

# THE IMPACT OF THE CONSTRUCTION INDUSTRY ON CLIMATE CHANGE

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SII 5281 green building standard &  
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Chairman of **IRMI** – Israeli raw  
materials innovation forum



- A platform to meet and share insights with different sectors from construction and infrastructure sites, quarries, landfills, the cement industry, recycling plants, academic institutions, designers, and more.
- Sharing database, research and news about conferences and events from around the world.
- Exposure to grants and investors for start-ups and others in the industry.



# WORLD - 2019

**Concrete is the foundation of modern civilization and the building block for human progress.** Concrete creates the infrastructure that has allowed millions to live safe, sanitary and prosperous lives.

**Concrete is responsible for 4-8% of the world's CO<sub>2</sub>.** Among materials, only coal, oil and gas are a greater source of greenhouse gases.

**Half of concrete's CO<sub>2</sub> emissions are created during the manufacture** of clinker, the most-energy intensive part of the cement-making process.

**Concrete is sucking up almost a 10th of the world's industrial water use.**



Futuristic rendering of a hurricane-proof building by artist Dionisio Gonzalez

# WORLD - 2019

**The cement component of concrete generates roughly 1 tonne of CO<sub>2</sub> per tonne of cement. Cement consumption per capita is between 50kg and 2,000kg per person per year, depending on the phase of development of the country and the availability of alternative building materials. Taking an unholy average, each member of the human population is responsible, through their fondness for a built environment, for roughly 500kg per year of CO<sub>2</sub> from cement.**



A labourer stacks concrete blocks on his head at a construction site on the outskirts of Kolkata, India.



# WORLD - 2019

**The world needs to build around \$94 trillion in new infrastructure out to 2030.**

This would be equivalent to a doubling of the world's capital stock, with over two-thirds built in developing countries. **Around 70 percent of global greenhouse gas emissions come from carbon-intensive infrastructure.**

**China is by far the largest producer of cement**, followed far behind by India and the combined countries of the EU.



Solidia Concrete™ cinder block. Credit: Solidia

US firm Solidia, claims its concrete emits up to 70% less CO<sub>2</sub> than Portland cement.  
The firm is now in a partnership with major cement producer LafargeHolcim.

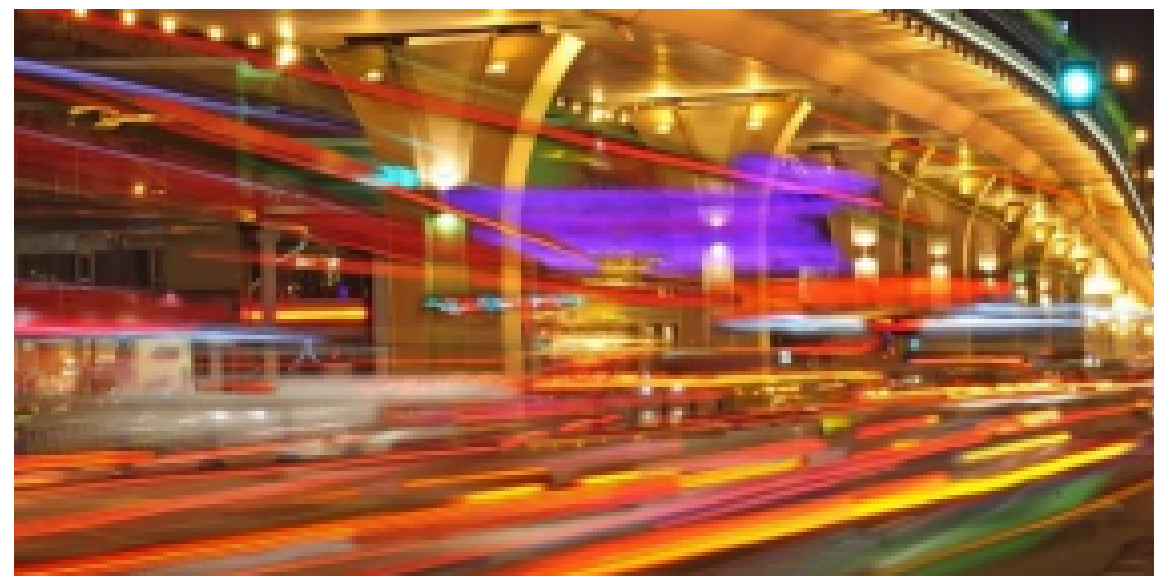
# LET'S TALK SOME NUMBERS...

