The Role of Gender-based Innovations for the UN Sustainable Development Goals

Toward 2030: Better Science and Technology for All

Edition 1

Managing Editors: Prof Heisook Lee & Dr Elizabeth Pollitzer

wiset Center for Women In Science, Engineering and Technology

PORTIA gender and science

The Role of Gender-based Innovations for the UN Sustainable Development Goals

Toward 2030: Better Science and Technology for All

Edition1

Managing Editors: Prof Heisook Lee & Dr Elizabeth Pollitzer

wiset Center for Women In Science, Engineering and Technology

PORTIA gender and science

Title: **The Role of Gender-based Innovations for the UN Sustainable Development Goals:** *Toward 2030: Better Science and Technology for All (Edition 1)*

Published: 18 January, 2016

Publisher: Prof Heisook Lee

Publishing institute: Korea Center for Women in Science, Engineering and Technology (WISET)

Managing Editors: Prof Heisook Lee | Dr Elizabeth Pollitzer

Coordination and design: Kirsty Taylor | Henrietta Dale

Managing Editors institutes: Korea Center for Women in Science, Engineering and Technology (WISET) | PORTIA LTD. Co-founders of the Gender Summits

Addresses: Korea Science and Technology Center 3rd Floor, Teheran-ro 7-gil, Gangnam-gu, Seoul, 06130, Korea | Portia Ltd, 9 Bonhill Street, London, EC2A 4DJ.

Tel: +82-2-6411-1000
Fax: +82-2-6411-1001

Email: gendersummit@wiset.or.kr | team@gender-summit.com
Websites: www.wiset.re.kr/eng | www.portiaweb.org | www.gender-summit.com

ISBN: 978-89-97520-42-8

TABLE OF CONTENTS

INTRODUCTION

This report was inspired by the scientific evidence examined during the Gender Summit 6 Asia-Pacific, in Seoul on 26-28 August 2015, showing how research and innovation outcomes are influenced by biological and social differences between females and males, and by the growing scientific consensus to integrate gender as a dimension of quality and impact in research.[1]

With the United Nations set to approve the Sustainable Development Goals (SDGs) a month later, Gender Summit participants' attention focused also on the role of sex-gender sensitive research in the implementation of the SDG targets. The 17 SDGs promise to be more gender-aware than the Millennium Development Goals, however, although one goal, SDG5, and its nine targets are dedicated to achieving greater gender equality and empowerment of women, among all the targets, less than 10% recognise the special needs of women and girls. This is in sharp contrasts to the scientific examination of the SDGs conducted by the International Council for Science, which identified 78 scientific topics involving "gender" and/or "women" as the main and a separate concern.[2]

The scientific evidence already available shows that gender inequality issues cannot be separated from actions to tackle poverty, hunger, poor health and wellbeing, maternal death, climate change adaptation, energy and environmental burdens, economic hardships, and societal insecurity. It also shows that better understanding of sexual reproduction of plants, wildlife and farmed animals can identify important conditions for protecting biodiversity, ensuring wellbeing of terrestrial and marine ecosystems and habitats, and advancing sustainable agricultural methods. Such knowledge can enhance the success of the implementation measures.

In presenting this report, we acknowledge and applaud the assertion that all indicators for the SDG targets (to be confirmed in early 2016) "should be disaggregated by sex, age, residence and other characteristics, as relevant and possible." The focus on and capture of such data is essential, not only to ensure gender equality across all SDG outcomes, but also to ensure the successful implementation of the SDGs for all of humanity.
Our aim in introducing this report is to help improve efficacy of the measures used to implement the SDGs, including their cross cutting impacts, by identifying research that investigates all sources and conditions of inequality in the lives of girls, boys, women, and men.

The following three examples explain this purpose:

In **SDG 2**: Zero Hunger the targets include the special nutritional needs of adolescent girls, the role of women as food producers, and the importance

of genetic diversity of seeds and plants. Their implementation could be enhanced through scientific understanding of sexual reproduction and maturation of plants and animals grown for food. For instance, in some fish species the male grows bigger (e.g. tilapia, popular in Africa) and in others the female (e.g. turbot, widely eaten in Europe).[3] Furthermore, such measures could also provide opportunity to enhance the role of women in aquacultures.
Similarly, production of food crops that rely on animal pollination would benefit from measures building on sex-conscious research showing that availability of pollinators improves yields and quality of crops, thus requiring less land and fertilizer to produce the same results.[4] Understanding how bees are attracted to male and female flowers, and when a plant's fertility is highest, could also help enhance pollination success, and promote smart beekeeping to improve the livelihoods of smallholder farmers, many of whom are women.

In **SDG 3**: Good Health and Wellbeing, the scientific evidence showing how sex-gender differences impact on health outcomes is widely available, but many important issues still need investigation, such as the impact of adolescent pregnancy on maternal cognitive development[5], and the socio-economic implications for these mothers, their families and society.

In **SDG 10**: Reduced Inequalities, implementation measures will benefit from better understanding of how intra-household gender relationships control resource allocation, especially with regard to girls' education, their future, and their mothers' ability to participate in income-generating activities.

The role of science and technology as sources of sustainable development solutions has been widely recognised, and commitments have been made to foster collaboration among academic, scientific and technological communities, especially in developing countries, to close international technological gaps, strengthen the science-policy interface and foster international research collaboration on sustainable development[6]. However, the importance of gender as a component of knowledge creation and application continues to be overlooked. For example, among the 187 scientific contributions to a UN crowdsourcing exercise, gender issues were assigned the lowest priority.[7] And, in the emerging field of sustainability science[8], which is expected to inform how the SDG challenges are to be addressed, investigations involving gender as a research variable are rare.

This report represents the joint effort of 27 international experts from various fields of science, technology, gender and development. It cites substantial research evidence, with 170 examples, to show that sex-gender considerations must be more deeply and broadly integrated into science knowledge and technologies supporting measures to achieve the SDG targets. Clearly, there is much more knowledge available and future versions of this report will continue to identify additional resources. The report also lists

over 150 examples of research topics recommended by experts as in need of further investigation. The fact that there are so many should not be seen as cause for despair but rather as an opportunity for researchers, innovators, policy makers and development experts to unite and make the SDG targets a reality by 2030.

Although not every aspect of science for development, and every measure used to implement the SDG targets, involves direct influence of sex and gender differences, their potential impact on outcomes must be considered in all instances. Otherwise, sex and gender issues will be sidelined as they were in many cases of the MDGs.

When planning interventions for each of the 17 SDGs we must continually ask: Will these interventions work equally for women? Will they work equally for men? We must use the best scientific evidence when formulating sex- and gender-conscious solutions to ensure this, and also to address wider societal and environmental challenges. We plan to continue the work started in Seoul through future Gender Summit events, guided by the ten principles of the Seoul Declaration to Advance Gendered Research, Innovation and Socio-economic Development in the Asia Pacific (attached in the Appendix)[9], and by collaborating with SDG communities of experts and practitioners everywhere. These processes will give rise to future editions of this report.

Yours Sincerely,

Prof Heisook Lee
President, Korea Center for Women in Science, Engineering and Technology

Dr Elizabeth Pollitzer
Director, Portia (Founder of the Gender Summit platform)

---

[1] Set up in 2011, the Gender Summit is a platform for dialogue where scientists, gender scholars and policy makers, as well as key stakeholders in scientific endeavours, meet to jointly examine new scientific evidence showing when, why and how gender issues impact research and innovation outcomes and what actions are needed to make improvements. Since 2011, the Gender Summit has evolved into several regional platforms in Europe, North America, Africa, Asia Pacific, and Latin America. See www.gender-summit.com

[2] http://www.icsu.org/publications/reports-and-reviews/review-of-targets-for-the-sustainable-development-goals-the-science-perspective-2015/SDG-Report.pdf

[3] http://journal.frontiersin.org/article/10.3389/fgene.2014.00340/full

[4] http://www.pnas.org/content/108/14/5909.full

[5] Davidson LL, Grigorenko EL, Boivin MJ, Rapa E, Stein A, A Focus on Adolescence to Reduce Neurological, Mental Health and Substance-use Disability. Natura 527, S161-S166 (19 Nov 2015) DOI: 10.1038/nature16030

[6]http://www.uncsd2012.org/content/documents/727The%20Future%20We%20Want%2019%20June%201230pm.pdf
[7] https://sustainabledevelopment.un.org/globalsdreport/2015 http://civicus.org/images/HLPF%20report.25Sept.pdf
[8] https://www.elsevier.com/__data/assets/pdf_file/0018/119061/SustainabilityScienceReport-Web.pdf
[9] http://www.internationalinnovation.com/promoting-gendered-innovations-the-seoul-declaration/

Sustainable Development Goals

Applying a Scientific Gender Lens to Each SDG

This section dedicates two pages to each of the SDGs in order to exemplify key areas for future sex and gender sensitive research. For each goal, we have listed the UN introduction to the goal; a summary of the related UN targets; a section on the gender knowledge needed to improve implementation, and some examples of existing research on these topics. The full text of the SDGs and their targets can be found in the Appendix (p60).

Experts suggested the use of the concept of intersectionality, rather than gender inequality as a stand-alone concept, to help understand the multiple dimensions of poverty and other underlying issues. Intersectionality refers to the inter-connected and co-constitutive dynamics of multiple oppressions (class, history, culture, race, ethnicity, and nationhood, within and across borders).[10]

Biographies of the 27 expert contributors are listed together with the process used to gather their opinions in the appendix (p 51-59).

---

[10] Amina Mohammed, Special Advisor of the UN Secretary-General on post-2015 Development Planning, 2015 *http://www.un.org/sustainabledevelopment/blog/2015/03/action-2015-amina-mohammed-on-womens-empowerment-and-gender-equality/*

Goal 1 End poverty in all its forms everywhere

Extreme poverty rates have been cut by more than half since 1990. While this is a remarkable achievement, one in five people in developing regions still live on less than $1.25 a day, and there are millions more who make little more than this daily amount, plus many people risk slipping back into poverty. Poverty is more than the lack of income and resources to ensure a sustainable livelihood. Its manifestations include hunger and malnutrition, limited access to education and other basic services, social discrimination and exclusion as well as the lack of participation in decision-making. Economic growth must be inclusive to provide sustainable jobs and promote equality.

SDG1 Targets: Snapshot of Topics

Eradicate extreme poverty

Reduce the number of people (women, men, children) living in poverty, and made vulnerable through experiencing a variety of poverty dimensions

Implement social protection systems in rural and urban areas for the poor and vulnerable

Ensure equal rights to economic resources, basic services, ownership and control over land and other forms of property, inheritance, natural resources, new technology, financial services

Build resilience of the poor and those in vulnerable situations to climate-related extreme events, and other shocks and disasters

Enhance cooperation and mobilization of all resources, to end poverty in all its dimensions

Create policy frameworks based on pro-poor, gender sensitive development strategies to support accelerated investment in poverty eradication actions

Gender knowledge needed to achieve SDG1

Determinants of rural-urban poverty, and effectiveness of the coping strategies used by women and men.

Gender-sensitive multi-dimensional conceptualisation and measurement of poverty and its relationships with gender inequality, gender norms, and gender stereotypes of poverty.

Gender factors in accessing and benefiting from ecosystem services (e.g. as source of cash, food, employment) and links to poverty alleviation.

Factors influencing socioeconomic vulnerability of households and adaptive capacity to poverty of women and men.

The role of human and women's rights in poverty alleviation measures, and their relationship with other SDG targets.

Determinants of women's income generating activities within households, and within social groups in urban and in rural areas.

Impact of poverty conditions on the wellbeing of women and men, intra-household relations over lifetimes, and on the social cohesion of their communities.

Understanding relationships between gender inequality and poverty and the conditions that exacerbate their effects on households, particularly in the poorest countries and among the most marginalised groups.

Relationships between development processes and societal attitudes toward poverty and gender inequality.

Understanding the causes of male-skewed sex ratio at birth and why it intensifies with economic development in many countries.

Potential for individual and household poverty reduction through gender-equal access to technology.

Relationships between gender-related community structures, values and perceptions of how proposed poverty alleviation measures will affect women's livelihoods and wellbeing.

Systematic mechanisms facilitating the collection and sharing of sex disaggregated data and experiences of gender related interventions. Especially what: works and doesn't; leads to success;

what the learning points are, and how these might be replicated or adapted in other situations.

Gender-related poverty considerations in assessment of impact of large infrastructure projects, such as energy, transport, communication on livelihood-providing ecosystem services.

Existing Research relevant to SDG1

Aguilar L, Granat M and Owren C. (2015) *Roots for the Future: The Landscape and Way Forward on Gender and Climate Change. IUCN & GGCA* 2015. Washington, DC. http://genderandenvironment.org/2015/12/ggo-launches-a-suite-of-new-products-on-gender-climate-change/

Bieri S and Sancar A. (2009) *Power and Poverty. Reducing Gender Inequality by Ways of Rural Employment?* Interdisciplinary Centre for Gender Studies and Swiss Development Agency, Switzerland. oecd.org/social/gender-development/42806451.pdf

Brown K, Daw T, Rosendo S, Bunce M, and Cherrett N. (2008) *Ecosystem Services for Poverty Alleviation: Marine & Coastal Situational Analysis.* University of East Anglia Synthesis Report, November 2008.

Cela B, Dankelman I and Stern J. (eds.) (2013) *Powerful Synergies: Gender Equality, Economic Development and Environmental Sustainability.* UNDP. undp.org/content/dam/undp/library/gender/f_PowerfulSynergies2013_Web.pdf

Clancy JS, Skutsch M and Batchelor S. (2002) *The Gender-Energy-Poverty Nexus. Finding the energy to address gender concerns in development.* DFID Project CNTR998521. cleancookstoves.org/binary-data/RESOURCE/file/000/000/300-2.pdf

Graham WJ, Fitzmaurice AE, Bell JS and Cairns JA. (2004) *The Familial Technique for Linking Maternal Death with Poverty*. *Lancet* 2004; 363(9402): 23-27.

Greene ME. (2008) *Poor health, poor women: How reproductive health affects poverty*. Woodrow Wilson International Center for Scholars and USAID paper.

Jayachandran S. (2014) *The Roots of Gender Inequality in Developing Countries.* Northwestern University Annual Review of Economics, 2014; 7. faculty.wcas.northwestern.edu/~sjv340/roots_of_gender_inequality.pdf

Johnsson-Latham G. (2007) *A Study on Gender Equality as a Prerequisite for Sustainable Development. What we know about the Extent to which Women Globally Live in a more Sustainable Way than Men, Leave a Smaller Ecological Footprint and Cause less Climate Change.* Report to the Environment Advisory Council, Sweden, 2007: 2.

Madise N, Zulu E and Ciera J. (2007) *Is poverty a driver for risky sexual behavior? Evidence from National Surveys of Adolescents in Four African Countries.* African Journal of Reproductive Health 2007; 11(3): 83-98.

UN-Women. (2014) *The World Survey on the Role of Women in Development 2014: Gender Equality and Sustainable Development*. UN-Women. unwomen.org/en/digital-library/publications/2014/10/world-survey-2014

Goal 2 End hunger, achieve food security and improved nutrition and promote sustainable agriculture

It is time to rethink how we grow, share and consume our food. If done right, agriculture, forestry and fisheries can provide nutritious food for all and generate decent incomes, while supporting people-centred rural development and protecting the environment. Right now, our soils, freshwater, oceans, forests and biodiversity are being rapidly degraded. Climate change is putting even more pressure on the resources we depend on, increasing risks associated with disasters such as droughts and floods. Many rural women and men can no longer make ends meet on their land, forcing them to migrate to cities in search of opportunities. A profound change of the global food and agriculture system is needed if we are to nourish today's 795 million hungry and the additional 2 billion people expected by 2050.

SDG2 Targets: Snapshot of Topics

Ensure access to nutritious, sufficient food, in particular for infants, the poor and vulnerable

Double agricultural productivity/income of small-scale food producers including women, indigenous people, family farmers, pastoralists and fishers, including market conditions

Ensure sustainable food production systems and resilient agricultural practices that increase productivity and production, that help to maintain ecosystems with capacity to adapt to climate change, extreme weather, drought, flooding and other disasters, and to maintain productive quality of land and soil

Maintain genetic diversity of seeds, cultivated plants, farmed and domesticated animals and related wild species including seed and plant banks for equitable sharing of the benefits arising from utilization of genetic resources and associated traditional knowledge

Increase investment, including international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant/livestock gene banks

Correct/prevent world agricultural market restriction/distortion, including export subsidies

Ensure proper functioning of food commodity markets and derivatives and timely access to market information, including to food reserves, in order to limit extreme food price volatility

Gender knowledge needed to achieve SDG2

The needs of women and girls in agricultural innovation that can be well defined and are trackable.

Measurable principles and indicators for gender responsive agricultural research.

Situational analysis of conditions supporting empowerment of women in agriculture, with regional comparisons.

Key lessons from meta-analysis of best strategies for empowering women and girls as food producers and processors.

Enabling equitable access to market opportunities within agricultural value chains with special attention to the needs of women as food producers, their earning potential and opportunities for growth.

Identification of real conditions (not covered by treaties or codes of conduct) in agricultural value chains, which depend on underpaid labour of women and girls in primary food production.

Methodologies for systematic, multi-dimensional analysis of the roles of women and men in food security and agricultural systems, e.g. comparing access to land, other resources, knowledge, financial services and markets, opportunities for value addition and non-farm employment.

Impact of food price variations on socioeconomic and nutrition status of women and men, in households and communities, and effects of food insecurity on societal welfare and stability.

Ensuring food security for the poor

Food insecurity is a risk factor for under-nutrition as well as obesity. Good nutrition comes from well balanced meals. Education and empowerment provide women with economic resources and social status necessary for food security of households. Nutritional education of women would enable them to provide balanced diet in the family to reduce under-nutrition as well as obesity and chronic diseases.

Efficient treatment protocols for severe malnutrition of women and children with little or no access to formal health services, especially in rural areas (e.g. agricultural and micronutrient interventions, provision of safe drinking water and sanitation, education on/support for better diets, attention to vulnerable groups such as pregnant women and young children.

Pathologic features and chronic effects of deficiencies in macronutrients (protein, carbohydrates and fat, leading to protein–energy malnutrition) and micronutrients (electrolytes, minerals and vitamins), leading to specific outcomes for women, men, girls, boys, and infants.

Relationships between malnutrition and bacterial and parasitic disease among females/males through different life stages.

Impacts of poverty, HIV/AIDS, and humanitarian emergencies on nutrition.

Existing Research relevant to SDG2

Dinour LM, Bergen D, Yeh MC. (2007) *The Food Insecurity-Obesity Paradox: A Review of the Literature and Role Food Stamps May Play*. J Am Diet Assoc; 107:1952-1961.

FAO. (2011) *The State of Food and Agriculture 2010-2011 Women in Agriculture: Closing the Gender Gap for Development.* FAO.

FAO and ADB. (2013) Gender Equality and Food Security. *Women's Empowerment as a Tool against Hunger.*

Farnworth C and Jiggings J. (2003) *Participatory Plant Breeding and Gender Analysis, PPB Monograph No. 4*. PRAGA & CGIAR, Colombia.

Garibaldi LA, Aizen MA, Klein AM, Cunningham SA and Harder LD. (2011) *Global Growth and Stability of Agricultural Yield Decrease with Pollinator Dependence*. PNAS; 108(14): 5909-5914.

