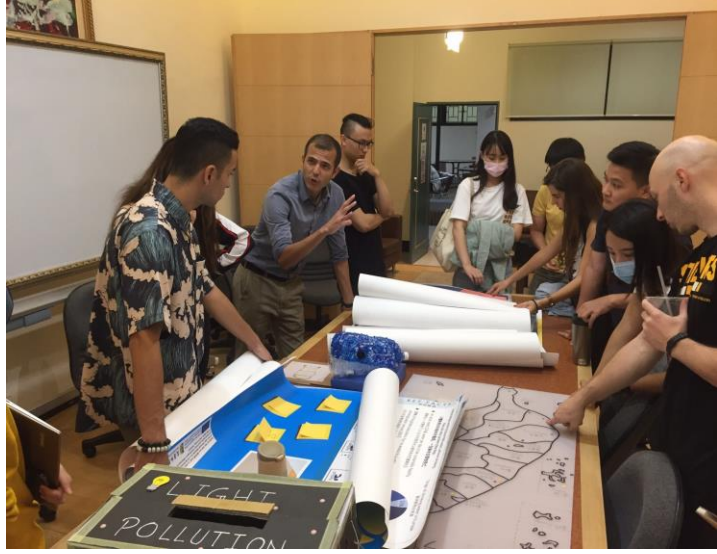
PROBLEM 問題	CONSEQUENCES 後果
<p>Contaminated Water 受污染的水質</p> <p>Poor Sanitation 衛生設備差</p>	<p>HEALTH RISKS 健康風險</p> <p>Common symptoms 常見症狀:</p> <ul style="list-style-type: none"> Headache 頭痛 Diarrhea and fever 腹瀉及發燒 Blood in the stool 血便 Nausea 嘔吐 Severe cough 咳嗽 <p>Worst Case 嚴重併發症: Death 死亡</p>
	<p>Common diseases 常見疾病:</p> <ul style="list-style-type: none"> Cholera 霍亂 Cancer 癌症 Typhoid 傷寒 Diarrhoea 腹瀉 Hepatitis A 甲型肝炎

EU DRINKING WATER DIRECTIVE 歐盟飲用水指令

OBJECTIVE 共同目標
Protect human health by setting quality-standards that apply to all waters intended for human consumption 制定適用於所有供人類飲用的水質標準以保護人類健康

STANDARDS 標準制定
Water is drinkable if it is free of microorganisms, parasites and hazardous substances 若水中無微生物、寄生蟲及有害物質則可飲用
Directive sets microbiological, chemical, and indicator parameters 指令水質的微生物學、化學及指標參數

IMPLEMENTATION 實施方法
EU members may implement necessary laws, regulations, and provisions referring to drinking water 歐盟成員法可制定與飲用水有關的法律、法規及行政規定
EU members should provide access to drinking water with the prescribed standards 歐盟成員應確保人民享有符合標準之飲用水
EU members may give regular status-updates of drinking water to the EU Commission 歐盟成員應定期向歐盟委員會更新飲用水狀況
EU members are asked to set additional standards if needed 歐盟成員若需要應設定額外標準