**1) In 2065 the population of Israel will be 15.8 million**  
(according to the Central Bureau of Statistics for 2016).

**2) The construction industry in Israel dictate that by the year 2023 more than 400,000 additional housing units will be built in Israel, and by 2035, 1,120,000 new housing units will be added**  
(According to the document "The Future Housing Needs of the Israeli Population," Prime Minister's Office, Dror and Noa Litmanovich, November 2014).

**3) In Israel, a shortage of clay, limestone, cement, basalt and sand is expected to occur around the year 2020.**  
(According to forecasts of National Master Plan No. 14A for mining and quarrying sites for the construction and paving industry 2015).

# NATURAL METRIALS SUCH AS: GRAVEL, SAND, CEMENT, LIMESTONE FOR CEMENT AND CLAY



Research shows that today there is a 26% shortage of natural raw materials for the construction and infrastructure industry, and the shortage will worsen even further



# ISRAEL - 2019

THE SHORTAGE OF RAW MATERIALS WILL HAVE:

1. AN INCREASE IN HOUSING PRICES AND THE ESTABLISHMENT OF PUBLIC INFRASTRUCTURE
2. DELAYS THAT MAY ARISE IN THE CONSTRUCTION OF APARTMENTS AND INFRASTRUCTURE
3. GENERATE IMPORT RATHER THEN USING LOCAL PRODUCTION
4. LESS SUITABLE RAW MATERIALS OR QUALITY
5. IMPACT ON THE DOMESTIC EMPLOYMENT MARKET

## מחסור בחול מאיים על תעשיית חומרי הבניין

סגירת "חולות לבנים", אחת משתי המחצבות היחידות בישראל לייצור חול דק, יוצרת מצוקה קשה בענף חומרי הבניין, שנותר ללא חומר גלם

נמרוד בוסו 17.01.18 10:39

תגיות: [כריית חול](#) [מחצבה](#) [חולות לבנים](#) [בטון](#) [כרייה](#)

סגירת אחת משתי המחצבות היחידות בישראל לכריית "חול דק" (חול סיליקה), יצרה מצוקה קשה בקרב החברות העוסקות בייצור מוצרים המשמשים את ענף הבנייה כמו טיח, חומרי איטום ודבקים. המחסור בחומר הגלם הביא לסגירתם של קווי ייצור בשבועות האחרונים, וכעת מזהירות היצרניות המעסיקות כ-1,700 עובדים מפני גל פיטורים, אם לא יחול שינוי במצב בקרוב.

# ISRAEL - 2019



## ISRAEL

Construction waste produced in Israel reaches **7.5** million tons per year, of which:

3.6 million tons of **construction waste** and  
3.9 million tons of **surplus soil and dirt**.

**1-3.5** million tons of construction waste are disposed  
in open spaces annually,

**About 95% of which can be recycled and returned to  
the construction and infrastructure sector.**

(Israel Ministry of environmental protection)

# ISRAEL - 2019

**30 QUARRIES**

**24 RECYCLING  
FACTORIES  
FOR CONSTRUCTION  
AND DEMOLITION  
WASTE**

**11 LANDFILLS**





# A partial lists of Israeli companies promoting innovation in raw materials for the construction and infrastructure industry





# INNOVATION in CONTECH



XtreeE co-developed this 3D printed concrete stormwater collector, a European first, in partnership with Point P TP , the french leader in construction materials distribution, and la Sade, a networks specialized company.

Printed in 9 hours in XtreeE's workshop, the 2,15\*2,2\*2,6m collector was then placed on site, in the city of Lille, France.

This part was printed in 9 hours.





Material composition



Surface complexity



Macro design



**ECO**ncrete®  
Concrete Ecological Solutions  
[www.econcretetech.com](http://www.econcretetech.com)

ECOConcrete® offers a suite of high performance environmentally sensitive concrete solutions that enhance the biological and ecological value of urban, coastal, and marine infrastructure while increasing their strength and durability





# FROM ILLEGAL WASTE DUMPS TO BENEFICIAL RESOURCES



Bringing Open dumping sites back to the Circular Economy using drone technology and advanced data analysis tools.





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NELSON MANDELA SAID:  
IT ALWAYS SEEMS IMPOSSIBLE  
UNTIL IT'S DONE.

**THANK  
YOU**