Hill RV and Vigneri M. (2010) *Mainstreaming Gender Sensitivity in Cash Crop Market Supply Chains*. FAO/ESA 2010; Working Paper No. 11-08.

Martinez P, Vinas AM, Sanchez L, Diaz N, Ribas L and Piferrer F. (2014) *Genetic Architecture of Sex Determination in Fish: Applications to Sex Ratio Control in Aquaculture*. Front. Genet. 29 September 2014. http://dx.doi.org/10.3389/fgene.2014.00340

Meinzen-Dick R. et al. (2010) *Engendering Agricultural Research.* IFPRI Discussion Paper 00973, May 2010 (Table 1).

Müller O and Krawinkel M. (2005) *Malnutrition and Health in Developing Countries*. Canadian Medical Association Journal 2005; 173(3): 279–286.

OXFAM. (2012) *Gender Equality: It's Your Business, 2012*. Oxfam International Briefings for Business Series 2012. www.oxfam.org/sites/www.oxfam.org/files/bfb07-gender-equality-its-your-business-060312-en.pdf

Goal 3 Ensure healthy lives and promote well-being for all at all ages

Ensuring healthy lives and promoting the well-being for all at all ages is essential to sustainable development. Significant strides have been made in increasing life expectancy and reducing some of the common killers associated with child and maternal mortality. Major progress has been made on increasing access to clean water and sanitation, reducing malaria, tuberculosis, polio and the spread of HIV/AIDS. However, many more efforts are needed to fully eradicate a wide range of diseases and address many different persistent and emerging health issues.

SDG3 Targets: Snapshot of Topics

Reduce maternal mortality*

Reduce mortality of premature, new-borns and under fives

End epidemics of AIDS/communicable diseases

Reduce premature mortality from non-communicable diseases, including occurrence and effects of mental health

Prevent and treat substance abuse

Reduce road traffic accidents and deaths

Ensure access to sexual and reproductive healthcare services, information, education, including family planning

Ensure access to affordable medicines and vaccines for communicable and non-communicable diseases

Substantial reduction of mortality and illness from hazardous chemicals, pollution and contamination of air, water and soil

WHO Framework Convention on Tobacco Control

Research, development and intellectual property rights on medicines

Strengthen capacity of health workforce (and of those carrying out hazardous jobs)

Capacity for early warning and management of emerging health risks

*Expert board members state that this should also include pregnant women.

Gender knowledge needed to achieve SDG3

Risk factors affecting mortality of women and men involving health behaviours, social ties, socioeconomic status, and biological indicators of health.

Sources, and social and economic consequences, of poor mental health in women and men.

Indicators of the full scope of socioeconomic impact of poor mental health on women, men, and households (e.g. consumption poverty, education, illness, low labour force participation, poor physical health, widowhood or other crises), to inform social protection policy.

Relationships between road injury risk and mode of travel, and conditions that differentiate injury risk of men and women.

Differences between women and men in road safety risk factors and use of safety devices; between male/female drivers and passengers, and gender conscious policy interventions needed to prevent injury (see box).

Vehicle and infrastructure safety improvements needed to equally protect both male and female vulnerable road users (motorcyclists, pedestrians, cyclists).

Conditions that differentiate the sexual and reproductive health needs, access to services, and treatment outcomes for different groups of women and men (e.g. those who are adolescents; married; in rural/urban areas, or affected by war).

Health risk factors associated with consumption of food, especially fish and water, contaminated with mercury, arsenic or other metals for women, men and children.

Studies that include representative samples of women to gain better understanding of discrepancies between men and women, e.g. to isolate specific risk factors that would be potential targets for improving cardiovascular disease management.

Clinical trials that include a representative sample of women to test new or improved treatment methods and enable revision of treatment guidelines under gender considerations.

Existing Research relevant to SDG3

Ameratunga S, Hijar M and Norton R. (2006) *Road-traffic Injuries: Confronting Disparities to Address a Global-health Problem*. Lancet 2006; 367.

Berer M. (2003) *Integration of Sexual and Reproductive Health Services: A Health Sector Priority,* Editorial, 2003. Reproductive Health Matters 2003; 11(21): 6-15.

Bose D, Segui-Gomez M and Crandall JR. (2011) *Vulnerability of Female Drivers Involved in Motor Vehicle Crashes: An Analysis of U.S. Population at Risk.* American Journal of Public Health 2011; 101(12): 2368-73.

Chrowa F, Atwood S and Van der Putten M. (2013) *Gender Inequality, Health Expenditure and Maternal Mortality in Sub-Saharan Africa: A Secondary Data Analysis.* Prm Health Care Fam Med 2013; 5(1): 471.

Cottingham J and Berer M. (2011) *Access to Essential Medicines for Sexual and Reproductive Health Care: The Role of the Pharmaceutical Industry and International Regulation*, Reproductive Health Matters 2011; 19(38): 69-84.

Das J, Do Q-T, Friedman J and McKenzie D. (2008) *Mental Health Patterns and Consequences: Results from Survey Data in Five Developing Countries*. The World Bank Economic Review 2008; 23(1): 31–55.

Hung DV, Stevenson MR and Ivers RQ. (2006) *Prevalence of Helmet Use Among Motorcycle Riders in Vietnam*. Injury Prevention 2006; 12(6): 409-413.

Klen SL, Roberts CW. (2015) *Sex and Gender Differences in Infection and Treatments for Infectious Diseases.* Springer International Publishing, Switzerland.

Langer A, et al. (2015) *Women and Health: The key for sustainable development.* The Lancet 2015; 386(1165).

Rogers RG, Everett BG, Sain Onge and JM, Krueger PM. (2010) *Social, Behavioral, and Biological factors, and Sex Differences in Mortality.* Demography 2010; 47(3): 555-578.

Tsai VW, Anderson CL and Vaca FE. (2008) *Young Female Drivers in Fatal Crashes: Recent Trends, 1995-2004*. Traffic Injury Prevention 2008; 9(1): 65-69.

World Bank. (2010) *Mainstreaming Gender in Road Transport: Operational Guidance for World Bank Staff, TP-28*. World Bank, March 2010.

Gender Differences in Focus: Road Traffic Injuries

Information about serious and fatal road traffic injuries is dominated by focus on men, owing to their high rates of exposure and suggested riskier behavior. This has led to design of injury countermeasures (e.g., occupant protection in cars) specified for the male anthropometry and biological characteristics and thereby ignoring design parameters that are relevant for female road users (e.g., shorter stature and difference in musculature).

With differences in exposure to driving risk between men and women reducing globally, it is important for research to demonstrate that safety design measures have equitable performance and health outcome for either sex. In most developing countries, which have a disproportionate share of global road injuries, risk prevention factors such as helmet and belt use may vary dramatically between the driver and the passenger. In these countries where women account for a large proportion of vehicle passengers and pillion riders, it is important that research shows the importance of effective policies and interventions targeted at such groups.

Goal 4 Ensure inclusive and quality education for all and promote lifelong learning

Obtaining a quality education is the foundation to improving people's lives and sustainable development. Major progress has been made towards increasing access to education at all levels and increasing enrolment rates in schools particularly for women and girls. Basic literacy skills have improved tremendously, yet bolder efforts are needed to make even greater strides for achieving universal education goals. For example, the world has achieved equality in primary education between girls and boys, but few countries have achieved that target at all levels of education.

SDG4 Targets: Snapshot of Topics

Access and completion by girls and boys of equitable and quality pre-primary, primary and secondary education leading to relevant and effective learning outcomes

Access for all women and men to education facilities and to skills provided by schools comprising technical, vocational and tertiary education, including university

Number of youth and adults with relevant skills, including technical and vocational skills, for employment, decent jobs, entrepreneurship

Eliminate gender disparities in education and ensure access to all levels of education and vocational training for persons with disabilities, indigenous peoples and children in vulnerable situations

All youth and a substantial proportion of adults, both men and women, to achieve literacy and numeracy

Learners acquire knowledge/skills to promote sustainable development, including through education for sustainable development and lifestyles, human rights, gender equality, promotion of peace and non-violence, global citizenship, appreciation of cultural diversity and culture's contribution to sustainable development

Build/upgrade child, disability and gender sensitive education facilities, and provide safe, non-violent, inclusive and effective learning environments for all

Expand the number of higher education scholarships for developing countries, including vocational training, information and communications technology, technical, engineering and scientific programmes

Increase the supply of qualified teachers for teacher training in developing countries, especially least developed countries and small island states

Gender knowledge needed to achieve SDG4

Interactions between social dynamics; gender ideologies; and conditions of poverty and rural residence and access to quality education for females and males at different ages.

Content and location in school curricula of sex education programmes and ecological factors (i.e. interaction among multiple social markers) and the fostering of proactive gender identities.

Methods for analysis of intersections between poverty and gender norms in access to education by combining contributions from sociology, political science, and anthropology to capture the complexity of gender in education.

Qualitative studies on a small number of schools capable of providing insightful information through data collection, site observation, interviews, and focus groups.

Policy formation and implementation to improve literacy and numeracy rates for girls/boys and adult women and men.

Interconnections between gender and other sources of disadvantage (e.g. disability, indigenous group membership, being in vulnerable situations) and impact on access to/participation in education.

Integrating gender-related content into teacher training and assessing the experience of teaching gender in pre- and in-service training programmes.

Barriers preventing greater participation of women in education leadership, e.g. as school administrators and decision makers.

Integrating gender knowledge into adult literacy and numeracy programmes.

How gender functions in (pre-)primary, secondary and tertiary education.

Factors affecting retention of girls in schools (particularly related to early/ forced marriage, early pregnancy, and poverty) and comparisons of girls' and boys' retention in rural areas.

Gender-related experiences of those in teacher training programmes in Africa, Latin America, and Asia, and their gender-responsive knowledge and skills.

Statistics on Education Participation

Statistics on female participation in school have reached a ceiling in terms of their power to explain deeper causes affecting education outcomes of girls and women. Statistics and numerical indicators tell us only the presence and intensity of certain variables; they do not expand our understanding of underlying causes for the manifestation of these indicators nor the set of intersections they develop with other indicators, thus they do not facilitate a comprehensive response to the existing conditions. We therefore need to gather data on gender-related practices and gender-socialization by teachers in primary schools and secondary schools in specific regions, such as in African, Latin American and Asian countries.

Quantitative, qualitative, intersectional and longitudinal research methods to inform about enabling conditions, obstacles, limitations and results of institutional as well as personal strategies for developing a process of change of gender inequalities in education.

Existing Research relevant to SDG4

Ackers J and Soriano CT. (2015) *Reflections on the Effectiveness of Partnerships - Past and Future - to Promote Education for all in Asia and the Pacific,* UNICEF. www.ungei.org/resources/index_6101.html

Aslam M. (2014) *Empowering Women: Education and the Pathways of Change*. UNESCO Background paper prepared for the Education for All Global Monitoring Report 2013-4.

Aslam, M, Bari, F and Kingdon, G. (2012) *Returns to Schooling, Ability and Cognitive Skills in Pakistan.* Education Economics, 2012; 20(2): 139-73.

Brooking Institute. (2015) *What works in Girl's Education. Evidence for the World's Best Investment,* 11 October 2015, www.ungei.org/resources/index_6072.html

Jayachandran, S. *The Roots of Gender Inequality in Developing Countries*. Annual Review of Economics 2015; 7: Submitted.

Kanyangarara T, Mayberry B, Pai A and Shanahan M. (2012) *Gender Analysis in Education: A Conceptual Overview*. Gender analysis in education - UNGEI 2012; 07. www.ungei.org/files/Gender_Analysis_in_Education.pdf

Kendall N. (2006). *Strengthening Gender and Education Programming in the 21st Century.* USAID Working Paper.

Stromquist NP. (2015) *Women's Empowerment and Education: Linking Knowledge to Transformative Action.* European Journal of Education 2015; 50(3).

UNESCO. (2014) *Education for All Global Monitoring Report 2013-4: Gender Summary*. UNESCO 2014.

UNESCO. (2015) *Rethinking Education: Towards a Global Common Good?* UNESCO 2015,11. http://unesdoc.unesco.org/images/0023/002325/232555e.pdf

UNICEF. (2005) *Barriers to Girls' Education, Strategies and Interventions,* www.unicef.org/teachers/girls_ed/BarrierstoGE.pdf

Unterhalter E, et al. (2014) *Interventions to Enhance Girls' Education and Gender Equality.* Education Rigorous Literature Review. Department for International Development 2014; 06.

USAID. *Education from a Gender Equality Perspective,* Management Systems International. EQUATE Project report for USAID's Office of Women in Development, May 2008. www.ungei.org/resources/files/Education_from_a_Gender_Equality_Perspective.pdf

Goal 5 Achieve gender equality and empower all women and girls

While the world has achieved progress towards gender equality and women's empowerment under the Millennium Development Goals (including equal access to primary education between girls and boys), women and girls continue to suffer discrimination and violence in every part of the world. Gender equality is not only a fundamental human right, but a necessary foundation for a peaceful, prosperous and sustainable world. Providing women and girls with equal access to education, health care, decent work, and representation in political and economic decision-making processes will fuel sustainable economies and benefit societies and humanity at large.

SDG5 Targets: Snapshot of Topics

End discrimination against women and girls

Eliminate violence against all women and girls, including trafficking and sexual and other types of exploitation

Eliminate harmful practices, such as child, early and forced marriage, female genital mutilation

Recognize and value unpaid care and domestic work

Women's full and effective participation in and equal opportunities for leadership at all levels of decision-making in political, economic and public life

Universal access to sexual and reproductive health and reproductive rights

Reforms to give women equal rights to economic resources, access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws

Use of enabling technology, in particular information and communications technology, to promote the empowerment of women

Policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels

Gender knowledge needed to achieve SDG5

Theoretical and multidisciplinary studies to unpack the idea of "women's empowerment."

Cross-disciplinary studies to better understand the simultaneous influence of economic, cultural, and social factors on the construction of subordinate gender identities among women, as well as the mechanisms and processes needed for women to be empowered in their daily lives at micro- and macro-social levels.

Examination of current practices and experiences of girls and women in education systems, with qualitative studies on how women as teachers in schools, in families and in communities negotiate gender roles and identities. Identification of successful and unsuccessful individual and collective agency.

Identification of class and school practices that enable girls to exercise and develop assertive gender identities.

Case studies of empowerment practices in non-formal education programmes for adult women.

The role of women-led non-governmental organisations in provision of transformative knowledge for urban and rural low-income women.

Promotion of non-traditional careers, e.g. women in technical jobs, men in nursing, pre-schools, etc., responsive to social class, ethnicity, prestige, etc.

Study on the impacts of male and female use of ICT in empowerment, participation, creativity, collaboration, social engagement, etc.

Existing Research relevant to SDG5

Bandiera O, Burgess R, Goldstein M, Buehren N, Gulesci S, Rasul I, and Sulaiman M (2014). *Women's Empowerment in Action: Evidence from a Randomized Control Trial in Africa.* Centre for the Study of African Economies Working Paper WPS/2014-30.

Bandiera O, Burgess R, Gulesci S, Rasul I, Sulaiman M. (2013). *Capital, Skills and the Economic Lives of the Poor: Recent Evidence from Field Experiments*. A

Roadmap for Promoting Women's Economic Empowerment. Background paper.

Cela B, Dankelman I, Stern J. (eds.) (2013) *Powerful Synergies: Gender Equality, Economic Development and Environmental Sustainability.* UNDP. http://www.undp.org/content/dam/undp/library/gender/f_PowerfulSynergies2013_Web.pdf

European Commission. (2015) *Gender Equality and Women's Empowerment: Transforming the Lives of Girls and Women through EU External Relations 2016-2020*, Joint Staff Working Document, European Commission, Brussels, 21/09/2015.

European Commission. (2013) *Towards the elimination of female genital mutilation*, European Commission, COM 2013; 833 final, 25.11.2013.

European Council. (2008) *EU Guidelines on Violence Against Women and Girls and Combating All forms of Discrimination Against Them.* European Council. https://www.consilium.europa.eu/uedocs/cmsUpload/16173cor.en08.pdf

SAGA (STEM and Gender Advancement). *Improved Measurement of Gender Equality in science, technology, engineering and mathematics*. UNESCO and SIDA. http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/SAGA_leaflet.pdf

Stromquist, NP (1995). *The Theoretical and Practical Bases for Empowerment. In: Women, Education and Empowerment: Pathways Towards Autonomy*. UIE Studies 5, Ed. Medel-Annoneuevo C. http://www.unesco.org/education/information/pdf/283_102.pdf

The Lancet. (2015) *Violence Against Women and Girls: How Far Have we Come?* Editorial. The Lancet 2015; 386(10008): 2029. http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(15)01029-6/fulltext

UNFPA. (2013) *Adolescent pregnancy in Eastern Europe and Central Asia*. UNFPA, 2013; pp8.

UNFPA. (2012) *Marrying too Young*. UNFPA. http://www.unfpa.org/end-child-marriage

Measuring equality and empowerment with qualitative and quantitative indicators

Identifying negative practices (e.g. discrimination, violence, poor recognition for unpaid care and domestic work) and proactive policies (e.g. ensuring access to: social protection, sexual and reproductive health and reproductive rights; economic resources; enabling technologies; legislation on gender equality and empowerment) are all essential topics of SDG5.
However, we must carefully separate the goal of gender equality from the goal of gender empowerment. Women's empowerment is concerned with women's self-worth and rights to choices; opportunities; resources; and the power to control their own lives, and the ability to influence social change. It is a prerequisite for reaching gender equality, which is the equal enjoyment by women and men of socially-valued goods, opportunities, resources and rewards, a state which can result from gender empowerment (UNFPA). The conflation of equality with its necessary factor of empowerment has led governments and development agencies to focus primarily on quantitative indicators in the past, missing important facets of empowerment processes and outcomes for both women and girls.
Experts note that although quantitative indicators (e.g. number of girls in school) are important and have become dominant today, they inform us only about particular conditions but not about processes and dynamics that lead to or cause such conditions.
A quantum leap in our knowledge could be attained through more qualitative studies that, while focusing on a small number of cases, provide insights about successful women's agency in removing obstacles to their advancement and in reframing gender and social issues. These studies should have clear gender-sensitive theoretical frameworks, and be considered in the context of broader social structures.

Sources: UNFPA http://www.un.org/popin/unfpa/taskforce/guide/iatfwemp.gdl.html
POPIN http://www.unfpa.org/resources/frequently-asked-questions-about-gender-equality#sthash.cygkPsEA.dpuf

Goal 6 Ensure access to water and sanitation for all

Clean, accessible water for all is an essential part of the world we want to live in. There is sufficient fresh water on the planet to achieve this. But due to bad economics or poor infrastructure, every year millions of people, most of them children, die from diseases associated with inadequate water supply, sanitation and hygiene. Water scarcity, poor water quality and inadequate sanitation negatively impact food security, livelihood choices and educational opportunities for poor families across the world. Drought afflicts some of the world's poorest countries, worsening hunger and malnutrition. By 2050, at least one in four people is likely to live in a country affected by chronic or recurring shortages of fresh water.

