



Greening the economy in the pan- European region: working towards sustainable infrastructure

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There is an **urgent need to include sustainable and climate-resilient infrastructure** as an integral part of **green growth to deliver energy**, water and transportation solutions that will facilitate opportunity, connection and **sustainable growth.**”

Mr. Ban Ki-moon, former Secretary-General

Main challenges

- The world is not investing what it takes to close the infrastructure gap (*\$6,9 trillion/year until 2030*)
- The investments being made are often not sustainable (*potential benefits are not always materialized*)

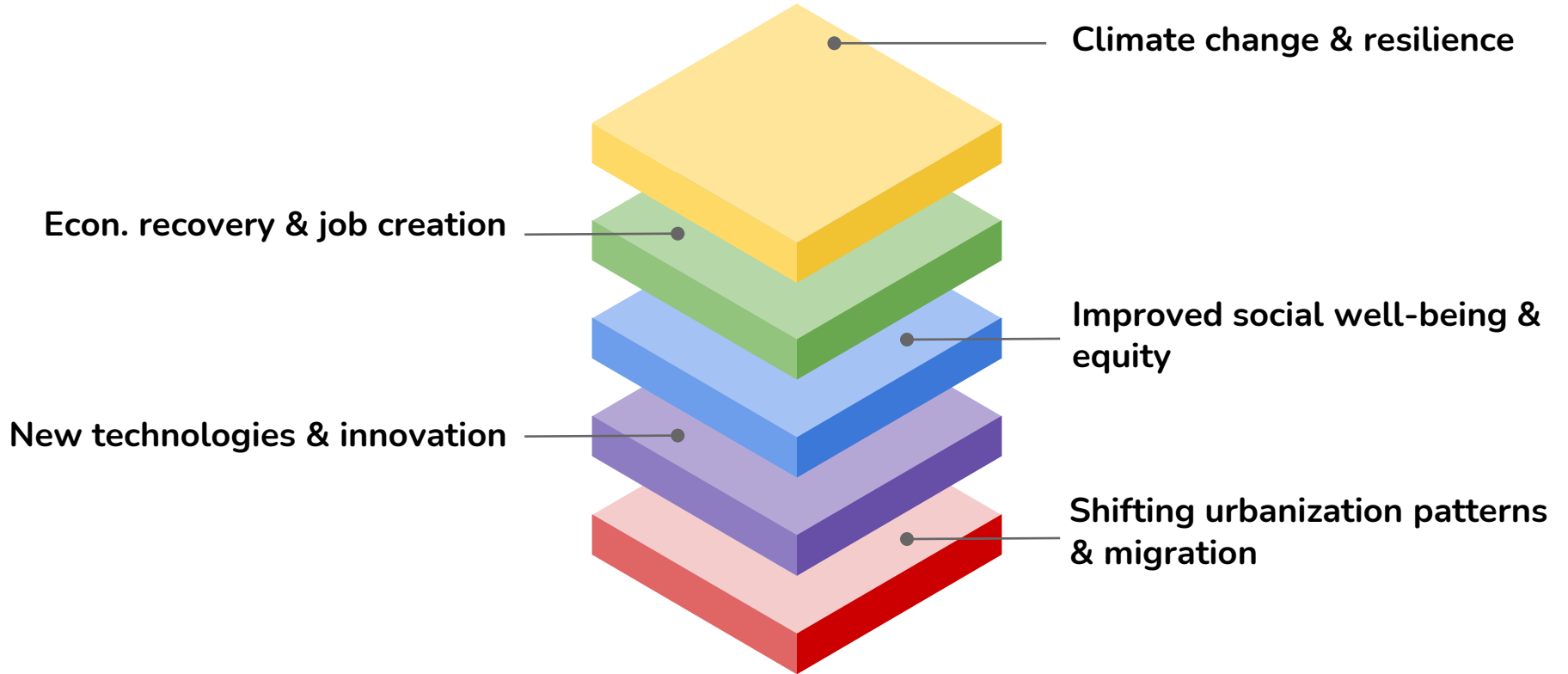


WHAT IS SUSTAINABLE INFRASTRUCTURE?

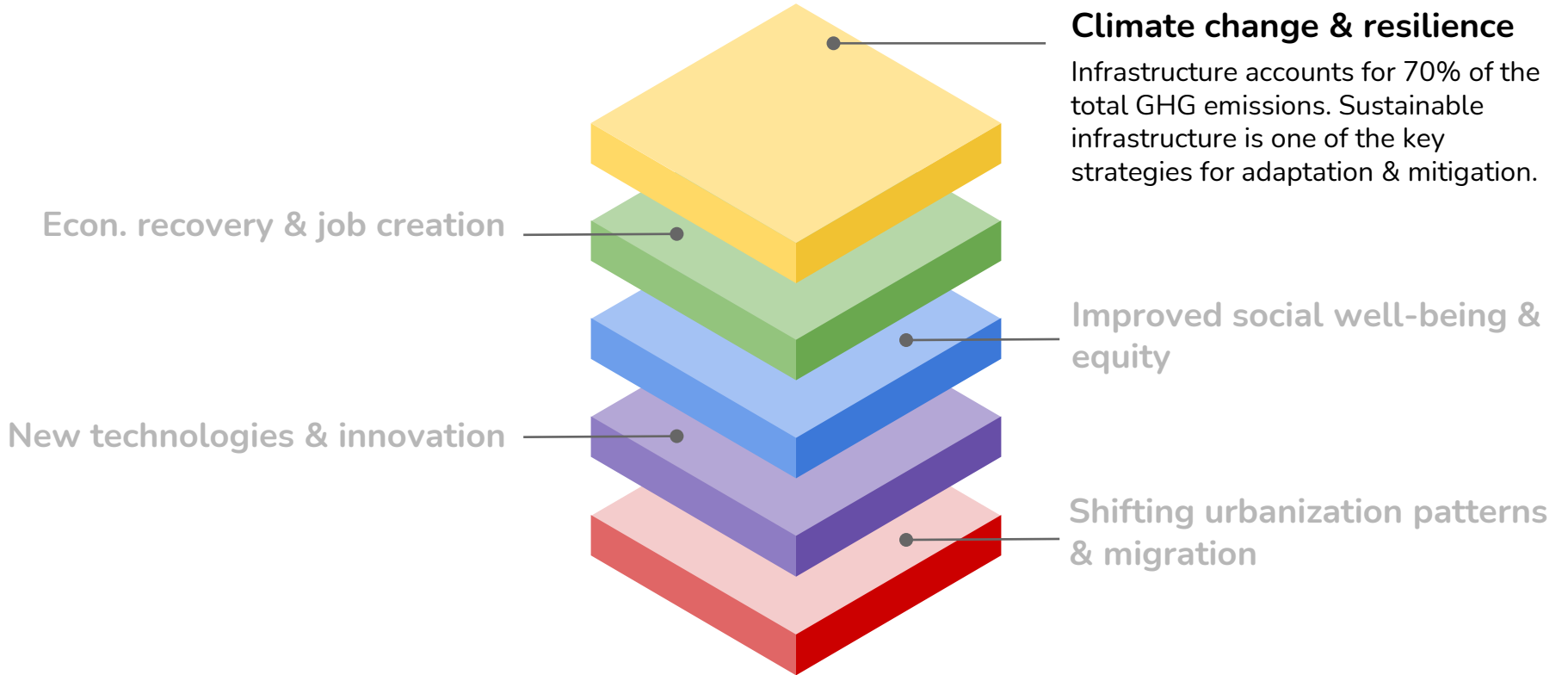
Sustainable infrastructure (sometimes called “green infrastructure”) systems are those that are **planned, designed, constructed, operated and decommissioned** in a manner that ensures **economic and financial, social, environmental** (including climate resilience) and **institutional sustainability** over the **entire infrastructure life cycle**. Sustainable infrastructure can include built infrastructure, natural infrastructure or **hybrid** infrastructure that contains elements of both.

