



HAL
open science

Prospects and challenges in the Korean construction industry: An economic overview

Djamil Benghida

► **To cite this version:**

Djamil Benghida. Prospects and challenges in the Korean construction industry: An economic overview. *International Journal of Civil Engineering and Technology* , 2017, 8 (4), pp.1338-1346. hal-01515086

HAL Id: hal-01515086

<https://hal.science/hal-01515086>

Submitted on 27 Apr 2017

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



PROSPECTS AND CHALLENGES IN THE KOREAN CONSTRUCTION INDUSTRY: AN ECONOMIC OVERVIEW

Djamil Benghida

Dong-A University, South Korea,
Expected Design, Italy

ABSTRACT

The Korean construction industry has long provided a stable and strong power to the growth of the country's economy since the 1970's. The Korean construction activity continues to prosper nowadays as it is expected to rebound by 2.5% between 2015 and 2019. The government also continues to have high economic interest in all industry sector projects related to property investments in residential, commercial and infrastructure projects. However, analysts consider that the Korean economy is increasingly being over dependent on its construction industry. Many residential properties were designed, and for the most part still are, for single or young families. This may result in an unwelcome oversupply in the future especially with the ageing population. South Korea, with already 13.80% of elderly citizens, is expecting an elderly population rise up to 24.50% in 2030. This means that soon there will be a great demand on architects with design skills for senior citizens. This paper calls for addressing this critical demographic problem via the process of architectural constructions. The paper also suggests to work on a wide range of new and creative architectural models and gives a few recommendation to face all the contemporary and near future problems.

Key words: South Korea, Construction Industry, Architectural Trends, Economic Growth, Sustainable Architecture, Ageing Population, Real Estate Development, Unemployment Rate.

Cite this Article: Djamil Benghida, Prospects and Challenges In The Korean Construction Industry: An Economic Overview, *International Journal of Civil Engineering and Technology*, 8(4), 2017, pp. 1338-1346

<http://www.iaeme.com/IJCIET/issues.asp?JType=IJCIET&VType=8&IType=4>

1. INTRODUCTION

The construction sector is usually the largest economical sector having an important impact on the economic performance of any country. Its activities influence nearly every economical aspect in the country. It has a direct effect on the gross domestic product (GDP) and many socio-economic development goals such as employment, money supply, inflation and expenditure (Lewis, 2004).

In 1850, during a parliament discourse in Paris Martin Nadaud, a parliament member, pronounced what is known today by “*Quand le batiment va, tout va!*” (When the building trade is thriving, everything is thriving!), meaning that everyone can profit from the construction sector due to its strong linkage with other industrial sectors. There is a mutual influence between construction output and economic growth in any state. The rule goes as the following:

An economy that grows at a fast pace \Leftrightarrow A construction sector that expands at a quick rate

Indeed, with any increasing construction output, a fast economic growth will follow, and on the other hand, an economic stagnation will affect negatively the construction industry (Erol et al., 2015). Construction expansion is directed by the economic growth and vice versa (Erol et al., 2015).

Recent markets analysis (Research and Markets, 2016) found that the compound annual growth rate (CAGR) (the mean annual growth rate of an investment) from 2016 to 2021 is forecast to rise at 5.5% as a result of urbanization rate and global population growth.

Hence, a successful real estate development market depends on the factors shown on figure 1.

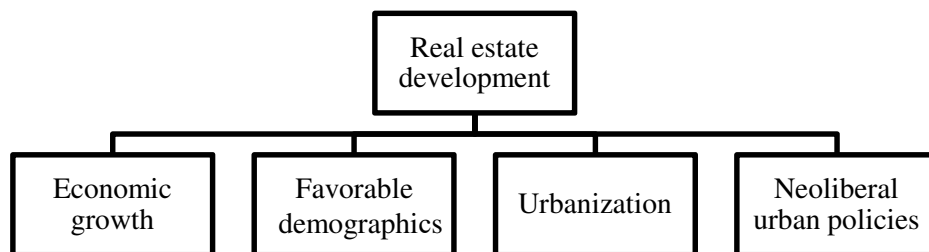


Figure 1 Real estate development market factors (Adapted from: Erol et al, 2015)

The global rural urbanization was estimated by a report published in 2014 by the United Nations (UN) to be approximately 3.4 billion and is expected to fall down to approximately 3.2 billion by 2050 (UN, 2014). Meanwhile, the global urban population is estimated to be 3.9 billion and will continue to grow to be close to 6.3 billion in 2050 (fig. 2) (UN, 2014).

