

STRATEGIC FORESIGHT IN THE EUROPEAN PARLIAMENT: THE GLOBAL TRENDS UNIT

Providing the Members of the European Parliament with expertise on global trends

Global Trendometer

FORESIGHT CLUB

The EU's Foresight System

- Enhancing foresight and anticipation -

ESPAS European Strategy and Policy Analysis System

- Inspired by the US NIC's work on global trends
- An inter-institutional initiative
- High level administrative dialogue
- Enhances foresight & anticipation

Integration of foresight

- Identify global trends with impact
- Develop foresight and anticipation
- Monitor the impact of global trends
- Develop foresight and anticipation

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THE EUROPEAN UNION, A FORWARD-LOOKING PROJECT BY ESSENCE

SHARED SOVEREIGNTY OF 28 (27) NATION STATES

- COOPERATION
- COMpetition POLICY
- FREE MOVEMENT IN THE SINGLE MARKET
- AGRICULTURE
- ENVIRONMENT
- ACADEMIA

VIA A NOT SO UNFAMILIAR COMPLEX INSTITUTIONAL STRUCTURE

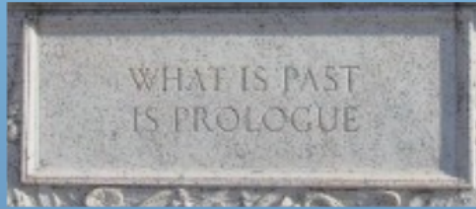
- THE COUNCIL ON THE EUROPEAN LEVEL
- THE EUROPEAN PARLIAMENT
- THE EUROPEAN COURT OF JUSTICE
- THE EUROPEAN COMMISSION
- THE EUROPEAN COURT OF AUDITORS
- THE EUROPEAN INVESTMENT BANK

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POLICE
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COMPETITION POLICY

INTERNATIONAL TRADE

FREE MOVEMENT IN THE SINGLE MARKET

AGRICULTURE

BORDERS
MANAGEMENT

ENVIRONNEMENT

ASYLUM

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THE COUNCIL OF THE EUROPEAN UNION
---THE US SENATE

THE EUROPEAN PARLIAMENT
-- THE US HOUSE OF REPRESENTATIVES

THE EUROPEAN COMMISSION
--POTUS ADMINISTRATION

THE EUROPEAN COURT OF JUSTICE
---THE US SUPREME COURT

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Global Trendometer



The Global Trendometer consists of several reports and a lightbulb icon, representing the unit's work in identifying and analyzing global trends.

FORESIGHT CLUB



The Foresight Club is a group of experts who provide strategic foresight to the European Parliament. It includes a photo of a meeting and a globe icon.

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- To identify global long-term trends relevant to the EU
- Conduct inter-institutional analysis of probable outcomes for policy makers
- To provide strategic thinking through regular input to the EU institutions

Structure of ESPAS

Steering Group
Young Talent Network
ESPAS teams at each participating entity

ESPAS Activities



The diagram shows the flow of information and activities within the ESPAS system, including the Steering Group, Young Talent Network, and ESPAS teams at each participating entity.

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Global Trendometer

Essays on medium- and long-term global trends
July 2018

Deep Fake
Economic Waves
Labour Share
India
Artificial Intelligence
Remittances
Trump
Food (In)security
Public Procurement
Climate Engineering


STUDY

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Disappearing sand: A limit on the development of urban infrastructure?

By David White

Most development in the European continent, because the flow and cost reflects a significant imbalance between supply and demand, is being driven by the rising number of people living in urban areas. In 2016, the EU population was 740 million, with a projected growth of 100 million in the next 50 years. This growth will be concentrated in urban areas, with the majority of the population living in the 10 largest urban agglomerations. This will have significant implications for the development of urban infrastructure.

Urban infrastructure is the backbone of economic growth, and its development is essential for the well-being of the population. However, the development of urban infrastructure is facing significant challenges, including the limited availability of land, the increasing cost of construction, and the need to integrate sustainable development into the planning process.

The limited availability of land is a major constraint on the development of urban infrastructure. In Europe, the amount of land available for development is limited, and the cost of land is increasing. This is due to a combination of factors, including the increasing demand for land, the need to protect natural resources, and the need to integrate sustainable development into the planning process.

