THE IMPACT OF URBANISATION ON LONG-TERM SUSTAINABILITY IN SOUTH ASIA

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Contextualization: Despite the progress made by South Asian nations, a recent analysis by the World Bank indicates that the region has faced challenges in harnessing the potential that urbanisation presents to transform their economy and join the ranks of more prosperous nations in terms of prosperity and living standards. As a result, the suburbs and outskirts of large cities have experienced a more rapid expansion of population. The economics of location and space are influenced by urbanisation's embodiment of agglomeration's density, separation, and variety. It is the main reason for the disparity in prosperity between different parts of the country.

Objective: Propose to investigate the impact of urbanization on long-term sustainability in South Asia.

Methodology: For this article it was used the inductive method, based on primary sources and carrying out documentary and bibliographical research.

Results: The study provides clarification and debate on a current issue linked to the impact of urbanisation on environmental, social and economic sustainability and, at the same time, presents some solutions and policies and strategies to minimise this impact. To this end, it takes a critical look at the impact of urbanisation on long-term sustainability in South Asia. It concludes that urban growth has long-term effects on the way we live, work and interact in cities, so it is crucial to plan and build sustainable communities as the world's population moves to cities.

Keywords: Urbanisation; SDGs; Urban biodiversity; Climate change; South Asia.

O IMPACTO DA URBANIZAÇÃO NA SUSTENTABILIDADE A LONGO PRAZO NA ÁSIA MERIDIONAL

Contextualização: Apesar dos progressos registrados pelos países do Sul da Ásia, uma análise recente do Banco Mundial indica que a região tem enfrentado desafios no aproveitamento do potencial que a urbanização representa para transformar a sua economia e juntar-se às fileiras das nações mais prósperas em termos de prosperidade e de nível de vida. Consequentemente, os subúrbios e as periferias das grandes cidades registraram uma expansão mais rápida da população. A economia da localização e do espaço é influenciada pela urbanização, que incorpora a densidade, a separação e a variedade da aglomeração. Esta é a principal razão para a disparidade de prosperidade entre as diferentes partes do país.

Objetivo: Propõe-se investigar a importância do impacto da urbanização na sustentabilidade a longo prazo na ásia meridional.

Metodologia: Utilizou-se do método indutivo, a partir de fontes primárias e realização de pesquisa documental e bibliográfica.

Resultados: O estudo traz esclarecimentos e o debate de um tema atual, ligado ao impacto da urbanização na sustentabilidade ambiental, social e econômica e, concomitantemente, apresenta algumas soluções e políticas e estratégias para minimizar esse impacto. Para o efeito, lança um olhar crítico para o impacto da urbanização na sustentabilidade a longo prazo na ásia meridional. E, conclui que o crescimento urbano tem efeitos a longo prazo na forma como vivemos, trabalhamos e interagimos nas cidades, pelo que é crucial planear e construir comunidades sustentáveis, à medida que a população mundial se desloca para as cidades.

Palavras-chave: Urbanização; ODS; Biodiversidade urbana; Alterações climáticas; Sul da Ásia.

EL IMPACTO DE LA URBANIZACIÓN EN LA SOSTENIBILIDAD A LARGO PLAZO EN EL SUR DE ASIA

Contextualización: A pesar de los progresos realizados por los países del sur de Asia, un reciente análisis del Banco Mundial indica que la región se ha enfrentado a retos a la hora de aprovechar el potencial de la urbanización para transformar su economía y engrosar las filas de las naciones más prósperas en términos de prosperidad y nivel de vida. Como consecuencia, los suburbios y las periferias de las grandes ciudades han experimentado una expansión más rápida de la población. La economía de localización y espacio está influida por la urbanización, que incorpora la densidad, la separación y la variedad de la aglomeración. Esta es la principal razón de la disparidad de prosperidad entre las distintas partes del país.

Objetivo: Se propone investigar el impacto de la urbanización en la sostenibilidad a largo plazo en el sur de Asia.

Métodologia: Se utilizó el método inductivo, basándose en fuentes primarias y realizando investigación documental y bibliográfica.

Resultados: El estudio aporta aclaraciones y debate sobre un tema de actualidad relacionado con el impacto de la urbanización en la sostenibilidad medioambiental, social y económica y, al mismo tiempo, presenta algunas soluciones y políticas y estrategias para minimizar dicho impacto. Para ello, analiza de forma crítica el impacto de la urbanización en la sostenibilidad a largo plazo en Asia Meridional. Concluye que el crecimiento urbano tiene efectos a largo plazo sobre la forma en que vivimos, trabajamos e interactuamos en las ciudades, por lo que es crucial planificar y construir comunidades sostenibles a medida que la población mundial se traslada a las ciudades.

Palabras clave: Urbanización; ODS; Biodiversidad urbana; Cambio climático; Sur de Asia.

INTRODUCTION

Despite the progress made by South Asian nations, a recent analysis by the World Bank indicates that the region has faced challenges in harnessing the potential that urbanisation presents to transform their economy and join the ranks of more prosperous nations in terms of prosperity and living standards[1]. As a result, the suburbs and outskirts of large cities have experienced a more rapid expansion of population. As seen by satellite images, many of the twelve largest Indian cities have more built-up land outside their formal boundaries than they do within them. In each of the twelve cities, the ratio of population to built-up area outside of city limits exceeds one. A further manifestation of Sri Lanka's chaotic urbanisation is the ribbon development along important transportation corridors. Peripheral to the Colombo metropolitan zone and along major routes, such as the one connecting Colombo and Kandy (Sri Lanka's second-most populous city)[2].

In fact, as Ana Anjo argues,

[while] in the more developed regions this problem has been reasonably solved, the same cannot be said of the less developed regions. In 2003, 550 million people lived in these areas in Asia, 187 million in Africa, and 128 million in Latin America and the Caribbean, meaning in terms of urban population, 72% in Sub-Saharan Africa, 59% in South-Central Asia, 36% in East Asia, 33% in West Asia and 32% in Latin America and the Caribbean. Forecasts suggest that by 2050, some 3 billion people will live in "informal" urban areas. Given their scale, which is often associated with serious environmental problems, and increasingly with marginalization and crime, it has become imperative to intervene not only to improve the quality of life in these areas and hence that of their residents but also as a way of enabling structured and sustainable development of cities.[3]

As GDP rises, the agricultural sector is transformed into the non-agricultural sector, infrastructure grows, and population demographics shift, urbanisation emerges as a worldwide force. The economics of location and space are influenced by urbanisation's embodiment of agglomeration's density, separation, and variety. It is the main reason for the disparity in prosperity between different parts of the country. Urban agglomerations materialize as cities, which serve as engines of economic expansion and creative breakthroughs[4]. The growing concentration of people in urban areas and the development of