Google search operators cheat sheet

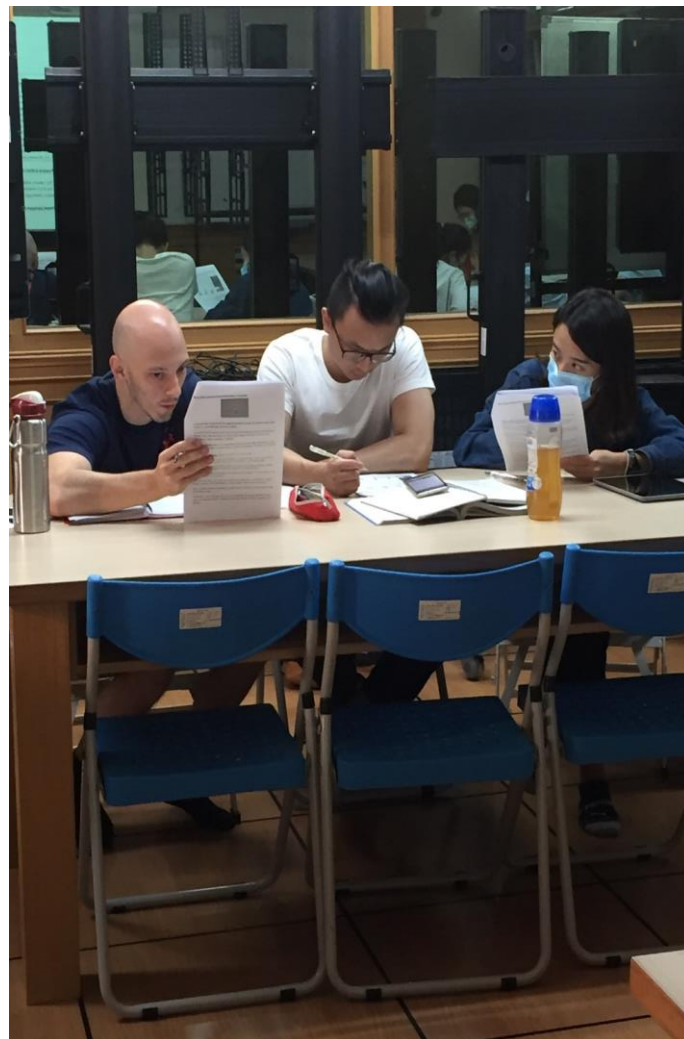
You can find all of the major organic search operators below, broken up into three categories: “Basic”, “Advanced”, and “Unreliable”. Basic search operators are operators that modify standard text searches.

I. Basic search operators

- " "** **"nikola tesla"**
Put any phrase in quotes to force Google to use exact-match. On single words, prevents synonyms.
- OR** **tesla OR edison**
Google search defaults to logical AND between terms. Specify "OR" for a logical OR (ALL-CAPS).
- |** **tesla | edison**
The pipe (|) operator is identical to "OR". Useful if your Caps-lock is broken :)
- ()** **(tesla OR edison) alternating current**
Use parentheses to group operators and control the order in which they execute.
- **tesla -motors**
Put minus (-) in front of any term (including operators) to exclude that term from the results.
- *** **tesla "rock * roll"**
An asterisk (*) acts as a wild-card and will match on any word.

II. Advanced search operators

- intitle:** **intitle:"tesla vs edison"**
Search only in the page's title for a word or phrase. Use exact-match (quotes) for phrases.
- allintitle:** **allintitle: tesla vs edison**
Search the page title for every individual term following "allintitle:". Same as multiple intitle:'s.
- inurl:** **tesla announcements inurl:2016**
Look for a word or phrase (in quotes) in the document URL. Can combine with other terms.
- allinurl:** **allinurl: amazon field-keywords nikon**
Search the URL for every individual term following "allinurl:". Same as multiple inurl:'s.
- intext:** **intext:"orbi vs eero vs google wifi"**
Search for a word or phrase (in quotes), but only in the body/document text.
- allintext:** **allintext: orbi eero google wifi**
Search the body text for every individual term following "allintext:". Same as multiple intext:'s.
- filetype:** **"tesla announcements" filetype:pdf**
Match only a specific file type. Some examples include PDF, DOC, XLS, PPT, and TXT.



EXHIBITION (2019-2020)



Light Pollution

by
Ivy Ratnacitta
&
Ke-Ching Wei (魏可晴)



Air pollution (PM 2.5)

by
Cheng Yi Hsuan (鄭以璇)
&
Hsieh Yi Hsiu (謝宜秀)
&
Tsai Yu Hsuan (蔡瑜萱)



Bathing Water

by
Yeh Wan-En (葉宛恩)
&
Lu Kai-Hsin (盧鏡莘)



Plastic Pollution (BPA)

by
Gu Ting Yi (顧庭伊)
&
Yu, Pei Chi (余珮綺)
&
Li, Pei Yu (李培瑜)