SDG6 Targets: Snapshot of Topics

Universal and equitable access to safe and affordable drinking water for all

Adequate and equitable sanitation and hygiene for all, no more open defecation, paying special attention to the needs of women and girls and those in vulnerable situations

Improve water quality through reduced pollution from hazardous chemicals and materials, and from untreated wastewater, and increased recycling and safe reuse of water globally

Increase water-use and re-use efficiency across all sectors with sustainable withdrawals and supply of freshwater to address water scarcity, fewer number of people suffering from water scarcity

Integrate water resources management at all levels, including through trans-boundary cooperation

Protect water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

Cooperation and capacity-building supporting developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies

Participation of local communities in improving water and sanitation management

Gender knowledge needed to achieve SDG6

Men's and women's values, attitudes and behaviour at individual, public and policy levels towards water use/reuse.

Conceptualising access to water as a human right for women and men.

Gendered definitions of sufficient, safe, acceptable, physically accessible, and affordable water.

Gender differences in water use and water resource management, including as a source of livelihood.

Gender related climate change adaptation strategies and mitigation activities linked to changes in water ecosystem services.

Construction of water ecosystems inventories, including consideration of the livelihoods of women, men, and children, to track changes in the quantity and quality of water resources.

Understanding water ecosystems from the perspective of humans (both women and men) as beneficiaries for protecting fresh water use and mitigating water damage and in light of impacts created by climate change (See Box).

Health related gender effects in ensuring safety of drinking water for human consumption.

How women's economic and domestic activities are affected by infrastructure, or its absence, for household water supply and sanitation.

How securing enough water to meet family needs impacts women's health, access to education and employment.

Impact of lack of clean water at community level and water fetching duties on girls' schooling and the economic productivity of women and men.

How inadequate sanitation in public places impacts on health and education of young girls who reach puberty.

Women's voices, needs and leadership in training and decisions regarding implementation of infrastructure development and water projects, including in technical and managerial roles.

Water, Climate Change and Human Rights

Climate change presents a serious obstacle to the realization of the rights to water and sanitation. Water is a key medium through which climate change impacts upon human populations and ecosystems, particularly due to predicted changes in water quality and quantity. The impacts of climate change need to be seen in light of their direct effects on water resources as well as their indirect influence on other external drivers of change, in particular increasing population pressures and changing consumption patterns.

However, not every adverse impact of climate change must lead to a human rights violation. It should also be noted that the right to water "for personal and domestic uses" requires only a small fraction of the overall water supply. Lack of sufficient access to water for household use is more a function of power, poverty and inequality, and a failure of governments to prioritise water allocation for basic needs and human dignity, than it is about scarcity per se. Since women are often primarily responsible for water provision in developing country homes these structural relationships must be viewed through a gender lens.

Existing Research relevant to SDG6

Bennett V, Davila-Poblete S and Rico MN. (2008) *Water and Gender: the Unexpected Connection that Really Matters*. Journal of International Affairs 2008; 61(2): 107.

Carter, RC, Tyrrel SF and Howsam P. (1999) *The Impact and Sustainability of Community Water Supply and Sanitation Programmes in Developing Countries*. Water and Environment Journal 1999; 13(4): 292-296.

Cleaver F and Elson D. (1995) *Women and Water Resources: Continued Marginalisation and New Policies.* International Institute for Environment and Development, London.

Climate Change and the Human Rights to Water and Sanitation, prepared for Swedish International Development Cooperation Agency. http://www.ohchr.org/Documents/Issues/Water/Climate_Change_Right_Water_Sanitation.pdf

Gross, B, van Wijik, C and Mukherjee, N. (2001). *Linking Sustainability with Demand, Gender, and Poverty: A Study in Community-Managed Water Supply Projects in 15 Countries.* Delft, Netherlands: IRC International Water and Sanitation Centre.

Hutton, G., Haller, L., and Bartram, J. (2007). *Global Cost-Benefit Analysis of Water Supply and Sanitation Interventions. World Health Organization Journal of Water and Health,* 5 (4), 481-502. http://www.iwaponline.com/jwh/005/0481/0050481.pdf

Meinzen-Dick R and Zwarteveen M. (1998) *Gendered Participation in Water Management: Issues and Illustrations from Water Users 'Associations in South Asia*. Agriculture and Human Values 1998. 15(4): 337-345.

Mikhail, M and Yoder, R. (2008). *Multiple-Use Water Service Implementation in Nepal and India: Experience and Lessons for Scale-up.* Lakewood, Colorado: International Development Enterprises (IDE), Challenge Program on Water and Food (CPWF), and International Water Management Institute (IWMI).

Ray I. (2007) *Women, Water, and Development*. Annu. Rev. Environ. Resour. 2007;32: 421-449.

Goal 7 Ensure access to affordable, reliable, sustainable and modern energy for all

Between 1990 and 2010, the number of people with access to electricity has increased by 1.7 billion, and as the global population continues to rise so will the demand for cheap energy. A global economy reliant on fossil fuels and the increase of greenhouse gas emissions is creating drastic changes to our climate system. This is having a visible impact on every continent. However, there has been a new drive to encourage alternative energy sources, and in 2011 renewable energy accounted for more than 20 percent of global power generated. Still one in five people lack access to electricity, and as the demand continues to rise there needs to be a substantial increase in the production of renewable energy across the world. Ensuring universal access to affordable electricity by 2030 means investing in clean energy sources such as solar, wind and thermal. Adopting cost-effective standards for a wider range of technologies could also reduce the global electricity consumption by buildings and industry by 14 percent. This means avoiding roughly 1,300 mid-size power plants. Expanding infrastructure and upgrading technology to provide clean energy sources in all developing countries is a crucial goal that can both encourage growth and help the environment.

SDG7 Targets: Snapshot of Topics

Ensure universal access to affordable, reliable and modern energy services

Renewable energy in the global energy mix

Double global improvement on energy efficiency

Cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology

Infrastructure and technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing states, and land-locked developing countries, in accordance with their respective programmes of support

Gender knowledge needed to achieve SDG7

Gender sensitive exploration and analysis of the inter-linkages between behavioural and technical sides of energy consumption by better understanding the impact of gender and other socio-economic and socio-demographic influences on energy utilization and management.

Understanding the impacts of (non-technical and technical) energy efficiency measures on gender relations and gender division of labour.

Research that compares energy projects which include a gender-perspective, and those which do not, in order to provide evidence of the significance of integrating gender into climate change policies and measures.

Investigation into whether there are gender differences in implementation, results, acceptance, and preferences of the users, or those involved in implementation, of energy efficiency projects.

Examination of the green energy choices, energy conservation and sustainable consumption of energy by both women and men.

Disruptive effects of climate change on energy costs and consequences for women's lives.

Household energy interventions to ease time demands on women's roles, and effects of indoor pollution on them and children.

Commercialisation of fuel and women's labour input.

Women's labour as a factor in the adoption of energy technology.

Linkages between gender and energy project success/failure, e.g. in improved stoves, indoor air pollution, and throughout the energy sector as a whole.

Existing Research relevant to SDG7

Cecelski E and Dutta S. (2011) *Mainstreaming Gender in Energy Projects, a Practical Handbook*. ENERGIA. http://energia.org/wp-content/uploads/2015/02/01.-Mainstreaming_gender_in_energy_projects_A_practical_Hand_book.pdf

Cecelski E. (2005) *Is Gender a Key Variable in Household Energy and Indoor Pollution Interventions?,* Boiling Point No 50. http://practicalaction.org/print/docs/energy/docs50/bp50-gender.pdf

Clancy J, Oparaocha S and Roehr U. (2004) *Gender Equity and Renewable Energies*. Thematic Background Paper for Renewables 2004, Bonn. www.ren21.net/Portals/0/documents/irecs/renew2004/Gender%20Equity%20and%20Renewable%20Energies.pdf

Clancy J. (2010) *Late Developers: Gender Mainstreaming in the Energy Sector*. www.devstud.org.uk/aqadmin/media/uploads/4ab8efeb3f827_SA3-clancy-dsa09.pdf

Elnakat A and Gomez JD. (2015) *Energy Engenderment: An Industrialized Perspective Assessing the Importance of Engaging Women in Residential Energy Consumption Management.* Energy Policy 2015; 82:166-177.

ESMAP. (2011) *Addressing the Gender Dimension of Energy Projects in Africa*. www.esmap.org/node/1292

Fatema N. (2005) *The Impact of Structural Gender Differences and its Consequences on Access to Energy in Rural Bangladesh*. World Bank, Washington, DC. //openknowledge.worldbank.org/handle/10986/8261.

OECD. (2008) *Gender and Sustainable Development: Maximising the Economic, Social and Environmental Role of Women*. OECD. http://www.oecd.org/social/40881538.pdf

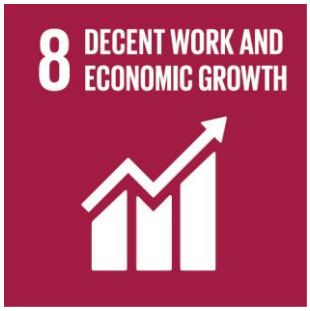
Permana AS, Norsiah AA and Siong HC. (2015) *Is mom energy efficient? A study of gender, household energy consumption and family decision making in Indonesia.* Energy Research & Social Science 2015; 6(7): 78-86.

World Bank. (2013) *Integrating Gender Considerations into Energy Operations.* World Bank, Washington, DC. https://openknowledge.worldbank.org/handle/10986/17479

Gender perspectives for more effective energy policy

Gender blind policies can be detrimental to women. For example, energy planning is implemented in a gender-neutral way, assuming that energy policies benefit women and men equally. What we find in reality is that energy planning fails to recognise that the needs of men and women are different. More research must be done on how energy policies can become more gender-responsive.

Historically, the vast majority of research focused on access to energy for the poor, mostly in rural households, and on health impacts of inefficient cook stoves. We now need to rethink how gender and identity affect power relations, and to unpack how feminine, masculine, intersectional identities or hetero-normative perspectives impact energy use and transition.



Goal 8 Promote inclusive and sustainable economic growth, employment and decent work for all

Roughly half the world's population still lives on the equivalent of about US$2 a day. And in too many places, having a job doesn't guarantee the ability to escape from poverty. This slow and uneven progress requires us to rethink and retool our economic and social policies aimed at eradicating poverty. A continued lack of decent work opportunities, insufficient investments and under-consumption lead to an erosion of the basic social contract underlying democratic societies: that all must share in progress. The creation of quality jobs will remain a major challenge for almost all economies well beyond 2015. Sustainable economic growth will require societies to create the conditions that allow people to have quality jobs that stimulate the economy while not harming the environment. Job opportunities and decent working conditions are also required for the whole working age population.

SDG8 Targets: Snapshot of Topics

Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries

Economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour intensive sectors

Policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services

Resource efficiency in consumption and production and endeavor to decouple economic growth from environmental degradation

Full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value

Reduce the proportion of youth not in employment, education or training

Eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms

Protect labour rights and safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment

Sustainable tourism that creates jobs and promotes local culture and products

Capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all

Aid for Trade support for developing countries, in particular least developed countries, including through the Enhanced Integrated Framework for Trade-Related Technical Assistance to Least Developed Countries

Develop a global strategy for youth employment and implement the Global Jobs Pact of the International Labour Organization

Gender knowledge needed to achieve SDG8

Setting of gender sensitive, country-by-country targets for inequality reduction at national level through public consultation, as a means of fast-tracking their adoption.

Cross-country comparison of female inclusion in formal and informal financial systems, and income inequality between women and men.

Quantification of economic growth effects of gender policies in developing economies.

Impact of gender inequality in employment and pay on economic growth.

Interactions between infrastructure, women's time allocation (on health, education, child rearing, household chores, market work) and economic growth.

The relationship between gender bias against women in the workplace, the gender pay gap, and saving behaviors of women and men.

Female employment and earnings and their bargaining power within families and communities.

Better frameworks for gender disaggregated data and national specific employment targets that can reflect specific national context and ensure relevance.

Exploitative production practices and women's participation in the labour force.

Discriminatory legal institutions and cultural traditions that can limit women's ability to achieve equal status.

Gender norms and treatment and status of women in newly urbanized populations.

Consideration of how globalisation can improve gender equality.

How norm-based globalisation affects income thresholds as well as gender equality in specific development phases.

Existing Research relevant to SDG8

Eastin J and Prakash A. (2013) *Economic Development and Gender Equality: Is there a Gender Kuznets Curve?* 2013. World Politics 65(1), January 2013:156-186.

Frey CB and Osborne MA. (2013) *The Future of Employment: How Susceptible are Jobs to Computerisations.* Oxford Martin 2013. www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf

Gray MM, Kittilson MC and Sandholtz W. (2006) *Women and Globalization: a study of 180 countries, 1975–2000*. International Organization 60 (2): 293–333.

Klassen S and Lamanna F. (2008) *The Impact of Gender Inequality in Education and Employment on Economic Growth in Developing Countries: Updates and Extensions.* Institute for the Study of Labor (IZA) 2008. www.iza.org/conference_files/worldb2008/klasen_s146.pdf

Schober T and Winter-Ebmer R. (2009) *Gender Wage Inequality and Economic Growth. Is there Really a Puzzle?* IZA DP 2009; 4323. http://ftp.iza.org/dp4323.pdf

Shaheen F. (2014) *Reducing Economic Inequality as a Sustainable Development Goal: Measuring up the Option for Beyond 2015*. New Economics Foundation. http://b.3cdn.net/nefoundation/226c9ea56ee0c9e510_gqm6b9zpz.pdf

Steel G and Kabashima, I. (2008) *Cross-regional support for Gender Equality*. International Political Science Review 29, No. 2: 133–56.

UN System Task Team on the Post-2015 UN Development Agenda (2012). *Macroeconomic Stability, Inclusive Growth and Employment*. ILO, UNCTAD, UNDESA, WTO Thematic Think Piece. www.un.org/millenniumgoals/pdf/Think%20Pieces/12_macroeconomics.pdf

World Bank. (2006) *Gender Equality as Smart Economics: A World Bank Group Gender Action Plan*. http://siteresources.worldbank.org/INTGENDER/Resources/GAPNov2.pdf

Goal 9 Build resilient infrastructure, promote sustainable industrialization and foster innovation

Investments in infrastructure – transport, irrigation, energy and information and communication technology – are crucial to achieving sustainable development and empowering communities in many countries. It has long been recognized that growth in productivity and incomes, and improvements in health and education outcomes require investment in infrastructure. Inclusive and sustainable industrial development is the primary source of income generation, allows for rapid and sustained increases in living standards for all people, and provides the technological solutions to environmentally sound industrialization. Technological progress is the foundation of efforts to achieve environmental objectives, such as increased resource and energy-efficiency. Without technology and innovation, industrialization will not happen, and without industrialization, development will not happen.

SDG9 Targets: Snapshot of Topics

Quality, reliable, sustainable and resilient infrastructure to support economic development and human wellbeing, with affordable and equitable access for all

Promote inclusive and sustainable industrialization and, significantly raise in industry's share of employment and gross domestic product

Access of small-scale industrial and other enterprises to financial services, including affordable credit, and their integration into value chains and markets

Upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes

Enhance scientific research and technological capabilities of industrial sectors to promote innovation, and substantially increasing the number of research and development workers per 1 million people

Sustainable and resilient infrastructure and technology development, including access to information and communication technologies

Support domestic technology development, research, innovation in developing countries

Gender knowledge needed to achieve SDG9

Impact of infrastructure performance on livelihoods and societal benefits for women and men (e.g. reduced access to health through unsafe water and lack of sanitation).

Infrastructure provision for the urban and rural poor with effects on women and men (e.g. access to education and safe drinking water).

Infrastructure deficit and economic productive capacity of women and men.

Infrastructure provision

Infrastructure provision has typically been a top-down process dominated by technological concerns and with little engagement in socio-economic debates, whilst 'pro-poor' interventions tend to focus on community-based provisions with simple, low cost technology and user participation.

Collaborative efforts to collect and share data on infrastructure investments and its impacts on productivity and incomes of women and men in relation to national circumstances.

Relationship between economic development, intra-household bargaining, poverty and economic empowerment of women through equal opportunities in employment.

How public investment in education, scientific and technological infrastructure can be framed to produce irreversible attainment of gender equality in Africa, Asia, and Latin America.

Role of industrialisation and innovation in achieving socially inclusive development and gender equality, and removing income inequality.

Examination of gender roles and bias in planning and management of large-scale infrastructure sectors (e.g. water, sanitation, rural transport, communication).

Development of ways to include laypersons, including often-marginalised groups such as women, in the process of designing technology roadmaps responsive to societal challenges.

Existing Research relevant to SDG9

Alber, G. (2011) *Gender, Cities, and Climate Change.* UN-Habitat Thematic report prepared for Cities and Climate Change Global Report on Human Settlements. http://unhabitat.org/wp-content/uploads/2012/06/GRHS2011ThematicStudyGender.pdf

Beall, J. (1996) *Urban Governance: Why Gender Matters,* Gender in Development Monograph Series No. 1, UNDP, New York.

British Council and One World Action (2000) *Developing Gender-sensitive Local Services*, London 28–29 June 2000, British Council, London.

Cannon, T. (2002), *Gender and Climate Hazards in Bangladesh*, Gender & Development 10(2):45–50.

Chant S and Mcilwaine C. (2013) *Gender, Urban Development and Politics of Space*. E-International Relations 2013. http://www.e-ir.info/2013/06/04/gender-urban-development-and-the-politics-of-space/

Demetriades J and Esplen E. (2008), *The Gender Dimensions of Poverty and Climate Change Adaptation*, IDS Bulletin 39(4): 24–31.

Heidingsfelder M, Kimpel K, Best K and Schraudner M (forthcoming): *Shaping Future – Adapting design knowhow to reorient innovation towards public preferences*. Technological Forecasting & Social Change 90(10).

Von Schomberg R. (2013): *A Vision of Responsible Innovation.* In: Owen, Richard; Heintz, Maggy & Bessant, John (Eds.), Responsible Innovation. Managing the Responsible Emergence of Science and Innovation in Society. John Wiley: London.

Nitivattananon V, Tu TT, Rattanapan A and Asavanant J. (2009) *Vulnerability and Resilience of Urban Communities under Coastal Hazard Conditions in Southeast Asia*, paper presented at the World Bank Fifth Urban Research Symposium on 'Cities and Climate Change: Responding to an Urgent Agenda', Marseille, 28–30 June 2009.

Satterthwaite D. (2008) *Cities' Contribution to Global Warming: Notes on the Allocation of Greenhouse Gas Emissions*. Environment and Urbanization 2008; 20(2): 539–549.

UN-Habitat. (2010) *Gender Equality for Smarter Cities, Challenges and Progress*, UN-Habitat Nairobi 2010.

UN-Habitat. (2008) *State of the World's Cities 2008/2009: Harmonious cities*, UN-Habitat and Earthscan, Nairobi and London 2008.

UNDP. (2013) *Overview of Linkages Between Gender and Climate Change*. Gender and Climate Change: Asia and the Pacific Policy Brief 1 2013. http://www.undp.org/content/dam/undp/library/gender/Gender%20and%20Environment/PB1-AP-Overview-Gender-and-climate-change.pdf

Williams B. (2005) *Gender and Urban Transport*, Habitat Debate 11(1): 10.

Goal 10 Reduce inequality within and among countries

The international community has made significant strides towards lifting people out of poverty. The most vulnerable nations – the least developed countries, the landlocked developing countries and the small island developing states – continue to make inroads into poverty reduction. However, inequality still persists and large disparities remain in access to health and education services and other assets. Additionally, while income inequality between countries may have been reduced, inequality within countries has risen. There is growing consensus that economic growth is not sufficient to reduce poverty if it is not inclusive and if it does not involve the three dimensions of sustainable development – economic, social and environmental. To reduce inequality, policies should be universal in principle paying attention to the needs of disadvantaged and marginalized populations.