Note: This definition was published by UNEP in its report International Good Practice Principles for Sustainable Infrastructure (Nairobi, 2021), as an adaptation of the definition provided by IDB in its March 2018 Technical Note No. IDB-TN-1388 entitled What is Sustainable Infrastructure? A Framework to Guide Sustainability Across the Project Cycle.

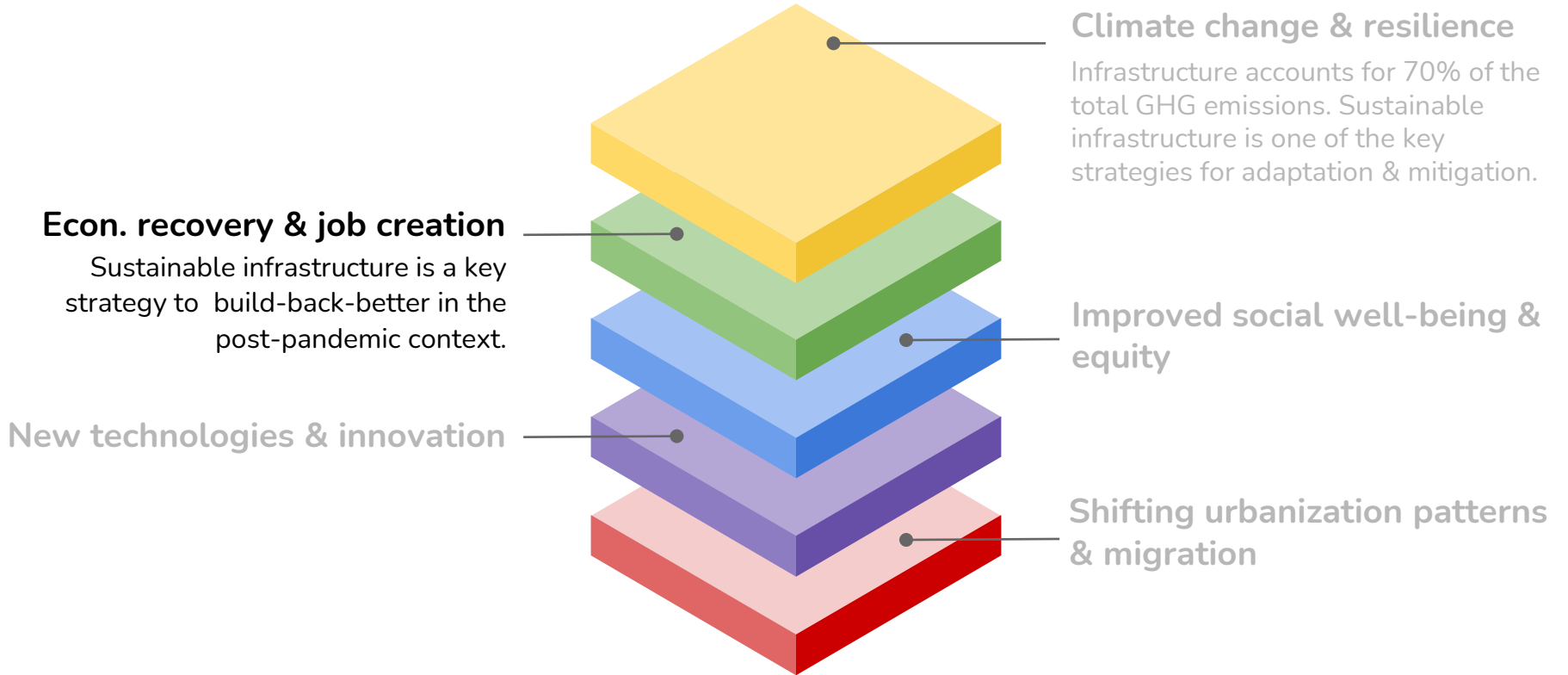
Main drivers of sustainable infrastructure demand