Drinking Water

by
Lee, Wan Yu (李宛諭)
&
Raphael Mielke



The adventures of Mr. EU SoyBean



<https://www.youtube.com/watch?v=ILtsGRK7fAQ>

Activity



<https://www.youtube.com/watch?v=KIkcrusadA>



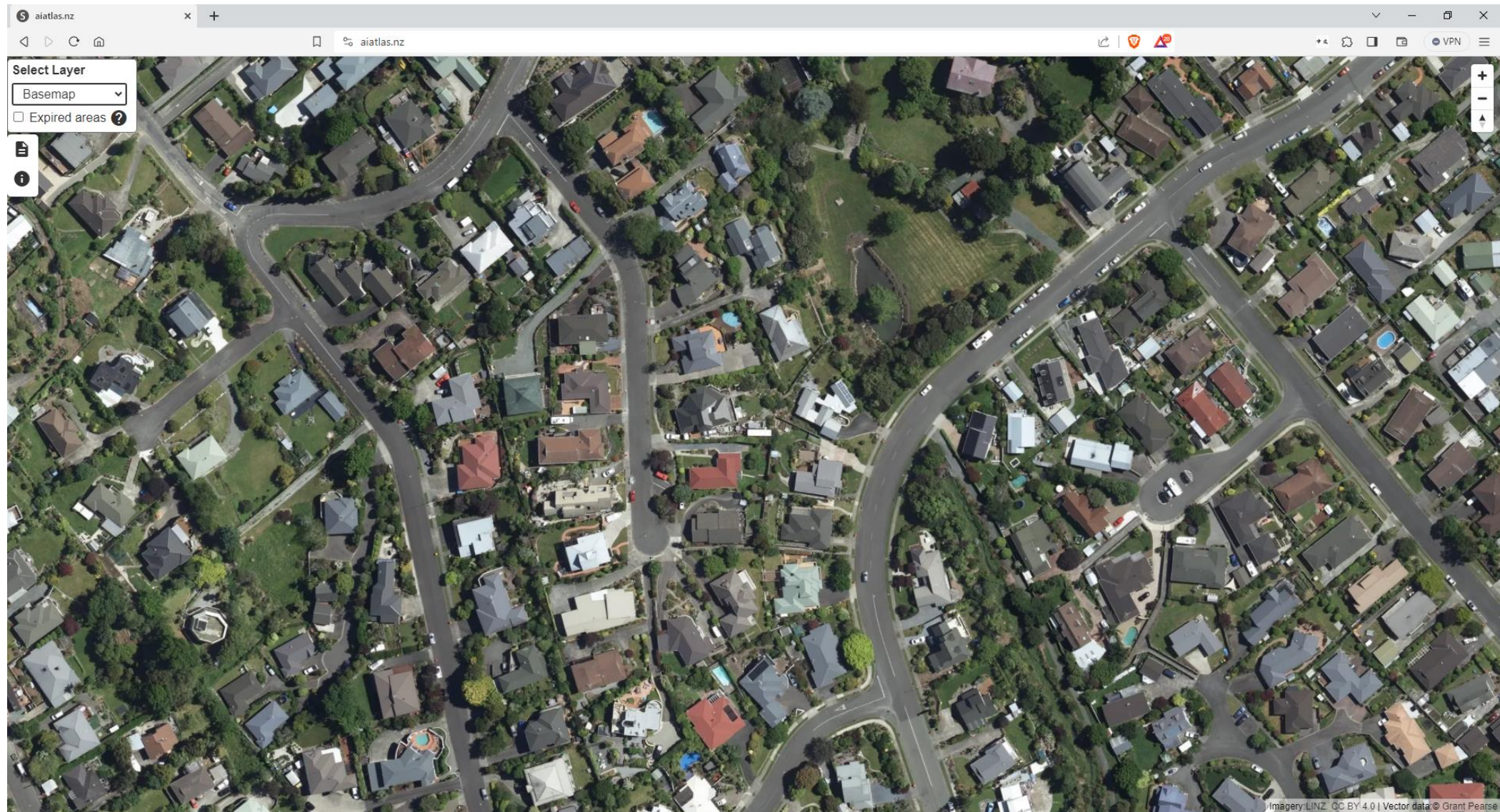
Teilen

Ansehen auf  YouTube<https://www.youtube.com/watch?v=FbS34GXapoc>

VR Study Tour







<https://www.aiatlas.nz/>

Interactive World Forest Map & T x +

globalforestwatch.org/map/?map=eyJZW50ZXliOnsibGF0b2t0cyNTI2Mzc3ODQ1MiwibG5nljoxMjAuNTAwNj11NjQxNz...