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[1] BANCO MUNDIAL. **Relatório sobre o desenvolvimento mundial. O Estado num Mundo em Transformação**. Washington. 1997, p. III e pp. 124-125. Retrieved from: https://documents1.worldbank.org/curated/en/634101468162557539/pdf/341310PORTUGUE1821313777 1701PUBLIC1.pdf.
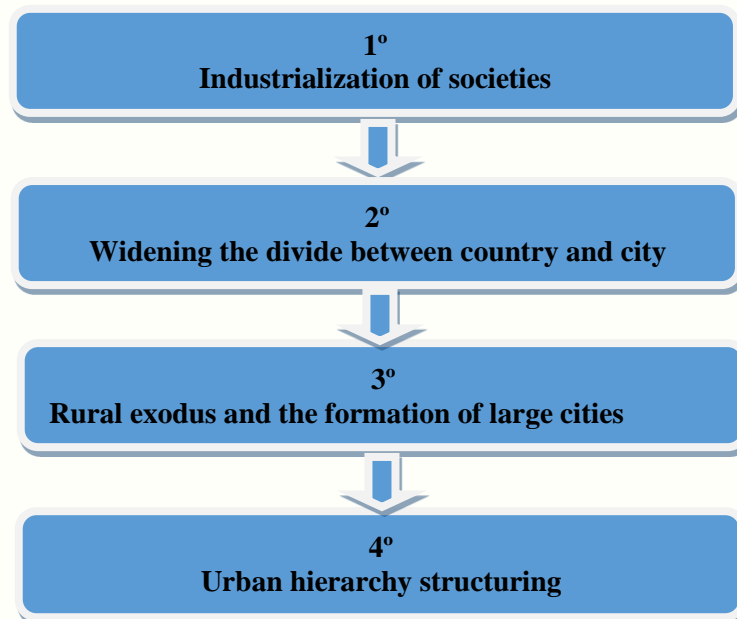
[2] ROBERTS, Mark. **South Asian Urbanisation: Messy and hidden**. World Bank Blogs. September 28, 2015. Retrieved from: https://blogs.worldbank.org/endpovertyinsouthasia/south-asian-urbanisation-messy-and-hidden.

[3] ANJO, Ana. **A Reabilitação de Áreas Urbanas "Informais" em Moçambique**. Dissertação de Mestrado em Planeamento do Território – Ordenamento da Cidade. Universidade de Aveiro. 2009. Retrieved from: https://ria.ua.pt/handle/10773/3466.

[4] BHAGAT, Ram Babu. **Urbanisation and Urban Policies in South Asia**. Paper presented in the National Symposium on "Regional Disparity of Development in South Asia with Special Reference to North-east

urban infrastructure and services is a major trend in South Asia known as urbanisation. Countries like India, Pakistan, Bangladesh, Sri Lanka, and Nepal, all located in South Asia, have some of the world's highest per capita populations. Rapid population increase, rural-urban movement, and greater economic opportunities in urban centres are only a few of the causes that have pushed the region towards urbanisation. In fact, as Rafaela Sousa[5] mentions in Figure 1, the urbanisation process takes place in four main stages, suffering a few variations in different parts of the planet:

Figure 1 – Stages of urbanisation process

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1º
Industrialization of societies
        ↓
2º
Widening the divide between country and city
        ↓
3º
Rural exodus and the formation of large cities
        ↓
4º
Urban hierarchy structuring
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Source: developed by the authors

In recent decades, the population of South Asia has exploded, forcing more people into cities. By the year 2050, it is anticipated that the population of the region will surpass 2.2 billion, with a significant proportion of them settling in urban areas. Migration from rural to urban regions has been a major factor in South Asian urbanisation. Individuals relocate for a variety of reasons, including the prospect of securing employment, acquiring better housing, and facilitating easier access to medical care, higher education, and other essentials[6].

In South Asia, it is possible to locate megacities such as Mumbai, Delhi, Karachi, and Dhaka, all of which are regarded as megacities. The rapid growth of cities in numerous areas has led to the growth of city districts and other informal communities, as well as

India". held on 12-13 October, Department of Geography, Guwahati University, Guwahati. 2018. https://doi.org/10.13140/RG.2.2.21550.05440.

[5] SOUSA, Rafaela. Urbanização, Brasil Escola. September 14, 2023. Retrieved from: https://brasilescola.uol.com.br/brasil/urbanizacao.htm.

[6] BANCO MUNDIAL. **Cidades em Movimento. Estratégia de Transporte Urbano do Banco Mundia**l. 2023. Retrieved from: https://documents1.worldbank.org/curated/en/742541468329980326/pdf/24910a10portuguese1cities1on1the1move.pdf.

difficulties with transportation, hygiene, and other essentials of daily existence. South Asia's booming informal economy, which has emerged as a result of the region's rapid urbanisation, is characterised by street vendors, unlicensed landlords and unofficial housing. The aforementioned issues, which are entwined with poverty, social inequity, and inadequate access to social protection, are exacerbated by the fact that a significant number of urban dwellers engage in the informal sector. Rapid urbanisation in South Asia has presented significant challenges to the region's infrastructure and service delivery systems. The issues of housing, water and hygiene, transportation, health care, and education are all common concerns, as well as significant environmental issues, such as excessive energy use, air pollution, waste generation, and resource exhaustion[7].

The effective management of urbanisation in South Asia is heavily dependent on the calibre of its urban planning and governance. The inadequacy of institutions, corruption, and a lack of coordination among various levels of government all pose obstacles to sustainable urban growth in numerous cities in the region. Nonetheless, notwithstanding the challenges associated with urbanisation, there exist numerous avenues for advancing society and the economy. By promoting entrepreneurship, technological innovation, and cultural interchange, South Asian urban centres can promote inclusive and sustainable growth. If South Asian governments, politicians, and urban planners are to meet the growing urbanisation challenges, sustainable urban development must be a top priority. Investing in infrastructure, enhancing governance and service delivery, promoting equitable growth, and implementing environmentally friendly practices are crucial factors in transforming cities into viable and resilient environments for the expanding urban population.

1. URBAN DEVELOPMENT SINCE HUMAN CIVILIZATION

Human civilization has always been characterized by the growth of urban areas throughout history. The emergence of cities and urban centres occurred when people ceased to be nomadic and adopted a sedentary agrarian way of life. In the period of ancient Mesopotamia, approximately 4000 BC, cities such as Uruk, Ur, and Babylon emerged with intricate social structures, centralized governments, and technologically advanced infrastructures, including fortifications, religious buildings, and water systems. In ancient Egypt, cities such as Memphis and Thebes emerged along the Nile River. During the classical era, there was significant urban growth in the Greek and Roman civilizations, with cities such as Athens and Sparta becoming important cultural and political centres. The Roman Empire constructed a vast network of roads and aqueducts, as well as magnificent cities such as Rome,

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[7] CUNHA, Belinda Pereira da; AUGUSTIN, Sérgio. **Sustentabilidade ambiental: estudos jurídicos e sociais**. Caxias do Sul, RS. EDUCS – Editora da Universidade de Caxias do Sul. 2014. Retrieved from: https://www.ucs.br/site/midia/arquivos/Sustentabilidade_ambiental_ebook.pdf.