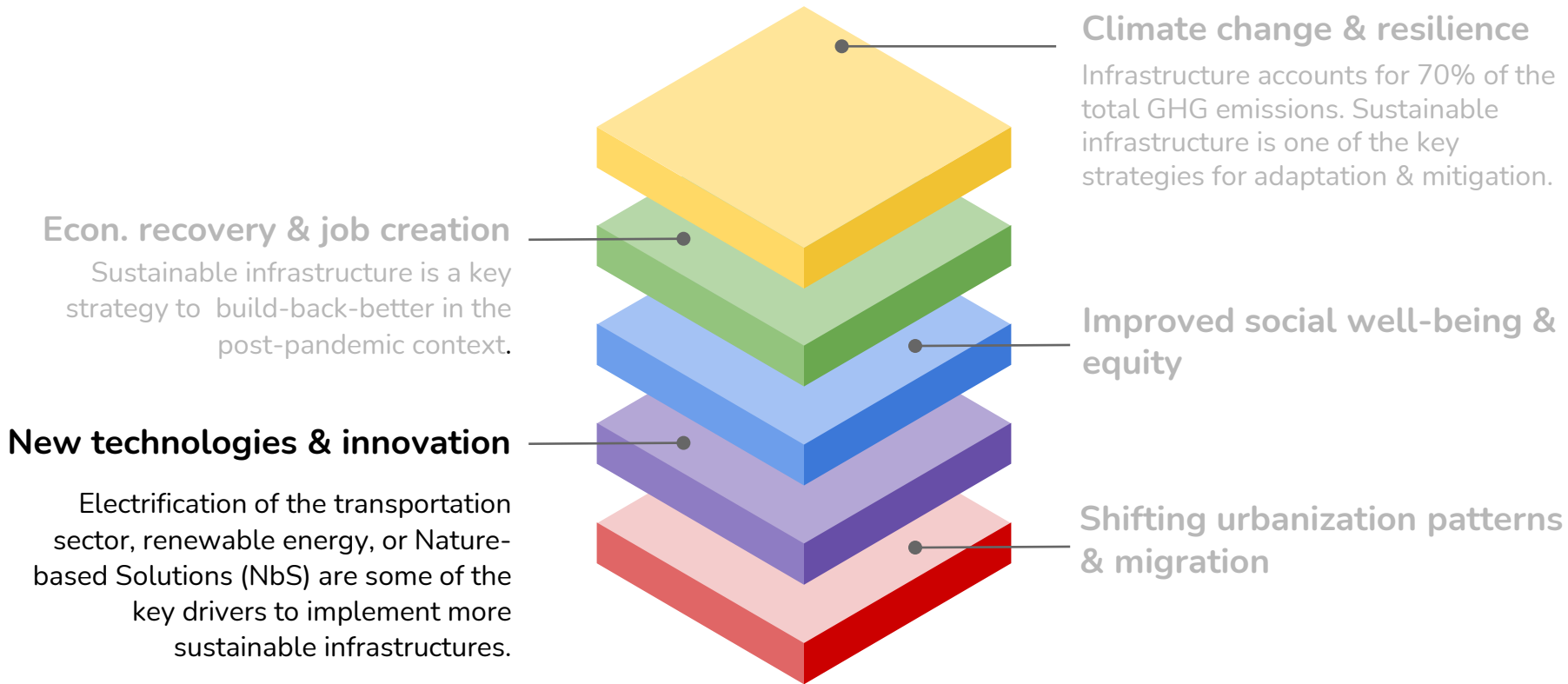
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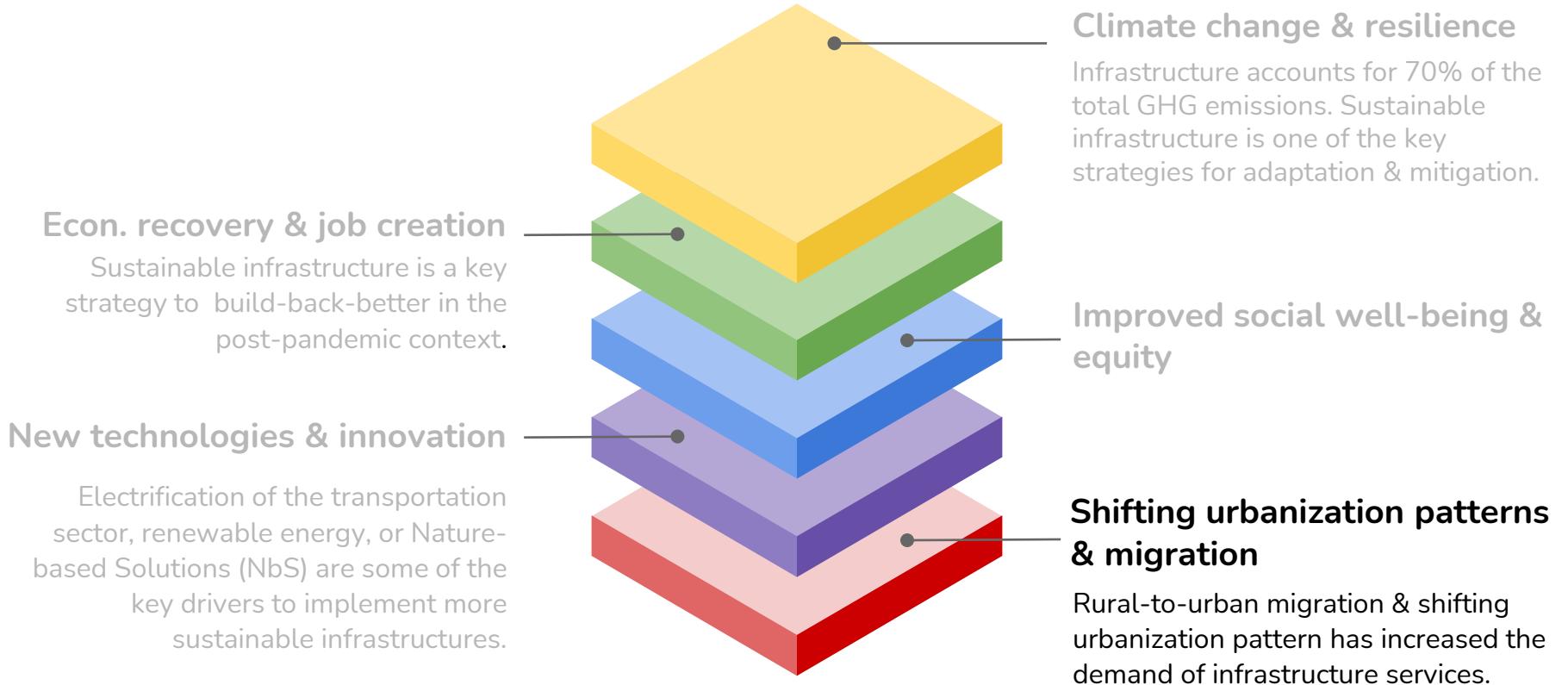
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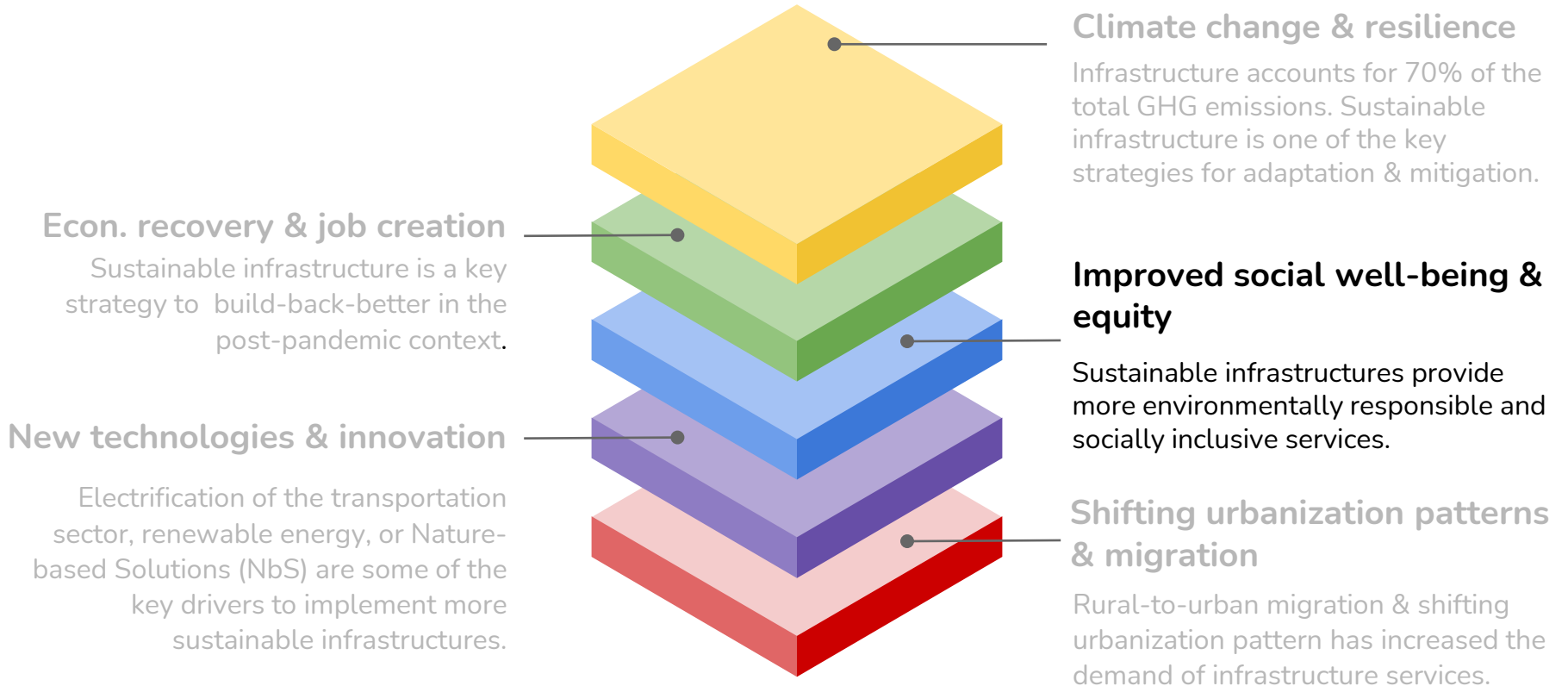