GLOBAL FOREST WATCH

MAP DASHBOARD HELP ABOUT BLOG OTHER TOOLS

ENGLISH

LEGEND ANALYSIS

FOREST CHANGE

LAND COVER

LAND USE

CLIMATE

BIODIVERSITY

GOOGLE SATELLITE IMAGERY

SATELLITE IMAGERY

- PLANET SATELLITE IMAGERY
Monthly high resolution basemaps (tropics)
- GOOGLE SATELLITE IMAGERY
Highest resolution imagery 1-3 years old (global)
- LANDSAT SATELLITE IMAGERY
Coarse resolution imagery (global)
- LANDSAT 8 / SENTINEL 2
Latest satellite imagery available from Sentinel-2 and Landsat 8

Tree cover gain - 2000-2020

- Tree cover gain

Tree cover loss - 2001-2022

- Tree cover loss

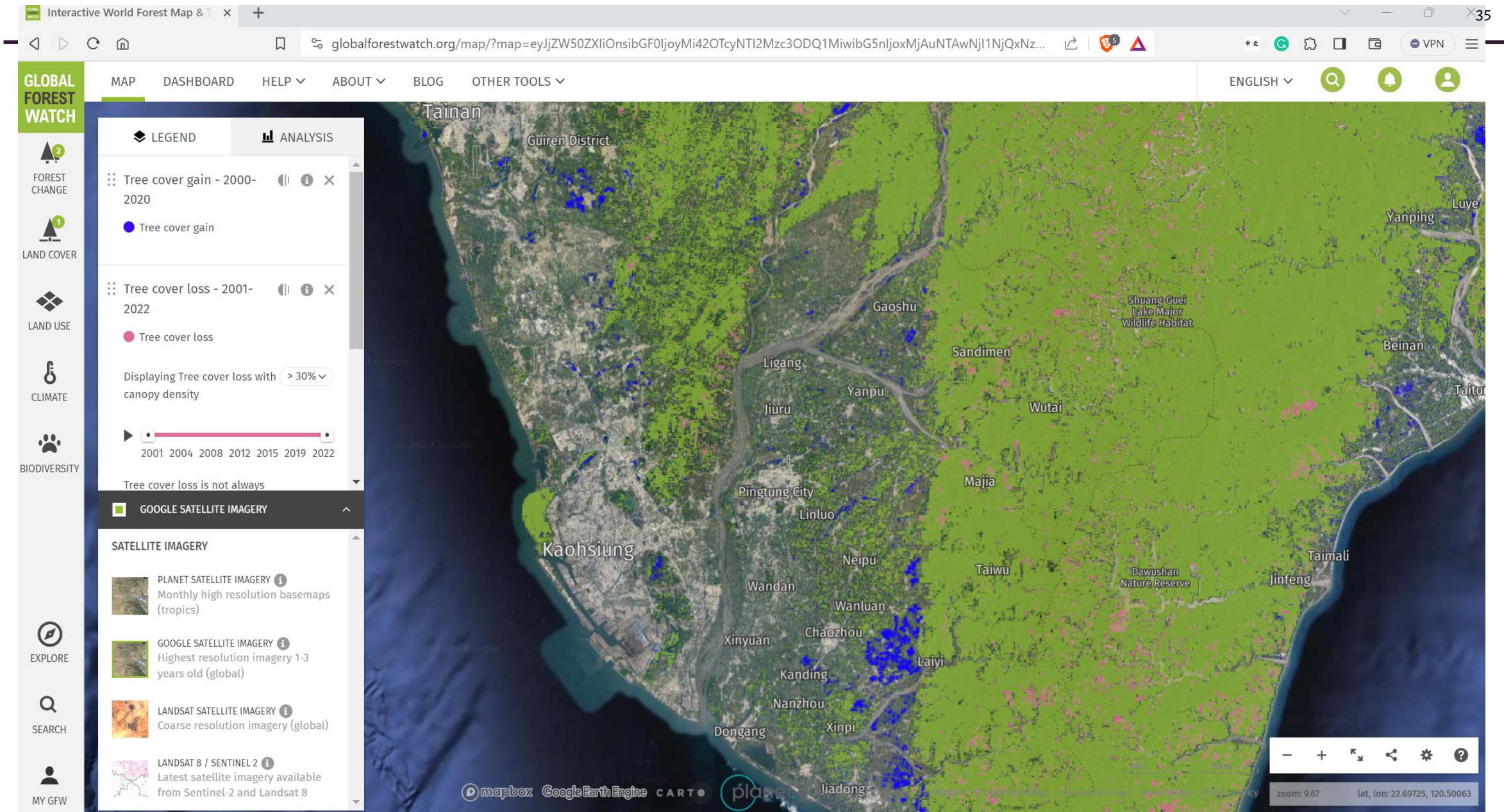
Displaying Tree cover loss with canopy density > 30%