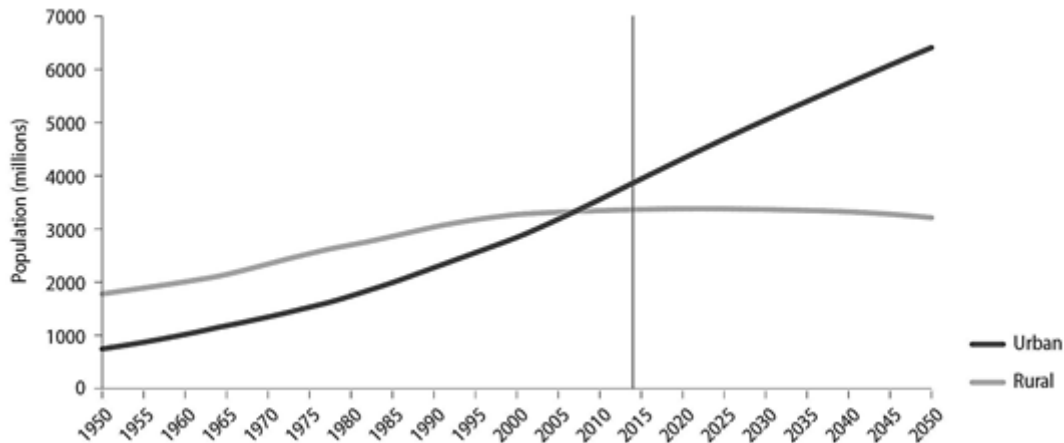


Figure 2 Urban and rural population of the world, 1950-2050 (Source: UN, 2014)

The fast growing cities around the globe require a sustainable approach to improve the living standards of their population. Employment opportunities, transportation, energy, healthcare, infrastructures and dwellings are required to ensure a decent life for everyone. As the global urban expansion rise, sustainable development challenges in cities will increase too. There is an urgent need for governments to explore new ways of supporting affordable dwellings.

The global construction industry is expected to grow from US\$ 9.5 trillion to US\$ 15.5 trillion by 2030 (AECOM, 2016). The growth is forecast to be in the three construction industry main sector: Residential, commercial and infrastructure. Developing countries will continue their industrialization and developed countries will make up for years of underinvestment.

2. THE KOREAN CONSTRUCTION MARKET ANALYSIS

The Korean construction activity is expected to rebound by 2.5% between 2015 and 2019 (ITA, 2016), and there is an extensive interest by the government on the public sector projects: transportation and infrastructure (Turner and Townsend, 2016) since there is an important rise of tourists visiting Korea - from about 6 million in 2005 to more than 13 million visitors in 2015 (Korea Tourism Organization).

The construction inflation cost is negligible and the authorities are placing diverse measures to boost the housing demand such as low interest rates and fiscal stimulus (Turner and Townsend, 2016).

Analysts consider that the Korean economy is increasingly being overdependent on its construction industry (Yoon, 2016). As per rule, overdependence in this sector will result in an oversupply of residential buildings; the demand is affected negatively by the ageing population (Turner and Townsend, 2016). Dwellings are designed for young couples and singles, it is not suitable in a country which is said to become soon the world's oldest country in 2045 (Korea Times, 2013).

The Korean economy has been hit by the oil prices fall. The plunging price of oil is affecting negatively both the fabrications and shipbuilding sectors (Turner and Townsend, 2016). More than that the political crisis after Ms. Park Geun-hye impeachment is making the country face great economic challenges, raising the unemployment rate to 5% (KOSIS, 2017a). However, the high rise of the unemployment rate is due to the immersion of the fresh graduate students into the job market, since they usually get graduated in every February of every year (fig.3).