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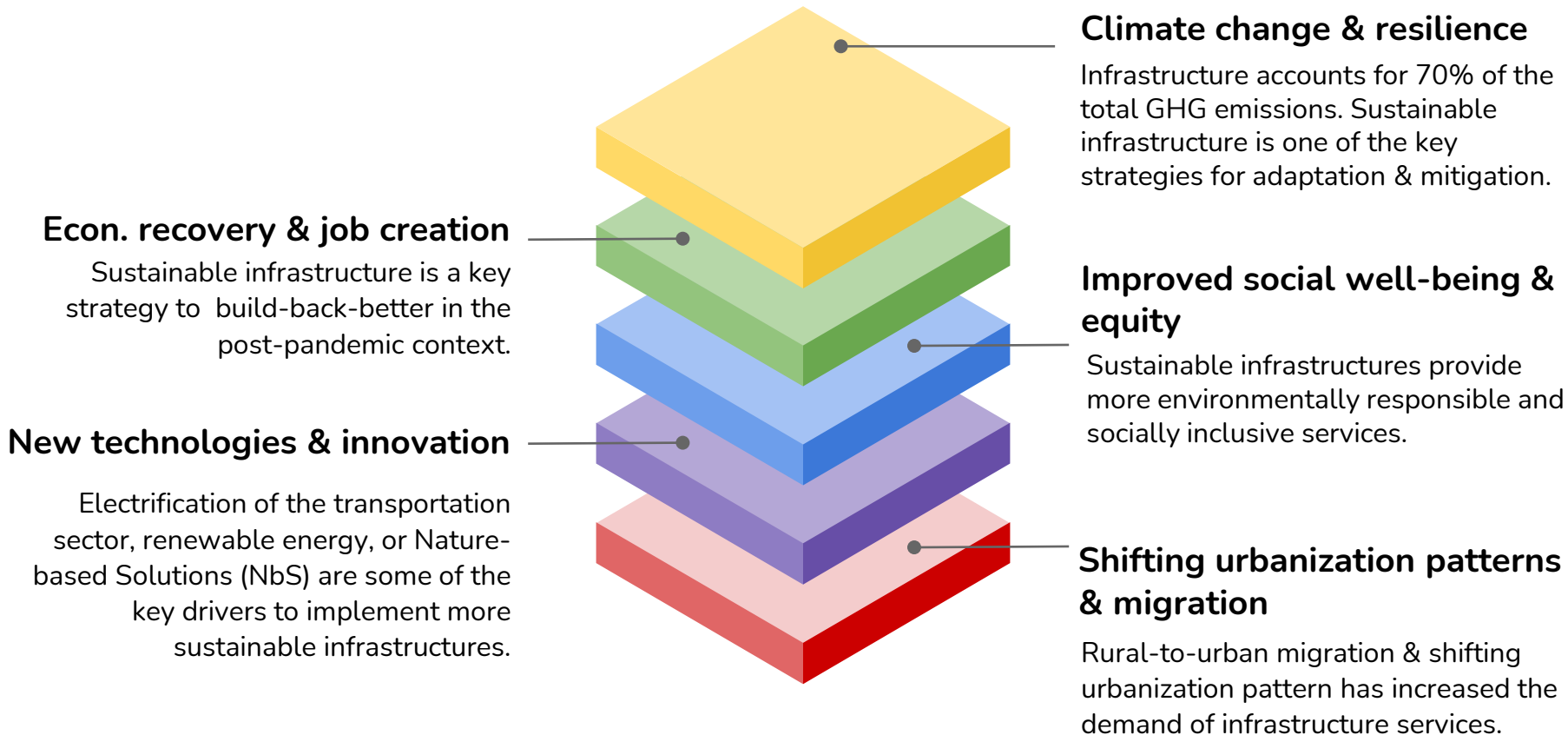
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Main drivers of sustainable infrastructure demand



