FBALMUN'24 UN–HABITAT STUDY GUIDE

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1.   Letter from the Secretary-General

Honourable delegates,

I am extremely delighted to welcome you all to the FBALMUN'24. I am Elif Erboz, the Secretary-General of FBALMUN'24. I have been attending MUN's since 2022 and now i am here. In MUN's you devalope your public speaking abilities in addition to improve your English. You become educated about world problems and solutions for them. Furthermore you widen your general knowledge in along with strengthening your diplomatic abilities. In the second annual session of FBALMUN, our academic team has decided to assign our delegates to seven unique committees: UNWOMEN, DISEC, ACEA, UNHABITAT, CONGRESS OF VIENNA, JCC: SECOND WEST RUSSIAN WAR, TURKCE KRIZ: KORE SAVASI. Within this study guide you are going find all the necessary information and guidelines which will help you about the committee. Since life is brief, the moments that will always bring us joy and that we will never forget are what truly make it special. I hope that for you, FBALMUN'24 will be one of those moments. As FBALMUN family, we are pleased to serve our attendees an unforgettable experience. Let's #breakthecycle together.

2.   Letter from the Under-Secretary-General

Most esteemed participants,

I am Elif Naz Alptekin, a junior studying Political Science and Public Administration at Bilkent University. I am proud to announce that I will be serving you as your Under-Secretary-General responsible for the committee of the United Nations United Nations Human Settlements Programme in FBALMUN'24. FBALMUN will always hold a special place in my heart as it marks the first and the last time I have occupied a position in an Executive Board. I am incredibly excited to reconvene in Aliağa to continue our legacy of breaking the cycle.

This July in UN-Habitat, our agenda item will be related to the Sustainable Development Goals of the UNDP, especially number 12. We will talk about empowering developing countries to enhance their scientific and technological capabilities, fostering a shift towards more sustainable patterns of consumption and production.

Should you have any queries, please do not hesitate to reach me via my email address down below.

Yours sincerely,

Elif Naz Alptekin

elifnaz.alptekin@ug.bilkent.edu.tr

3.   Introduction to the Committee

UN-Habitat is the United Nations initiative striving towards a better urban future. Its goal is to advance the development of human settlements in a way that is both environmentally and socially sustainable and to ensure that everyone has access to decent housing.[1]

The UN General Assembly has given the UN Human Settlements Programme (UN-Habitat) the authority to advance environmentally and socially responsible cities and towns. The focal point for all UN system issues pertaining to urbanisation and human settlement is UN-Habitat. In order to create inclusive, secure, resilient, and sustainable cities and communities, UN-Habitat collaborates with partners. Urbanisation is viewed by UN-Habitat as a beneficial transforming force that lowers poverty, discrimination, and inequality for individuals and communities. [2]

3.1 History

The United Nations Habitat and Human Settlements Foundation (UNHHSF), the first official UN organisation devoted to urbanisation, was founded by the UN General Assembly on January 1, 1975. Subsequently, it was tasked with supporting national human settlement projects, especially in poor nations, by providing funding and technical assistance under the auspices of the United Nations Environment Programme (UNEP). The United Nations Human Settlements Programme (UN-Habitat) was established on January 1, 2002, when the General Assembly

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[1] "Learn More about Us:," UN, accessed June 16, 2024, https://unhabitat.org/about-us/learn-more.
[2] "About Us:," UN, accessed June 16, 2024, https://unhabitat.org/about-us.

passed Resolution A/56/206, strengthening Habitat's mandate and granting it full UN programme status.[3]

3.2 Scope

Through information, policy recommendations, technical support, cooperative action, and other means, UN-Habitat works in more than 90 countries to encourage revolutionary change in cities and human settlements. The UN-Habitat strategy plan takes a more strategic and integrated approach to addressing the opportunities and problems faced by cities and other human settlements in the twenty-first century. The organisation's four primary roles—think, do, share, and partner—are embodied in UN-Habitat's mission.[4]

Think: The normative work of UN-Habitat, which encompasses innovative research and capacity-building, establishes guidelines, suggests norms and principles, disseminates best practices, tracks worldwide advancements, and aids in the creation of policies pertaining to sustainable cities and human settlements.[5]

Do: UN-Habitat uses a variety of technical assistance sources to support its operational operations, utilising its distinct experience in crisis management and sustainable urbanisation. UN-Habitat carries out initiatives to give nations specialised, value-added assistance.[6]

Share: To encourage qualitative change in national development plans, policy frameworks, development practices, and investment decisions for sustainable urban development at the local, national, and international levels, UN-Habitat uses advocacy, communication, and outreach to mobilise public, political, and financial support as well as cooperative action.[7]

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[3] "History, Mandate & Role in the UN System:," UN, accessed June 16, 2024, https://unhabitat.org/history-mandate-role-in-the-un-system.
[4] "About Us:," UN, accessed June 16, 2024, https://unhabitat.org/about-us.
[5] "About Us:," UN, accessed June 16, 2024, https://unhabitat.org/about-us.
[6] "About Us:," UN, accessed June 16, 2024, https://unhabitat.org/about-us.
[7] "About Us:," UN, accessed June 16, 2024, https://unhabitat.org/about-us.