4. FUTURE CONSTRUCTION TRENDS

Architectural design is one of the most influential factors in human lifestyle; from Imhotep designing Pyramids for Pharaohs in Egypt, to Frank Gehry designing in a deconstructivism style everywhere. Styles in architecture have been changing since decades following the economical, industrial and technological advancement and the evolving needs of human beings. In this article, I define the near future architectural trends that will affect in a great way the Korean lifestyle and needs thus the construction industry in these two elements:

4.1. SUSTAINABLE DESIGN

Korea ranks as the eighth in terms of world energy consumption (World Energy Statistics, 2016). As an industrialized country, it will be quite difficult to reduce the energy use or the CO₂ emissions. As a response to global concerns of climate change and renewable resources shortage, the Korean government took the challenge of reducing the CO₂ emissions by 37% by 2030 across all sectors (Choi, 2015). However, how can Koreans reduce the greenhouse gas emissions without compromising their lifestyle?

From the 1970s, South Korea has undergone a rapid industrialization resulting in an important urbanization throughout the country (Benghida, 2014a; 2014b). The functionalist building style gained place over the vernacular architecture and the exposed concrete became the favorite construction material over wood and mud bricks (Lee et al, 2017, Benghida, 2016a). But since the 1990s, sustainability in architecture increasingly gained importance among architecture and engineering firms; the awareness about the global warming and the finite resources forced governments to adopt building codes demanding more livable cities and high energy efficiency buildings, for both new constructions and the existing building stock.

According to Korea Green Building Council (KGBC, 2017), cities are responsible for over 75% of global CO₂ emissions (KGBC, 2017). Korea reached an amount equal to 592 Mt of CO₂ emissions (Global Carbon Atlas, 2017), and only in the city of Seoul, buildings are responsible for 68% of its total CO₂ emissions (KGBC, 2017). By updating cement plants, the use of green construction materials, renewable energy and ecological architecture, the building sector can contribute in a great way to this sustainable challenge and the contemporary climate crisis (Lee et al, 2017; Benghida, 2016b, 2016c, 2017).

4.2. UNIVERSAL DESIGN: HOW TO DESIGN FOR A KOREAN AGEING SOCIETY?

According to The World Bank (The World Bank, 2017), population aged 65 and above reached approximately 8.3% globally (fig.5), this became a contemporary global concern. Politicians, economists, and sociologies have an extensive interest about finding solutions for slowing this effect or dealing with the consequences of the engendered economic realm, however, for architects, this demographic transformation is a tough challenge.

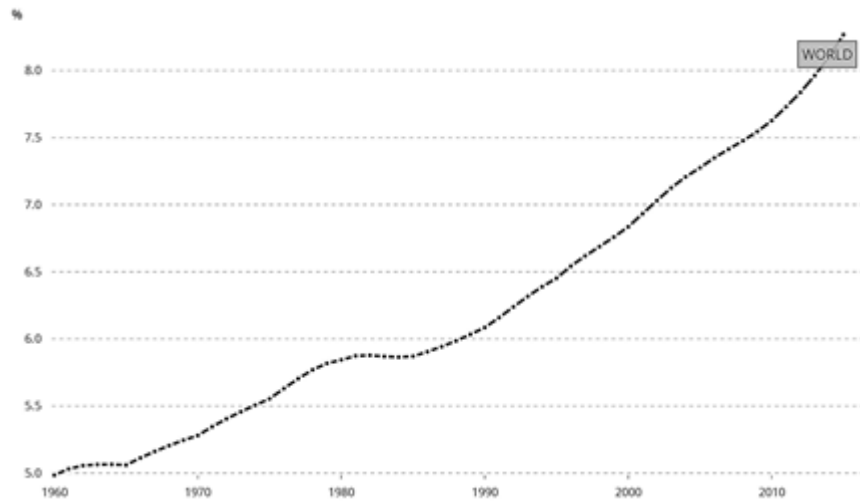


Figure 5 Worldwide population ages 65 and above (source: World Bank, 2017)

South Korea is not excluded too from this outnumber of elderly population rise (fig. 6), with already 13.80% of elderly citizens (KIOSIS, 2017c), soon the country will be categorized as an aging society when reaching the 14%, which is the minimum percentage set by the UN to define an aging society (Noh, 2016), and is expected to rise to 24.50% in 2030 (KIOSIS, 2017c).