SDG10 Targets: Snapshot of Topics

Achieve and sustain income growth of the bottom 40 per cent of the population

Empower social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status

Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard

Fiscal, wage and social protection policies, and progressively achievement of greater equality

Regulation and monitoring of global financial markets and institutions and strengthened implementation of such regulations

Enhanced representation and voice for developing countries in decision-making in international economic and financial institutions

Migration and mobility of people

Special and differential treatment for developing countries, development assistance and financial flows, reduce to less than 3 per cent the transaction costs of migrant remittances and eliminate remittance

Build sustainable and resilient buildings utilizing local materials

Gender knowledge needed to achieve SDG10

Gender relationships in intra-household resource allocation and poverty: patterns in resource allocation among household members, especially children in large households faced with severe income constraints.

Monitoring of anti-female bias in measures such as sex ratios of population, food distribution, human capital investment, time allocation, and expenditure patterns.

Regional differences in the extent of gender discrimination and its response to income growth, e.g. the relationship between gender bias in child mortality and income growth.

Patterns of inequality within and across countries vs. country-related conditions regarding gender inequality, human capital and education.

Social preference/tolerance for gender income inequality.

Investment in girls' education as an efficient economic choice for developing countries.

Interlinks between gender inequality and social or cultural preferences about gender roles.

Impact of market failures/successes on investment in girls.

The determinants and long-term effects of female and male migration and how they compare between source and destination countries.

Existing Research relevant to SDG10

Baudasse T and Bazillier R. (1999) *Gender Inequality and Emigration: Push Factor or Selection Process,* International Economics, 2014; 139: 19-47.

Dollar D, Gatti R. *Gender Inequality, Income, and Growth: Are Good Times Good for Women?* Policy Research report on Gender and Development, The World Bank 1999; Working Paper Series No 1.

Jolly S and Reeves H. (2009) *Gender and Migration.* BRIDGE Overview report, 2005. http://www.bridge.ids.ac.uk/sites/bridge.ids.ac.uk/files/reports/CEP-Mig-OR.pdf

Omelaniuk I. (2006) *Gender, Poverty and Migration*. World Bank. http://siteresources.worldbank.org/EXTABOUTUS/Resources/Gender.pdf

Ueyama N. (2007) *Income Growth and Gender Bias in Childhood Mortality in Developing Countries*, IFPRI 2007; Discussion Paper 00739.

UNDP. (2013) *Humanity Divided. Confronting Inequality in Developing Countries*. UNDP. http://www.undp.org/content/dam/undp/library/Poverty%20Reduction/Inclusive%20development/Humanity%20Divided/HumanityDivided_Full-Report.pdf

Goal 11 Make cities inclusive, safe, resilient and sustainable

Cities are hubs for ideas, commerce, culture, science, productivity, social development and much more. At their best, cities have enabled people to advance socially and economically. However, many challenges exist to maintaining cities in a way that continues to create jobs and prosperity while not straining land and resources. Common urban challenges include congestion, lack of funds to provide basic services, a shortage of adequate housing and declining infrastructure. The challenges cities face can be overcome in ways that allow them to continue to thrive and grow, while improving resource use and reducing pollution and poverty. The future we want includes cities of opportunities for all, with access to basic services, energy, housing, transportation and more.

SDG11 Targets: Snapshot of Topics

Adequate, safe and affordable housing and basic services and upgraded slums

Safe, affordable, accessible and sustainable transport systems for all, improving road safety, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons

Inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management

Protect and safeguard the world's cultural and natural heritage

Reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations

Reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

Access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities

Economic, social and environmental links between urban, per-urban and rural areas

Increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters

Build sustainable and resilient buildings utilizing local materials

Gender knowledge needed to achieve SDG11

How cities and other players need to respond to the complexity of gender related needs and interactions.

How gender differentiates inequalities related to income, class, age, race, ethnicity, health status, etc. and affects impacts of climate change on women and men in urban settings.

Collection and sharing of statistics on gender bias in fatalities during disasters in cities, and among disadvantaged social groups who are not reached by early-warning information, or cannot escape due to their responsibility for family care and constrained mobility.

Inclusion of the gender dimension in climate change policies, plans and programmes for cities including gendered aspects of the responsibility for and access to resources (energy, water, space, time).

Systematic assessment of gender differentials in resource use and the resulting contributions of these actions to climate change.

Differentiated needs of women and men in relation to safety and health, housing and shelter, mobility, nutrition and food security, sanitation services.

Gender differentials in vulnerability, taking women's and men's needs into account, including differentials in coping strategies and options for response.

Existing Research relevant to SDG11

Alber G. (1996) *Gender, Cities, and Climate Change*. UN-Habitat Thematic report prepared for Cities and Climate Change Global Report on Human Settlements 2011. http://unhabitat.org/wpdm-package/grhs-2013-arabic-language-version/2011/

Beall J. (1996) *Urban Governance: Why Gender Matters*, Gender in Development Monograph Series No. 1, UNDP, New York.

British Council and One World Action. (2000) *Developing Gender-sensitive Local Services, London 28–29 June 2000*, British Council, London.

Cannon T. (2002) *Gender and Climate Hazards in Bangladesh*. Gender & Development 10(2):45–50.

Chant S and Mcilwaine C. (2013) *Gender, Urban Development and Politics of Space*. E-International Relations. http://www.e-ir.info/2013/06/04/gender-urban-development-and-the-politics-of-space/

Demetriades J and Esplen E.(2008) *The Gender Dimensions of Poverty and Climate Change Adaptation*, *IDS Bulletin* 39(4): 24–31.

Nitivattananon V, Tu TT, Rattanapan A and Asavanant J. (2009) *Vulnerability and Resilience of Urban Communities under Coastal Hazard Conditions in Southeast Asia*, paper presented at the World Bank Fifth Urban Research Symposium on 'Cities and Climate Change: Responding to an Urgent Agenda', Marseille, 28–30 June 2009.

Satterthwaite D. (2008) Cities' Contribution to Global Warming: Notes on the Allocation of Greenhouse Gas Emissions. *Environment and Urbanization* 2008; 20(2): 539–549.

UN-Habitat. (2010) *Gender Equality for Smarter Cities, Challenges and Progress*, UN-Habitat Nairobi 2010.

UN-Habitat. (2008) *State of the World's Cities 2008/2009: Harmonious cities*, UN-Habitat and Earthscan, Nairobi and London 2008.

UNDP. (2013) *Overview of Linkages Between Gender and Climate Change*. Gender and Climate Change: Asia and the Pacific Policy Brief 1 2013. http://www.undp.org/content/dam/undp/library/gender/Gender%20and%20Environment/PB1-AP-Overview-Gender-and-climate-change.pdf

Williams B. (2005) '*Gender and urban transport*', Habitat Debate 11(1): 10.

Goal 12 Ensure sustainable consumption and production patterns

Sustainable consumption and production is about promoting resource and energy efficiency, sustainable infrastructure, and providing access to basic services, green and decent jobs and a better quality of life for all. Its implementation helps to achieve overall development plans, reduce future economic, environmental and social costs, strengthen economic competitiveness and reduce poverty. Sustainable consumption and production aims at "doing more and better with less," increasing net welfare gains from economic activities by reducing resource use, degradation and pollution along the whole lifecycle, while increasing quality of life. It involves different stakeholders, including business, consumers, policy makers, researchers, scientists, retailers, media, and development cooperation agencies, among others. It also requires a systemic approach and cooperation among actors operating in the supply chain, from producer to final consumer. It involves engaging consumers through awareness raising and education on sustainable consumption and lifestyles, providing consumers with adequate information through standards and labels and engaging in sustainable public procurement, among others.

SDG12 Targets: Snapshot of Topics

Implement programmes on sustainable consumption and production

Achieve sustainable management and efficient use of natural resources

Halve per capita global food waste

Environmentally sound management of chemicals and all wastes in order to minimize their adverse impacts on human health and the environment

Reduce waste generation

Encourage sustainable practices and sustainability information in reporting of large transnational companies

Promote sustainable public procurement practices

Ensure provision of information and awareness for sustainable development and lifestyles in harmony with nature

Strengthen developing countries' scientific and technological capacity for more sustainable consumption and production

Develop and implement tools to monitor sustainable development impacts for sustainable tourism

Rationalize inefficient fossil-fuel subsidies to reflect their environmental impacts, taking into account the specific needs and conditions of developing countries in a manner that protects the poor and the affected communities

Gender knowledge needed to achieve SDG12

Extend understanding of household consumer expenditure beyond disaggregation by purpose (e.g. energy, transport, housing, food) to understand consumption by individual household members to specific purposes, e.g. care work, commuting, personal consumption.

Relative roles of women and men in urban waste management, including in waste sector micro-enterprises.

Gendered work roles and differences in health risk exposure to and effects of chemical substances used for work, including awareness of the use of damaging chemical substances.

Gender differences in production regimes across countries, industries, and factories, and similarities between specific locations in the global context.

Gender differentiated effects of the privatisation and commercialisation of natural resources (water, land, forests, etc.).

Gender differentiated approach to consumption patterns and the individual and framework conditions influencing consumption.

Interactions between gender, household type, age, lifestyle orientation and socio-demographic conditions in the influence on consumption.

Existing Research relevant to SDG12

Calkin S. (2015) *Globalizing 'Girl Power': Corporate Social Responsibility and Transnational Business Initiatives for Gender Equality,* Globalizations 2015. DOI: 10.1080/14747731.2015.1064678.

Croppenstedt A, Goldstein M and Rosas N. (2013) *Gender and Agriculture. Inefficiencies, Segregation, and Low Productivity Traps.* Policy Research Working Paper 6370, World Bank.

Inter-Agency Task Force on Gender and Water. (20016) *Gender, Water and Sanitation*. Policy Brief prepared in support of the International Decade for Action, 'Water for Life' 2005-2015. UN-Water and the Interagency Network on Women and Gender Equality (IANWGE0 2006).

Kusakabe K and Jahan J. (2010) *Gender Mainstreaming in Urban Environmental Management Projects: Lessons Learned from Southeast Asia Urban Environmental management Applications (SEA-UMEA) Project*. CIDA-AIT Partnership. http://www.gdrc.org/gender/kyoko-2.pdf

Muller M and Schienberg A. (1997) *Gender and Urban Waste Management.* Paper presented at the Gender, Technology and Development Conference 1997, organised by TOOL/ TOOLCONSULT, Amsterdam.

Muller SM. (not dated) Gender, Social Inequalities and Waste Management. WASTE. http://www.worldbank.org/urban/solid_wm/erm/Annexes/US%20Sizes/Annex%201.2.pdf

Nzeadibe TC and Adama O (2015) Ingrained Inequalities? Deconstructing Gendered Spaces in the Informal Waste Economy of Nigerian Cities. Urban Forum, Vol 26 (2) pp 113-130.

Schultz I and Stiess I. (2009) *Gender Aspects of Sustainable Consumption Strategies and Instruments.* Final Draft, April 2009, EUPOPP. http://www.eupopp.net/docs/isoe-gender_wp1_20090426-endlv.pdf

Scott J, Dakin R, Heller K and Eftimie A. (2013) *Extracting Lessons on Gender in the Oil and Gas Sector. A Survey and Analysis of the Gendered Impacts of Onshore Oil and Gas Production in Three Developing Countries.* World Bank.

Seguino S. (2000) *Gender Inequality and Export-led Growth: A Cross-Country Analysis.* World Development 2000; 28(7): 1211-1230.

Ward B, Strongman J, Eftimie A and Heller K. (2011) *Gender Sensitive Approaches for the Extractive Industry in Peru. Improving the Impact of Women in Poverty and Their families: Guide for Improving Practice*. World Bank. https://esmap.org/sites/esmap.org/files/578680_Gender-Sensitive_Approaches_for_the_Extractive_Industry_in_Peru.pdf

Woroniuk B and Schalkwyk J. (2008) *Waste Disposal and Equality between Women and Men*. OECD. http://www.oecd.org/dac/gender-development/1849277.pdf

Goal 13 Take urgent action to combat climate change and its impacts

Climate change is now affecting every country on every continent. It is disrupting national economies and affecting lives, costing people, communities and countries dearly today and even more tomorrow. People are experiencing the significant impacts of climate change, which include changing weather patterns, rising sea level, and more extreme weather events. The greenhouse gas emissions from human activities are driving climate change and continue to rise. They are now at their highest levels in history. Without action, the world's average surface temperature is projected to rise over the 21st century and is likely to surpass 3 degrees Celsius this century—with some areas of the world expected to warm even more. The poorest and most vulnerable people are being affected the most. Affordable, scalable solutions are now available to enable countries to leapfrog to cleaner, more resilient economies. The pace of change is quickening as more people are turning to renewable energy and a range of other measures that will reduce emissions and increase adaptation efforts. But climate change is a global challenge that does not respect national borders. Emissions anywhere affect people everywhere. It is an issue that requires solutions that need to be coordinated at the international level and it requires international cooperation to help developing countries move toward a low-carbon economy.

SDG13 Targets: Snapshot of Topics

Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters

Integrate climate change measures into national policies, strategies and planning

Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

Mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions

Capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities

Gender knowledge needed to achieve SDG13

How transformation towards decarbonisation/low-carbon development affects gender relations, and whether there is an equal distribution of benefits and burdens of this.

Research on how this transition can be done in ways that take into account gender and climate justice, in both developed and developing countries.

Developed countries have the historical responsibility for a fast (latest until 2050) decarbonisation of their economies and societies, therefore knowledge is urgently needed on the impacts of this transition on different groups in society (i.e. migrants, single parents, elderly…) and on gender relations.

In developing countries and emerging economies transition towards a low-carbon development strategy should be done in a gender-responsive way, research is needed to better understand the prerequisites and impacts of this transition.

What the benefits are of climate change mitigation beyond the reduction of carbon emissions.

What multiple effects (e.g. health, gender equality, jobs, safety….) could bring higher acceptance to climate change measures, improve gender mainstreaming into climate issues, and also speed-up the necessary reduction of CO2-emissions by contributing to the necessary societal shift.

Gender equality in participation and gender in research content are often conflated. Research evidence is needed to show that in the context of climate change, more women in decision-making and research will change programme/project design and content in a gender-responsive way.

Existing Research relevant to SDG13

Alber, G. (2015) *Gender and Urban Climate Policy. Gender-Sensitive Policies Make a Difference*. GIZ, UNHABITAT & GenderCC. http://gendercc.net/fileadmin/inhalte/dokumente/gendercc_publications/Guidebook_Gender_and_Urban_Climate_Policy_June_2015.pdf

Alston M and Whittenbury K (eds.). (2013) *Research, Action and Policy: Addressing the Gendered Impacts of Climate Change*. New York: Springer. http://www.springer.com/us/book/9789400755178

Demetriades J and Esplen E. (2008) *The Gender Dimensions of Poverty and Climate Change Adaptation*, IDS Bulletin 39(4): 24–31.

European Institute for Gender Equality – EIGE (ed.) (2012) *Review of the Implementation in the EU of Area K of the Beijing Platform for Action: Women and the Environment*. Gender Equality and Climate Change. Luxembourg. http://eige.europa.eu/sites/default/files/documents/Gender-Equality-and-Climate-Change-Report.pdf

Magnusdottir G and Kronsell A. (2015) *The (In)visibility of Gender in Scandinavian Climate Policy-making*. International Feminist Journal of Politics 2015; 17(2): 308-326. http://dx.doi.org/10.1080/14616742.2014.896661

Skinner, E. (2011) *Gender and Climate Change. Overview Report,* Brighton, United Kingdom: BRIDGE, Institute of Development Studies. http://docs.bridge.ids.ac.uk/vfile/upload/4/document/1211/Gender_and_CC_for_web.pdf

UNDP. (2009) *Resource Guide on Gender and Climate Change*. UNDP. http://www.un.org/womenwatch/downloads/Resource_Guide_English_FINAL.pdf

UN's Gender-responsive climate action for sustainable development

The UN Expert Group Meeting on implementing gender-responsive climate action for sustainable development stated that gender-based differences should be "explicitly recognized in the development, transfer and diffusion of technologies for climate change adaptation and mitigation, including in the identification and prioritization of technology needs." The meeting organised by UNDESA, UN Women and the UN Climate Change Secretariat in October 2015 concluded that climate technology adoption could be hindered in developing countries without women's participation - for example, in development and promotion of solar cook stoves. Studies have demonstrated that women tend to reject riskier technologies that may negatively impact the environment or their communities. It advised that gender differences should be incorporated "at every step of the technology cycle, from design, to implementation and evaluation" to make technologies more attuned to the needs of communities while also advancing gender equality.

Gender perspectives in climate change action and mitigation are also being addressed by the Secretariat of the Lima Work Program on Gender (LWPG). In May 2015 the LWPG mapped all decisions, reports and conclusions adopted under the United Nations Framework Convention on Climate Change (UNFCCC) pertaining to or referencing gender. Identifying progress, potential gaps, and areas requiring further support for implementation, the report is a starting point for discussion on an action plan and implementation of the LWGP's two-year programme on gender.

LWPG (2015). "Draft Compilation of Decisions, Subsidiary Body Reports and Adopted Conclusions Related to Gender and Climate Change" http://bit.ly/1YqGQnK

UNDESA, UN WOMEN and UNFCCC (2015) "Implementation of gender-responsive climate action in the context of sustainable development Report of the Expert Group Meeting Bonn, Germany 14-16 October 2015" http://bit.ly/1MqAFDM

Goal 14 Conserve and sustainably use the oceans, seas and marine resources

The world's oceans – their temperature, chemistry, currents and life – drive global systems that make the Earth habitable for humankind. Our rainwater, drinking water, weather, climate, coastlines, much of our food, and even the oxygen in the air we breathe, are all ultimately provided and regulated by the sea. Throughout history, oceans and seas have been vital conduits for trade and transportation. Careful management of this essential global resource is a key feature of a sustainable future.

SDG14 Targets: Snapshot of Topics

Reduce marine pollution of all kinds

Manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience

Address the impacts of ocean acidification

Regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans

Conserve at least 10 per cent of coastal and marine areas

Prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing

Increase economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism

Increase scientific knowledge, develop research capacity and transfer marine technology

Provide access for small-scale artisanal fishers to marine resources and markets

Enhance conservation and sustainable use of oceans and their resources by implementing international law

Gender knowledge needed to achieve SDG14

Existing chemical monitoring of marine organisms for exposure to pollution principally evaluates the presence of pollutants in tissues by chemical analysis. Research is needed to establish bio-monitoring methods to evaluate not only the presence, but also the response of the organisms to pollutants by the assessment of female and male biomarkers, i.e. parameters that reflect their effects at the molecular, cellular, organ, and organism level in female and male fish.

The use of biomarkers in monitoring exposure to pollutants should be integrated with chemical monitoring in determining their toxic effects of pollutants, including when they are present at low, sub-lethal concentrations.

Impact of current developments in fisheries on the lives and livelihoods of fishing communities, specifically focusing on women's experiences.

Constructing and sharing local agendas and women's organisations' strategies in fisheries, taking stock of achievements and obstacles.

