Chapter 13
Secured WEF and Gender: Better Data for Equality and Resilience

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Better informed WEF system analyses improve security, equality and resilience.

Abstract Under increasing climate uncertainties and extremes, threats to water, energy, and food (WEF) security affect vulnerable social groups in disproportionate ways. In the Pacific region, women and girls continue to be disadvantaged in access to water, sanitation, and hygiene services; in their decision-making power over natural resources management, and in developing their full potential for economic autonomy. Gender disparities are usually based on structural inequalities rooted in cultural norms, social stratification, and relations of power. Sector analyses often do not adequately reflect how the WEF security nexus and gender interrelate. One main factor conditioning ill-informed sector analyses is the lack of sex-disaggregated data. The chapter briefly discusses availability of gender disaggregated WEF-related data in the Pacific region with a focus on the Pacific Small Island Developing States. It then proposes an integrative gender methodology for the analysis of natural resources management and agricultural development programmes for policy and project development. Useful methodological tools for disaggregating data by gender are further discussed.

Keywords Water security · Gender · Equality · Sex-disaggregated data · Gender-analytical framework · Pacific SIDS

13.1 Introduction

Increasing climate variability and increasing social stratification present challenges to sustaining livelihoods and community resilience in the Pacific Region. One of the

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results is the growing difficulty for large segments of the Pacific population to secure access to water and sanitation—being denied, in effect, a human right (UN 2010, 2016). Likewise, energy poverty, particularly in rural areas, compromises efforts to make livelihoods more reliable and sustainable. Access to affordable and nutritious food poses similar challenges, especially in urban and peri-urban environments. Combined, threats to safe, reliable, affordable, and equitable access to water, energy, and food (WEF) affect the most vulnerable in disproportionate ways. Further, in Pacific communities, adaptive strategies and resilience are compromised by climate extremes and frequent natural disasters.

Today, inclusion and equality issues related to water, in particular those of gender, rank highly in international policy frameworks and agreements. Although the rights and roles of women in water and sanitation services have received increasing attention in country policy and planning, in many countries, severe inequalities in water security persist (UNESCO WWAP 2021). Women and girls continue to be disadvantaged in access to water, sanitation and hygiene (WASH) services while simultaneously bearing the household burden of providing daily water needs. Moreover, gaps in the participation and leadership of women in water jobs and in water resources management are significant (World Bank Group 2019).

Environmental and water policies largely overlook the unpaid care and domestic work responsibilities of women, exacerbating their difficulties for equal and meaningful participation in and administration of the water sector. The critical part women play in the productive uses of water, including irrigation, related micro-enterprises, and employment in water-related jobs is still lacking adequate attention in practice (Das 2017).

Social differences and inequalities, including those related to gender, are substantial in the Pacific region (WFP and SPC 2018). Many women are disproportionally disadvantaged in terms of access to, use and control of water and other resources for food production and for livelihoods (CARE 2020). Disadvantages and constraints include that women remain underrepresented in political spheres and a large proportion of women are subject to gender-based violence (UN Women 2014; ADB 2016). Evidence exists about the gendered and social dimensions of water insecurity (UNESCO WWAP 2021), food insecurity (Broussard 2019), and energy poverty (UN-Women 2017) which are often rooted in structural inequalities including differences in education, income and socio-economic status determined by social norms, social stratification, and relations of power (Broussard 2019; Imburgia et al. 2021). Accordingly, WEF security is a factor not only of gender but also of class, age, ethnicity, type of access, and locality among others. These dimensions compound other conditions of vulnerability, notably health conditions and disability (Mactaggart et al. 2021).

Root causes of gender inequalities and different vulnerabilities are not always well understood due to incomplete or ill-informed sector analyses (Lefore et al. 2017; Imburgia 2019). Sectoral analyses often do not adequately reflect the intersections between the WEF security nexus and gender. This results in a poor understanding of how water, energy, and food security are gendered. The direct consequence is a lack of

effective gender inclusion in policy and implementation with direct impact on investments for improvements in WEF. The main factor conditioning ill-informed sector analyses is the lack of sex-disaggregated data. This problem is further compounded by disparities in data availability in different Pacific countries (ADB 2016; CARE 2020; Michalena et al. 2020).

Water-energy-food security and gender inequalities are complex and multidimensional issues, calling for an integrative analysis approach. *How could gender disaggregated data contribute to the understanding of the interrelations between climate crisis, deficient access to water, sanitation, and energy, and secure livelihoods?*

The following sections will briefly discuss availability of gender disaggregated WEF-related data in the Asia–Pacific region with a focus on the Pacific Small Islands Developing States (SIDS). It will then propose an integrative gender methodology for the analysis of natural resources management and agricultural development programmes for policy and project development. Useful methodological tools for disaggregating data by gender will be discussed.