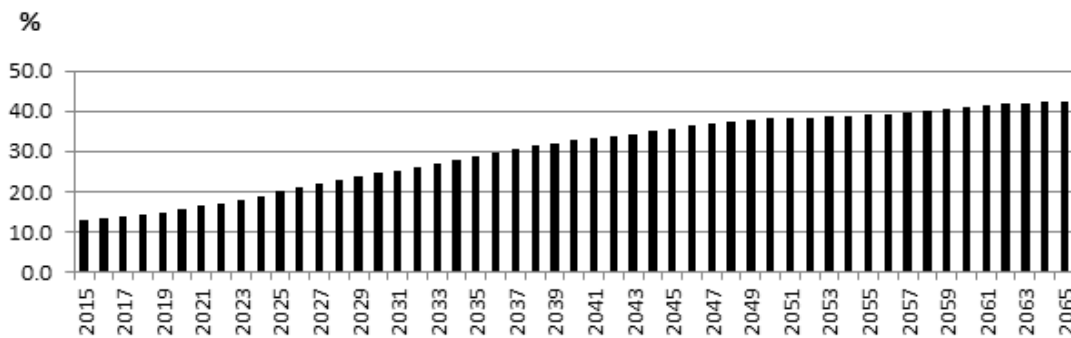


Figure 6 South Korean population aged 65 and above (source: KIOSIS, 2017c)

There is an urgent need to train architecture students to become problem solvers in order to deal with these issues. Soon there will be a great demand on architects with design skills for senior citizens; both retrofitting existing dwellings and development of new housings will be a priority in Korea beside the design of the welfare facilities to accommodate different activities for them.

As designers, we need to find answers for these questions:

- How can the space be designed for seniors?
- How to adapt the accessibility for the seniors?
- How to design dwellings for an inter-generation society taking in consideration the income, the age and the ability?

Figure 7, shows the components that are necessary to design a sustainable age-friendly city.

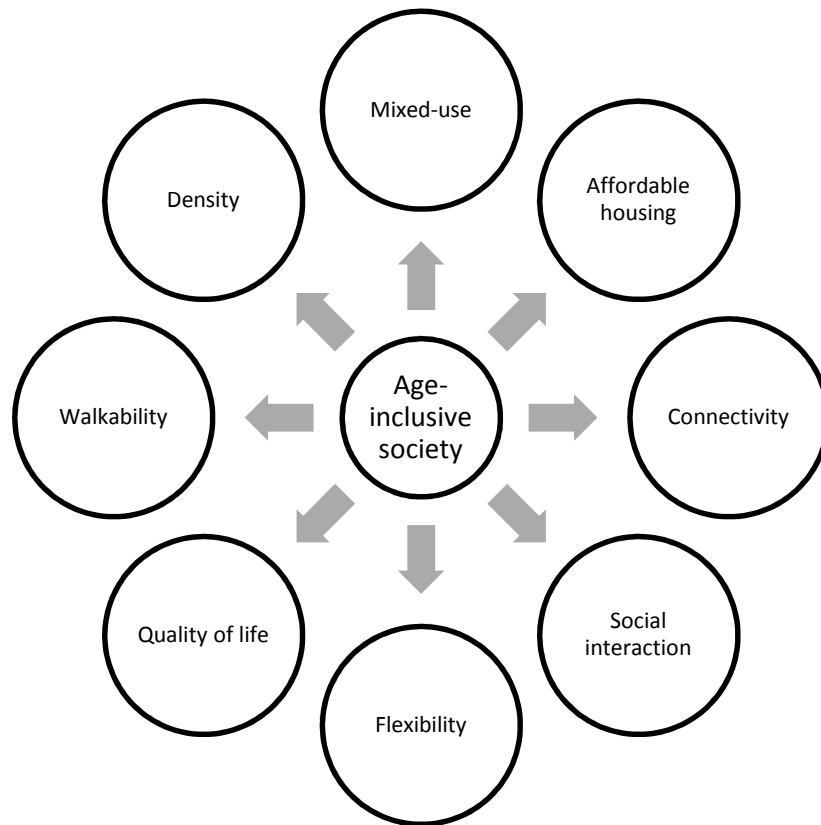


Figure 7 The age-friendly city

5. CONCLUSION

Growth and progress sustain each other; the buildings are the physical evidence of cities' progress, and without buildings there is no growth. Usually, the economists base their analysis on expectations because the future is uncertain. It is indeed quite hard to predict the future, especially when national or international politics affects directly the economic growth.

However, climate change is real, shortage of resources is a fact and so is the increase in the ageing population. Buildings have been built by population as homes and shelters for their activities since the beginning of the civilizations and will not stop; indeed, more infrastructures and more buildings are requested to the evolving population and the evolving lifestyle. Architects should be prepared and enough skilled to face these real contemporary and near future problems to be able face the sustainability challenge, the architectural mind need to evolve too.