In some fish species it is the male that grows bigger (e.g. Tilapia) and in others it is the female (e.g. Turbot), research is needed to help fish farmers effectively sex young fish, which is currently done manually and requires special training.

Sexual development in fish varies widely between species. Some fish farmers (e.g. tilapia farmers in the Philippines) control reproduction in mixed sex populations through administration of methyl testosterone, which in turn may pose a health risk to workers. Research is needed to understand the fate of the hormone in the effluent and ground water.

Large old female fish contribute overwhelmingly to the egg production that renews fish populations. Research is needed to understand how young and old fish divert food resources into growth and reproduction, and how to manage fishing and fisheries to protect fertile older female fish.

Exclusion of women from policy decision processes

Fish harvesting policies often focus on industrialization and centralization of facilities in urban areas. In many countries, this has meant women have been marginalized or even pushed out of the sector. Infrastructure development, capacity building and marketing practices (both informal and formal) of the sector at village-level, in which women play a key role, have also been neglected.

Existing Research relevant to SDG14

Arsenia G, Cagauan F, Baleta N and Abucay JS. (2004) *Sex Reversal of Nile Tilapia, Oreochromis Niloticus l. by Egg Immersion Technique: the Effect of Hormone Concentration and Immersion Time.* International Collective in Support of Fishworkers WIF Workshop Report, 2004. http://ag.arizona.edu/azaqua/ista/ista6/ista6web/pdf/127.pdf

Awuor CB, Orindi VA and Andrew OA. (2008) *Climate Change and Coastal Cities: the case of Mombasa, Kenya*, Environment and Urbanization 20(1): 231–242.

Bennett E. (2005) *Gender, Fisheries and Development*, Mar. Policy, 29 (5) (2005), pp. 451–459. http://dx.doi.org/10.1016/j.marpol.2004.07.003

Brugere C. (2014) *Mainstreaming Gender in Trans-boundary Natural Resources Projects – the Experience of the Bay of Bengal Large Marine Ecosystem (BOBLME) project*. Environmental Development 2014: 1184–97

Dietz T, Rosa EA and York R. (2009) *Environmentally Efficient Well-being: Rethinking Sustainability as the Relationship Between Human Well-being and Environmental Impacts*, Hum. Ecol. Rev., 16 (1) (2009), pp. 114–123.

IIFET 2016 Special Session: "*Gender Research as a New Frontier in Fisheries and Aquaculture Economics*" at the IIFET 2016 conference in Aberdeen, Scotland (http://www.iifet-2016.org) – 12-15 July, 2016.

Kime DE. (1995) *The Effects of Pollution on Reproduction in Fish*. Rev Fish Biol Fish 1995; 5: 52-96.

Koehler A. (2004) *The Gender-specific Risk to Liver Toxicity and Cancer of Flounder (Platichthys flesus (L.)) at the German Wadden Sea Coast*
Aquat Toxicol 2004; 70: 257-276.

Kumar KG (ed.). (2010) *Recasting the Net: Defining a Gender Agenda for Sustaining Life and Livelihoods in Fishing Communities*. WIF Workshop, 7-10 July 2010, Mahabalipuram, India. http://women.nl/cms/wp-content/uploads/2011/05/REPORT-INTERNATIONAL-WORKHOP-GENDER-AND-FISHERIES-JULY-2010.pdf

Pauly D, Christensen V, Guennette S, Pitcher TJ, Rashid U, Walters CJ, Watson R and Zeller D (2002). Towards Sustainability in World Fisheries. Nature 418, 689-695 (8 August 2002).

Williams MJ, Porter M, Choo PS, Kusakabe K, Vuki V, Gopal N and Bondad-Reantaso M. (2012) *Guest Editorial: Gender in Aquaculture and Fisheries – Moving the Agenda Forward,* Asian Fish. Sci., 25 (2012), pp. 1–13 (Special issue).

Goal 15 Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss

Forests cover 30 per cent of the Earth's surface and in addition to providing food security and shelter. Forests are key to combating climate change, protecting biodiversity and the homes of the indigenous population. Thirteen million hectares of forests are being lost every year while the persistent degradation of drylands has led to the desertification of 3.6 billion hectares. Deforestation and desertification – caused by human activities and climate change – pose major challenges to sustainable development and have affected the lives and livelihoods of millions of people in the fight against poverty. Efforts are being made to manage forests and combat desertification.

SDG15 Targets: Snapshot of Topics

Conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and dry lands

Sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally

Desertification and restoration degraded land and soil to achieve a land degradation-neutral world

Conservation of mountain ecosystems, including their biodiversity

Degradation of natural habitats, and loss of biodiversity including threatened species

Utilization of genetic resources and appropriate access to such resources

Poaching and trafficking of protected species of flora and fauna

Impact of invasive alien species on land and water ecosystems

Ecosystem and biodiversity values in national and local planning

Financial resources to conserve and sustainably use biodiversity and ecosystems

Financial resources for sustainable forest management in developing countries, including for conservation and reforestation

Poaching and trafficking of protected species

Gender knowledge needed to achieve SDG15

Understanding impact of the rapid change in land use, driven by export-oriented growth in agricultural products such as palm oil and natural rubber, on transforming farming practices and influencing gender-specific agricultural roles.

Understanding shifts in gender division of labour and decision-making, e.g. collection of firewood, medicinal plants and wild fruit for household consumption by women, while men tend to be occupied in monoculture, e.g. oil palm or rubber production.

Measures to protect forests from insect pests and diseases require reliable information on their reproduction processes and the appropriate control conditions.

Understanding how rapid erosion of soil is reducing food production and causing serious losses in biodiversity, and how female and male farmers understand and protect the character and functioning of soil ecosystems in different types of soil and regions.

Linking of local soil knowledge and management practices with cultural, socioeconomic and environmental conditions and in this context establishing how farmers, women and men, classify soils with regard to fertility and erosion, what they view as the cause of erosion, and how they control erosion.

Linking of gender differences in knowledge of plant use with gender divisions of labour and gendered spatial knowledge (i.e. gender differences in

familiarity with local natural resources) for conservation programmes.

Existing Research relevant to SDG15

Anu E. (2006) *Women, Environmental Changes and Forestry-related Development: Gender-affected Roles of Rural People in Land Degradation and Environmental Rehabilitation in a Dry Region of Sudan*. PhD Dissertation, Faculty of Agriculture and Forestry, University of Helsinki.

CIFOR, Forests, Trees, and Agroforest. (2012) *A Strategy for Gender-responsive Research and Action*. CIFOR, Bogor, Indonesia. http://www.cifor.org/fileadmin/subsites/crp/CRP6-Gender-strategy.pdf

FAO (2005) *Global Review of Forest Pests and Diseases.* Forestry Paper 156. http://www.fao.org/docrep/011/i0640e/i0640e00.htm

Gurubg JD. (2006) *Gender and Desertification. Expanding Roles for Women to Restore Dry Land Areas*. IFAD.

Leimar Price L. (2007) *Locating farmer-based knowledge and vested interests in natural resource management: the interface of ethnopedology, land tenure and gender in soil erosion management in the Manupali watershed, Philippines*. J Ethnobiol Ethnomed. 2007; 3: 30.

Momsen J. (2007). *Gender and Biodiversity: A New Approach to Linking Environment and Development*, Geography Compass 2007; 1(2): 149-162.

Oldham P, Hall S and Forero O. (2013) *Biological Diversity in the Patent System*. PLoS ONE 2013; 8(11): e78737. doi:10.1371/journal.pone.00

Oliva MJ. (2011) *Biodiversity, Gender and Trade. A Role for the WTO*. Centre for International Environmental Law.

Pimentel D. (2006) *Soil Erosion: a Food and Environmental Threat*. Environment, Development and Sustainability 2006; 8(1): 119-137.

Van Koppen B. (2002) *A Gender Performance Indicator for Irrigation. Concepts Tools and Applications.* International Water management Institute, Colombo, Sri Lanka, 2002, Research Report 59.

Villamor GB, Akiefnawati R, van Noordwijk M, Desrianti F and Pradhan U. (2015) *Land use Change and Shifts in Gender Roles in Central Sumatra, Indonesia*. International Forestry Review 2015 17(4): 61-75.

Villamor GB, Desrianti F, Akiefnawati R, Amaruzaman S, and van Noordwijk M (2013) *Gender influences decisions to change land use practices in the tropical forest margins of Jambi, Indonesia.* Mitig Adapt Strateg Glob Change Vol 13(6), August 2013.

Wakhungu JW. (2010) *Gender Dimension of Science and Technology: African Women in Agriculture, United Nations Division for the Advancement of Women*. (DAW, part of UN Women) United Nations Educational, Scientific and Cultural Organization (UNESCO) 28 September – 1 October 2010. http://www.ifad.org/pub/gender/desert/gender_desert.pdf

Goal 16 Promote just, peaceful and inclusive societies

Goal 16 of the Sustainable Development Goals is dedicated to the promotion of peaceful and inclusive societies for sustainable development, the provision of access to justice for all, and building effective, accountable institutions at all levels.

SDG16 Targets: Snapshot of Topics

Significantly reduce violence and related death rates

End abuse, exploitation, trafficking and all forms of violence against and torture of children

Promote the rule of law at the national and international levels and ensure equal access to justice for all

Significantly reduce illicit financial and arms flows, strengthen recovery and return of stolen assets, combat all forms of organised crime

Substantially reduce corruption and bribery in all their forms

Develop effective, accountable and transparent institutions at all levels

Ensure responsive, inclusive, participatory and representative decision-making at all levels

Broaden participation of developing countries in the institutions of global governance

Legal identity for all, including birth registration

Protect fundamental freedoms, in accordance with national legislation and international agreements

Strengthen national institutions for building capacity in developing countries to prevent violence and combat terrorism and crime

Promote and enforce non-discriminatory laws and policies for sustainable development

Gender knowledge needed to achieve SDG16

How gender stereotypes create obstacles to effective prevention of and response to gender-based violence in populations affected by armed conflict.

Understanding how conceptions of masculinity can put boys and men at risk of living a life of violence (as victims, survivors and/or perpetrators), and how boys may become victims of sexual violence, or become child soldiers, or join violent gangs.

In conflict affected countries, displacement, economic insecurity, and broken social networks lead to less stable environments, increasing the risk of sexual violence. Research is needed to understand how to prevent and overcome consequences of conflict, rape and/or sexual torture used as deliberate weapons of war.

Better understanding of the impact of migration on women and the concomitant exposure to abuse and exploitation, and economically viable alternatives that prevent this.

Developing comparative indicators that integrate women's rights and the human rights principles, emphasising universal provision while taking into account the diversity of needs and constraints based on gender, age, class, ethnicity, sexual orientation, and abilities.

Identifying barriers to women's full participation in social movements and in the design, delivery, monitoring and evaluation of the development goals, policies and indicators at global, regional, national and local levels.

Corruption may differentially impact on the socioeconomic status of women and men by raising the marginal tax rate of firms, decreasing business activity, raising the marginal costs of public funds, making certain government projects economically unviable, and undoing the government's ability to correct externalities, leading to inefficient outcomes. Research is needed to identify gender related perceptions and

real extent and economic cost of corruption and its impact on the lives of women, men and children.

Understanding nature of violence, perceptions and manifestations in different contexts with emphasis on the consequences of violent acts towards women.

Existing Research relevant to SDG16

Combaz E. (2013) *Impact of Gender-responsive Budgeting*, GSDRC Helpdesk Research Report, 2013. http://gsdrc.org/docs/open/HDQ977.pdf

Cruz A and Klinger S. (2011) *Gender-based Violence in the World of Work: Overview and Selected Annotated Bibliography*, ILO Working Paper 3, 2011. http://www.ilo.org/wcmsp5/groups/public/@dgreports/@gender/documents/publication/wcms_155763.pdf

Heise L, Ellsberg M and Gottemoeller M. (1999) *Ending Violence Against Women.* Population Information Program Population Reports, Series L. No. 11, 1999.

Olken BA and Pande RP. (2011) *Corruption in Developing Countries*, Abdul Latif Jameel Poverty Action Lab's Governance Initiative. http://www.hks.harvard.edu/fs/rpande/papers/Corruption%20in%20Developing%20Countries.pdf

UN Women's Major Group. (2013) *Strengthening Gender Justice: Recommendations for the Sustainable Development Goals and the Post-2015 Development Agenda*. Friedrich Ebert Stiftung.

UN. (2007) *Indicators to Measure Violence Against Women – Report of the Expert Group Meeting.* United Nations Division for the Advancement of Women, Economic Commission for Europe, United Nations Statistical Division, Geneva. www.un.org/womenwatch/daw/egm/IndicatorsVAW/IndicatorsVAW_EGM_report.pdf

UNESCO. (2011). *Men's Involvement in the Fight Against Gender-based Violence.* Report of the Scientific Meeting, Kinshasa, 29-30 March 2011. http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/BSP/GENDER/PDF/Kinshasa_Conference_report.pdf

UNICEF. (2014) *A Post-2015 World Fit for Children*. UNICEF. http://www.unicef.org/post2015/files/Child_Protection_2pager_FINAL_web.pdf

Vann B. (2004) *Training Manual Facilitator's Guide: Multi-sectoral and Interagency Prevention and Response to Gender-based Violence in Populations Affected by Armed Conflict,* Global GBV Technical Support Project JSI Research & Training Institute RHRC Consortium.

Vlachovà M and Biason L. (2005) *Summary Report: Women in an Insecure World – Violence against Women Facts, Figures and Analysis, 2005.* Geneva Centre for the Democratic Control of Armed Forces, Geneva.

Walker JA. (2012) *Early Marriage in Africa: Trends, harmful Effects, and Interventions*. African Journal of Reproductive Health 2012; 16(2): 2012.

Goal 17 Revitalize the Global Partnership for Sustainable Development

The Sustainable Development Goals (SDGs) can only be realized with a strong commitment to global partnership and cooperation. While official development assistance from developed countries increased by 66 per cent between 2000 and 2014, humanitarian crises brought on by conflict or natural disasters continue to demand financial resources and aid. Many countries also require Official Development Assistance to encourage growth and trade. The world today is more interconnected than ever before. Improving access to technology and knowledge is an important way to share ideas and foster innovation. Coordinating policies to help developing countries manage their debt, as well as promoting investment for the least developed, is vital to achieve sustainable growth and development. The goals aim to enhance North-South and South-South cooperation by supporting national plans to achieve all the targets. Promoting international trade, and helping developing countries increase their exports, is all part of achieving a universal rules-based and equitable trading system that is fair and open, and benefits all.

SDG17 Targets: Snapshot of Topics

Finance

- Domestic resource mobilization to improve domestic capacity for tax and other revenue collection
- Financial resources for developing countries
- Additional development finances from multiple sources
- Long-term debt sustainability
- Investment promotion regimes

Technology

- Triangular cooperation on access to science, technology and innovation and enhance knowledge sharing
- Development, transfer, dissemination and diffusion of environmentally sound technologies
- Bank and use of enabling technology, in particular information and communications technology

Capacity building

- Capacity-building to implement all the sustainable development goals

Trade

- Universal, rules-based, open, non-discriminatory and equitable multilateral trading system
- Exports of developing countries
- Duty-free and quota-free market access

Systemic issues

- Global macroeconomic stability through policy coordination and coherence
- Policy coherence for sustainable development
- Respect national policy space for poverty eradication and sustainable development
- Multi-stakeholder partnerships
- Enhance the Global Partnership for Sustainable Development
- Public-private and civil society partnerships

Data, monitoring and accountability

- Availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts
- Initiatives to develop measurements of progress on sustainable development that complement gross domestic product, and support statistical capacity-building in developing countries

Gender knowledge needed to achieve SDG17

Identification of the most relevant gender and environmental changes we are dealing with today worldwide, and in what sequence and at what level we should (and can) measure these changes.

Determination of new and more appropriate, analytic and data gathering tools for practical use in the field that bring out the gender aspects of the sustainable development dimensions mapped out in the SDG targets.

Data have different audiences – identification is needed of the kind of gender data that must be collected in regard to SDG targets for policy making, research, and for evaluating national and international commitments.

How to achieve collaborative information systems (SDGs, EGI, HDR) for linking knowledge to action in environmental and gender issues.

How to help governments and practitioners with the interpretation of gender-related data sets.

How to improve gender aspects of the collection of SDG-relevant datasets at sub-national levels.

Systematic sex disaggregated analysis of national legislative and policy framework and of institutional frameworks in the area of gender and climate change.

In general, gender gaps do not appear to fall systematically with growth, and they appear to rise with GDP per capita and with greater access to resources and inputs. Research is needed to explain why this is so and how SDG implementation can help close these gaps.

The impact of health system financing and lack of financial protection on socio-economic wellbeing of households, and specifically comparing the positions of women and men within households.

Internationally comparable ICT gender statistics provide insight into the use of ICT for economic and social development. What we can learn about the ways in which men and women experience ICT differently and the scope and intensity of the gender digital divide in a global knowledge society.

Definition of socially inclusive development and the gender relations within it.

Identification of relationships between technological innovation, structural change and social inclusiveness.

Whether industrialization can be socially inclusive.

Whether higher income inequality for women and men, within and between countries, is the inevitable outcome of technology-driven industrial development.

Identification of the trends in the demographic shifts across developing countries, facilitated by rising income and the uptake of modern technologies, better health, declining fertility rates, enrolment in education, and increased urbanization.

Identification of the risks and benefits from technology-led industrialization in a globalizing world for different countries and citizen groups, and in particular girls and women.

How investment in education can be promoted through improvements in the efficiency of financial markets and access to finance to give women and men workers access to the education they need in order to access and utilize new technologies in low-income countries where financial markets are underdeveloped and where the lack of credit in poor rural areas prevents people from accessing opportunities in education or entrepreneurship.

How women and men can overcome credit market imperfections that constrain their occupational choices and labour market mobility by reducing opportunities to upgrade their high-tech skills, thus entrenching higher income inequality.

Carrying out of gender-differentiated impact assessments on all policies related to STI for development to ensure they benefit both men and women equally.

Evidence of how S&T programmes targeted toward marginalized groups (including women in many countries) can lead to significant poverty reduction in order to demonstrate that ensuring everyone in society (men as well as women) has access to quality S&T education and training and career opportunities is essential and smart public policy.

Research on the institutional innovations (e.g. for identifying local problems) and needed for dealing with gender issues.

Existing Research relevant to SDG17

Barclays Wealth. (2011) *Understanding the Female Economy: The Role of Gender in Financial Decision making and Succession Planning for the Next Generation*. Barclays Wealth. https://www.home.barclays/content/dam/barclayspublic/documents/news/986-699-BW_Female-Client-Group-report.pdf

Baxter M. (2002) *Social Security as a Financial Asset: Gender-specific Risks and Returns*. Journal of Pension Economics and Finance 2002 1(1): 35-52.

Carr M and Hartl M. (2010*). Lightening the load: Labour Saving Technologies and Practices for Rural women.* Rugby,

International Fund for Agricultural Development (IFAD) and Practical Action.

Clark CW et al. (2002) *Science and Technology for Sustainable Development. Consensus Report of the Mexico City Synthesis Workshop, 20-23 May 2002.* Cambridge, MA: Initiative on Science and Technology for Sustainability.

Council of Europe. (2014) *Gender Equality Strategy, 2014-2017*, February 2014.

Knaul FM, Wong R and Arreola-Ornelas H. (2012) *Financing Health in Latin America*. Volume 1: Household spending and impoverishment. Harvard Global Equity Initiative, Harvard University Press.