Partner: To address the long-term effects of urbanisation, UN-Habitat works with governments, international organisations, UN agencies, civil society organisations, foundations, academic institutions, and the corporate sector.[8]

3.3 Membership

The Habitat III conference and its preparatory committee will be accessible to all United Nations members. In addition, as a means of preparing for Habitat III, Member States are called on to support broad stakeholder participation and participatory processes when creating, modifying, and executing national urban policies, including local authorities and their associations.[9]

4.   The Sustainable Development Goals and the 2030 Agenda

The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by the United Nations in 2015 as a universal call to action to address a wide range of global challenges by the year 2030. The SDGs consist of 17 interconnected goals with 169 specific targets aimed at addressing key issues such as poverty, inequality, climate change, environmental degradation, peace, and prosperity.

An essential part of the global action is that countries have agreed to give those who are falling behind the most priority while making progress. This indicates that nations have made a commitment to give the needs of the most marginalised and vulnerable communities first priority while working to achieve these objectives. This focus on equality and inclusivity acknowledges

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[8] "About Us:," UN, accessed June 16, 2024, https://unhabitat.org/about-us.
[9]

that sustainable development is impossible if some groups or regions are left behind. Developing countries often face unique challenges in achieving the Global Goals, and international cooperation and assistance are crucial to help them make progress. As we will further explore in our next chapter, this concept is especially corresponding to our agenda item, as we will be discussing how to support developing countries.

Figure 1: the SDGs[10]

4.1 Sustainable Development Goal 12: Responsible Consumption and Production

It is clear by now that we need to harmonise economic growth and sustainable development. To achieve this urgent goal, it is important that we alter our production and

[10] "Sustainable Development Goals Investment Initiative: United Nations Development Programme," UNDP, accessed September 26, 2023,
https://www.undp.org/turkiye/projects/sustainable-development-goals-investment-initiative.

consumption processes. For the promise of a better tomorrow for our planet and future generations to come, our ecological footprint needs to be drastically lowered.[11]

With agriculture being the biggest user of water worldwide, we must find innovative ways to recalibrate our irrigation systems. However, the transition does not stop there. Other important checkpoints to reach our aim of a lower ecological footprint include the effective management of our shared natural resources, and how we get rid of toxic waste and pollution. Equally crucial is encouraging trash reduction and recycling among enterprises, industries, and consumers, as well as assisting developing nations in shifting to more sustainable consumption patterns by 2030.[12]

When the majority of people on the planet consume barely enough food to even cover their most basic necessities, reducing food waste per capita globally at both the consumer and retailer is another pivotal point to improve our global economy's use and distribution of resources.[13]

[11] "Sustainable Development Goals: United Nations Development Programme," UNDP, accessed September 26, 2023, https://www.undp.org/sustainable-development-goals/responsible-consumption-and-production.
[12] "Sustainable Development Goals: United Nations Development Programme," UNDP
[13] "Sustainable Development Goals: United Nations Development Programme," UNDP
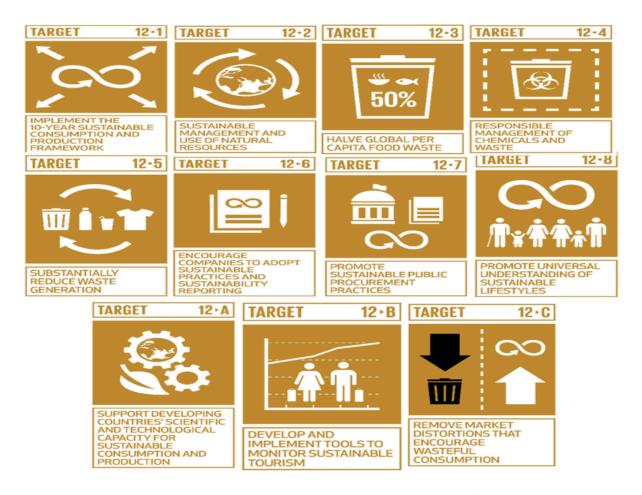
Figure 2: Sustainable Development Goal 12 Targets[14]

1. **Agenda Item: Supporting developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production**

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[14] Usama Awan, "Industrial Ecology in Support of Sustainable Development Goals," SpringerLink, January 1, 1970, https://link.springer.com/referenceworkentry/10.1007/978-3-319-95726-5_18.

One of the most important issues facing the international community in the twenty-first century is sustainable urbanisation, as our towns and cities expand at previously unheard-of rates, influencing worldwide social, political, cultural, and environmental trends. Thirteen percent of persons were city dwellers in 1950. This percentage has increased to half fifty years later, and by 2050, it will reach six billion people. Now, half of humanity lives in cities. They serve as the centre of many national production and consumption activities, which are social and economic processes that create opportunity and income. However, they also bring about poverty, pollution, crime, and sickness. Over 50% of people live in slums in many cities, particularly in developing nations, where they often lack access to clean water, sanitary facilities, and shelter. [15]

The achievement of several of the Sustainable Development Goals (SDGs), with a particular emphasis on Goal 12, which aims to "Ensure sustainable consumption and production patterns," hinges on the crucial task of assisting developing nations in building their scientific and technological capacity. To usher these countries toward more sustainable modes of consumption and production, it is imperative to adopt a comprehensive approach.