The following are the recommendations for a better Korean future:

1. Improving specialized training and making the construction sector more attractive to architecture students, and facilitating their immersion in the construction market with practical knowledge following future trends.
2. Improving salaries, occupational health and professional training to attract the blue-collar workers.
3. Updating architecture programs in schools by a better and a deeper knowledge for ecological architecture and universal design.

REFERENCES

- [1] Lewis, T. M. The construction industry in the economy of Trinidad & Tobago. *Construction Management and Economics*, 22(5), 2004, 541-549.
- [2] Erol, I., Unal, U., *Role of Construction Sector in Economic Growth: New Evidence from Turkey*, 2015. [Accessed 30 Mar. 2017]. Available at: https://mpr.aub.uni-muenchen.de/68263/1/MPRA_paper_68263.pdf
- [3] Research and Markets. *Growth Opportunities in the Global Construction Industry 2016-2021: Trends, Forecast, and Opportunity Analysis*, 2016. [online] Researchandmarkets.com. [Accessed 30 Mar. 2017]. Available at: <http://www.researchandmarkets.com/research/zwcg4m/growth>
- [4] United Nations (UN), Department of Economic and Social Affairs, Population Division. *World Urbanization Prospects: The 2014 Revision, Highlights (ST/ESA/SER.A/352)*, 2014.
- [5] AECOM, *Middle East Handbook Property and Construction Handbook*, 2016 Edition. [online] Aecom.com. [Accessed on 30 March 2017]. Available at: http://www.aecom.com/bh/wp-content/uploads/2016/11/Handbook-2016-Final_Lowres-spreads.pdf
- [6] International Trade Administration (ITA). *Top Markets Report Building Products and Sustainable Construction Country Case Study: Korea*, Building Products and Sustainable Construction Top Markets Report, 2016. [online] Trade.gov. [Accessed 30 Mar. 2017]. Available at: http://www.trade.gov/topmarkets/pdf/Building_Products_Korea.pdf
- [7] Turner and Townsend, International construction market survey 2016. *Overstretched and over-reliant: a polarised market*, 2016. [online] Turnerandtowntsend.com [Accessed 30 Mar. 2017]. Available at: <http://www.turnerandtowntsend.com/media/1518/international-construction-market-survey-2016.pdf>
- [8] Korea Tourism Organization, *Visitor Arrivals, Korean Departures, Int'l Tourism Receipts & Expenditures*, 2017 [online] kto.visitkorea.or.kr . [Accessed 30 Mar. 2017]. Available at: <https://kto.visitkorea.or.kr/eng/tourismStatics/keyFacts/visitorArrivals.kto>
- [9] Yoon, J., *Economy overdependent on construction*, 2016, [online] koreatimes. [Accessed 30 Mar. 2017]. Available at: http://www.koreatimes.co.kr/www/news/biz/2016/09/488_214178.html
- [10] Korea Times, *Korea's average age to be highest in the world in 2045: report*, 2013, [online] koreatimes. [Accessed 30 Mar. 2017]. Available at: http://www.koreatimes.co.kr/www/news/biz/2013/07/123_113340.html
- [11] Korean Statistical Information Service (KOSIS), *Summary of economically active pop. by gender*, 2017a, Statistics Korea, [online] kosis.kr/eng/ [Accessed 30 Mar. 2017]. Available at: http://kosis.kr/statHtml/statHtml.do?orgId=101&tblId=DT_1DA7001&vw_cd=MT_ETITLE&list_id=&scrId=&seqNo=&language=en&obj_var_id=&itm_id=&conn_path=A6&path=%252Feng%252F
- [12] Korean Statistical Information Service (KOSIS), *No. of workers and remuneration by no. of workers/type of employment/classes of industry*, 2017b. [Accessed 30 March 2017]. Available online at: http://kosis.kr/eng/statisticsList/statisticsList_01_List.jsp?vwcd=MT_ETITLE&parentId=H#SubCont
- [13] The World Bank, *Population ages 65 and above*, The World Bank Group, 2017. [Accessed 30 March 2017]. Available online at: <http://data.worldbank.org/indicator/SP.POP.65UP.TO.ZS>
- [14] Korean Statistical Information Service (KOSIS), *Construction Permit per Year*, Statistical database, 2017c. [Accessed 30 March 2017]. Available online at: http://kosis.kr/eng/statisticsList/statisticsList_01List.jsp?vwcd=MT_ETITLE&parentId=L#SubCont