The increasing cost of construction is another major challenge. The cost of construction is increasing, and this is due to a combination of factors, including the increasing demand for construction materials, the need to integrate sustainable development into the planning process, and the need to invest in infrastructure. This is a significant challenge for the development of urban infrastructure, as it increases the cost of housing and other infrastructure.

The need to integrate sustainable development into the planning process is a third major challenge. Sustainable development is a key principle of the European Union, and it is essential for the long-term well-being of the population. However, the development of urban infrastructure is often seen as a short-term activity, and it is difficult to integrate sustainable development into the planning process.

These challenges are significant, and they need to be addressed if the development of urban infrastructure is to be successful. This requires a combination of measures, including the development of new sources of land, the integration of sustainable development into the planning process, and the investment in infrastructure. Only by addressing these challenges can we ensure the long-term well-being of the population and the development of the European continent.

Main trends

The main trends in the world are the increasing global population, the increasing demand for infrastructure, the increasing cost of construction, and the need to integrate sustainable development into the planning process. These trends are significant, and they need to be addressed if the development of urban infrastructure is to be successful.

The increasing global population is a major trend. The world population is growing, and this is due to a combination of factors, including the increasing demand for food, the need to protect natural resources, and the need to integrate sustainable development into the planning process. This is a significant challenge for the development of urban infrastructure, as it increases the demand for land and other resources.

The increasing demand for infrastructure is another major trend. Infrastructure is essential for economic growth, and the demand for infrastructure is increasing. This is due to a combination of factors, including the increasing demand for transportation, the need to integrate sustainable development into the planning process, and the need to invest in infrastructure. This is a significant challenge for the development of urban infrastructure, as it increases the cost of construction and the need to integrate sustainable development into the planning process.

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Disappearing sand: A limit on the development of urban infrastructure?

Freya Windle-Wehrle

Background

Next to demographic shifts reshaping European societies, forecasts for Africa and Asia indicate a significant population increase with world population peaking towards [2030](#). The rising number of people living in urban areas - [two-thirds by 2050](#) - will result in the physical growth of cities. Figures also show that megacities with 10 million people or more will be common by 2025, developing countries leading in this sector holding 95 % of urban population growth.

Urbanisation at this speed requires new physical infrastructure to meet the needs of growing populations, particularly in regions vulnerable to extreme weather events. Residential building, public spaces and institutions, roads and other structures are essential to address the social, environmental and health challenges that arise due to urban sprawl.

The world's most important building material is concrete, of which 70-80 % is made up of aggregates such as sand, gravel and rock. The coming construction boom will increase demand and [competition](#) for concrete as well as other raw materials. What implications will this have for a city's ability to provide for new infrastructure?

The importance of sand for modern civilisation

The [dwindling supply](#) of sand, a [primary ingredient](#) not only for infrastructure but also for glass, electronics and aeronautics may prove to be a serious near-future problem. Sand, together with related aggregates, is of strategic importance for concrete production and therefore for building and beautification projects overall. It is considered the [second most important natural resource after water](#). The volume of sand extracted in 2012 alone was enough to build a 27-meter high wall around the equator. As a result, some parts of the world are already suffering from sand shortages, and see an increase of illegal sand mining, sometimes involving violence.

All extraction activities cause significant environmental pressure. They may have a serious impact on biodiversity, seas and water ecosystems, land loss and climate. Particularly in developing countries, livelihoods can be destroyed, with acute cultural and political consequences: In [Cambodia](#), civil society groups demand a total ban of sand exports. In [India](#), illegal sand mining is an open secret. Beaches and dunes disappear in [North Africa](#) through pillaging of sand, and East Africa's coastline is scarred.

In addition, does increasing demographic pressure in Asia force expansion towards the sea: [Singapore](#) already holds the world record in shifting sands having grown by 20 % since the 1960s. Artificial islands in the [South China Sea](#) and [Palm Jumeirah](#), one of the largest in the world, are another example. Despite all this, the global trend is still towards [intensified extraction](#) of a cheap and flexible building material.

How to cater for future demands?

Ironically, [desert sand](#), which covers much of earth, is not suitable for construction; its grains are too fine. Sand saturated with salt water is also unsuitable. Only high-quality angular shaped sand extracted from quarries, beaches or riverbeds complies with building requirements. These locations limit the extent of sand mining that is determined both by geology and by policies applying in areas of high demand, i.e. cities. Its weight generally makes transport further than 35-50 km uneconomic.