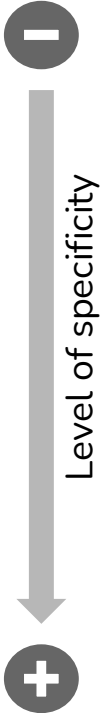
Main drivers of sustainable infrastructure demand



Landscape of sustainability initiatives

Provide aspirational lines of action at the global scale, these are in most cases published by international groups.

Ej. G20 Principles for Quality Infrastructure Investment (QII)



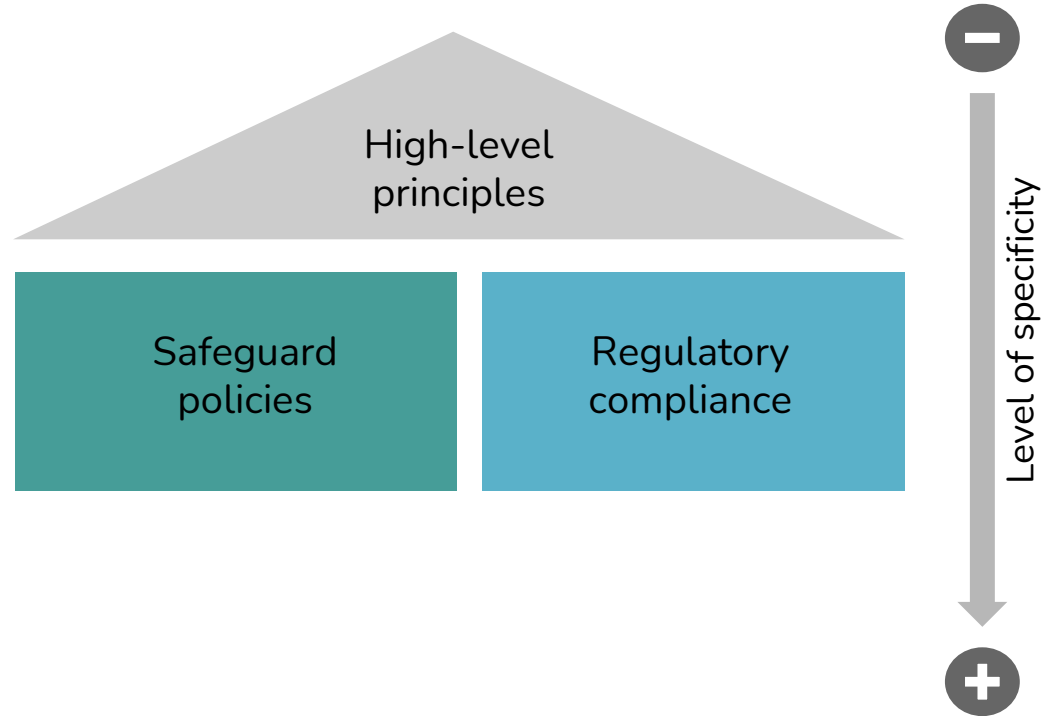
Landscape of sustainability initiatives

Provide aspirational lines of action at the global scale, these are in most cases published by international groups.

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Focused mostly on environmental and social considerations. These define minimum requirements and are mostly focused on risk mitigation (do-not-harm). *Ej. (IFC) Performance Standards and the Equator Principles*



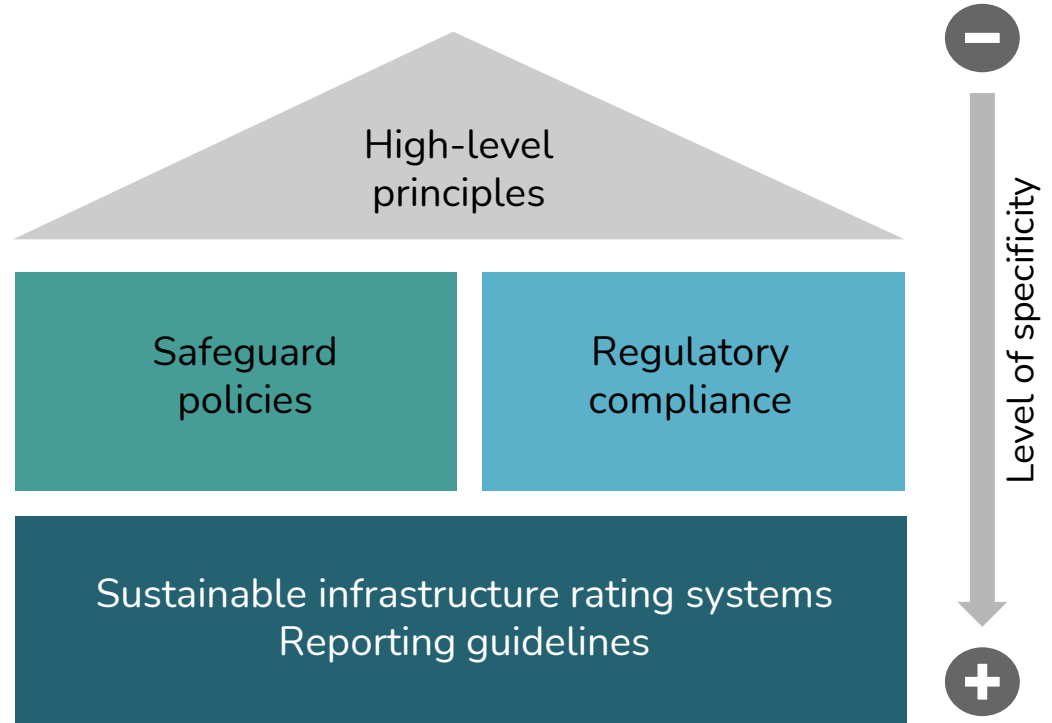
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Voluntary frameworks focused on sustainability performance (beyond minimum and legal compliance). *Ej. Envision Rating System or Global Reporting Initiative (GRI)*



Cross comparative analysis - methodology

These frameworks analyzed are:

1. Indicator Pan-European Strategic Framework
2. MDB Common Set of Aligned Sustainable Infrastructure Indicators (SII)
3. UNEP International Good Practice Principles for Sustainable Infrastructure
4. The G20 principles for Quality Infrastructure Investment
5. Fast-Infra
6. EU Taxonomy for Sustainable Activities

Cross comparative analysis - methodology

- These frameworks represent initiatives developed by the **public, and private sector** as well as **international groups** and **Multilateral Development Banks**.
- The **respective criteria** from the different frameworks have been organized around **four main categories**:
 1. Environmental sustainability & resilience
 2. Social sustainability,
 3. Institutional sustainability
 4. Economic and financial sustainability.