The global approach to international development has shifted over the last few decades from developed countries effectively telling developing countries how to address their own problems, to developing countries identifying their problems and working with developed countries to achieve the assistance they need. Many development problems are rooted in complex, multi-faceted issues, related to both scientific and nonscientific factors. The traditional

[15] 1. "UN-Habitat: United Nations Human Settlements Programme - Office of the Secretary-General's Envoy on Youth," United Nations, accessed June 16, 2024, https://www.un.org/youthenvoy/2013/08/un-habitat-united-nations-human-settlements-programme/#:~:text=The%20United%20Nations%20Human%20Settlements,providing%20adequate%20shelter%20for%20all.

single-discipline focus of Science & Technology (S&T) may therefore not be appropriate for addressing development problems.[16]

This multifaceted strategy entails supporting the transfer of sustainable technologies from industrialized to developing nations, funding Research and Development (R&D) projects, and offering extensive capacity-building activities. Governments, academia, business, and civil society should work together more to promote innovation in fields like manufacturing, energy, and agriculture.

Access to data and knowledge, financial incentives, and policy assistance are further crucial elements of this undertaking. We can enable poor countries to adopt sustainable practices and technology by embracing the concepts of the circular economy, supporting green finance methods, and fostering ecosystems for entrepreneurship and innovation. In the end, residents and consumers should be involved in education and awareness efforts to encourage a transition toward more sustainable consumption and production practices in these nations. This all-encompassing strategy will considerably help achieve the SDGs and address the pressing need for global sustainability.

For goal 12.a, AEG-SDG determined that the "Amount of support to developing countries on research and development for sustainable consumption and production and environmentally sound technologies" was the most effective indicator. However, no data or metadata are accessible at the time of writing (United Nations Statistics Division, 2016).[17]

[16]Scientific capacity in developing countries, accessed October 3, 2023, https://researchbriefings.files.parliament.uk/documents/POST-PN-216/POST-PN-216.pdf.
[17] "UNCTAD DGFF2016 SDG Goal 12.A - Science and Technology," UNCTAD DGFF 2016, accessed September 26, 2023, https://stats.unctad.org/Dgff2016/planet/goal12/target_12_a.html.

Total gross domestic expenditure on research and development (GERD), research and development intensity, and global share are the most frequently used metrics to track expenditures allocated to R&D globally.[18]

Since the 1970s, the share of research and development expenditures spent by developing countries has steadily increased, as shown in *Figure 3* below. These nations made up approximately a quarter of the world's research and development spending in 2007, although these worldwide averages conceal significant variations between the nations since research and development have been heavily concentrated in a small number of them. Prior to 2000, data were not readily available for many nations, but the Asian area as a whole was responsible for about 80% of the growth in the developing countries' share between 1973 and 2007.[19]

Since 2007, the East Asia-Pacific area and North America/Western Europe have experienced the most significant shifts. Additionally, the source of research and development spending varies greatly by nation, economy, and territory. At least 50% of research and development costs are covered by business enterprises in Belgium, China, Denmark, France, Germany, Hong Kong SAR, Iceland, Ireland, Japan, Malaysia, the Philippines, Puerto Rico, the Republic of Korea, Singapore, Slovenia, Sri Lanka, Sweden, Switzerland, Thailand, and the United States of America. The contribution is far more in several of these nations than in others, especially in Asia. The majority of expenditures worldwide are made by the government, especially in Africa, South and Western Asia, Central America, and Eastern Europe.[20]

From a regional standpoint, this results in a notable rise in new applications from Asia, which made up more than 58% of all applications in 2014. Applications from Europe have significantly decreased, falling from 36% in 2004 to 22% a decade later. The number of

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[18] "UNCTAD DGFF2016 SDG Goal 12.A - Science and Technology," UNCTAD DGFF 2016
[19] "UNCTAD DGFF2016 SDG Goal 12.A - Science and Technology," UNCTAD DGFF 2016
[20] "UNCTAD DGFF2016 SDG Goal 12.A - Science and Technology," UNCTAD DGFF 2016

applications from the United States decreased as well. No change was seen in Oceania, but there were declines in both Africa and Latin America, indicating that the "third-world R&D desert" (Annerstedt, 1988) has not significantly improved.[21]
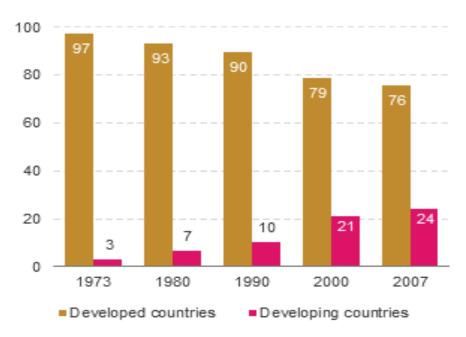

Figure 3: Distribution of GERD worldwide 1973-2007[22]

6.1 Developing Countries and Climate Change Adaptation

While you are preparing for the conference, keep in mind that the reason we talk about climate change so often in this study guide is that ensuring sustainable consumption and production patterns (SDG12) will have a great impact on combating climate change - and I would like you all to see the bigger picture when addressing our agenda item.