- [15] PR Newswire, *Construction in South Korea - Key Trends and Opportunities to 2020*, 2016, [online] PR Newswire Association LLC [Accessed 30 Mar. 2017]. Available at: <http://www.prnewswire.com/news-releases/construction-in-south-korea--key-trends-and-opportunities-to-2020-300293096.html>
- [16] Lee, C.W., *Training for construction workers with a total of 7.4 billion won*, News Worker, 2015. [Accessed 30 March 2017]. Available online at:
- [17] <http://www.newsworker.co.kr/news/articleView.html?idxno=4926>
- [18] World Energy Statistics, *Global Energy Statistical Yearbook 2016*, [online] Enerdata. [Accessed 30 Mar. 2017]. Available at: <https://yearbook.enerdata.net/>
- [19] Choi, H.C., *37 % reduction in greenhouse gas emissions by 2030*, Ministry of Environment, 2015. [Accessed on 30 March 2017]. Available online at: <http://me.go.kr/home/web/board/read.do?pagerOffset=0&maxPageItems=10&maxIndexPages=10&searchKey=&searchValue=&menuId=286&orgCd=&boardId=534080&boardMasterId=1&boardCategoryId=&decorator=>
- [20] Benghida, D., L'Excellence dans la Revitalisation Urbaine. Une Mise en Valeur Architectonique des Marchés de plein air à Busan, *International Journal of Innovation and Applied Studies*, ISSR Journals, vol. 07, no. 01, 2014a, pp. 239-250.
- [21] Korean Statistical Information Service (KOSIS), *Projected Population by Age Group (Korea) (Population items)*, 2017c, Statistics Korea, [online] kosis.kr/eng/ [Accessed 30 Mar. 2017]. Available at: http://kosis.kr/statHtml/statHtml.do?orgId=101&tblId=DT_1BPA003&vw_cd=MT_ETITLE&list_id=&scrId=&seqNo=&language=en&obj_var_id=&itm_id=&conn_path=A6&path=%252Feng%252F
- [22] Noh, H. W., *Population of S. Korea swells to 50m for time: census*, 2016, [online] the hankyoreh [Accessed 30 Mar. 2017]. Available at: http://english.hani.co.kr/arti/english_edition/e_national/761021.html
- [23] Lee, S. H., Benghida, D., Cast-In-Place Architectonic Concrete in South Korea: Methods and Specifications, *International Journal of Civil Engineering and Technology*, 8(1), 2017, pp. 920–928.
- [24] Korea Green Building Council (KGBC), 2017. [Accessed 30 March 2017]. Available at: <https://www.koreagbc.com/>
- [25] Global Carbon Atlas, CO2 Emissions, Global Carbon Atlas, 2017. [Accessed 30 March 2017]. Available online at: <http://www.globalcarbonatlas.org/en/CO2-emissions>
- [26] Benghida, D., Sun-dried Clay for Sustainable Constructions, *International Journal of Applied Engineering Research*, vol. 11, no. 06, 2016a, pp. 4628-4633.
- [27] Benghida, D., The urban identity recovery in Seoul: The case of the outdoor markets, *Proceedings of 13th Docomomo International Conference Seoul: Expansion and Conflict, Seoul, South Korea, September 24-27*, Docomomo, 2014b, pp. 227-231.
- [28] Benghida, D., CO2 reduction from cement industry. *Proceedings of the 2nd International Conference of Advanced Materials, Mechanical and Structural Engineering (AMMSE 2015), Je-ju Island, South Korea, September 18-20, 2015*, CRC Press, 2016b, pp. 127-130.
- [29] Benghida, D., Earth architecture: An eco-compatible solution for future green buildings, *Advances in Civil, Architectural, Structural and Constructional Engineering: Proceedings of the International Conference on Civil, Architectural, Structural and Constructional Engineering, Dong-A University, Busan, South Korea, August 21-23, 2015*, CRC Press, 2016c, pp. 77-80.
- [30] Benghida, D., Concrete as a sustainable construction material, *International Symposium on Material Science and Engineering (ISMSE 2017), Kuala Lumpur, Malaysia, January 13-14, 2017*.