Kurup A, Maithreyi R, Kantharaju B, and Godbole R. (2010) *Trained Scientific Women Power: How Much are we Losing and Why?* Bangalore, Indian Academy of Sciences/ National Institute of Advanced Studies. http://eprints.nias.res.in/142/

Lee H and Mun M (eds). (2015) *We Set: Women Enrich our Future through Science, Engineering and Technology*. Center for WISET, Korea. http://www.wiset.re.kr/eng/resources/resources03_view.jsp?sc_field=%EC%98%81%EB%AC%B8%EC%9E%90%EB%A3%8C&sc_webzine_master_seq=4&sc_display_yn=Y&pk_seq=1125

Nallari R and Griffith B. (2011) *Gender and Macroeconomic Policy. Directions in Development,* Washington: World Bank Institute. Chapter 8, 139-151. https://openknowledge.worldbank.org/bitstream/handle/10986/2256/589960PUB0ID171UBLIC109780821374344.pdf?sequence=1

Nanon I and Correia MC. (2006) *The other Half of Gender: Men's Issues in Development*, World Bank.

Naude W and Nagler P. (2015) *Industrialisation, Innovation, Inclusion.* Background papers for the UNIDO, Industrial Development Report 2016: IDR 2016 WP 7. UNIDO/UNU-MERIT, 2015.

Nega E. (2008) *Setting the scene: Gender and ICTs from an AISI perspective*, Validation Workshop on Gender and e-Government in Africa, organised by the United Nations Economic Commission for Africa, Addis Ababa, 20–21 May 2008.

Parpart JL, Connelly MP and Barriteau E. (2000) *Theoretical Perspectives on Gender and Development, 2000*, International Development Research, Canada.

Partnership on Measuring ICT for Development. (2013) *Stocktaking and Assessment on Measuring ICT and Gender Partnership on Measuring ICT for Development.* Contribution to 11th World Telecommunication/ICT Indicators Symposium (WTIS-13), Mexico City, 4-6 December 2013. http://www.itu.int/en/ITU-D/Statistics/Documents/events/wtis2013/001_E_doc.pdf

UNCTAD (2011) *Applying a Gender Lens to Science, Technology and Innovation*, UNCTAD Current Studies on Science, Technology and Innovation No5, 2011. http://unctad.org/en/docs/dtlstict2011d5_en.pdf

Watkins A and Ehst M (eds). (2008) *Science, Technology and Innovation: Capacity Building for Sustainable Growth and Poverty Reduction*, World Bank. http://siteresources.worldbank.org/EDUCATION/Resources/278200-1099079877269/547664-1099079975330/DID_STI_Capacity_Building.pdf

Appendices:

Using the Seoul declaration to formulate specific implementation action plans

Seoul Declaration Principles (aimed to be used as a basis for developing specific action plans)	Examples of actions suggested by experts that could be part of a specific implementation action plan	Examples of 'good practice' and actions already implemented
1. COLLABORATE by creating national and regional alliances to enable continued dialogue on common gender problems in science, such as criteria of scientific excellence, which are of concern to policy makers, scientists, gender research experts, and stakeholders in science endeavours, including industry and citizens.	**Collaborate by forming alliances to tackle common gender problems and to maximise impact,** for example: • Agree on cross-institutional and regional policies promoting equal opportunities for both women and men in decision-making in farming and food production • Promote interventions that support equal opportunities for women and men to participate in the management and utilization of forest resources and sharing of responsibilities and benefits • Promote interventions that enhance women farmers' economic options • Recognise the rights of Indigenous Peoples to participate in the use, management, and conservation of natural resources • Promote agricultural investment mechanisms and advisory services on the impacts of climate change • Ensure sustainable access for all to ICTs by providing needed access to energy • Adopt private-public collaboration models to create sustainable and scalable Internet access, especially in rural areas	"The Executive Director [of the] Women Advocates' Research and Documentation Centre, Dr. Abiola Akiyode tasked President Buhari to employ ways and stamp policies that will ensure food security in the country through women farmers. The programme, which was organised by the WARDC in collaboration with the United States International Aid for Development, was centered on building capacity for smallholder women farmers in Ilorin, Kwara state [Nigeria]." Michael, N. F.,(2015) *N100 Billion Intervention Fund For Women Farmers.* The FTC post. Aug. 23, 2015. http://www.fctpost.com/2015/08/23/n100-billion-intervention-fund-for-women-farmers/
2. ASK, to ensure quality of research process, "whether, and in what sense, biological sex and gender differences are relevant in the objectives and	**Ask for research evidence on gender issues when planning interventions** (more examples of research are listed in the report under each SDG) involving:	"A systematic approach was developed as a tool to examine the challenges faced by women farmers in Ghana and test the possible outcomes of different systemic interventions."

methodology of the project". Evidence demonstrates that the assertion that science is gender neutral is not the case. For instance, when gender is not taken into account, research often results in different health and safety outcomes for women and men.	• Indigenous practices of women in seed storage and cultivation • Learning from and protecting indigenous knowledge, farming and fishing practices • Livelihood and well-being concerns of women farmers and fishers • Requirements for technology and tools in labour intensive industries, or the workplace • Workplace practices and effectiveness of equipment used in regard to the different needs and capacities of women (e.g. agricultural equipment was designed for the male body)	Kwamina EB, Ocke JHB and Nam CB (2015) *A Systemic Intervention to Access Resource Impact on the Quality of Life of Women Farmers in Developing Countries: Evidence from Ghana*, Academia Journal of Agricultural Research 3(2): 15-22, February 2015
3. ESTABLISH research and innovation protocols, standards, regulatory regimes, as well as binding recommendations in areas where evidence already demonstrates the need to validate results to ensure safety and efficacy for both women and men. Examples include diagnostic biomarkers, stem cell medicine and assistive devices.	**Establish common protocols and standards when involving different actors in implementation measures** For example: • Criteria defining sustainable livelihood projects and other income-generating activities for youth, women, and the elderly • Competencies needed by women for leadership roles in farmers' organisations and similar groups • Decision-making practices that engage women in the control of agricultural technologies, training, credits, markets, and information • Structural gender related elements for analysing infrastructure, or other 'big' projects, which are not necessarily directly related to gender (e.g. building a new power station)	"East Asia has the highest ratio of male infants born to female infants due to selective abortion of female foetuses, with 119 boys born for every 100 girls, far exceeding the global world average of 107 boys for every 100 girls. The practice of sex selection itself may spread because fertility rates are continuing to fall and ultrasound scanners reach throughout the developing world". Economist (2010) *The worldwide war on baby girls*. March 4, 2010. http://www.economist.com/node/15636231

4. AGREE on accepted terminology, schema and models for representing and reporting the role and effects of biological sex and gender in scientific contexts, for instance when to use the term 'sex' and when to use 'gender' when explaining study results. There is considerable confusion in the research literature regarding terminology and this affects the potential for conducting systematic reviews and meta-analytic studies.	**Agree with all actors involved in implementation on the use of gender concepts in different contexts**, for example in: • Integrating considerations of gender into climate policy, mitigation, technology, adaptation, and capacity building • Gender knowledge and gender equality for the use in management of fisheries and aquatic resources, and evaluating the rights and benefits accruing to stakeholders in the fishing industry • Minimum norms for what is reasonable access to ICT and the Internet, including quality of bandwidth and quality of service	"Traditional concepts need to be reflected in development discourse - home-grown models that make use of historical and cultural experiences are critical for the sustainability of development efforts in Africa. The imposition of Western values through the development agenda questions and challenges the world view of Third World people while promoting and valorising Western values in the process. This is perceived as reinforcing cultural domination and promoting social dislocation resulting in unsustainable development." Soetan RO (2001) *Culture, Gender and Development*, Report submitted to African Institute for Economic Development and Planning (IDEO), Dakar, Senegal, October 2001 http://unpan1.un.org/intradoc/groups/public/documents/idep/unpan003342.pdf
5. CREATE fresh opportunities for developing new markets for science knowledge by advancing gendered innovation ecosystems. Such systems can be constructed by exploiting connections between: 1) gender sensitive research; 2) the different interests and product needs of women and men; and 3) making better use of the available female scientific and creative capital. These may involve, for instance, speech recognition products or devices promoting healthy aging.	**Create fresh opportunities for women's socio-economic empowerment through interventions** directed at, for example: • Updating useful, gender sensitive-technologies in food production, processing, and marketing • Designing, developing, and promoting women-friendly technologies, farm machines and equipment for crops, livestock, and forestry • Increase capacity of women and men, both upland dwellers and coastal fishers, to improve their food production • Developing business models for good high quality universal and ubiquitous access to Internet bandwidth • Improving women's participation in the	"The vast reservoir of traditional and indigenous knowledge that have sustained societies for hundreds of years should be tapped for income and employment generation in the face of increasing poverty and unemployment in Africa." Soetan RO (2001) *Culture, Gender and Development*, Report submitted to African Institute for Economic Development and Planning (IDEO), Dakar, Senegal, October 2001 http://unpan1.un.org/intradoc/groups/public/documents/idep/unpan003342.pdf "Mobilising female and maternal labour supply through explicit targets and programmes is key to sustainable economic growth in the long-term."

	promotion of sustainable ecotourism, protection and conservation of wildlife resources/endangered species • Involving women and men in sustainable solid waste management	OECD (2008) Gender and Sustainable Development. Maximising the Economic, Social and Environmental Role of Women, 2008 http://www.oecd.org/social/40881538.pdf
6. INVOLVE more women in innovation value chains - in idea creation, development, and implementation. Evidence shows that: 1) gender balance in a team improves its collective intelligence; 2) in 'crowd sourcing' innovation, women outside the formal innovation circles contribute better solutions than others; and 3) when experiments fail, women and men adopt different problems solving strategies.	**Involve more women in income-generating and livelihood promoting activities**, for example, by: • Promoting full involvement of women in food value chains from production to processing and marketing • Enabling greater participation of women in promoting the use of organic and natural farm inputs for crop production • Giving women greater access to and control over agroforestry and coastal management technologies, training, credit, markets, and information • Increasing the number of women adopting new technologies or activities that do not deplete the natural resources • Involving women in the ICT industry and mobile technologies and in providing local support in both rural and urban areas • Identifying and creating products and services that are relevant to women's needs	"The relationship between trade and gender is highly contextual and country-specific. It is possible to extrapolate some general patterns that are likely to be found across countries, e.g. the gender ramifications of an export-led strategy in fisheries in The Gambia. Commercial expansion of the fisheries sector could help to lift many Gambians from poverty and, in particular, women. Yet, without a built-in gender perspective, the promotion of fish exports in The Gambia could in some cases actually exacerbate inequality between men and women." Musselli I and Zarrilli S (2015) *Trade Policy Through a Gender Lens: Fish Trade and Women in The Gambia*, Biores 9(9), 9 November 2015. http://www.ictsd.org/bridges-news/biores/news/trade-policy-through-a-gender-lens-fish-trade-and-women-in-the-gambia
7. IDENTIFY statistics, indicators, and methods for collecting sex-disaggregated data to enable better understanding of the current situation regarding gender equality in science at institutional, national, and regional level. Key measures include: 1) gender balance in participation in science education, in	**Identify gender-disaggregated data** needed to: • Provide timely and accurate sex-disaggregated information on food safety • Gather all existing gender-related data pertaining to nutrition to identify learning points • Establish a shared open database with sex disaggregated data to enable research	The World Bank: "Gender Statistics database provides indicators on key gender topics. Themes included are demographics, education, health, labor force, and political participation." The World Bank, Gender Statistics Website http://data.worldbank.org/data-catalog/gender-statistics

research and innovation, and in science-related academic, industry and related employment; 2) institutional gender equality polices; 3) progression stages in the career pathways of women and men; and 4) applications and success rates in access to research funding.	and to assist policy makers and implementers • Establish minimum norms for what defines different dimensions of gender equality and how they should be measured	
8. EDUCATE, starting with schools and including university students, researchers, mangers of research and science communicators about the importance of including gender perspectives in research and innovation. Common sources of resistance to change include implicit and explicit gender bias, and cultural gender stereotypes. Children as young as 9 months can distinguish gender roles and by the age of 2 years have constructed their own gender stereotypes, which reflect those of the society they live in.	**Educate all targeted by the SDGs on the importance of learning and skills to improve lives**, for example, by: • Creating fresh opportunities to access employment and income-generating activities • Ensuring that the context for the learning is meaningful • Educating women and girls in the usage of ICT and in science and technology, so that they can take advantage of the advancements in science and technology • Educating girls and women on the legal/ constitutional rights of women and how they can access services to help them in exercising their rights and accessing government or other facilities	"By improving educational opportunities for girls and women, World Education helps women develop skills that allow them to make decisions and influence community change. In turn, these programs have a positive impact on some of the most profound issues of our time: Population growth, HIV, peace and security, and the widening gap between the rich and poor." World Education Website. "Girls' and women's education" http://www.worlded.org/WEIInternet/international/expertise/display.cfm?tid=1004&id=756
9. JUDGE the individual and scientific quality, and potential, of women and men using clear and fair assessment criteria, monitoring outcomes for signs of gender bias in order to improve the selection process. Evidence shows that bias in the evaluation of merit is common and favours the success of men: in recruitment to research teams and jobs; in career promotion; and in the award of research grants.	**Judge the value of advancing women and men equally, regardless their background**, by, for example: • Promoting female role models and examples for women across countries and industries • Enabling women's capacity to participate in income-generating work • Strengthening coping strategies of women and men • Making access to all livelihood-supporting	"A recent set of impact evaluations from India that look at the impacts of reserving local level government positions for women show this led to change in investment priorities to be more in line with female preferences (infrastructure in particular), that the reporting of crimes against women increased, that attitudes about the competence of female politicians improved, and that women were more likely to be elected. Finally, they show that having women in power changes the aspirations of parents for their girls, and that those parents are

	resources more equally available • Deploying transparency in how the conditions enabling participation of women and men are met in practice	then more likely to invest in their girls' education." Goldstein, M. (2012) *Getting to Equal in Africa: Closing the Gender Gap for Women and Girls.* Voices Perspectives on Development, The World Bank Blog, March 21, 2012. http://blogs.worldbank.org/voices/getting-to-equal-in-africa-closing-the-gap-for-women-and-girls
10. CREATE conditions for the gendered research and innovation principles to be implemented in practice through funding policies and programmes, encouraging cross-disciplinary and cross-sector collaboration, for example between universities, industry and Civil Society organisations.	**Create conditions for evidence led implementation of SDGs**, through, for example: • Designing technical capability development programmes for women to acquire agribusiness management skills, and understand enterprise development conditions • Developing and implementing gender-responsive ecotourism management plans • Improving capacity of relevant development agencies to plan, design, implement, and monitor programmes and projects in a gender sensitive way • Protecting women's right to ownership of land, water, and other food production resources and of shares of farm produce • Promoting gender aware dialogue to share experiences of sustainability interventions, especially what works what doesn't, what has led to success and how these might be replicated or adapted in other situations	"Women in leadership positions have long been thought to have the potential to pave the way for long-term changes by influencing aspirations; our study demonstrates their impact in a nationwide policy experiment in India. We present evidence suggesting that this impact exceeds their (relatively limited) ability to change the concrete situation of women and girls in the short run through direct policy actions. It is their presence as positive role models for the younger generation that seems to underlie observed changes in aspirations and educational outcomes of adolescent girls." Beaman L, Duflo E, Pande R and Topalova P (2012) *Female Leadership Raises Aspirations and Educational Attainment for Girls: A Policy Experiment in India*. Science Vol 335: 582-586, 3 February 2012. DOI: 10.1126/science/1212382 At the launch of the new UN Technology Facilitation Mechanism, the UN Industrial Development Organization underscored the need for complementarity. Given that technology is the interaction between individuals: "We must have platforms to ensure human connectivity and interaction, so as to think more in terms of technology cooperation instead of technology transfer." -- *We must ensure that women are equally*

		represented at every stage of the development and use of such platforms. UN (2015) "Launching the Technology Facilitation Mechanism for Achieving Sustainable Development Goals" 26th September 2015. Co-organised by the Permanent Missions of Brazil and France to the UN, with support of the Interagency Task Team on STI for the SDGs. https://sustainabledevelopment.un.org/content/documents/8525TFM%20launch%20event_summary_final.pdf

EXPERT CONTRIBUTORS

MANAGING EDITORS

PROF HEISOOK LEE, PRESIDENT OF CENTER FOR WISET (WOMEN IN SCIENCE, ENGINEERING & TECHNOLOGY), KOREA.

Prior to leading WISET, Heisook Lee PhD held various roles at Ewha Womans University, Korea, between 1995 and 2008 including Dean of the College of Natural Sciences, Dean of Research Affairs and Dean of the Graduate School. She served as the founding Editor of Communications of the Korean Mathematical Society from 1986 to 1988 and as Chief Editor of the Journal of the Korean Mathematical Society from 1994 to 1996. Her research interests include algebraic coding theory and algebraic structures over commutative rings. Her current interests are HRD in STEM fields and gender perspectives in science research. Prof Lee received her BS, MSc and PhD degrees in Mathematics from Ewha Womans University, the University of British Columbia and Queen's University, Canada, respectively.

DR ELIZABETH POLLITZER, DIRECTOR, PORTIA LTD, GENDER SUMMIT CO-FOUNDER, UK.

Elizabeth Pollitzer PhD is co-founder and Director of Portia, an organisation devoted to improving gender equality in science, technology, engineering and mathematics (STEM) and to promoting the inclusion of the gender dimension in STEM. She has 20 years' experience teaching and researching in the Departments of Computing and Management at Imperial College, University of London. Her original training was in Biophysics. She now applies this scientific background to her work as director of Portia. Portia was the coordinator of the genSET project, under which the Gender Summits were established. She is also an expert adviser on gender issues to the European Commission.

EDITORIAL PROCESS

Report Format

The report dedicates around two to each of the 17 SDGs to include the following:

1)Summary of existing SDG Targets	2) Experts' suggested priority sex and gender considerations/future research topics to inform successful SDG implementation	3) Experts' citations of research papers on sex and gender considerations relevant to SDG implementation

- **First Draft:** Prepared by Managing Editors and sent for review by Advisory Board
- **Second Draft:** Managing Editors integrated Advisory Board contributions, and sent for review by the Editorial Board
- **Final Draft:** Managing Editors integrated Editorial Board's Comments to prepare the final report

EDITORIAL BOARD

PROF BERHANU ABEGAZ, EXECUTIVE DIRECTOR, AFRICAN ACADEMIES OF SCIENCES (AAS).

Before joining the African Academies of Sciences, Berhanu Abegaz PhD was professor of chemistry at the University of Botswana in Gaborone for 17 years, and a member of the chemistry department at Addis Ababa University in Ethiopia from 1973 until 1994. He was elected a member of the Third World Academy of Sciences in 1998. He was born in Ethiopia. After receiving his B.Sc. in Chemistry in 1968 he was awarded an AFGRAD Scholarship and joined the Graduate Program in Chemistry at the University of Vermont, USA, where he studied under Professor A. Paul Krapcho and was awarded a PhD in 1973.

PROF SIMONE BUITENDIJK, VICE-RECTOR MAGNIFICUS LEIDEN UNIVERSITY; PROFESSOR OF WOMEN'S AND FAMILY HEALTH, LEIDEN UNIVERSITY MEDICAL CENTER, THE NETHERLANDS.