2001 2004 2008 2012 2015 2019 2022

Tree cover loss is not always

mapbox Google Earth Engine CARTO planet

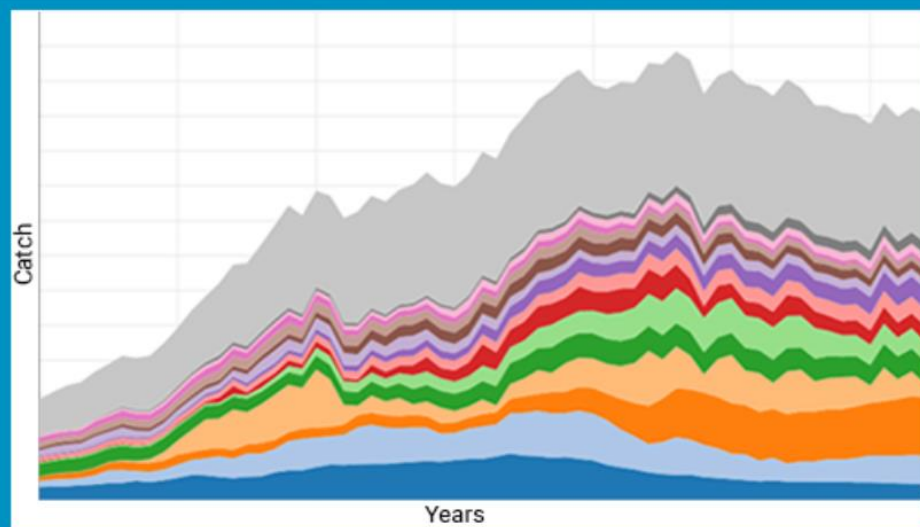
zoom: 9.67 lat, lon: 22.69725, 120.50063



<https://www.globalforestwatch.org/map>

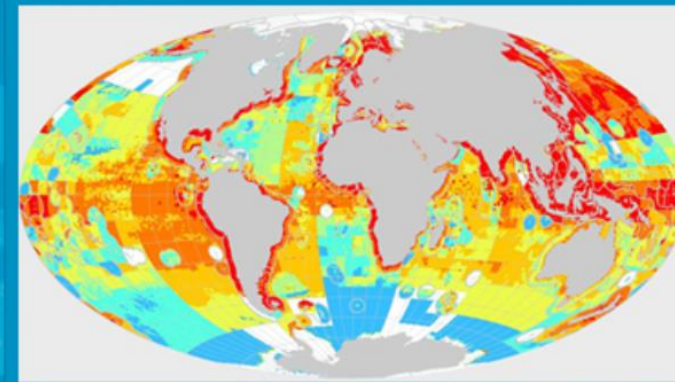
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We present fisheries and fisheries-related data at spatial scales that have ecological and policy relevance, such as by Exclusive Economic Zones, High Seas, or Large Marine Ecosystems.



Our interactive graphs »

Click graph for catches, data access and related information.



Our interactive maps »

Click above for catch maps.

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Europass tools

Create your Europass CV >

Create Cover Letter >

Test your digital skills >



Which of the following practices does not contribute to the reduction of energy consumption by a laptop computer?

Choose one answer only

0 : 53
mins secs

- Deactivating the WiFi connection when not in use.
- Using a USB mouse instead of the laptop mouse (touchpad).
- Reducing the brightness of the screen.
- Defragmenting the hard drive.

I don't know

Next

Thank you!