Framework analysis

Core elements Frameworks	Environmental sustainability and resilience	Social sustainability	Institutional sustainability	Economic and financial sustainability
Pan-European Strategic Framework	<ul style="list-style-type: none"> Natural capital Ecosystem services sustainable production patterns (circular economy) 	<ul style="list-style-type: none"> Healthy living & well-being Sustainable consumption Public participation & education 	<ul style="list-style-type: none"> Externalities & natural capital Green & fair trade 	<ul style="list-style-type: none"> Externalities & natural capital Green and decent jobs, & human capital
MDB Common Set of Aligned Sustainable Infrastructure Indicators (SII)	<ul style="list-style-type: none"> GHG reduction Climate risk, resilience Biodiversity Pollution control & monitoring Efficient use of materials Energy & water efficiency 	<ul style="list-style-type: none"> Access and affordability Stakeholder engagement Human & labor rights Disability & special needs Gender integration Health & safety 	<ul style="list-style-type: none"> Anti corruption protocols & procedures Corporate sustainability disclosure 	<ul style="list-style-type: none"> Positive economic & social return (ERR) Job creation
UNEP International Good Practice Principles for Sustainable Infra.	<ul style="list-style-type: none"> Resilience Environmental impacts and nature Resource efficiency Circular economy 	<ul style="list-style-type: none"> Equity inclusiveness & empowerment 	<ul style="list-style-type: none"> Life Cycle assessment Strategic planning Transparent, inclusive & evidence-based decision-making 	<ul style="list-style-type: none"> Fiscal sustainability & innovative finance Enhancing economic benefits
The G20 principles for Quality Infrastructure Investment	<ul style="list-style-type: none"> GHG reduction Climate risk, resilience Biodiversity Natural capital Pollution control & monitoring Resource efficiency Circular economy 	<ul style="list-style-type: none"> Community Development Stakeholder engagement Displacement female jobs Data gathering 	<ul style="list-style-type: none"> Participatory project identification, Procurement standards Conflict of interest and ethics Sustainability Certification 	<ul style="list-style-type: none"> ROR/ contingencies Cost overruns Domestic goods & services Training and education Permanent & construction jobs
Fast-Infra	<ul style="list-style-type: none"> GHG reduction Climate change mitigation, resilience Biodiversity Natural environment Pollution prevention and control Waste reduction Circular economy 	<ul style="list-style-type: none"> Stakeholder Engagement Human & Labour Rights Land Acquisition & Resettlement Mitigation Gender & Inclusivity Health & Safety 	<ul style="list-style-type: none"> Sustainability & Compliance Policies Anti-corruption Policies & Procedures Transparency & Accountability 	<ul style="list-style-type: none"> Embedding Government Policies for Project Fiscal Transparency & Procedures
EU Taxonomy for Sustainable Activities	<ul style="list-style-type: none"> Climate change mitigation Climate change adaptation Biodiversity and ecosystems. Pollution and control Circular economy Water and marine resources 	---	---	---

Indicators

CATEGORIES

INDICATORS

SUB-INDICATORS

Environmental sustainability and resilience

1. Climate change adaptation & mitigation
2. Environmental conservation & biodiversity protection
3. Circular Economy

- 1.1 GHG emission reduction
- 1.2 Disaster risk reduction strategies.
- 2.1 Biodiversity
- 2.2 Ecosystem services
- 3. Circular economy

Social sustainability

4. Gender equality & empowerment
5. Life-cycle cost accounting
6. Access to basic services

- 4. Gender equality & empowerment
- 5. Life-cycle cost accounting
- 6. Access to basic services

Institutional sustainability

7. Transparency & anticorruption

- 7. Transparency & anticorruption

Econ/ financial sustainability

8. Financial sustainability and innovative finances

- 8. Sustainability investment

Results

CATEGORY

ENVIRONMENTAL SUSTAINABILITY AND RESILIENCE

INDICATOR

DEFINITION

1. Climate change adaptation and mitigation

Infrastructure projects **should reduce/avoid Greenhouse Gas emissions, be climate-resilient and integrate adaptation and mitigation strategies** through the full cycle.

SUB-INDICATOR

UNIT OF MEASUREMENT

PROGRESS


1.1 GHG emission reduction

Total greenhouse gas emissions in the pan-European region (without land use, land-use change, and forestry) by subregion, **million tons of CO2 equivalent (2014-2018)**

Overall the GHG **emissions in the Pan-European region has gone up**, even though some subregions are moving in the right direction 

1.2 Disaster risk reduction strategies

Score of adoption and **implementation of national Disaster Risk Reduction strategies** in line with the Sendai Framework in the pan-European region (2018)

All the subregions, and, therefore, the pan-European region as a whole, **increased the adoption and implementation of disaster risk-reduction strategies** from 2015 to 2018 

Results

CATEGORY

ENVIRONMENTAL SUSTAINABILITY AND RESILIENCE

INDICATOR

DEFINITION

2. Environmental conservation and biodiversity protection

Infrastructure projects should **avoid negative impacts and/or restore biodiversity**, and the environment while **preserving ecosystems** and ecosystem services during the entire life cycle.

SUB-INDICATOR

UNIT OF MEASUREMENT

PROGRESS

2.1 Biodiversity protection.

Number of countries in the pan-European region that **established national targets in accordance with Aichi Biodiversity Target 2** of the Strategic Plan for Biodiversity 2011-2020 in their National Biodiversity Strategy and Action Plans.

