

-- International Environmental Policy Consultancy --



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UNIVERSITY & RESEARCH



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**Terms of References for “externs” on emerging issues for sustainable development
... including ‘green windows of opportunity’ for developing countries & a review of progress
towards SDGs 6, 7, 9, and 11**

A. Assignment and deliverables

The externs will work as a team and in sub-teams to provide inputs to the Division on Technology and Logistics of the United Nations Conference on Trade and Development (UNCTAD) and Division for Sustainable Development Goals (SDGs) of the United Nations Department of Economic and Social Affairs (DESA) (hereafter, the Client), related to emerging issues for sustainable development. The broad, general interest is on new, cutting-edge innovations in science and technology that have high potential for broad, global impacts, and which are especially challenging for governmental and intergovernmental agencies and informed publics to understand and regulate for the common good. This year, in concert with priority themes for the forthcoming “Technology and Innovation Report” and review of progress towards the SDGs, emphasis of the consultancy will be on: (a) *green windows of opportunity for developing countries to catch up technologically and economically*; and (b) *review of progress towards SDG 6 (water/ sanitation), SDG 7 (energy), SDG 9 (industry, innovation, infrastructure), and SDG 11 (sustainable cities and communities)*.

Participating externs will:

- Collaborate in the execution of a thorough analysis and forecasting of new, potentially high-impact, scientific findings, technological developments, and/or policy assessments in relation to the above two, broad areas of emphasis.
- Utilize methodological tools such as horizon scanning, social impact assessment (SIA), risk assessment, material flows analysis (MFA), life-cycle analysis (LCA), and scenario building in making such assessments.
- Develop an integrated set of Science-Policy briefs written for a broad, educated audience including senior government officials and policy makers; drawing insights from the social and natural sciences, engineering, and/or humanities; and complementing the sets of issue briefs prepared by academics and students in previous years.

The Science-Policy briefs requested here will combine a review of a wide variety of sources, data, and consultation with experts. Particular topics and illustrative cases are to be derived from the special areas of expertise of participating externs and draw *inter alia* on review issues and briefs prepared by bodies such as the Academies of Sciences, but also include recent academic literature and documentation of (non)-

governmental organizations, international organizations, companies, and knowledge institutes. A selection of experts at the forefront of the area(s) of concern are to be involved to provide input and validate results. Drafts are expected to include both quantitative and qualitative elements and should aim to synthesize and present a broad range of expert perspectives on these issues, including where applicable, reviews of key debates and points of divergence among experts.

The target length for each brief is 3-4 pages, plus a modest number of references and acknowledgements. Individual briefs might follow the following structure: i) introduction (including facts & figures); ii) scientific debates (including different perspectives and “food for thought”); iii) illustrative case studies; and iv) policy recommendations. Prior to submission, the briefs are to be validated by subject matter experts and synthesized in a draft technical consultancy report to the Client that includes a presentation of the chosen methodologies and preliminary results.

The final, integrated project report (executive summary) will be a maximum of 15 pages in length, with the individual Science-Policy briefs included as annexes. In conjunction with this 'commission', the externs are asked to also create a visual way for presenting the results that is accessible for a wider range of government officials and the general public (e.g. infographics and/or videos for broadcasting online). Each Science-Policy brief is to be provided also in separate, MS-Word formatting, for editing and inclusion in a variety of reporting and information venues. Further details of deliverables will be agreed upon between the externs and the Client.

B. Background¹

Given the diverse, multidimensional, ambitious and absolute nature of the Sustainable Development Goals, it will be practically impossible to achieve all of them by 2030 without the development and appropriate application of science, technology and innovation.

New and emerging technologies could facilitate new pathways towards sustainable development that also take into consideration its economic, social and environmental dimensions. Rapid technological change will have transformative and disruptive effects that may both advance and frustrate sustainable development. While the application of new and emerging technologies represents an opportunity for faster progress towards the Sustainable Development Goals, rapid technological change can also disrupt markets and economies, exacerbate social divides and raise normative questions. Consideration of the direction, distribution and diversity of innovation pathways in the context of the Sustainable Development Goals could provide opportunities for policymakers to support new forms of innovation that avoid the economic, social and environmental challenges that arose during past technological eras.

Rapid technological change has the potential to perpetuate existing divides within and between countries, women and men, rural and urban populations and rich and poor communities. As recent data show, the share of Internet users in the total population of developed countries is more than four times higher than in that of least developed countries. This existing digital divide may exacerbate economic divergence between countries at the frontier of rapid technological change and the least developed countries. Countries wishing to cross the technological frontier may leapfrog primarily through the adoption of technologies, rather than through the development of new technologies. However, innovation policies can help developing countries to foster and facilitate the deployment of frontier technologies and their adaptation to meet their needs and

¹This section is based on the concept note for the UNCTAD's Commission on Science and Technology for Development report, *The Impact of Rapid Technological Change on Sustainable Development 2019*, which examines the impact of key rapid technological changes on sustainable development.

promote sustainable development. The increasing rate of technological change may widen existing gender digital and science, technology, engineering and mathematics divides. Because the number of women working in the fields of science, technology, engineering and mathematics is low, they may not be able to take advantage of the increased demand for workers with skills in frontier technologies, or significantly shape rapid technological change.

While frontier technologies offer unprecedented opportunities to transform the practice, implementation and monitoring of sustainable development, they also pose profound questions regarding how legal, social, ethical and cultural norms could be affected in aspects ranging from the integrity of human life to the safety of the natural environment and from the respect for personal privacy, security and safety to the prevention of any form of discrimination.

Rapid technological change has potential regarding the implementation of the 2030 Agenda for Sustainable Development and the achievement of the Sustainable Development Goals. However, such change poses new challenges for policymaking, threatening to outpace the capacity of Governments and society to adapt to shifts brought about by new technologies. Although the global dynamics of technological change have the potential to increase socioeconomic divides, policies can support investments that spread capabilities more broadly and stimulate innovation with and for groups at the margins of society. National strategies harnessing rapid technological change for sustainable development involve the building and management of effective innovation systems. North–South, South–South and triangular cooperation, initiatives by academic, technical, business and civil society communities and United Nations system-wide efforts can also play a role in ensuring that rapid technological change leaves no one behind. The international community is encouraged to advance its collective understanding of how to navigate and shape new and emerging technologies in ways that “leave no one behind.”

C. Qualifications

Ideal externs will have a keen interest in interdisciplinary and policy-relevant work broadly related to advancing the global sustainable development goals (SDGs). They could have backgrounds in the social or natural sciences, humanities (e.g. ethics), engineering, economics, law, or policy. Most importantly, they will have strong analytical and writing skills and hold a first university degree. Interest and/or experience with respect to this year’s priority themes – *‘green windows of opportunity’ for developing countries & a review of progress towards SDGs 6, 7, 9, and 11* – will be an asset.

D. Learning Objectives

The assignment will provide insights into emerging issues in sustainability science and how they might make it onto the agenda of policy makers. By the conclusion of the assignment, ideally externs might have come up with their own innovative ideas on how to structure and present the vast map of issues at the interface of sustainability science and policy.

E. Supervision

The externs will be supervised by Dr Clovis Freire, Science, Technology & Innovation Policy Section, Division on Technology and Logistics, UNCTAD; and Dr R. Alexander Roehrl, Division for Sustainable Development Goals, United Nations Department of Economic and Social Affairs (DESA). For further information, they may be contacted at (freire@un.org) and (roehrl@un.org), respectively.

F. Confidentiality

No restrictions. Outputs will be in the public domain.