Pompeii, and Constantinople. During the Middle Ages, following the fall of the Roman Empire, decentralized urbanisation arose throughout Europe, with cities and towns establishing themselves as significant centres of commerce, craft production, and religious life. These cities were crucial to the development of medieval European civilization[8].

During the Renaissance and the Enlightenment, European cities such as Florence, Venice and Paris experienced a cultural and intellectual age, fuelling the development of art, science, and intellectual advancement. During this period, architects and intellectuals began to conceptualize ideal cities and urban landscapes, giving rise to the idea of urban planning. During the 18th century, the Industrial Revolution had a significant impact on the expansion of cities, leading to the emergence of significant urban centres such as Manchester, Birmingham, and Pittsburgh as a result of rapid industrialization. However, this increased urbanisation led to problems such as overcrowding, poor living conditions, and social difficulties. During the 20th century, the advent of contemporary urban planning led to the expansion of megalopolises. Large cities such as New York, London, Tokyo, and Mumbai have established themselves as global economic powerhouses, driven by skyscrapers, efficient public transport, and cultural diversity. Throughout time, urban planning has become more standardized, with a focus on city infrastructure and inhabitant's well-being[9].

Over the past few decades, new challenges have emerged for urban planners and developers, including issues related to rapid population expansion, urban sprawl, environmental concerns, and socio-economic inequality. Smart cities, green infrastructure, and inclusive planning have become a priority for sustainable urban development in response to these issues[10].

The expansion of urban areas has consistently had a significant impact on the manner in which individuals live, work, and think. Nonetheless, urban centres also pose challenges in terms of infrastructure, inequality, and sustainability, and have historically served as centres for innovation, commerce, and cultural exchange. Urbanisation forward momentum is driven by the pursuit of sustainable and habitable cities, as well as technological and societal developments[11]. Urban sustainability can be understood as the balance between

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[9] LEETE, Rebecca Ildikó. **Como o Renascimento influenciou a arquitectura**. ArchDaily. 24 abril 2022. Retrieved from: https://www.archdaily.com.br/br/979584/como-o-renascimento-influenciou-a-arquitetura. BRANCO, Diana Alexandra de Oliveira. **Reflexão sobre o Planeamento Espacial em contexto europeu e internaciona**l. Dissertação de Mestrado em Planeamento e Projeto Urbano. Faculdade de Engenharia da Universidade do Porto, pp.43-48. June, 2019. Retrieved from: https://repositorio-aberto.up.pt/bitstream/10216/122891/2/358512.pdf.

[10] JR. Francisco; AMIN, Angela; BRAIDE, Eduardo; CATHEDRAL, Haroldo. Cidades Inteligentes – Uma abordagem humana e sustentável. Série Estudos Estratégicos 12. Centro de Estudos e Debates Estratégicos. Consultoria Legislativa. Brasília, 1ª **Edições Câmara**, pp. 15 a 24. 2021. Retrieved from: https://www2.camara.leg.br/a-camara/estruturaadm/altosestudos/pdf/cidades_inteligentes.pdf.

[11] JR. Francisco; AMIN, Angela; BRAIDE, Eduardo; CATHEDRAL, Haroldo. Cidades Inteligentes – Uma abordagem humana e sustentável. Série Estudos Estratégicos 12. Centro de Estudos e Debates

the development of urban areas and the protection of the environment, always aiming for equity in income, employment, housing, basic infrastructure services, and transportation[12].

The Industrial Revolution was an important factor in the growth of urban areas in many parts of the world. It began in England in the 18th century and spread to the United States and the rest of Europe, creating employment opportunities in cities. Millions of people migrated from the countryside to urban centres during the following century, driving the growth of cities. The population of London, for example, increased from one million in 1800 to almost six million in 1810, mainly due to the Industrial Revolution. New York City also experienced rapid urban growth driven by the so-called Second Industrial Revolution and became the largest city in the world by 1950, with 12.5 million inhabitants. The spread of industrialization contributed to urban growth in different parts of the world[13]..

2. URBAN DEVELOPMENT AND ITS IMPACT ON CLIMATE CHANGE

The effects of climate change, a global problem, are felt most acutely in cities. For example, the occurrence of extreme weather conditions, such as floods, droughts, and storms, together with the spread of tropical diseases, are all exacerbated by the phenomenon of global warming.[14] This has high consequences for essential urban services, infrastructure, housing, human livelihoods, and health. This is why urban areas are one of the main contributors to global warming, as numerous human activities take place there. It has been estimated that 75 per cent of all CO2 emissions originate from urban areas, with the majority of these emissions emanating from transportation and construction[15].

The region most vulnerable to weather changes is South Asia. Extreme weather phenomena, such as heat waves, cyclones, droughts, and floods, are putting a strain on local governments, businesses, and individuals as they adjust to the new climate norm in the region[16].

Estratégicos. Consultoria Legislativa. Brasília, 1ª **Edições Câmara**, pp. 47 a 89. 2021. Retrieved from: https://www2.camara.leg.br/a-camara/estruturaadm/altosestudos/pdf/cidades_inteligentes.pdf.

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[14] VAZ, Dirlez dos Santos. Breves Considerações sobre Alterações climáticas, riscos ambientais e problemas de saúde. **Hygeia – Revista Brasileira de Geografia Médica e da Saúde.** Uberlândia, V. 6, n.10. 2010. Retrieved from: https://seer.ufu.br/index.php/hygeia/article/view/16975.

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[16] KOBIYAMA, Masato; MENDONÇA, Magaly; MORENA, Davis Anderson; MARCELINO, Isabela P. V. de Oliveira; MARCELINO, Emerson V.; GONÇALVES, Edson F., BRAZETTI, Leticia Luiza Penteado; GOERL,

In the previous 20 years, climate-related disasters have impacted more than half of the population of South Asia, or 750 million people in 8 countries (Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka). Up to 800 million people in a region with some of the world's poorest and most vulnerable populations might have their standard of living severely diminished as a result of climate change. At the same time, South Asia is at the forefront of several climate-smart solutions, such as community-based innovations in coastal resilience, renewable energy scalability, and regenerative forestry. In order to reduce emissions and prepare for the region's fast-warming environment, it is essential to speed up and expand these initiatives[17].

More than half of the world's population - 4.4 billion people - now live in urban areas. The current urban population is expected to more than double by 2050. By then, around 7 out of 10 people will call a city home[18].

Greater productivity and innovation are two ways in which urbanisation, which accounts for more than 80% of global GDP, can contribute to sustainable growth[19].

However, the speed and scale of urbanisation pose challenges in meeting the accelerating demand for affordable housing, viable infrastructure including transport systems, basic services, and jobs for the nearly one billion urban poor who live in informal settlements in order to be close to opportunities[20]. More than half of the refugees in the world now call cities home, adding to the burden they already feel from ongoing conflict[21].