All facets and tiers of society are susceptible to the effects of climate change. For the world's poorest nations, decreasing vulnerability to climate change has grown essential in recent years. These nations not only lack the resources necessary to combat climate-related

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[21] "UNCTAD DGFF2016 SDG Goal 12.A - Science and Technology," UNCTAD DGFF 2016
[22] "UNCTAD DGFF2016 SDG Goal 12.A - Science and Technology," UNCTAD DGFF 2016

hazards, but their economies also have a propensity to be more dependent on climate-sensitive industries, such as agriculture, water, and coastal regions. Climate change adaptation continues to be a top priority for these nations' sustainable development agendas.[23]

The ability of developing countries to carry out sustainable development programs is a big question. It is usual for industrialized countries to advise developing countries that the processes they employ in their own nations should be sustainable and future-proof, but this begs the question of whether this is first and foremost realistic. That is why emerging nations are dependent on aid and support from the developed world to help them cut down on their debt to unsustainable businesses. It is easy for a developed western country to advocate for a reduction in these types of economic growth. Although greenhouse gas emissions and environmental concerns are significant, it is unlikely that sustainable development projects will be given top priority without support from governments, policymakers, and the corporate sector.[24]

Programs for sustainable development must be adjusted to meet the local environment. In order to establish competitive and practical sustainable development programs that do not impede each country's progress, they must take into account the stage of development each is currently at and assist them accordingly. Addressing global sustainable development challenges at the expense of the development and improvement of other emerging countries is pointless.[25]

People and areas are protected by climate adaptation by becoming less susceptible to the effects of climate change. Communities may construct seawalls or move structures to higher elevation, for instance, to protect themselves against rising sea levels and increased flooding. We

[23] Home | UNDP climate change adaptation, accessed October 2, 2023, https://www.adaptation-undp.org/resources/training-tools/adaptation-policy-frameworks.
[24] Plastic collective
[25]"Sustainable Development: Challenges and Opportunities," TVET for Sustainable Development - Opportunitites and Challenges, accessed October 3, 2023, https://unevoc.unesco.org/home/TVET%20for%20Sustainable%20Development%20-%20Opportunitites%20and%20Challenges&context=.

can become more resilient, or better equipped to deal with the changes, by taking action to adapt to climate change.[26]

We must adjust to the changing environment in order to survive and prosper, and we must also reduce greenhouse gas emissions in order to prevent global warming. We may plan to make communities less vulnerable to climate change by using climate models, which offer scenarios of future climate change, to better comprehend the effects of climate change to which we must adapt.[27]

Individual, municipal, national, and international initiatives are all part of many climate adaptation plans. Some alterations are prompted by modifications to governmental regulations. Technology advancements cause other adaptations. Planning and engineering can offer strategies for regions to adapt to changing environmental conditions. As a result of population migration brought on by climate change, efforts to adapt that are globally coordinated and ensure that as many places as feasible remain livable can be helpful.[28]

On a more practical level, the UNDP thinks that the realignment plan listed below can occur as the conversation about adaptation develops in the years to come:[29]

Reevaluating current plans to strengthen infrastructure designs and long-term investments;[30]

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[26] "Adapting to Climate Change", Center for Science Education, accessed October 2, 2023, https://scied.ucar.edu/learning-zone/climate-solutions/adapting-climate-change#:~:text=What%20Is%20Climate%20Adaptation%3F,relocate%20buildings%20to%20higher%20ground.

[27] "Adapting to Climate Change", Center for Science Education, accessed October 2, 2023

[28] "Adapting to Climate Change", Center for Science Education, accessed October 2, 2023

[29] Adaptation Policy Frameworks for Climate Change - Developing Strategies, Policies and Measures," UNDP Climate Change Adaptation, accessed October 3, 2023, https://www.adaptation-undp.org/resources/training-tools/adaptation-policy-frameworks.

[30] Adaptation Policy Frameworks for Climate Change - Developing Strategies, Policies and Measures," UNDP Climate Change Adaptation

Starting a process to reverse trends that increase maladaptation and raise risks for human populations and natural systems;[31]

Raising societal awareness of and readiness for future climate change, from policymakers to local communities;[32]

Increasing understanding of the factors that either improve or threaten the adaptability of vulnerable populations.[33]

Finally, it's critical to remember that adaptation to climate change is a global phenomenon, not just a problem in developing nations. It also extends beyond civil society and neither the public nor the business sectors. Instead, it requires active participation from all parties involved. Climate change poses a severe threat to every nation. However, poor nations are frequently more at risk than other nations, either because they lack a solid framework for putting adaptation measures in place or because they are more vulnerable to the effects, as is the case for several small island governments. It's possible that not everyone has access to adoption options. In addition to other issues, poverty, social rank, ethnicity, and gender might be obstacles to finding and implementing solutions.[34]

Communities must be ready for more than just more frequent floods and hotter weather due to the complexity and diversity of adaptation. Other disruptions abound, some of which are difficult to foresee. Being adaptation-capable, in large part, entails being a member of a