Every country in the pan-European region **has established its respective strategic plans for biodiversity** and action plans. **Limited information regarding the effects of infrastructure** in biodiversity disruption →

2.2 Ecosystem services protection

Proportion of land that is degraded over total land area, 2015.

Limited-to-no information has been identified across countries regarding the **percentage of land degraded associated with infrastructure development** or other relevant information regarding quantification of services provided by natural ecosystems. Significant difference of land degradation % in the region. →

Results

CATEGORY

ENVIRONMENTAL SUSTAINABILITY AND RESILIENCE

INDICATOR

DEFINITION

3. Circular Economy

Infrastructure projects should be planned, designed, constructed, operated, and decommissioned considering the **efficient use of resources as well as principles of circular economy** (including repurpose, recycle, reduce, reuse, repair, refurbish, remanufacture)

SUB-INDICATOR

UNIT OF MEASUREMENT

PROGRESS

3.1 Circular economy

Recovery rate of construction and demolition waste in the European Union (2014-2018).

Recovery rate of construction and demolition waste in other pan-European countries (non-European Union)

Limited information was identified at the pan-European regional level. However, this indicator is part of the European Commission Circular Economy indicator set. The average recovery rate of construction and demolition waste has remained almost constant EU.
*2014 & 2016 -- 87% // *2018 — 88%



Results

CATEGORY

SOCIAL SUSTAINABILITY

INDICATOR

DEFINITION

4. Gender equality and empowerment

Infrastructure projects should promote **social inclusion, gender equality, and human rights protection** by fostering economic empowerment and social mobility, and equal opportunities for all.


SUB-INDICATOR

UNIT OF MEASUREMENT

PROGRESS

4.1 Gender equality and empowerment

Gender employment gap across the pan-European region (2020)

The gender employment gap has shown a positive trend, having decreased in most sub-regions.
Different gaps depending on the sub-region: 

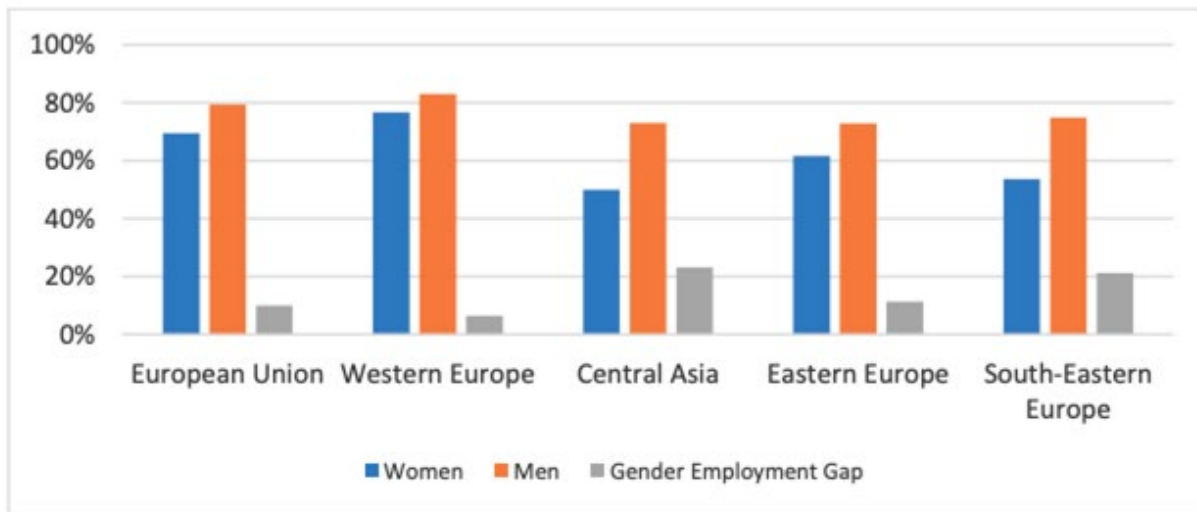
- EU: 20,8% (1990) — 9,9% (2019)
- Western Europe: 18,2% (1990) 6,4% (2019)
- Central Asia: gap increased 1,5%
- Eastern Europe: gap increased 0,9%
- Pan-European region: 19,2% (1990) 14,4% (2019)

Results

SUB-INDICATOR

Gender employment gap across the pan-European region (2020)

Gender employment gap, simple average of national values per subregion (2019)



Source: ILOSTAT database.

Results

CATEGORY

SOCIAL SUSTAINABILITY

INDICATOR

5. lifecycle cost accounting

DEFINITION

Infrastructure projects should consider the **net economic and social returns** as well as the real **cost of economic activities and natural capital** over the **entire project life cycle** (including during the maintenance and decommissioning, where appropriate), taking into consideration both positive and negative externalities and life-cycle cost accounting.

SUB-INDICATOR

5. Life-cycle cost accounting

UNIT OF MEASUREMENT

Sectors in which countries usually **perform Cost-Benefit Analysis** (2014)

PROGRESS

Specific **references to externalities** are found in the "pan-European Strategic Framework for Greening the Economy". **Limited data exist regarding the quantification of externalities across the region.** Cost-benefit analysis (CBA) is the first step. Several countries in the region apply **CBA to large infrastructure projects**. A **more comprehensive analysis** should be conducted.

Results

CATEGORY

SOCIAL SUSTAINABILITY

INDICATOR

6. Access to basic services

DEFINITION

Infrastructure projects should improve physical and economic access to basic services (including drinking water, sanitation, electricity, and digital technology) ensuring healthier living conditions, and well-being.

SUB-INDICATOR

6. Access to basic services

UNIT OF MEASUREMENT


% of **population using basic drinking water services by location (2020)**


% of **population using basic sanitation services by location (2020)**


% of population with **access to electricity by location (2020)**


% of population covered by **at least 2G, 3G and 4G mobile network** across the pan-European region (2018)

PROGRESS

Around 90% access in all regions. (measured in alignment with SDG 1.4.1 "Proportion of population using basic drinking water services.") 