Once a city has been constructed, its design and natural resource utilization protocols can endure for decades or even centuries, resulting in unsustainable sprawl. It is

Roberto Fabris; MOLLERI, Gustavo Souto Fontes; RUDORFF, Frederico de Moraes. Prevenção de Desastres Naturais – Conceitos Básico. Florianópolis – SC, **Editora Organic Trading**. 2006. Retrieved from: https://cetesb.sp.gov.br/proclima/wp-content/uploads/sites/36/2014/05/prevencaodedesastresnaturaisconceitosbasicos.pdf.

[17] THE WORLD BANK. **Climate and Development in South Asia**. 2023. Retrieved from: https://www.worldbank.org/en/region/sar/brief/integrating-climate-and-development-in-south-asia/integrating-climate-and-development-in-south-asia-region.

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[19] JACINTO, Sara Patrícia Guerreiro. **O impacto ambiental do crescimento económico – Uma visão integrada na União Europeia e no mundo**. Dissertação em Mestrado em Relações Internacionais e Estudos Europeus. Escola de Ciências Sociais. Universidade de Évora. July, 2013. Retrieved from: https://dspace.uevora.pt/rdpc/bitstream/10174/17421/1/disserta%C3%A7%C3%A3o.pdf.

[20] TEIXEIRA, Orozina Maristela João. **Mobilidade e Acessibilidade Urbana – Estudo de caso do Município de Viana**. Dissertação de Mestrado em Gestão Autárquica. Instituto Superior de Educação e Ciências. Dezembro 2014, pp. 17-20 e 30-32. Retrieved from: https://comum.rcaap.pt/bitstream/10400.26/21551/1/TFM.pdf.

[21] UNHCR. **A metade dos refugiados no mundo vive atualmente em cidades**. Agência da ONU para Refugiados. Brasil. December 11, 2009. Retrieved from: https://www.acnur.org/portugues/2009/12/11/a-metade-dos-refugiados-no-mundo-vive-atualmente-em-cidades/.

estimated that the world will have 1.2 million km2 of built-up urban area by 2030, as urban land consumption grows faster than population. Cities constitute two-thirds of the global energy consumption and are accountable for more than 70% of greenhouse gas emissions, thereby indicating that urban sprawl is detrimental to the environment[22]. As we can see in Figure 2:

Figure 2 – Urban development and its impact on climate change
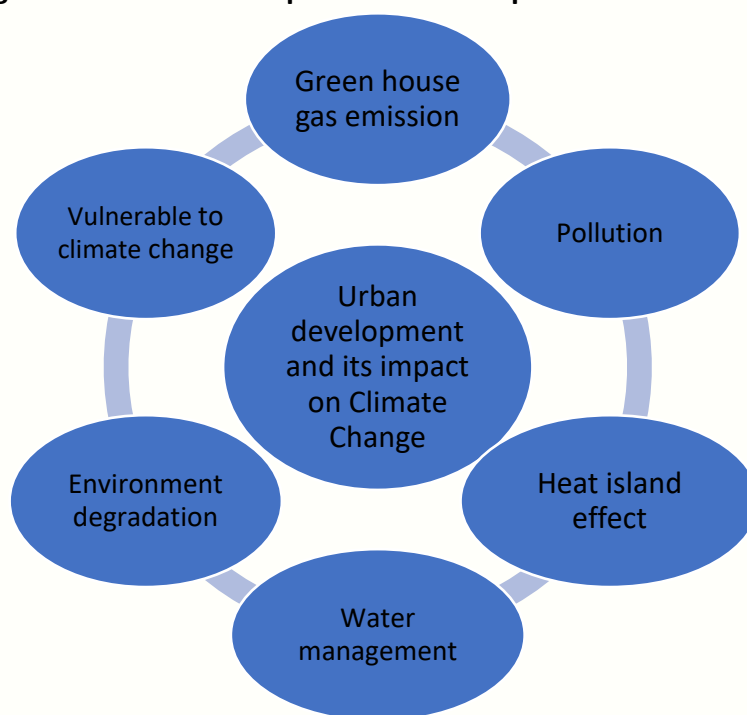
Source: developed by the authors

Increasing urbanisation, population growth, and accompanying difficulties in South Asia have a major bearing on global warming caused by urban development[23]. Major contributors to greenhouse gas emissions come from South Asian cities. Rapid urbanisation has led to increased energy use, transportation emissions, and industrial activities, which in turn increase CO2 emissions. The demand for housing, infrastructure, and services is increasing, which in turn drives up emissions from building and trash production[24].

Air pollution is a major issue in South Asian cities, primarily caused by vehicle and industrial emissions, as well as the use of solid fuels for heating and cooking. This pollution

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[22] WORLD BANK. **Urban Development**. April 03, 2023. Retrieved from: https://www.worldbank.org/en/topic/urbandevelopment/overview.

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[24] PARLAMENTO EUROPEU. **Emissões de gases com efeito de estuda por país e setor (Infografia**). March 29, 2023. Retrieved from: https://www.europarl.europa.eu/news/pt/headlines/society/20180301STO98928/emissoes-de-gases-com-efeito-de-estufa-por-pais-e-setor-infografia.

has significant negative effects on both human health and the environment, including the acceleration of glacier melting and changes in weather patterns. South Asian urban areas also experience the urban heat island effect, where temperatures are much higher than in surrounding rural areas due to factors such as concrete buildings, reduced vegetation, and human activity. This leads to increased greenhouse gas emissions, more intense heat waves, and an increased demand for energy and cooling. Additionally, water management is a challenge due to rapid urbanisation and issues such as over-extraction of groundwater, water pollution from poorly managed sewage systems, and inadequate wastewater treatment. South Asian cities are particularly vulnerable to climate-related disasters like floods, cyclones, and heat waves due to unplanned expansion, encroachment on water bodies, and insufficient waste management infrastructure. These hazards pose amplified threats to human health, private property, and urban infrastructure. Threats to human health, private property, and urban infrastructure are amplified as a result of climate change[25].

The ramifications of climate change are becoming increasingly apparent, and the necessity for climate-resilient urban development in South Asia is becoming increasingly acknowledged. Cities can enhance their resilience to climate change by incorporating green spaces, environmentally friendly transportation alternatives, and utilizing less energy in their construction process. Indeed, as Erdal Sabri Ergen points out "[t]he cities must be at the centre of any realistic vision of sustainability. Although urban areas occupy a meagre 2% of the world's landmass, they produce 70% of global greenhouse gas emissions and consume 78% of the world's energy. Our cities do indeed have a huge ecological footprint[26].