[31]Adaptation Policy Frameworks for Climate Change - Developing Strategies, Policies and Measures," UNDP Climate Change Adaptation
[32]Adaptation Policy Frameworks for Climate Change - Developing Strategies, Policies and Measures," UNDP Climate Change Adaptation
[33]Adaptation Policy Frameworks for Climate Change - Developing Strategies, Policies and Measures," UNDP Climate Change Adaptation
[34] "Conclusion of the Green Technology Book and Recommendations," WIPO, accessed October 3, 2023, https://www.wipo.int/green-technology-book-adaptation/en/conclusion.html.

community with the assets, authority, institutions, capacity, and knowledge to act, advance, and adapt.[35]

6.2 Technology Cooperation for Addressing Climate Change

In order to address the worldwide challenge of climate change and sustainable development, technology is essential. Since the United Nations Framework Convention on Climate Change (UNFCCC) was written, concerns about technologies and technological collaboration have been raised and argued at international climate change negotiations. Both the Kyoto Protocol and the UNFCCC contain these by their very nature.[36]

One important tactic that might support the efforts of the international community in greenhouse gas emissions abatement and adaptation to climate change impacts is technology collaboration. In particular, technology cooperation is a key strategy in these accords, supporting efforts to reduce greenhouse gas emissions (GHGs) and prepare for the effects of climate change. Such collaboration comprises knowledge transfer, capacity building, and the sharing of environmentally friendly technologies between developed and developing countries. It also includes investment, research, and innovation in climate-resilient infrastructure, energy efficiency, and renewable energy. Together, these technological developments serve as crucial pillars in the collective effort to battle climate change and target sustainable development goals on a worldwide scale. They are supported by international cooperation, financial support, and sustainable habits.[37]

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[35] "Conclusion of the Green Technology Book and Recommendations," WIPO
[36] Preeti Soni et al., "Technological Cooperation and Climate Change: United Nations Development Programme," UNDP, March 28, 2012, https://www.undp.org/india/publications/technological-cooperation-and-climate-change.
[37] Preeti Soni et al., "Technological Cooperation and Climate Change: United Nations Development Programme," UNDP

To combat the effects of climate change, technology is essential. Both the development and transfer of new technologies as well as the spread of currently used ones must be done quickly and on a big scale. Developing countries are expanding their R&D capabilities in response to the extraordinary challenge posed by climate change, but there are growing gaps between them. National efforts may be feasible and provide favorable results in some instances, but they are probably insufficient to give such nations the tools they require. Today, there seems to be a growing understanding that such collaboration needs to be successfully carried out, at least among developing countries. There are various models for achieving this goal, and it makes sense that there are sensitive judgments to be made. However, there are practical examples and a variety of solutions available for policymakers to put into practice what has until far only been an ambition.[38]

Firstly, with respect to the global negotiations, the countries have to decide upon positions in order to take proactive stances. It is imperative to deliberate on the prioritised climate technology needs, especially for developing countries, and examine the existing models and institutional arrangements for technology cooperation to draw lessons and inputs to contribute to national and global discussions on the Technology Mechanism. Secondly, there may be implications for South-South and regional cooperation. There is an increasing emphasis on technology cooperation between developing countries as well as within the South Asian region. The issue is how the Technology Mechanism may impact technology cooperation for addressing climate change between the developing countries. Thirdly, there is the implication at the national level.[39]

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[38] Preeti Soni et al., "Technological Cooperation and Climate Change: United Nations Development Programme," UNDP

[39] Preeti Soni et al., "Technological Cooperation and Climate Change: United Nations Development Programme," UNDP

It is crucial to identify the technologies that will be most useful in combating climate change, especially as a variety of these technologies may be regarded as "priority climate technologies". In light of this, it is necessary to evaluate the "climate technology needs" not only internationally but also in the particular context of developing nations and at the national level. It would also be beneficial if technological collaboration was driven by need; in other words, nations should work together to discover needs rather than just accept offers of technical assistance or cooperation. The ability to adapt and scale up to more efficient and effective technologies that are fit for the conditions and development goals of the countries will also be a problem.[40]

The availability and adoption of climate technology across all nations and sectors are crucial for the success of efforts to move toward a low-carbon, climate-resilient future path. At all levels—global, regional, and national—technology for mitigation and adaptation must be developed and made more widely available. This can be done by building capacity and providing new and additional funding to cover the costs of incorporating climate change considerations into the development process and stand-alone activities. Even though the Technology Mechanism envisions stronger cooperation in this area, there are a number of problems and uncertainties. At the international, regional, and national levels, the implications of technological collaboration need to be investigated.[41]

• Identification of technology needs by sector and by actor (for example, size of operations). The latter is important since actors, for example, firms of different sizes may have very different technology needs. We should also recognise that we need to pay special attention

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[40] Preeti Soni et al., "Technological Cooperation and Climate Change: United Nations Development Programme," UNDP
[41] Preeti Soni et al., "Technological Cooperation and Climate Change: United Nations Development Programme," UNDP

to adaptation technologies since much of the conversation in the climate arena continues to be dominated by mitigation.[42]

     • Prioritisation of technologies since the opportunities exceed resources and capacity. Here we also need to incorporate broader developmental considerations (energy access, employment, food security, etc.) into the calculus.[43]

     • Understanding of gaps to be overcome for successful deployment/scale-up and then ensuring that the climate technology programs appropriately identify ways to overcome these gaps.[44]