Overall access 96,3% across the region. (More heterogeneity in the data ranging from 82,3% to 99,5%) 

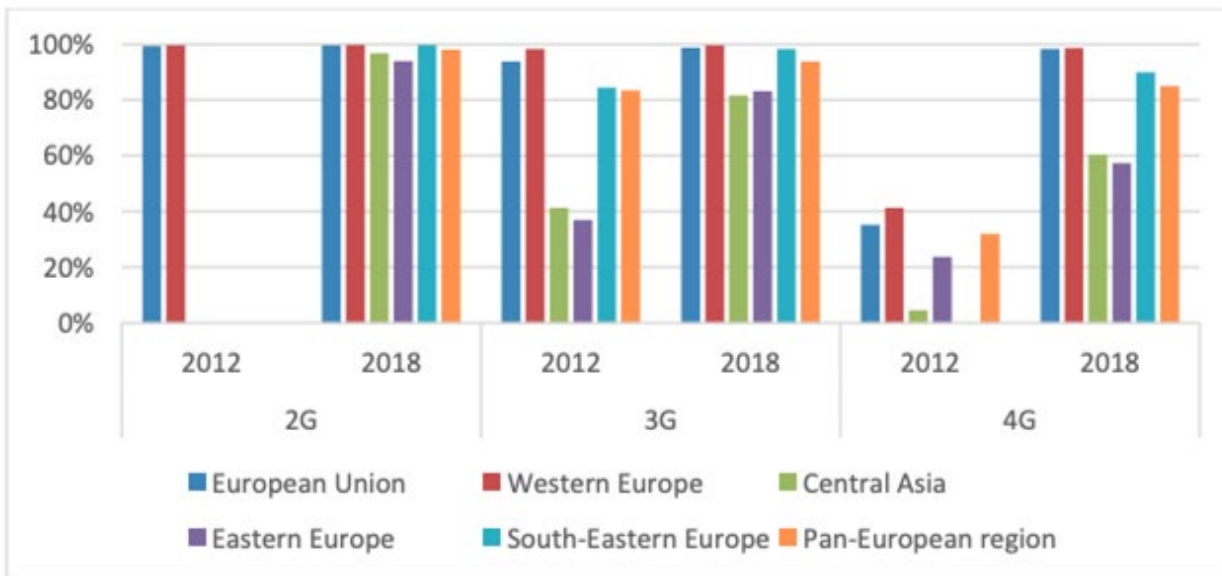
Full access to electricity in the region (measured in alignment with "SDG 7.1.1, and it refers to the percentage of people that have access to electricity") 

In alignment with SDG 9, Indicator 9.c.1, and refers to the percentage of inhabitants living within range of a mobile-cellular signal 

Results

SUB-INDICATOR

Proportion of population covered by at least 2G, 3G and 4G mobile network across the pan-European region (2012 and 2018)



Source: ECE Statistical Database.

Results

CATEGORY

INSTITUTIONAL SUSTAINABILITY

INDICATOR

7. Transparency & anticorruption

DEFINITION

Infrastructure development should be planned and designed, constructed, and operated in a transparent manner, so as to guarantee that relevant information is available and accessible to all stakeholders. Projects should have anti-corruption and anti-bribery management systems in place, for long-term monitoring.

SUB-INDICATOR

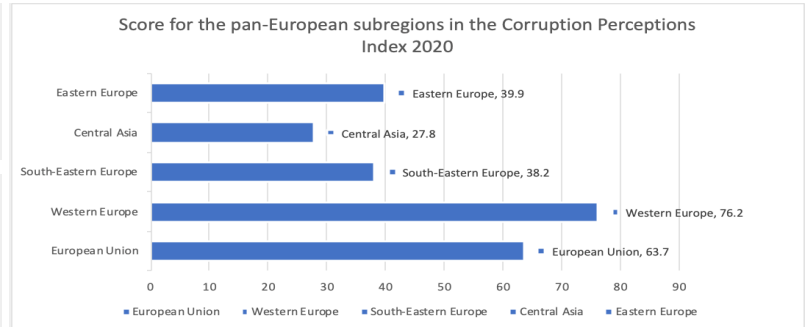
7. Transparency & anticorruption

UNIT OF MEASUREMENT

Score for the pan-European subregions in the Corruption Perceptions Index 2020

European Union performance on the Corruption Perceptions Index during the period 2016 - 2020

PROGRESS



(*) 0 represents the highest level of corruption, and 100 is the lowest. Comparing 2016 and 2020, 17 out of the 27 countries in the European Union experienced an increase in corruption.

Results

CATEGORY

ECONOMIC & FINANCIAL SUSTAINABILITY

INDICATOR

8. Financial sustainability & innovative finances

DEFINITION

Infrastructure development should **guarantee the financial sustainability of the assets through the full lifecycle**. This will include mobilization of innovative sources of capital at scale.

SUB-INDICATOR

8. Sustainable investment

UNIT OF MEASUREMENT

Contribution to **the international 100bn USD commitment on climate related expending** (2014 - 2019)

PROGRESS

The EU increased its contributions by 37% compared to the 2014.
(Aligned with SDG 13. a.1 “mobilize funding for the 100 billion international commitment for climate-related expending”)



Key messages

1. **The life-cycle** approach to infrastructure development is often time **not fully considered**. This limits the implementation of **circular economy strategies, life-cycle cost accounting**, and consideration of **externalities**.
2. Sustainable Infrastructure investment has been recognized as one of the most impactful strategies to build back better in the post COVID recovery.
3. There is a **global effort** to **consolidate indicators** defining **what is sustainable infrastructure**. However, some of the key aspects are already agreed upon.
4. **Efficient use of materials and circular economy** are at the core of a Sustainable Infrastructure project.
5. **New approaches to infrastructure** (*Nature-based solutions ...*) **and its benefits** (*eg. ecosystem services ...*) are to this date not well covered by existing literature. New data-gathering efforts would be necessary.
6. Targeted efforts are required to **mainstream gender in infrastructure**. The current approach is focused on the **employment gap**, however a broader view of the incorporation of gender diversity, as users, workers and decision-makers is required.

Recommendations

1. **Common definition in SI** should be developed at the Pan-European region
1. **Use existing tools** to promote sustainable infrastructure
 - ECE Protocol on Strategic Environmental Assessment
 - Alignment with other development targets
 - Short term vs. long term trade-offs (life-cycle considerations)
1. **Capacity gaps to deploy SI** at scale in the different phases
1. **Nature based solutions (NbS)** to complement traditional infrastructure
 - Help achieve climate change considerations
 - Delivery of SI services
 - Lack of demand.
 - More incentives to be developed by government and capacity building.
 - Incentives aligned with the EU Taxonomy /Pan-European Strategic framework
2. **All stakeholders should be included.** (gender mainstreaming in infrastructure)



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