Several measures are being taken in South Asia to combat the effects of climate change and urbanisation. Sustainable policies, renewable energy, enhanced public transport, and climate-resilient infrastructure are becoming increasingly prevalent[27]. Furthermore, UNICEF stated that

> [the] children of Afghanistan, Bangladesh, India, and Pakistan are among those who are at the highest risk of experiencing the adverse effects of the climate crisis in South Asia, where 600 million young people reside. (…) On the scale, Pakistan is ranked 14th, followed by Bangladesh and Afghanistan, both ranked 15th, and India, ranked 26th. Likewise, Nepal (51st) and Sri Lanka (61st) are among the 65 most affected countries in the world. Approximately one billion children live in the 33 countries classified as 'extremely high risk' more than half of these in the four countries of South Asia. For the first time, we have

[25] NETO, Tatiana Filomena Da Silva. **Políticas e medidas de mitigação de poluição atmosférica em megacidades**. Dissertação de Mestrado em Gestão e Políticas Ambientais, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa. 2016. Retrieved from: https://run.unl.pt/bitstream/10362/20316/1/Neto_2016.pdf.

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[27] NAÇÕES UNIDAS BRASIL. **Mudanças climáticas: ameaça ao bem-estar humano e à saúde do planeta**. March 2, 2022. Retrieved from: https://brasil.un.org/pt-br/173693-mudan%C3%A7as-clim%C3%A1ticas-amea%C3%A7a-ao-bem-estar-humano-e-%C3%A0-sa%C3%BAde-do-planeta.

clear evidence of the impact of climate change on several million children in South Asia, said UNICEF director for this region, George Laryea-Adjei[28].

South Asian countries must work together to combat climate change and advance sustainable urban development.

3. URBAN DEVELOPMENT AND ITS IMPACT ON SDGS

The United Nations approved 17 Sustainable Development Goals (SDGs) in 2015. Indeed,

> 2015 will go down in history as the year in which the 2030 Agenda was defined, consisting of 17 Sustainable Development Goals (SDGs). The 2030 Agenda is a broad and ambitious agenda that addresses various dimensions of sustainable development (socio, economic, environmental) and promotes peace, justice, and effective institutions. The Sustainable Development Goals are based on the progress and lessons learned with the 8 Millennium Development Goals, established between 2000 and 2015, and are the result of the joint work of governments and citizens around the world. The 2030 Agenda and the 17 Sustainable Development Goals are the common vision for humanity, a contract between world leaders and people and 'a list of things to do on behalf of people and the planet'.[29]

In this scope urban development is essential to accomplishing these goals. Especially because, if we analyse some objectives and restrict them to their conceptual essence, we find that they aim at the following, as shown in Figure 3:

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[28] OBSERVADOR. **Milhões de crianças no sul da Ásia estão em risco devido à crise climática, anuncia Unicef**. August 20, 2021. Retrieved from: https://observador.pt/2021/08/20/milhoes-de-criancas-no-sul-da-asia-estao-em-risco-devido-a-crise-climatica-anuncia-unicef/..
[29] NAÇÕES UNIDAS. **Agenda 2030**. Centro Regional de Informação para a Europa Ocidental. 2023. Retrieved from: https://unric.org/pt/Objetivos-de-Desenvolvimento-Sustentavel/.

Figure 3 – SGDs – Sustainable Development Goals
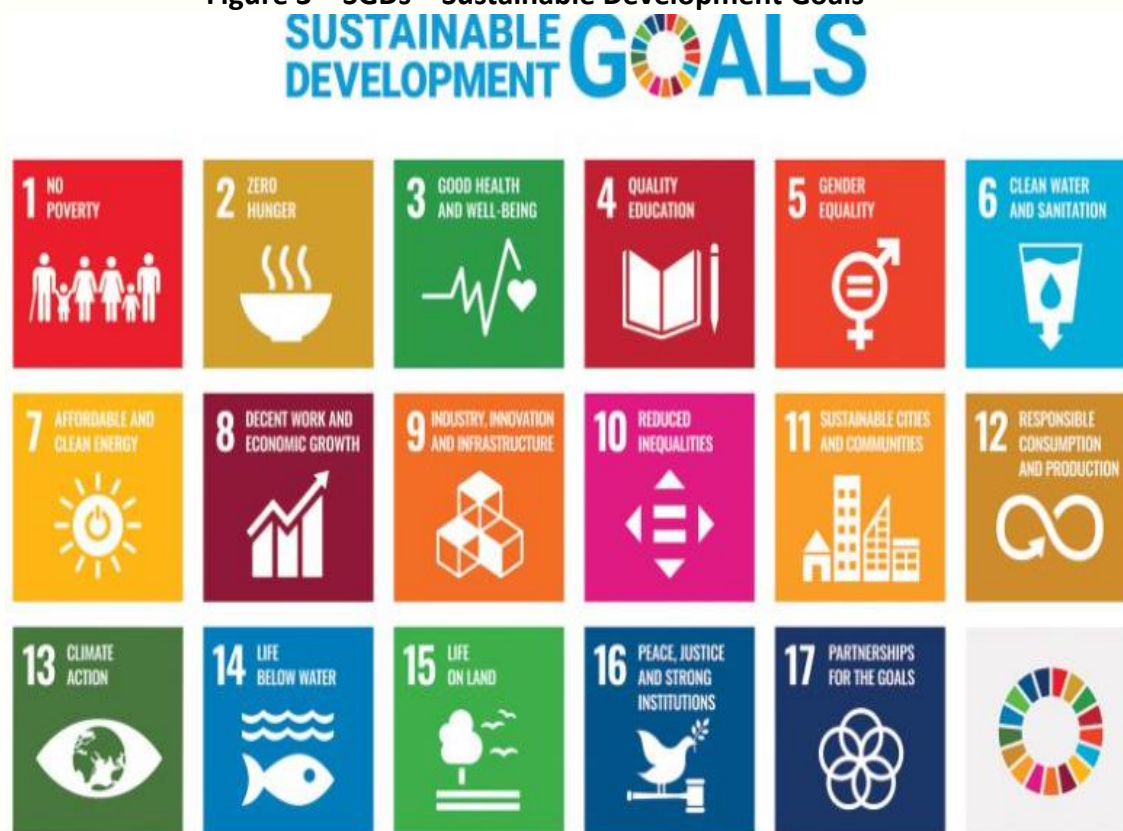
Source: United Nations

> Goal 1: No Poverty - Urban development can help reduce poverty by creating jobs, expanding access to essential services like clean water, proper sanitation, quality healthcare, and quality education, and making cities more welcoming places for people from all walks of life[30].

> Goal 3: Good Health and well-being - Access to quality healthcare, well-designed public spaces that encourage physical activity, decreased pollution, and improved living conditions are just a few of the ways that well-planned, sustainable urban development can enhance health outcomes for city dwellers[31].

> Goal 4: Quality Education - Getting a good education is priority number four, and this is generally easier to do in a city. Expanding educational facilities, improving transportation networks, and lowering barriers to education are all ways in which urban development can provide equal access to quality education for marginalized communities in cities[32].