     • Developing systems of information collection and dissemination. Given the dynamic nature of technology, constant attention needs to be paid to technological development and advances so that there is a continuous improvement of technological systems. Meeting the climate challenge will be a long-term effort and understanding technology needs is not a one-time event but an ongoing process.[45]

6.3 Intellectual Property and Climate Change

When it comes to bolstering scientific and technological capabilities in developing countries, there is a pressing need to close the capability gap in research and development. It is crucial to strike the proper balance between promoting innovation with Intellectual Property (IP) protection and making sure that sustainable technology is widely accessible. Patents, copyright, and trademarks are a few examples of intellectual property that are legally protected and allow

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[42] Preeti Soni et al., "Technological Cooperation and Climate Change: United Nations Development Programme," UNDP

[43] Preeti Soni et al., "Technological Cooperation and Climate Change: United Nations Development Programme," UNDP

[44] Preeti Soni et al., "Technological Cooperation and Climate Change: United Nations Development Programme," UNDP

[45] Preeti Soni et al., "Technological Cooperation and Climate Change: United Nations Development Programme," UNDP

people to profit financially or get notoriety from their inventions. The intellectual property system seeks to provide an environment where creativity and innovation can flourish by striking the optimal balance between innovators' interests and the larger public interest.[46]

Patents, copyright, and trademarks are a few examples of intellectual property that are legally protected and allow people to profit financially or get notoriety from their inventions. The intellectual property system seeks to provide an environment where creativity and innovation can flourish by striking the optimal balance between innovators' interests and the larger public interest.[47]

Examining the total number of intellectual property applications (including patents, copyright, trademarks, industrial designs, and geographical indications) is a relatively straightforward method for determining the impact of research and development expenditure. From over 6,900 in 2004 to slightly over 12,200 in 2014, the number of new global applications nearly doubled over the previous ten years. Since then, there has been a discernible change in the number of applications from high-income to upper-middle-income nations, with upper-middle-income nations accounting for the greatest percentage of new applications (48%) in 2014. Applications in lower-middle- or low-income nations have not changed.[48]

[46] "What Is Intellectual Property (IP)?," WIPO, accessed October 3, 2023, https://www.wipo.int/about-ip/en/.
[47] "What Is Intellectual Property (IP)?," WIPO, accessed October 3, 2023, https://www.wipo.int/about-ip/en/.
[48] "UNCTAD DGFF2016 SDG Goal 12.A - Science and Technology," UNCTAD DGFF 2016
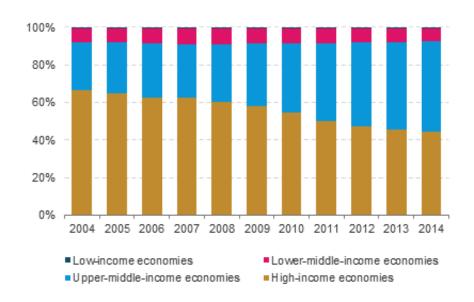
Figure 4: Shares of applications to register intellectual property by income group, 2004-2014[49]

Economic growth that supports the environment rather than harms it is necessary to combat climate change. Innovative green technology solutions, such as those for alternative energy production, energy conservation, more environmentally friendly modes of transportation, agriculture, and forestry, can help by enabling us to accomplish more with less. The challenge is to foster innovation while facilitating the faster spread of these green technologies around the world.[50]

The fight against climate change depends on international cooperation. Collaboration efforts can be considerably enhanced by working to harmonize international IP norms and by setting up agreements for the shared use of eco-friendly technologies. Progress can be accelerated by putting an emphasis on open-source models and fostering cooperative methods in research and development.

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[49] "UNCTAD DGFF2016 SDG Goal 12.A - Science and Technology," UNCTAD DGFF 2016
[50] "What Is Intellectual Property (IP)?," WIPO

6.4 Scientific & Technological Capacity

The governments of many developing countries recognize the critical importance of local institutions and specialists being able to identify, adapt, and effectively use the S&T achievements of industrialized nations and to develop their own unique technologies. According to World Bank officials, requests for S&T-related assistance from such governments are on the rise.[51]

Many aspects of social and economic development, from pest-resistant crops to less wasteful food processing, from prenatal care and child health to the prevention and treatment of diseases, from the reduction of environmental contaminants to water filtration, and from more dependable electricity to more effective and affordable communication and transportation systems, can be improved through the better application of technologies of broad international interest.[52]

From nation to nation, there are vast differences in the particular technologies that are ideal for addressing development issues. In some situations, continuing to use well-established medical, agricultural, and technical innovations may be more practicable than implementing more recent innovations that are becoming more prevalent in industrialized nations. The ability of a nation to choose technology that can be efficiently employed and maintained at reasonable rates, through its governmental and increasingly private sector institutions, is a crucial factor in successful development.[53]

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[51] "The Fundamental Role of Science and Technology in International Development: An Imperative for the U.S. Agency for International Development National Academies of Sciences, Engineering, and Medicine. 2006," National Academies Press, accessed October 3, 2023, https://nap.nationalacademies.org/read/11583/chapter/5#68.