Simone Buitendijk MD, MPH, PhD is Vice-rector Magnificus in charge of teaching, learning and diversity at Leiden University, the Netherland. She is Professor and Chair of Women's and Family Health at Leiden University Medical Center. She studied Medicine in Utrecht, received a Master's degree in Public Health at the Yale School of Medicine, USA, and her PhD degree at Leiden University. She is a member of the LERU (League of European Research Universities) Gender Steering Group and co-authored the 2013 LERU position paper ''Women, research and universities: excellence without gender bias'' and the 2015 LERU advice paper on Gendered Research and Innovation.

DR YONGSUK JANG, SENIOR RESEARCH FELLOW, SCIENCE AND TECHNOLOGY POLICY INSTITUTE (STEPI) OF KOREA.

Dr Jang is actively conducting policy research mainly on diverse aspects of innovation systems at regional, national and global levels. Recently he has expanded his research interests to science diplomacy, innovation for development, gendered research and innovation. He consults for not only the Korean Government but also many international organisations including OECD, APEC, World Bank and IDB. Currently, he serves as a vice-chair to the Committee of Science and Technology Policy (CSTP) of the OECD and as the managing editor of 'STI Policy Review.' He holds a PhD in Public Policy from the George Washington University.

DR YEE CHEONG LEE, MALAYSIAN CHAIRMAN, GOVERNING COUNCIL, INTERNATIONAL SCIENCE TECHNOLOGY AND INNOVATION CENTRE (ISTIC) FOR SOUTH-SOUTH COOPERATION UNDER UNESCO, MALAYSIA.

Academician Dato' Ir Yee Cheong Lee PhD is also a Member of the National Science and Research Council of Malaysia; Pro-Chancellor of the Infrastructure University of Kuala Lumpur, Chairman of the Global Council InterAcademy Partnership (IAP) Science Education Program and a Commissioner of the UN Broadband Commission for Sustainable Development. He was formerly Chairman of Governing Board of the Institute of Energy Policy and Research (IEPRe) at the University Tenaga, Malaysia (UNITEN), as well as Adjunct Professor of UNITEN. He is an Advisor to MIGHT

International; a Member of Global Science Innovation Advisory Council (GSIAC); and Vice Chairman of the UN Sustainable Development Solution Network (SDSN) Malaysia, among many other roles

PROF DONNA MERGLER, PROFESSOR EMERITA, UNIVERSITÉ DU QUÉBEC À MONTRÉAL, CANADA.

Donna Mergler PhD is a Professor Emerita in the Department of Biological Sciences of the Université du Québec à Montréal (UQAM), where she was a professor of physiology and environmental health since 1970. She is a member of the Centre for Interdisciplinary Research Center on Biology, Health, Society and Environment (CINBIOSE), a Collaborating Centre of the World Health Organization and the Pan American Health Organization (WHO-PAHO). Her research focuses on environmental and occupational health. Since 2008, she heads an interdisciplinary pan-Canadian team on Gender, Environment and Health.

PROF HEE YOUNG PAIK, PRESIDENT, KOREAN FEDERATION OF WOMEN'S SCIENCE & TECHNOLOGY ASSOCIATIONS (KOFWST), KOREA.

Hee Young Paik ScD is Professor and Researcher of the Department of Foods and Nutrition, Seoul National University, Korea, and is currently President of the Korea Federation of Women's Science and Technology Associations (KOFWST). She also served as Korea's Minister of Gender Equality and Family from 2009-2011. She has received several honours including Excellent Research Awards in Science (2005), National Honora for High Achievements in Science (2008), and Asia-Pacific Clinical Nutrition Award (2009) and the First Class Order of Service Merit (2012). From 1984 to 1992, she was a faculty member at Sookmyung Women's University in Seoul, Korea. Prof Paik's final degree is an ScD in Nutrition obtained from the Harvard School of Public Health, USA.

PROF CURT RICE, RECTOR, OSLO AND AKERSHUS UNIVERSITY COLLEGE OF APPLIED SCIENCES; HEAD OF THE COMMITTEE ON GENDER BALANCE AND DIVERSITY IN RESEARCH, NORWAY.

Curt Rice PhD chairs the Board for Current Research Information System in Norway (CRIStin) and was a member of the Board at the University of Tromsø. Previously, he served as Pro Rector for Research at the University of Tromsø and was the Founding Director of the Center for Advanced Study in Theoretical Linguistics: A Norwegian Centre of Excellence (CASTL). Prof Rice is a member of the genSET Science Leaders Panel; the Gender Summits were established on the recommendation of the panel. Since participating in genSET he has written and spoken widely on university leadership and gender, particularly on his blog ScienceInBalance.com.

PROF MARTINA SCHRAUDNER, HEAD OF DEPARTMENT OF GENDER AND DIVERSITY IN ORGANIZATIONS, TECHNICAL UNIVERSITY BERLIN; DIRECTOR, RESPONSIBLE RESEARCH AND INNOVATION UNIT, FRAUNHOFER GESELLSCHAFT, GERMANY.

Martina Schraudner PhD's research focuses on the integration of different perspectives in the innovation process and involvement of potential users, dialogue between different science disciplines, and accommodating views of different stakeholders. She has participated in initiatives related to

the "Partners for Innovation" project and for the development of a high-tech strategy for Germany; she is member of the Hochschulrat of the Paderborn University and a board member of the Kompetenzzentrum Diversity e.V. and Total E-Quality e.V. She received her PhD in Biology from the Technical University of Munich, and was a researcher at the Swiss Federal Institute of Technology in Zurich and the Forschungszentrum Jülich.

DR JANET STOTSKY, CONSULTANT AND FORMER ADVISER, OFFICE OF BUDGET AND PLANNING, INTERNATIONAL MONETARY FUND.

Janet Stotsky PhD is an economist and expert on gender budgeting and fiscal policies. She is a retired senior staff at the IMF, where she worked in the Fiscal Affairs, African, and Western Hemisphere Departments and in the Office of Budget and Planning. She provided fiscal policy advice to countries around the world and led IMF country program negotiations. She is currently leading a project, as a visiting scholar at the IMF, on gender budgeting. She has taught at Rutgers and American Universities. She has a PhD in economics from Stanford University, USA.

CHANGMO SUNG, PRESIDENT, GREEN TECHNOLOGY CENTER KOREA (GTCK), KOREA.

Changmo Sung PhD was formerly a President of Hyosung Corporation, responsible for its R&D Business Institute from 2006-2011. Prior to that, he was President of Inje University in Korea's Gyungnam Province from 2004-2006. He has also served on Korea's Presidential Committee on Balanced National Development, the Presidential Commission on Policy Planning, and National Special Committee of Innovation Science Technology. Dr Sung was involved in planning and execution of Korean high technology clusters and commercialization for advanced regional economic development. He was also a tenured professor at University of Massachusetts, Lowell from 1993-2004, where he worked in the NSF Nanomanufacturing Center and Renewable Energy Research.

DR JULIA TAGUENA, DEPUTY DIRECTOR, NATIONAL COUNCIL OF SCIENCE AND TECHNOLOGY (CONACYT), MEXICO.

For over 25 years, Julia Tagüeña PhD has been a research professor at the Energy Research Center of the Universidad Nacional Autónoma de México (UNAM), of which she also served as Director. She studied physics at UNAM and obtained a PhD at Oxford University. She is a member of Mexico's National Research System, with the highest rank, and of different societies such the Mexican Academy of Sciences and the Institute of Physics of the United Kingdom. She has also worked on science communication and she is a member of the scientific committee of the international Public Communication of Science and Technology Network.

DR WANDA WARD, DIRECTOR, OFFICE OF INTEGRATIVE ACTIVITIES, NATIONAL SCIENCE FOUNDATION (NSF), USA.*

Wanda E. Ward PhD has served in a number of science and engineering policy, planning and program capacities for the United States National Science Foundation (NSF), including as Head of International and Integrative Activities, Senior Advisor to the NSF Director; Assistant to the NSF Deputy Director for Human Resource Development; Deputy Assistant Director for Social, Behavioral, and Economic Sciences; and Deputy Assistant Director, Education and Human Resources. She

also served on the President's National Science and Technology Council subcommittees and interagency working groups on science education, workforce development, and social, behavioral and economic sciences. Previously, she was an associate psychology professor and founding director of the Center for Research on Multi-Ethnic Education, University of Oklahoma, Norman.

** DR. WARD PARTICIPATES IN HER PERSONAL CAPACITY. HER PARTICIPATION DOES NOT CONSTITUTE AN ENDORSEMENT BY THE NATIONAL SCIENCE FOUNDATION OR THE UNITED STATES GOVERNMENT.*

ADVISORY BOARD

PROF ALICE ABREU, DIRECTOR, GENDERINSITE; PROFESSORA EMÉRITA UNIVERSIDADE FEDERAL DO RIO DE JANEIRO, BRAZIL.

Alice Abreu, the Acting Director of GenderInSITE, is Emeritus Professor of the Federal University of Rio de Janeiro, Brazil. She was vice-president of the National Research Council for Scientific and Technological Development of Brazil, director of the Office of Education, Science and Technology of the Organization of American States, and director of the regional office for Latin America and the Caribbean of the International Council for Science. A sociologist by training, she has worked on sociology of work and more recently on gender and science.

PROF GLORIA BONDER, UNESCO REGIONAL CHAIR ON WOMEN, SCIENCE AND TECHNOLOGY; GENDERINSITE REGIONAL FOCAL POINT FOR LATIN AMERICA AND THE CARIBBEAN; DIRECTOR, GENDER, SOCIETY AND POLICIES AREA, FLACSO (LATIN AMERICAN SCHOOL OF SOCIAL SCIENCES), ARGENTINA.

Gloria Bonder PhD is coordinator of the UNESCO Regional Chair on Women, Science and Technology in Latin America and the Global Network of UNESCO Chairs on Gender. She also coordinates an e-learning master's programme on Gender, Society and Public Policies. Since 2014, she has coordinated her region's activities in the global GenderInSITE programme, which aims to influence policies and policy makers in science, technology, innovation and engineering, to integrate gender equality principles and goals. She is a researcher and consultant on Women, Science and Technology for organisations including the Ministry of Science and Technology in Argentina, United Nations, Women and Development Unit, ECLAC, the Office of Science and Technology, UNICEF, UNIFEM, UNDP and UNESCO, among others.

DR DIPAN BOSE, TRANSPORT SPECIALIST, GLOBAL ROAD SAFETY FACILITY (GRSF), TRANSPORT ANCHOR, WORLD BANK GROUP, INTERNATIONAL.

Dipan Bose PhD is a road safety engineer by training with research experience in developing interventions to mitigate road crash-related trauma. Prior to joining the World Bank in 2012, he was a Research Scientist at the University of Virginia Center for Applied Biomechanics focusing on the vehicle restraint systems and injury epidemiology program. He has presented at previous Gender Summits on female driver vulnerability when involved in motor vehicle crashes and the relevance to health policies and vehicle regulations to promote injury reduction, as well as the global context of mainstreaming gender issues in transport projects.

ITZÁ CASTAÑEDA, GENDER AND SUSTAINABLE DEVELOPMENT SPECIAL ADVISER. GLOBAL GENDER OFFICE, INTERNATIONAL UNION FOR THE CONSERVATION OF NATURE (IUCN) MEXICO.

Itzá Castañeda is gender specialist with 20 years of experience working on sustainable development in Mexico and Latin America. She was the Director of Gender Equity at Mexico's Secretariat of Environment and Natural Resources (2001-2004) and the Senior Gender Adviser for the United Nations Development Programme (UNDP) in Mexico (2004 – 2011).

Since 2012, she has been advising on environmental and gender policy for IUCN. She has participated in numerous national and international forums and is co-author of 10 books and other publications on gender, environment, disasters, climate change and human development. She studied biology and later a Master's in environment and development.

OFELIA FLORESCA-DOMINGO, CHAIR, GENDER AND DEVELOPMENT TECHNICAL WORKING GROUP (GAD-TWG), PHILIPPINE COUNCIL FOR AGRICULTURE, AQUATIC AND NATURAL RESOURCES RESEARCH AND DEVELOPMENT, DEPARTMENT OF SCIENCE AND TECHNOLOGY (PCAARRD-DOST), PHILIPPINES.

As PCAARRD-DOST GAD-TWG Chair, Ofelia Floresca-Domingo supervises and manages the council's gender mainstreaming work and leads advocacy and capacity development activities for engaging researcher-scientists to integrate gender concerns in agriculture, aquatic and natural resources sectors. She also plays a significant role in conceptualizing and managing the Program on Enhancing Gender-Sensitive Sustainable Agriculture and Aquatic S&T Based Livelihood Enterprise in Los Baños. She also represents PCAARRD in the Task Force for the GREAT Women Economic Empowerment Program of the Philippine Commission on Women and the Department of Foreign Trade and Development of Canada. She has a Master's of Science in Development Communication, with PhD units in Environmental Science from University of the Philippines, Los Baños.

DR SHIRIN HEIDARI, DIRECTOR AND EDITOR-IN-CHIEF, REPRODUCTIVE HEALTH MATTERS, MEMBER OF COUNCIL OF EUROPEAN ASSOCIATION OF SCIENCE EDITORS AND CHAIR OF ITS GENDER POLICY COMMITTEE.

Shirin Heidari PHD, as chair of the EASE Gender policy Committee, has led the development of reporting guidelines (SAGER) that encourage authors to disaggregate data by sex and provide a gender analysis in scientific manuscripts. She has a doctorate degree in clinical virology from the Karolinska Institute and completed her post-doctoral training with The European Vaccine Effort against HIV/AIDS. Between 2007 and 2014, she oversaw the research promotion department of the International AIDS Society, and served the executive editor of its Journal (JIAS). Previously, she was a researcher at the Centre of Excellence for Infectious Medicine at the Karolinska Institute and Editor-in-Chief at the Noah's Ark Foundation, Stockholm. Dr Heidari has 15 years' experience in HIV and health research, policy and advocacy, and is author of several publications.

DR GRETCHEN KALONJI, SPECIALLY APPOINTED PROFESSOR, GLOBAL STATION ON FOOD, LAND AND WATER RESOURCES, HOKKAIDO UNIVERSITY, JAPAN; FORMER ASSISTANT DIRECTOR-GENERAL FOR NATURAL SCIENCES, UNESCO.

Gretchen Kalonji PhD is specially appointed professor at the Global Station on Food, Land and Water Resources at Hokkaido University. Formerly, she was Assistant Director-General for Natural Sciences at UNESCO (2010-2014) and has previously served in various leadership roles in the University of California system, including as Director of International Strategy Development for the 10 campus UC system, at the UC Office of the President, and as Director of Systemwide Research Development. She also served at the University of Washington as Kyocera Professor of Materials Science from 1990 to 2005. Prior to 1990 she was Assistant and then Associate Professor in the Department of Materials Science and Engineering at MIT.

ULRIKE ROEHR, BOARD MEMBER, GENDERCC - WOMEN FOR CLIMATE JUSTICE.

Ulrike Roehr is a civil engineer and social scientist by education. For more than 30 years she has been linking gender equality and environmental policy. She is the head of genanet, which supports gender mainstreaming in environmental policy. In recent years she has managed research and implementation projects focussing on Gender, Care and Green Economy. Her main focus is gender in energy and climate change policy. Currently she is involved in the project GenderNETCLIM, run by the University of Bremen. The project aims to contribute to gender equality in the context of climate mitigation and adaptation, and to highlight the relevance of gender research for innovative solutions in the field of climate change.

PROF SHOURASENI SEN ROY, ASSOCIATE PROFESSOR, DEPARTMENT OF GEOGRAPHY AND REGIONAL STUDIES, UNIVERSITY OF MIAMI, USA.

Shouraseni Sen Roy PhD's research focuses on expanding understanding about long term trends in climate processes in view of impending climate change, mainly over the Indian subcontinent. Her research methodology incorporates extensive spatial analysis using GIS methodologies. In addition, she has focused on working on specific climate related research questions in other regions of the world including the US, Myanmar, and South Africa. Her latest research examines the spatial variations of current and potential impacts of climate change on girls and women in the Global South.

PROF STEPHANIE LUSTER-TEASLEY, ASSOCIATE PROFESSOR, JOINT APPOINTMENT, DEPARTMENT OF CIVIL, ARCHITECTURAL AND ENVIRONMENTAL ENGINEERING AND DEPARTMENT OF CHEMICAL, BIOLOGICAL AND BIOENGINEERING, NORTH CAROLINA A&T STATE UNIVERSITY, USA.

Stephanie Luster-Teasley PhD joined NCA&T in 2004 after working in private industry as an environmental engineer. Her research specializations include environmental remediation, water sustainability, and engineering education. She has received patents for controlled release polymers able to deliver oxidants to treat and disinfect contaminated water. She has received funding from the Department of Education for developing a mentoring program for students in STEM disciplines, the National Science Foundation for developing and implementing case studies modules in science labs, and the Burroughs Wellcome Fund to implement science programmes for middle school girls. Other honors include the 2005 National Women of Color in Technology Educational Leadership Award, 2013 U. of North Carolina Teaching Excellence Award, and the 2014 American Society for Engineering Education (ASEE) Dupont Minorities in Engineering Award. She has a PhD in environmental engineering from Michigan State University, USA.

PROF NELLY STROMQUIST, PROFESSOR, INTERNATIONAL EDUCATION POLICY, DEPARTMENT OF COUNSELING, HIGHER EDUCATION, AND SPECIAL EDUCATION (CHSE), UNIVERSITY OF MARYLAND, USA.

Nelly Stromquist specializes in issues related to social change and gender, which she examines from the perspective of critical sociology. Her research interests focus on the dynamics of educational policies and practices, gender relations, and equity, particularly in Latin America. She is author of numerous articles and several books. She was a

Fulbright New Century Scholar during 2005-06 and the recipient of the Swedish Kerstin Hesselgren award 2012. She is former president of the Comparative and International Education Society. She holds a PhD in international development education from Stanford University and a master's in political science from the Monterey Institute of International Studies.

DR HALE ANN TUFAN, INTERNATIONAL PROGRAMS, COLLEGE OF AGRICULTURE AND LIFE SCIENCES, CORNELL UNIVERSITY, USA.

Hale Ann Tufan PhD, directs the NEXTGEN Cassava "Gender-Responsive Cassava Breeding" initiative, and co-coordinates the Gender-Responsive Researchers Equipped for Agricultural Transformation (GREAT) project, both funded by the Bill & Melinda Gates Foundation. For NEXTGEN, she works with women smallholder farmers in Uganda and Nigeria to better understand the gender based needs and constraints in these communities around cassava production, to work with NARS to mainstream and prioritize gender-specific end-user preferences into breeding programme design and implementation. For the GREAT project, she works with Makerere University to design and deliver a joint certificate programme in applied gender training for agricultural researchers to offer tailored skills development in gender-responsiveness along the design, implementation, evaluation, and communication of agricultural research. In 2010, she completed her PhD in molecular plant pathogen interactions at the John Innes Centre, UK, and was awarded a Women in Triticum award to recognize her contributions to wheat research and commitment to international agricultural development. She holds and Adjunct Faculty appointment with the Department of Plant Breeding and Genetics at Cornell University.

DR SUSHEELA VENKATARAMAN, FORMER PRINCIPAL DIRECTOR, OFFICE OF INFORMATION SYSTEMS AND TECHNOLOGY (OIST), ASIAN DEVELOPMENT BANK (ADB).