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[30] NAÇÕES UNIDAS. **1. Erradicar a pobreza**. Centro Regional de Informação para a Europa Ocidental. 2023a. Retrieved from: https://unric.org/pt/objetivo-1-erradicar-a-pobreza-2/.

[31] NAÇÕES UNIDAS. **3. Saúde de Qualidade**. Centro Regional de Informação para a Europa Ocidental. 2023b. Retrieved from: https://unric.org/pt/objetivo-3-saude-de-qualidade-2/.

[32] NAÇÕES UNIDAS. **4. Educação de Qualidade**. Centro Regional de Informação para a Europa Ocidental. 2023c. Retrieved from: https://unric.org/pt/objetivo-4-educacao-de-qualidade-2/.

> Goal 5: Gender Equality - Safe and inclusive urban environments that empower women and girls can be fostered through urban development. Issues like discrimination and violence based on gender must be addressed, as must the provision of equal opportunities in school, healthcare, the workplace, and public areas[33].

> Goal 6: Clean Water and Sanitation - Ensure that all people have access to safe drinking water and sanitation facilities, with a particular focus on densely populated areas. Improving wastewater treatment and spreading awareness of water conservation are all part of this strategy[34].

> Goal 7: Affordable and Clean Energy - Access to and affordability of clean energy urban development has the potential to lessen cities' dependency on fossil fuels by increasing the use of renewable energy sources, energy-efficient structures, and sustainable transportation systems[35].

> Goal 8: Decent Work and Economic Growth - Urban development can provide jobs, boost the economy, and inspire new business owners. It entails fostering business-friendly environments in metropolitan areas, investing in infrastructure, and expanding access to capital for SMBs[36].

> Goal 11: Sustainable Cities and Communities - Community and urban sustainability aims to ensure that all people may live in and benefit from cities that are welcoming, safe, resilient, and environmentally sustainable. Urban planning is a part of it, as are things like low-cost housing, reliable public transit, environmentally friendly buildings, open areas, and measures to lessen the impact of natural disasters[37].

> Goal 13: Action on Climate - Change Sustainable urban development is essential to combating global warming. In order to lessen the severity of climate change and adapt to its effects, it is necessary to take steps like decreasing emissions of greenhouse gases, encouraging the construction of energy-efficient buildings, improving public transit, and implementing climate-resilient infrastructure and

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[33] NAÇÕES UNIDAS. **5. Igualdade de Género. Centro Regional de Informação para a Europa Ocidental. 2023d.** Retrieved from: https://unric.org/pt/objetivo-5-igualdade-de-genero-2/.

[34] NAÇÕES UNIDAS. **6. Água Potável e Saneamento. Centro Regional de Informação para a Europa Ocidental**. 2023e. Retrieved from: https://unric.org/pt/objetivo-6-agua-potavel-e-saneamento-2/.

[35] NAÇÕES UNIDAS. **7. Energias Renováveis e Acessíveis. Centro Regional de Informação para a Europa Ocidental**. 2023f. Retrieved from: https://unric.org/pt/objetivo-7-energias-renovaveis-e-acessiveis/.

[36] NAÇÕES UNIDAS. **8. Trabalho Digno e Crescimento Económico. Centro Regional de Informação para a Europa Ocidental**. 2023g. Retrieved from: https://unric.org/pt/objetivo-8-trabalho-digno-e-crescimento-economico/.

[37] NAÇÕES UNIDAS. **17. Parcerias para a implementação dos objetivos. Centro Regional de Informação para a Europa Ocidental**. 2023i. Retrieved from: https://unric.org/pt/objetivo-17-parcerias-para-a-implementacao-dos-objetivos/.

urban design[38].

> Goal 17: Partnerships to Achieve the Goals - Partnerships and collaboration between governments, local authorities, civil society organisations, corporate sector companies, and communities are essential if the SDGs are to be realised. Multi-stakeholder partnerships are commonly used in urban development projects to pool resources, disseminate information, and apply environmentally friendly strategies[39].

Sustainable, inclusive, and resilient urban development can help cities and communities overcome social, economic, and environmental difficulties, which in turn advances progress towards the SDGs. Creating egalitarian, liveable, and sustainable cities calls for integrated approaches, innovative solutions, and democratic decision-making processes.

It is essential that cities be fortified in their role as critical development actors with the adoption of the 2030 Agenda and the Sustainable Development Goals (SDGs). In order to "Make Cities and Human Settlements inclusive, safe, resilient, and sustainable," as SDG11 puts it, "is essential. It is apparent that an integrated approach is required to put the urban objective into practice and effectively execute the SDGs at a local level, given the significant interlinkages between the 17 SDGs and their 169 targets. This is especially true in light of the problems plaguing cities today, such as inadequate public services, income inequality, and environmental deterioration. Neither can these problems be solved by isolating them to one industry or group of actors. For example, as urban areas are responsible for 80% of global greenhouse gas emissions, analysing the interconnections between SDG13 "to combat climate change and its impacts" and the urban objective is essential for its successful local implementation. It also stresses the importance of recognising the interconnectedness of SDG13 with other objectives, such as those dealing with clean energy (SDG7), infrastructure and innovation (SDG9), and sustainable consumption and production patterns (SDG12)[40]. As we can see in Figure 4:

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[38] NAÇÕES UNIDAS. **13. Ação Climática. Centro Regional de Informação para a Europa Ocidental**. 2023h. Retrieved from: https://unric.org/pt/objetivo-13-acao-climatica/.

[39] NAÇÕES UNIDAS. **17. Parcerias para a implementação dos objetivos. Centro Regional de Informação para a Europa Ocidental**. 2023i. Retrieved from: https://unric.org/pt/objetivo-17-parcerias-para-a-implementacao-dos-objetivos/.

[40] EISENBEIB, Katrin. **The SDGs go local! Why cities need to engage in integrated urban development**. URBANET. October 4, 2016. Retrieved from: https://www.urbanet.info/sdgs-integrated-urban-development/.

Figure 4 – Urban development contribution to sustainable development goal

Source: United Nations

4. IMPACT OF URBAN DEVELOPMENT ON THE SOCIO-ECONOMIC SECTOR

In this particular topic, our analysis will primarily focus on two key aspects: a) the expansion of employment opportunities and economic growth, and b) the expansion of urban services infrastructure.

In terms of employment opportunities and economic growth, South Asia's major cities are considered major economic centres that attract a wide variety of investors, manufacturers, and retailers. In this sense, manufacturing, services, construction, and even the informal economy benefit from the influx of workers resulting from urbanisation. By enabling rural dwellers to find work in metropolitan areas, it is possible to increase GDP, and income and reduce poverty. However, income inequality and social stratification are likely to increase with South Asia's rapid urbanisation, as this creates economic opportunities and can potentially exacerbate class differences. Rapid urbanisation and informal work widen income gaps, resulting in greater difficulty in attaining well-paid jobs and essential infrastructure. Despite this, rapid urbanisation also provides access to essential goods for more people in South Asian cities[41].