[52] "The Fundamental Role of Science and Technology in International Development: An Imperative for the U.S. Agency for International Development National Academies of Sciences, Engineering, and Medicine. 2006." National Academies Press

[53] "The Fundamental Role of Science and Technology in International Development: An Imperative for the U.S. Agency for International Development National Academies of Sciences, Engineering, and Medicine. 2006." National Academies Press

Unfortunately, the economic, research, and educational policies and programs of the countries themselves as well as the initiatives promoted by their international partners may not fully reflect the necessity of increasing S&T competence. Policies that encourage governmental or private sector organizations to invest in appropriate technologies, support training initiatives for local suppliers and users of technologies—no matter how cutting-edge—and guarantee that product quality standards are met are frequently given little consideration. The effectiveness and limitations of the technologies that are bought are frequently poorly understood locally, leading public and private sector institutions to simply buy the technologies that are marketed by foreign sales personnel or accept suggestions from international partners. But many governments in developing nations are now working to strengthen their own technical capacities so they can choose and, when necessary, adapt both domestic and imported technologies to help ensure they will function properly in the physical, economic, and social environments where they will be used. Local researchers with expertise can frequently offer guidance that is useful throughout the selecting process.[54]

Although the term "capacity" is not precisely defined, it can be interpreted as the capacity of a person, an organization, or a society to meet its demands. In the new strategy for development previously discussed, emerging nations would choose their own needs. However, poor nations may find it challenging to achieve this successfully without enough knowledge and skills in many fields, including S&T. Furthermore, it's not obvious whether emerging nations consider S&T to be a top priority. In fact, creating longer-term S&T capacity is sometimes viewed as a less urgent issue than the current absence of primary education in many developing

[54] "The Fundamental Role of Science and Technology in International Development: An Imperative for the U.S. Agency for International Development National Academies of Sciences, Engineering, and Medicine. 2006." National Academies Press

countries. In the past, development organizations haven't put much money into helping developing nations enhance their S&T capabilities.[55]

With the help of local researchers on occasion, researchers from developed countries conduct research on developing nations. Through fellowships, citizens of developing nations attend classes and earn credentials abroad. Through in-country training, educators from developed nations instruct students at institutions in developing nations. And through financial support, donors directly fund the universities and research initiatives of developing nations.[56]

6.4.1 Characteristics of S&T in Developing Countries

The connection between emerging nations and world research has been compared to a freeway, with three categories of developing nations functioning as the traffic on that highway depending on their capabilities:[57]

• fast moving vehicles: India, China, Brazil[58]

• slower moving traffic: Mexico, Argentina and some countries in the Middle East and South East Asia[59]

• pedestrians: sub-Saharan Africa, small island states. The United Nations Development Programme (UNDP)'s "technology achievement index," which closely mirrors the UNDP's overall indicator of the degree of human development, provides a more formal description of the situation. Four groups of countries are recognized when taking a look at all of the nations in the world:[60]

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[55] Scientific capacity in developing countries
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[59] Scientific capacity in developing countries
[60] Scientific capacity in developing countries

• Leaders: those at the cutting edge of innovation. These are highly developed countries (such as the UK).[61]

• Potential leaders: those with high skill levels, who have diffused old technologies (electricity and water supply networks), but innovate little. This group includes some European countries (Spain and Bulgaria), plus some Latin American countries (Chile, Mexico and Argentina).[62]

• Dynamic adapters: those rapidly expanding their use of new technologies (e.g. internet, mobile phones), who have important high technology industries, but where the diffusion of old technologies has been slow and incomplete. This group includes many Latin American and Middle Eastern countries (Ecuador, Honduras, Tunisia and Iran) and some Asian countries (China, India, Sri Lanka, Thailand and Indonesia).[63]

• Marginalised countries: where skill levels are very low, with large proportions of the population yet to receive benefits from the diffusion of old technology. This group includes very poor sub-Saharan African countries such as Tanzania, Sudan, and Mozambique, plus other countries such as Pakistan, Nepal and Nicaragua.[64]

6.4.2 Technological Capacity

It is impossible to overstate the significance of science, technology, and innovation in the modern world. Build your own national technological capacity for national development, especially in poor nations. Even though there are many economic theories that describe how technical progress contributes to economic growth, there aren't many studies that demonstrate

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[61] Scientific capacity in developing countries
[62] Scientific capacity in developing countries
[63] Scientific capacity in developing countries
[64] Scientific capacity in developing countries

how national technological capabilities are established throughout the early stages of development for developing nations.[65]

One of the key elements for national development in underdeveloped nations is the development of technological capacity. Building a nation's technology capacity requires, in particular, the establishment and management of key technological organizations. In developing nations, there are more aspects to take into account while establishing technical organizations, such as sustainability and governance concerns. The emerging nations require a variety of items in order to expand their technological capacities. The infrastructure for science and technology, including research centers, universities, and governmental laws and regulations, comes first. Second, there must be sufficient national R&D initiatives and R&D funding. In order to guarantee the productivity of the nation's R&D resource, expertise in or management of R&D investment is also required.[66]