In her former role, Susheela Venkataraman PhD was responsible for planning, implementing, and maintaining ADB's communications and information technology platforms and systems. Dr Venkataraman has led teams in major consulting firms, working for governments and multi-national corporations in many countries and industries for about three decades. Her engagements focused on enterprise and community transformation. She holds a PhD from the Birla Institute of Technology and Science Pilani, with an MBA from the University of Delhi and a Master's degree in Physics from the Indian Institute of Technology, Delhi.

UN Sustainable Development Goals and Targets

Goal 1. End poverty in all its forms everywhere
1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day
1.2 By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions
1.3 Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable
1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance
1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters
1.a Ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programmes and policies to end poverty in all its dimensions
1.b Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender-sensitive development strategies, to support accelerated investment in poverty eradication actions

Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture
2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round
2.2 By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons
2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment
2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality
2.5 By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed
2.a Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries
2.b Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round
2.c Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility

Goal 3. Ensure healthy lives and promote well-being for all at all ages
3.1 By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births
3.2 By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births
3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases
3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through

prevention and treatment and promote mental health and well-being
3.5 Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol
3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents
3.7 By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes
3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all
3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination
3.a Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate
3.b Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all
3.c Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States
3.d Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks

Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes
4.2 By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education
4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university
4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship
4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations
4.6 By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy
4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development
4.a Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all
4.b By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries
4.c By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States

Goal 5. Achieve gender equality and empower all women and girls
5.1 End all forms of discrimination against all women and girls everywhere
5.2 Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation
5.3 Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation

5.4 Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate
5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life
5.6 Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences
5.a Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws
5.b Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women
5.c Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels

Goal 6. Ensure availability and sustainable management of water and sanitation for all
6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all
6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations
6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally
6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity
6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate
6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes
6.a By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies
6.b Support and strengthen the participation of local communities in improving water and sanitation management

Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all
7.1 By 2030, ensure universal access to affordable, reliable and modern energy services
7.2 By 2030, increase substantially the share of renewable energy in the global energy mix
7.3 By 2030, double the global rate of improvement in energy efficiency
7.a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology
7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support

Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
8.1 Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries
8.2 Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors
8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services
8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead

8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value
8.6 By 2020, substantially reduce the proportion of youth not in employment, education or training
8.7 Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms
8.8 Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment
8.9 By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products
8.10 Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all
8.a Increase Aid for Trade support for developing countries, in particular least developed countries, including through the Enhanced Integrated Framework for Trade-Related Technical Assistance to Least Developed Countries
8.b By 2020, develop and operationalize a global strategy for youth employment and implement the Global Jobs Pact of the International Labour Organization

Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all
9.2 Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries
9.3 Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets
9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities
9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending
9.a Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States
9.b Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities
9.c Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020

Goal 10. Reduce inequality within and among countries
10.1 By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average
10.2 By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status
10.3 Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard
10.4 Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality
10.5 Improve the regulation and monitoring of global financial markets and institutions and strengthen the implementation of such regulations
10.6 Ensure enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions in order to deliver more effective, credible, accountable and legitimate institutions
10.7 Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies
10.a Implement the principle of special and differential treatment for developing countries, in particular

least developed countries, in accordance with World Trade Organization agreements
10.b Encourage official development assistance and financial flows, including foreign direct investment, to States where the need is greatest, in particular least developed countries, African countries, small island developing States and landlocked developing countries, in accordance with their national plans and programmes
10.c By 2030, reduce to less than 3 per cent the transaction costs of migrant remittances and eliminate remittance corridors with costs higher than 5 per cent

Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable
11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums
11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons
11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries
11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage
11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations
11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management
11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities
11.a Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning
11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels
11.c Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials

Goal 12. Ensure sustainable consumption and production patterns
12.1 Implement the 10-year framework of programmes on sustainable consumption and production, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries
12.2 By 2030, achieve the sustainable management and efficient use of natural resources
12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses
12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment
12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse
12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle
12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities
12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature
12.a Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production
12.b Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products
12.c Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities

Goal 13. Take urgent action to combat climate change and its impacts*
13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries
13.2 Integrate climate change measures into national policies, strategies and planning
13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
13.a Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible
13.b Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities
* Acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change.

Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development
14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans
14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels
14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics
14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information
14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation
14.7 By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism
14.a Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries
14.b Provide access for small-scale artisanal fishers to marine resources and markets
14.c Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of The Future We Want

Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements
15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally
15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world
15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development
15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of

biodiversity and, by 2020, protect and prevent the extinction of threatened species
15.6 Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed
15.7 Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products
15.8 By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species
15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts
15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems
15.b Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation
15.c Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities

Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
16.1 Significantly reduce all forms of violence and related death rates everywhere
16.2 End abuse, exploitation, trafficking and all forms of violence against and torture of children
16.3 Promote the rule of law at the national and international levels and ensure equal access to justice for all
16.4 By 2030, significantly reduce illicit financial and arms flows, strengthen the recovery and return of stolen assets and combat all forms of organised crime
16.5 Substantially reduce corruption and bribery in all their forms
16.6 Develop effective, accountable and transparent institutions at all levels
16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels
16.8 Broaden and strengthen the participation of developing countries in the institutions of global governance
16.9 By 2030, provide legal identity for all, including birth registration
16.10 Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements
16.a Strengthen relevant national institutions, including through international cooperation, for building capacity at all levels, in particular in developing countries, to prevent violence and combat terrorism and crime
16.b Promote and enforce non-discriminatory laws and policies for sustainable development

Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development
Finance
17.1 Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection
17.2 Developed countries to implement fully their official development assistance commitments, including the commitment by many developed countries to achieve the target of 0.7 per cent of ODA/GNI to developing countries and 0.15 to 0.20 per cent of ODA/GNI to least developed countries; ODA providers are encouraged to consider setting a target to provide at least 0.20 per cent of ODA/GNI to least developed countries
17.3 Mobilize additional financial resources for developing countries from multiple sources
17.4 Assist developing countries in attaining long-term debt sustainability through coordinated policies aimed at fostering debt financing, debt relief and debt restructuring, as appropriate, and address the external debt of highly indebted poor countries to reduce debt distress
17.5 Adopt and implement investment promotion regimes for least developed countries
Technology
17.6 Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism
17.7 Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed
17.8 Fully operationalize the technology bank and science, technology and innovation capacity-

building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology

Capacity-building

17.9 Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the sustainable development goals, including through North-South, South-South and triangular cooperation

Trade

17.10 Promote a universal, rules-based, open, non-discriminatory and equitable multilateral trading system under the World Trade Organization, including through the conclusion of negotiations under its Doha Development Agenda

17.11 Significantly increase the exports of developing countries, in particular with a view to doubling the least developed countries' share of global exports by 2020

17.12 Realize timely implementation of duty-free and quota-free market access on a lasting basis for all least developed countries, consistent with World Trade Organization decisions, including by ensuring that preferential rules of origin applicable to imports from least developed countries are transparent and simple, and contribute to facilitating market access

Systemic issues

Policy and institutional coherence

17.13 Enhance global macroeconomic stability, including through policy coordination and policy coherence

17.14 Enhance policy coherence for sustainable development

17.15 Respect each country's policy space and leadership to establish and implement policies for poverty eradication and sustainable development

Multi-stakeholder partnerships

17.16 Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the sustainable development goals in all countries, in particular developing countries

17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships

Data, monitoring and accountability

17.18 By 2020, enhance capacity-building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts

17.19 By 2030, build on existing initiatives to develop measurements of progress on sustainable development that complement gross domestic product, and support statistical capacity-building in developing countries

The Seoul Gender Summit Declaration and Call for Actions

to Advance Gendered Research, Innovation and Socio-economic Development

Adopted at the Gender Summit 6 – Asia Pacific

This declaration is directed at research and innovation communities of experts and practitioners in STEMM fields. In its current format, the text does not represent the views of any government in the region.

The historical inequalities between women and men in research participation and in science knowledge create barriers to achieving the full socio-economic benefits of science-led innovation. With women in a minority and science with more evidence for men than for women, outcomes and opportunities are biased to advantage the needs of men and overlook the needs of women.

But now, extensive evidence shows that gender bias in science knowledge making can negatively impact on the quality of scientific research for both women and men. Whilst we continue building systematic understanding of the underlying causes, we have enough solid knowledge to generate the benefits of gender sensitive and responsive research.

The scientists, gender scholars and policy makers attending the Gender Summit 6 - Asia Pacific 2015 (GS6 – AP) discussed the full complexity and diversity of gender issues in research and innovation in the region. These discussions identified numerous scientific and socio-economic benefits of adopting gendered approaches to research and innovation.

Science and policy leaders in Europe have already taken such actions as a strategy for the EU Horizon 2020 programme, as well as at national level. We call on science and policy leaders in Asia Pacific to promote gender aware and sensitive research and innovation to improve the quality of science and enhance socio-economic development in the region.

1. COLLABORATE by creating national and regional alliances to enable continued dialogue on common gender problems in science, such as criteria of scientific excellence, which are of concern to policy makers, scientists, gender research experts, and stakeholders in science endeavours, including industry and citizens.

2. ASK, to ensure quality of research process, "whether, and in what sense, biological sex and gender differences are relevant in the objectives and methodology of the project". Evidence demonstrates that the assertion that science is gender neutral is not the case. For instance, when gender is not taken into account, research often results in different health and safety outcomes for women and men.

3. ESTABLISH research and innovation protocols, standards, regulatory regimes, as well as binding recommendations in areas where evidence already demonstrates the need to validate results to ensure safety and efficacy for both women and men. Examples include diagnostic biomarkers, stem cell medicine and assistive devices.

4. AGREE on accepted terminology, schema and models for representing and reporting the role and effects of biological sex and gender in scientific contexts, for instance when to use the term 'sex' and when to use 'gender' when explaining study results. There is considerable confusion in the research literature regarding terminology and this affects the potential for conducting systematic reviews and meta-analytic studies.

5. CREATE fresh opportunities for developing new markets for science knowledge by advancing gendered innovation ecosystems. Such systems can be constructed by exploiting connections between: 1) gender sensitive research; 2) the different interests and product needs of women and men; and 3) making better use of the available female scientific and creative capital. These may involve, for instance, speech recognition products or devices promoting healthy aging.

6. INVOLVE more women in innovation value chains - in idea creation, development, and implementation. Evidence shows that: 1) gender balance in a team improves its collective intelligence; 2) in 'crowd sourcing' innovation, women outside the formal innovation circles contribute better solutions than others; and 3) when experiments fail, women and men adopt different problems solving strategies.

7. IDENTIFY statistics, indicators, and methods for collecting sex-disaggregated data to enable better understanding of the current situation regarding gender equality in science at institutional, national, and regional level. Key measures include: 1) gender balance in participation in science education, in research and innovation, and in science-related academic, industry and related employment; 2) institutional gender equality polices; 3) progression stages in the career pathways of women and men; and 4) applications and success rates in access to research funding.

8. EDUCATE, starting with schools and including university students, researchers, mangers of research and science communicators about the importance of including gender perspectives in research and innovation. Common sources of resistance to change include implicit and explicit gender bias, and cultural gender stereotypes. Children as young as 9 months can distinguish gender roles and by the age of 2 years have constructed their own gender stereotypes, which reflect those of the society they live in.

9. JUDGE the individual and scientific quality, and potential, of women and men using clear and fair assessment criteria, monitoring outcomes for signs of gender bias in order to improve the selection process. Evidence shows that bias in the evaluation of merit is common and favours the success of men: in recruitment to research teams and jobs; in career promotion; and in the award of research grants.

10. CREATE conditions for the gendered research and innovation principles to be implemented in practice through funding policies and programmes, encouraging cross-disciplinary and cross-sector collaboration, for example between universities, industry and Civil Society organisations.

TARGET ACTORS & ACTIONS FOR PROGRESS IN THE SHORT-MEDIUM TERM*

General Recommendation

1. Do not assume that the science knowledge and research methods and practices in their current use are free from gender bias.

For funding agencies

2. Promote the use of the methods for sex-gender analysis in research and innovation as a criterion of scientific excellence
3. Be explicit how sex-gender analysis should be integrated into study design and how proposals should incorporate the gender-dimension within knowledge making

4. Take measures to promote gender balance in decision-making of grant review panels and raise awareness of the effects of gender bias in peer-review panels and assessment processes.

5. Monitor the grant-award process and how decisions are made to ensure that female and male applicants have the same opportunities to succeed, and that there are no hidden reasons for gender differences in success rates.

6. Require that when grants are used to create research teams, the process gives due attention to achieving appropriate balance of women and men, reflecting the proportion of female and male researchers in the field or in the organisation.

For institutions

7. Be explicit about the processes and criteria used to assess individual merit when recruiting, promoting, and rewarding staff and take measures to prevent implicit gender bias from influencing decisions.
8. Promote gender-balancing efforts in key decision-making committees.

9. Ensure that employment and working conditions offer the same opportunities for personal and professional development to women and to men.

10. When recruiting new staff, ensure that there is appropriate gender balance in the candidate pool.

11. Integrate methods for sex and gender analysis in research and innovation in researcher training programmes.

12. Include gender-related issues in the evaluation of organisational competence.

13. Provide training in methods in sex and gender analysis should be integrated into all subjects across all basic and applied science curricula.

For publishers

14. Promote fuller participation of women on journal editorial boards.

15. Encourage authorship practices that provide accurate information about the specific contributions of each author and make these and other bibliometric information available disaggregated by sex.

16. Promote editorial policies that ask for clear explanation whether and what kind sex-gender analysis was included in study design and research process.

For researchers

17. When involved in committees making decisions about funding, hiring, tenure, or promotion, ensure that the process and outcomes are not influenced by explicit or implicit gender bias.
18. Challenge omissions of sex-gender analysis in curricula, research methodologies, and in research communications where there is a clear element of human benefit.

For regulatory agencies

19. Revise research and innovation regulations to incorporate the gender dimension (as well as ethnicity, age, and other relevant factors) in the recommended procedures.

For industry

20. Promote open and user led innovation and more fully engage women in the innovation process as a source of new ideas and solutions.
21. Explore opportunities to create innovation ecosystems that build on gender-informed science knowledge and the different needs of women and men.

** These recommendations are based on evidence and examples of good practice implemented in other regions. Details can be requested by sending an email to team@gender-summit.com*

MANAGING EDITORS' ORGANISATIONS

The Gender Summits were established in 2011 under the overarching theme of "Quality Research and Innovation through Equality" as part of the genSET project, coordinated by Portia Ltd. They are creating regional and global multi-stakeholder communities committed to enhancing scientific excellence by: removing gender bias from science knowledge making; advancing gender equality in science structures and practices; and applying understanding of gender issues to advance more sustainable and effective research and innovation.
Their objectives are to: 1) Develop national, regional and global communities as agents of change; 2) Develop evidence-based consensus on the actions needed and the ways of implementing them in specific national or regional contexts; 3) Demonstrate positive effects of gender balance and gender diversity in research and innovation process; 4) Demonstrate how integrating gender dimension in research and innovation content improves quality of results and outcomes, and to 5) promote gender aware solutions to societal problems, e.g. urban quality; human adaptation to climate change; food security, and transport and mobility.

In 2011, **The Korea Center for Women in Science, Engineering and Technology (WISET)** was commissioned by the Korean Ministry of Science, Education and Technology and the Korea Advanced Institute of Women in SET (Science Engineering and Technology) to create conditions under which women can play a central role in science and technology sectors. WISET aims to establish a total support system for Women Scientists and Engineers by creating a sustainable eco-system through domestic and foreign integration, cooperation, exchange, and solidarity; by reinforcing the status as a total support center toward fostering and utilizing women scientists and engineers; and by building a global network hub for women scientists and engineers. WISET carries out five core projects: 1) Supporting an innovation system in science and engineering and policy study on women scientists and engineers; 2) Developing support measures through analysis on legislative operational output, policy outcomes, and related domestic and international policy studies; 3) Nurturing a self-sustainable ecosystem by introducing and systemizing a lifecycle tailored mentoring system; 4) Establishing an interdisciplinary cross-matched network among different generations to foster women in SET, and 5) Fostering and systemizing the utilization of a core workforce of women scientists and engineers.

Portia Ltd designs and implements effective, evidence-based strategies for advancing quality of research and innovation through gender. Our work covers gender equality issues in STEM and the gender dimension in the content, process and impact of science (STEM) endeavours. We work through national and international partnerships, involving the scientific community, industry, policy makers and gender research scholars, to enhance science knowledge making; improve institutional practices and process; promote human capital; and ensure compliance with regulation. We believe firmly in putting the views and needs of women at the centre of the gender equality debate in science, and as a key to achieving sustainable economic growth and promoting Europe's role as a global R&D leader. Portia co-founded the Gender Summits in 2011 as part of a project we co-ordinated, genSET.

Letter to the UN Secretary General

17 September 2015
His Excellency Mr. Ban Ki-moon
United Nations Secretary-General
United Nations Headquarters
New York, NY 10017

Dear Mr. Secretary-General,

In advance of the United Nations Sustainable Development Summit for the adoption of the post-2015 development agenda, we urge that gender mainstreaming based on scientific evidence should underpin implementation of the new Sustainable Development Goals (SDGs). We note the inclusion of Goal 5 to "Achieve gender equality and empower all women and girls" but urge that gender mainstreaming must also be a fundamental consideration in working toward all 17 proposed goals.

Gender inequality issues created through biological and socio-cultural differences between women and men are intrinsically intertwined with poverty, hunger, health and wellbeing, maternal death, climate change adaptation, environment, and peaceful societies. We must ask, therefore, when planning interventions to achieve the SDGs: Will these interventions work equally for women? Will they work equally for men? We must use the best scientific evidence when formulating solutions to ensure this.

These are the conclusions of the Gender Summit 6 – Asia Pacific, which took place in Seoul on 26-28 August 2015. Each summit brings together scientists, gender scholars and policy makers to examine new scientific evidence showing when, why and how sex and gender characteristics impact on research outcomes for women and men, and through consensus identify where improvements and needed and what actions will deliver these improvements. In Seoul, 600 scientists, gender scholars and policy makers participated in the summit, which identified 10 specific gender equality principles for socioeconomic advancement through research and innovation. These principles form *The Seoul Declaration and Call for Actions to Advance Gendered Research, Innovation and Socio-economic Development in the Asia Pacific Region*, which we attach to this letter. We urge you to consider this Declaration when formulating the basis for establishing an evidence-based policy for mainstreaming gender into the post-2015 development agenda. More women die because of dirty water than AIDS, more women than men live in poverty – these are but two examples why gender mainstreaming will enhance the success of actions to address the Sustainable Development Goals.

For too long, the importance of the differences between the needs of women and men was poorly recognized in research, innovation and development causing unwitting gender bias in how problems are understood and solutions decided upon. Now we have the evidence, and can do better.

We send this letter to you as Co-Chairs of the Gender Summit 6 – Asia Pacific on behalf, and at the request of the participants and signatories of the Seoul Gender Summit Declaration.

Yours Sincerely,

Professor Heisook Lee
President, Korea Center for Women in Science, Engineering and Technology

Dr Elizabeth Pollitzer
Director, Portia (Founder of the Gender Summit Platform

비매품
93300
9 788997 520428
ISBN 978-89-97520-42-8