Improvements have been made in areas such as infrastructure for education,

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[41] TOMÉ, Luis. A Arquitetura de Segurança na Ásia-Pacífico. **Nação e Defesa**, nº 134- 5ª Série. 2013. Retrieved from: https://comum.rcaap.pt/bitstream/10400.26/9641/1/TOMELuis_Aarquiteturadeseguran%C3%A7anaAsia _Pacifico-N_134_p_21_42.pdf.

healthcare, water, sanitation, transportation, and communication. Due to the greater concentration of educational facilities, medical facilities, and other social infrastructure, opportunities for personal growth and development are enhanced in most urban settings. South Asia's rapid urbanisation poses a challenge in providing sufficient and reasonably priced housing for the region's expanding urban population. As cities expand rapidly, slums and other informal communities emerge, typically characterized by impoverished living conditions. The lack of affordable housing for people with lower incomes contributes to urban poverty and social isolation[42].

The urbanisation of South Asian cities is one of the main causes of the rapid growth of infrastructure and services provided in the region, such as roads, power lines, water pipelines and wastewater treatment plants. Economic growth, increased communications, and urban life all benefit from infrastructure investment. Despite progress, there are still obstacles to be overcome, such as the need for sustainable and resilient urban systems, and gaps in infrastructure and service provision.

South Asian cities are often home to ethnically mixed populations and intense cultural exchanges[43]. Through urban development, it is possible to strengthen social ties by promoting cultural exchange, encouraging tolerance, and facilitating contacts between people of different backgrounds. Cities play a crucial role in cultural vitality and social cohesion, acting as places where new ideas and customs merge. However, urbanisation in the region has environmental implications such as increased energy consumption, air and water pollution, waste production, and resource depletion. To mitigate these effects, it is necessary to adopt sustainable urban development practices. In addition, good governance and urban management practices are critical to addressing the challenges of corruption, inadequate urban planning, and lack of coordination between governments that exist in South Asian cities. To achieve equitable and sustainable urban development, it is necessary to address these issues.

South Asian policymakers and city planners should strive to achieve equitable and environmentally responsible urbanisation. This entails addressing socioeconomic disparities, promoting affordable housing, enhancing infrastructure and service delivery, incorporating environmental sustainability into urban planning and development initiatives, and guaranteeing equitable access to economic opportunities and fundamental services. More than half of the individuals who reside on our planet consider a city their residence. It is

[42] GOMES, Henrique Manuel Candeias Rosa. **A nova ordem mundial – Do fim do mundo bipolar à emergência de novos actores internacionais**. Dissertação de Mestrado em Estudos Euro-Asiáticos. Universidade Aberta. 2009. Retrieved from: https://repositorioaberto.uab.pt/bitstream/10400.2/2053/1/Tese%20de%20Mestrado%20Final.pdf.

[43] VASCONCELLOS, Morôni Azevedo de. **Geografia da Ásia**. InfoEscola. Navegando e Aprendendo. 2023. Retrieved from: https://www.infoescola.com/geografia/geografia-da-asia/.

predicted that the number of South Asians living in urban areas will increase by 130 million between the years 2000 and 2011, and it is anticipated that another 250 million will do so by the year 2030[44]. As we can see in Figure 5:

Figure 5 – Urban Development impact on the economic sector in South Asia

Employment and Economic Opportunities
Income disparity and inequality
Access to basic services
Housing and Shelter
Urban frastructure
Social inclusion
Environment Impact
Governance and urban managemnt

Source: developed by the authors

The growth and success of a nation depend on the development of practical and pleasant cities. However, South Asia still faces challenges in urbanisation due to a lack of adequate infrastructure and public services. To promote urban development, there is a need to increase public and private investment and take an active role in policymaking. The consequences are visible in cities that do not attract significant investment, with many inhabitants living in slums without access to basic services. For example, slums are home to 130 million of South Asia's metropolitan residents, all of whom lack access to public amenities and are not even housed in conditions considered to be suitable. To have successful urbanisation, it is essential to have smart and coordinated policies that consider the availability of efficient markets and public funding to address congestion and the lack of adequate housing, transport, and infrastructure. Proper planning is needed to manage congestion and fill these gaps[45].

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[44] POMAR, Milton. **Ásia em 2030: mais velha e mais rica? Amanhã.** September 20, 2019. Retrieved from: https://amanha.com.br/categoria/mundo/asia-em-2030-mais-velha-e-mais-rica.

[45] VENABLES, Tony. **Making cities work for development: Perspectives from South Asia.** IGC. December 14, 2015. Retrieved from: https://www.theigc.org/blogs/making-cities-work-development-perspectives-south-asia.

5. URBAN DEVELOPMENT IMPACT ON INDUSTRIALIZATION

The economic structure has changed significantly because of urbanisation, industrialization, population growth, increased energy use, and technological advances. In other words, the pace of urbanisation has been accelerated by industrialization and accelerated urbanisation and industrialization pose challenges to green growth[46].

Currently, the relationship between pollution and global warming is discussed. The consequences of the climatic changes are getting worse because of human-caused carbon emissions. Due to the association between carbon dioxide emissions and higher temperatures, as emissions rise, the effects of climatic change also do well. The rise in temperatures, the rise in sea level, the melting of glaciers, the drought, the flora fires, and pollution all influence the ecosystem as a whole and on society[47].

The level of urban development in South Asia is a significant factor in determining the rate of industrialization in that region[48]. Cities in South Asia often have clusters of businesses that are interconnected for the simple reason that they are conveniently located near customers. Companies, suppliers, and support services that form these clusters have the ability, as a group, to benefit from economies of scale, accelerate innovation, and attract investors. The growth of industrial clusters depends on their access to the infrastructure, land, and links that urbanisation makes available to them. Both the construction and manufacturing industries derive advantages from accelerated industrialization, which in turn enables economic expansion and the creation of employment. The presence of both domestic and international corporations in expanding and developing cities results in a heightened level of output, economic expansion, and employment creation. This benefit accrues to the entire city. The availability of skilled labour in large urban centres is another aspect that contributes to the successful completion of the industrialization process[49].