Increasing technological capacity should target many challenges, including but not limited to: a large pool of unskilled manual labor, inadequate IT infrastructure, a lack of public and private funding for research and development, and strict intellectual property laws that prevent the widespread dissemination of technological knowledge. The entire government should be involved in developing and executing science, technology, and innovation policy because numerous departments and organizations will be working to create a thriving ecosystem. This entails enhancing both the soft and hard infrastructure, such as laws and regulations that control innovation and the adoption of new technologies, as well as hard infrastructure like dependable

[65]Deok S.Yim, Technological Capacity Building through the Establishment and Management of Technological Organization in Developing Countries: A Case Study of Nepal Technology Innovation Center in Nepal, accessed October 3, 2023, https://ieeexplore.ieee.org/document/8893707.
[66]Deok S.Yim, Technological Capacity Building through the Establishment and Management of Technological Organization in Developing Countries: A Case Study of Nepal Technology Innovation Center in Nepal

electricity and internet connections. It also entails establishing research and development organizations and achieving macroeconomic stability.[67]

Realistic technologically enabled structural transformation should follow national development priorities and programs. Research suggests locating new industries that are near to the existing national production space and then developing focused policies to encourage innovation, either by enhancing the product or the production process. The primary players in national innovation systems, such as businesses, research institutes, universities, and financial institutions, will need to collaborate with governments.[68]

6.4.3 Scientific Capacity

There are numerous challenges to conducting scientific research in developing countries, ranging from limited material and financial resources to poor physical and communication infrastructures. Strengthening research capacity in developing countries is one of the most effective and sustainable ways of advancing health and development in these countries and of helping correct the 10/90 Gap in health research. The 10/90 Gap refers to the fact that only 5–10% of all global health research funding is directed to research on health problems that affect 90% of the world's population, and only a small proportion of this funding actually goes to researchers in developing countries.[69]

[67]. "Building Technological Capacities Can Help Countries Escape Commodity Dependence," UNCTAD, July 7, 2021, https://unctad.org/news/building-technological-capacities-can-help-countries-escape-commodity-dependence.
[68]. "Building Technological Capacities Can Help Countries Escape Commodity Dependence," UNCTAD, July 7, 2021.
[69] Eva Harris, "Building Scientific Capacity in Developing Countries," EMBO reports, January 2004, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1298969/.

2. Conclusion

It's crucial to personalize the approach to emerging countries in order to promote balanced economic growth and protect the environment. These nations require significant assistance in developing their scientific and technological capacities and guiding them toward sustainable production and consumption methods. Initiatives should be centered on encouraging a spirit of international cooperation on R&D projects, supporting the transfer of eco-friendly technologies from more developed countries, and funding educational and professional development programs for local professionals.

Additionally, the concept is expanded beyond just strategies on paper by establishing innovation hubs and incubators in developing nations. This creates a real-world setting for collaboration and the implementation of creative ideas. The success of such initiatives strongly depends on making sure financing options are available, promoting open data sharing, and winning over lawmakers.

Adapting solutions to local circumstances is a human-centered strategy that acknowledges the distinctive difficulties and opportunities in each area. Additionally, educating the public is an essential first step because engaged citizens are more likely to support sustainable efforts. The promotion of collaboration and the sharing of experiences among nations confronting comparable development issues is made possible by encouraging South-South cooperation.

Importantly, the continual observation and assessment of these programs show a dedication to improving and growing. On the path to more sustainable patterns of consumption and production, we may both emphasize areas of success and identify areas for development by

routinely evaluating their efficacy. In essence, it pertains to adopting a sustainable mindset throughout the entire process of sustainable development.

3. Questions to Ponder

1. What are the primary obstacles that developing nations must overcome in order to improve their technological and scientific capability for sustainable consumption and production?

2. How can education and skill development be incorporated into the system of support to guarantee that developing nations can effectively use emerging technology for sustainability?

3. What possible social and economic effects could come from increased technology capacity for environmentally friendly consumption and production? How may these advantages be increased and distributed fairly?

4. How might promoting environmentally friendly consumption and manufacturing help achieve global environmental goals?

5. How can we facilitate capacity building in developing countries for scientific and technological advancements related to sustainable consumption and production?

6. What mechanisms can be established to promote the transfer of environmentally friendly technologies from developed to developing nations in a way that is fair, accessible, and effective?

7. In what ways can the resolution promote and incentivize international collaboration on research and development projects geared towards sustainable consumption and production?

8. How can the establishment of innovation hubs and technology incubators in developing countries to foster local innovation and collaboration be supported?

9. What specific policy measures can be recommended to developing countries to create an enabling environment for sustainable consumption and production?

10. How can access to financial resources for sustainable projects in developing countries be facilitated, and what financial mechanisms can be put in place?

11. How can countries encourage and enable open data sharing related to sustainable technologies and practices, promoting transparency and the sharing of best practices?

12. How can countries acknowledge and support the development of localized solutions that are culturally, socially, and economically relevant in different developing country contexts?

13. What strategies can be recommended to raise public awareness in developing countries about the importance of sustainable consumption and production?

14. How can South-South cooperation be encouraged to ensure that developing nations learn from and collaborate with each other on sustainable development initiatives?

15. What provisions should be included in the committee resolution to establish a robust system for monitoring and evaluating the impact of initiatives under SDG 12.a, and how can the lessons learned be shared among nations?

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