New, cheap and flexible substances replacing sand remain to be discovered. Artificial sand and alternative building material has not yet proven large-scale efficiency. Nevertheless, the world is moving into cities, with [Sub-Saharan Africa](#) urbanising faster than any other part. Similarly, developing Asia has infrastructure investment needs of \$26tn from [2016 to 2030](#).

Main Trends

The rapid rate of change to an interconnected, global world is unprecedented in human history. From country to country and regions at different rates, cities are mushrooming, turning into spheres of urban mass population with [global economic power settling in global megacities](#). Ineffective governance in territories generating an estimate of 80 % of all economic growth could generate a source of instability with resiliency of urban areas becoming a security issue.

This trend shaping future strategic contexts becomes even more salient when looking at indicators suggesting a 5-6 % rise in annual sand demand, and a global one of [240 million metric tons by 2024](#). In 2018, the Asia/Pacific region will remain the largest user, supported by a dominant Chinese market with sand-consuming industries such as the glass sector fuelling consumption. However, forecasts for North America point out an even faster annual pace than any other regional market. Hydraulic fracturing segments and the strength in the US and Canadian oilfield activity will, next to the construction industry, boost sales further.

The global problem of climate change urges societies towards a radical transformation of physical structures and functions worldwide. Risks are potentially lacking [affordable and sustainable building materials](#) to do so. The unparalleled exploitation of sand and similar aggregates already show signs of shortages with social and political implications.

Hence, the need for forward-looking tools in urban planning is immense, particularly for a transition to a low-carbon, resource-smart metropolitan region. Particularly, as [forecasts](#) already highlight the necessity to reconcile urban development and biodiversity conversation strategies viewing uncertainties on, for example, the amount and location of urban land expansion.

Future proof societies will have to apply alternative technologies and infrastructure promoting better use of primary resources such as sand to maintain and further expand living standards without causing serious environmental damages as rapid urbanisation continues.

Uncertainties

- > A hazardous shortfall of critical infrastructure may hamper economic development and social well-being thereby causing increased inequalities.
- > A global rise in sand prices may hit the economy.
- > In the absence of essential building material, a global black market for sand may emerge possibly even resulting in [sand wars](#).
- > The magnitude of rapid urban expansion will vary across the world but may create instability. Security challenges might arise due to turmoil over scarce resources.
- > Severe implications after climate changes, especially for megacities situated in coastal regions, as infrastructure may be destroyed.

Possible disruptions

- > Recycling concrete: Dependency on mining would significantly decrease, reducing serious environmental implications resulting from extraction activities.
- > [Re-healing concrete](#) that patches up cracks by itself increasing its service life.
- > [Manufactured sand](#) as a 100 % replacement of natural sand. Replicating its properties would let future societies pursue the usage of concrete.
- > [Smart Living](#) and the development of new, cheaper and more efficient construction technologies and advanced materials may reduce the need for scarce material.
- > Green construction becoming mainstream: Environmentally responsible and resource efficient building could create sustainable futures. Dovetailing alternate sources such as wood, adobe, bamboo and steel with nano- or other technologies might be an option.

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ESPAS
Activities

ESPAS
Annual Conferences

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- **To identify global long-term trends relevant to the EU**
- **Common inter-institutional analysis of probable outcomes for policy makers**
- **To nourish strategic thinking through regular input to the EU institutions**

Structure of ESPAS

Steering Group



Young Talent Network

ESPAS teams of each
participating entity

ESPAS Activities

ESPAS Annual Conferences



- 2-day conference in the European Parliament and European Commission
- High-level experts
- International, multiperspective approach

28-29 November 2018:

Wapping up the foresight work done since 2014

Preparation of the 2019 ESPAS report



ESPAS Regular Activities

- ESPAS High Level Speakers Series
- Young Talent Network: "Breaking the silos at an early stage"
- Developing the Network
- ORBIS
- ESPAS Plus

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ESPAS PLUS



KEY ASSUMPTIONS CHECK

Preparation of the 2019 ESPAS report



2015

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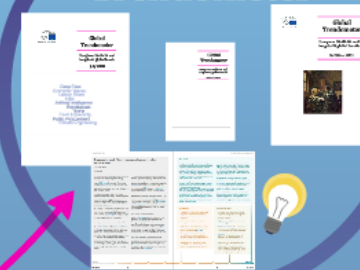
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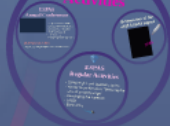
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