The expansion and advancement of urban areas is influenced by a multitude of factors, including but not limited to communication systems, water and electricity supply, and transportation networks. This well-developed infrastructure holds significant importance in the efficient movement of individuals, commodities, and raw materials, as well as in providing

[46] PENA, Rodolfo F. Alves. **Relação entre industrialização e urbanização. Brasil Escola**. August 2, 2023. Retrieved from: https://brasilescola.uol.com.br/geografia/relacao-entre-industrializacao-urbanizacao.htm.
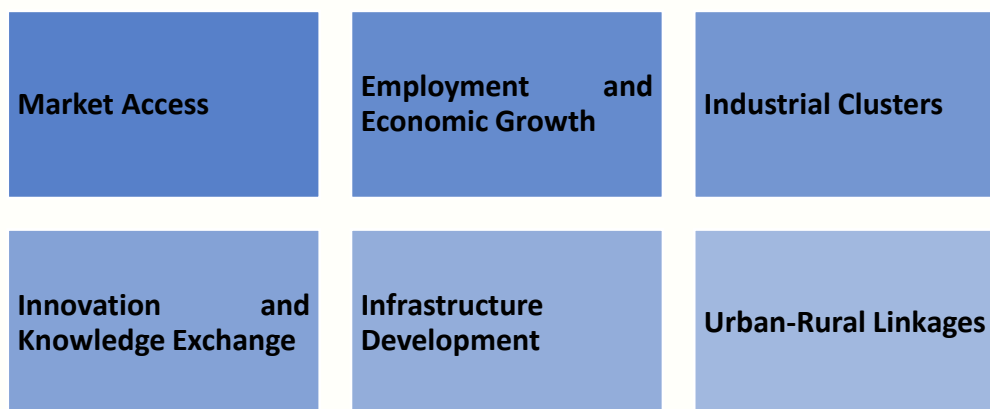
[47] VOUMIK, Liton Chandra; SULTANA, Tasnim. Impact of urbanisation, industrialization, electrification and renewable energy on the environment in BRICS: fresh evidence from novel CS-ARDL model, **Heliyon**. Volume 8, Issue 11, E11457. November 07, 2022. https://doi.org/10.1016/j.heliyon.2022.e11457.

[48] AMSDEN, Alice H. The diffusion of development: the late industrialization model and the Great East Asia. **Brazilian Journal of Political Economy**, vol.12 (1), Jan-Mar, 1992, pp.134-141. Retrieved from: https://www.scielo.br/j/rep/a/Tf4T4kw59L57wVR7B7zCfcr/?lang=pt.

[49] AMSDEN, Alice H. The diffusion of development: the late industrialization model and the Great East Asia. **Brazilian Journal of Political Economy**, vol.12 (1), Jan-Mar, 1992, pp.135-138. Retrieved from: https://www.scielo.br/j/rep/a/Tf4T4kw59L57wVR7B7zCfcr/?lang=pt.

access to markets and ensuring the success of production operations. In South Asia, urban areas possess significant potential for industrial development owing to their proximity to extensive consumer markets and supply chains. Due to the large number of potential consumers present in metropolitan regions, companies have the opportunity to expand their customer base. The availability of services, financial options, and distribution channels in urban areas are the main reasons industries thrive in these locations. As we can see in Figure 6:

Figure 6 – South Asia urban development and industrial growth

Market Access	Employment and Economic Growth	Industrial Clusters
Innovation and Knowledge Exchange	Infrastructure Development	Urban-Rural Linkages

Source: developed by the authors

The expansion of cities is a necessary step in the progress of industrialization since it facilitates the dissemination of novel concepts and knowledge

> [a] city is marked by different temporalities, bringing in its space permanence from previous eras, but also ruptures. It is within the dynamic movement of the city's urban world that narrated time and inhabited space are more closely associated than isolated buildings (...) its public spaces, its squares, rightly named, invite celebrations and public gatherings.[50]

A significant amount of higher education, scientific research, and technological advancement may be found in South Asia's major urban areas. The proximity of urban districts to academic institutions and the enormous and diversified talent pools that they offer make it possible for businesses in those places to create, investigate, and apply cutting-edge technologies.

The rapid urbanisation and industrialization that is taking place in South Asia will have an impact on the natural ecology of the region. Industrial processes exacerbate a number of environmental problems, including pollution, waste, and the depletion of natural resources. The environmental issues that affect metropolitan areas can be broken down into a few

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[50] KNACK, Eduardo Roberto Jordão. Industrialização e urbanização no centenário de passo fundo/rs – 1957. **História: Questões & Debates**, Curitiba, volume 64, n°1, jan/jun. 2016, p.253. Retrieved from: https://revistas.ufpr.br/historia/article/download/42213/28613

categories: air and water pollution, loss of forest cover, and the reduction or elimination of open green space. For urban growth to be sustainable and for these detrimental effects on the environment to be mitigated, environmentally friendly industrial technologies and pollution control methods are absolutely necessary[51]. Connections between urban and rural areas: the urbanisation and industrialization that has taken place in South Asia have had both positive and negative consequences on the rural communities that make up the region. An advantage of urban industrialization is that it encourages migration from rural regions and builds linkages between rural and urban groups. This is one of the many positive effects of urban industrialization. However, because most resources and investments are concentrated in urban centres, it's possible that rural areas will fall more and further behind.

In order to effectively manage urbanisation and industrialization, competent policies and robust governance institutions are required. It is the responsibility of governments to encourage economic growth by creating an environment that is friendly to business, passing legislation that is supportive of industry, and fostering widespread participation in the industrial sector. Only by including urban planning, constraints on land use, and other environmental management practices in development initiatives would it be possible to achieve environmentally responsible growth in the industrial sector.

In order to find a medium between urbanisation and industrialization in South Asia, careful planning, environmentally conscious practices, and regulations that include everyone are essential. It is necessary to take into account the social, economic, and environmental dimensions in order to ensure an equitable and sustainable industrialization. This requires addressing issues such as infrastructure deficits, environmental sustainability, labour rights, and social inclusivity, as well as fostering synergies between urban and rural development.

FINAL CONSIDERATIONS

Urban growth has long-term effects on how we live, work, and interact in cities. In order to build future sustainable cities it is important to plan and develop urban areas. It's crucial to plan and construct sustainable communities as the world's population shifts to cities.

Sustainable urban growth requires resource reduction, renewable energy, transit improvements, and green spaces. Sustainable measures can decrease global warming, improve living standards, and ensure a better future for cities. Climate change resilience is a

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[51] SILVA, Paulo Ricardo Santos da. **Avaliação de impactos e custos ambientais em processos industriais - uma abordagem metodológica**. Dissertação de Mestrado em Engenharia de Produção. Escola de Engenharia. Programa de Pós-graduação em Engenharia de Produção. Universidade Federal do Rio Grande do Sul. 2023. Retrieved from: https://lume.ufrgs.br/bitstream/handle/10183/5258/000423610.pdf?sequence=1&isAllowed=y.

city's ability to weather bad weather. Rising sea levels, intense weather, and changing weather patterns require cities to adapt and strengthen.

Future urban development should include flood-resistant buildings, green infrastructure for stormwater management, and other nature-based climate mitigation options. We must build climate-resistant cities to protect and sustain communities. "Smart cities" emerged from urban expansion and technological advancement. Technology and data promote efficiency, sustainability, and quality of life in "smart cities." In the future, the Internet of Things (IoT), artificial intelligence (AI), and data analytics will help city planners use resources more efficiently, improve public services, and solve urban challenges.

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