13.2 Gender and Sex-Disaggregated WEF Data Availability in the Pacific SIDS Sub-Region[1]

The 2014 SIDS Accelerated Modality of Action (SAMOA) Pathway recognized the transformative and multiplier effect of gender equality and realization of human rights for women and girls on sustainable development, economic growth, and adaptation to climate change in the Pacific SIDS (UN 2014). Gender equality and a perspective on the empowerment of women have been guiding major country-donor activity in the region for the last decade (USAID, n.d.; World Bank 2012; DFAT 2016; MFAT 2021).

The SAMOA Pathway included an explicit commitment to "improve the collection, analysis, dissemination and use of gender statistics and data disaggregated by sex, age, disability and other relevant variables in a systemic and coordinated manner at the national level, through appropriate financial and technical support and capacity-building, while recognizing the need for international cooperation in this regard" (UN 2014). In recent years, significant progress has been reported from the Pacific region in conducting population and housing censuses and collecting household income and expenditure data (ADB 2016). On the other hand, few countries in the region have advanced the monitoring and evaluation of gender issues through statistics, due to weak technical and financial capabilities (ADB 2016). Some of the Pacific SIDS count on national statistical systems available online with statistics provided, for example, by the Parliament (Fiji), by the Ministry of Finance and Economic Development (Kiribati), or by the National Statistics Department (Niue and Tonga). These sources provide mostly economic and demographic statistics.

[1] Assistance in the literature review provided by Arianna Fusi, UNESCO WWAP Junior Consultant.

Gender data and the monitoring needs are to a large extent being bridged by global and regional donor agencies, and development agencies,[2] which play a critically important role in assessing and generating disaggregated data and evidence-based information for decision making (ADB 2016; UNESCAP 2021). Efforts are also addressing the necessity of better data quality and accessibility by supporting statistical innovation and capacity development.[3]

The amount and quality of information available in each Pacific Island Country varies. The larger countries, by population size, tend to have relatively comprehensive information and datasets, and are also the ones receiving more attention in studies and development documents (ADB 2016). In general, gender disaggregated data availability in the Pacific SIDS is quite variable and, in many cases, updates are needed. Countries with the greatest need to update their gender disaggregated data include Nauru, New Caledonia, Niue, Palau, Tokelau, and Tuvalu. Other countries, such as Cook Islands, Federated States of Micronesia, Marshall Islands,[4] Kiribati, Samoa, Solomon Islands, Timor-Leste, Tonga, and Vanuatu have more recent data; however, they also rely significantly on outdated resources (2010–2015). Fiji and Papua New Guinea are the countries with the most recent data (2018 and newer).

Agriculture and fisheries are key development sectors providing major sources of livelihoods and food security in the Pacific SIDS. In 2020, 61% of the population was reported to be rural; on average, agriculture, forestry, and fishing represent close to 13% of the GDP of the Pacific SIDS that record this information, with some countries including Kiribati, Solomon Islands, and Vanuatu exceeding 25% of the GDP (World Bank, n.d.). In countries with a large representation of rural population and agriculture as the most important livelihood, disaggregated land tenure data provide an important proxy for gender equality. Revision of relevant databases and statistical resources[5] indicated the following overall results: Cook Islands, Fiji, Palau, Papua New Guinea, Samoa, Solomon Islands, Timor-Leste, Tonga, and Vanuatu collect sex-disaggregated data on land tenure. Fiji and Papua New Guinea rank first in data availability regarding access to land, landownership, and land rights. Solomon Islands and Tonga mostly rely on general, non-disaggregated information on land tenure. The Federated States of Micronesia, Kiribati, Marshall Islands, Nauru,

[2] Agencies and organizations with the largest involvement in collecting data are UN Women, FAO, the Asian Development Bank (ADB), and the World Bank. Water related data, in particular WASH, are largely collected by the JMP, World Health Organization (WHO)-UNICEF, CARE Australia, and the Pacific Community.

[3] The World Bank project "Statistical Innovation and Capacity Building in the Pacific Islands" implemented by the Pacific Community—Statistics for Development Division (SPC-SDD) provides an example of such efforts: https://projects.worldbank.org/en/projects-operations/project-detail/P168122.

[4] The ADB project "Promoting Evidence-Based Policy Making for Gender Equity in the Pacific (Phase II)" presents a compilation of key statistics disaggregated by gender in Marshall Islands. https://www.adb.org/publications/marshall-islands-gender-equality-overview.

[5] Databases and statistical resources included: Parliament of the Republic of Fiji, http://www.parliament.gov.fj/gender-data-hub/; Databank of The World Bank, https://databank.worldbank.org/home; Asia and the Pacific UN Women databases, https://asiapacific.unwomen.org/en/countries; PNG land area data, https://www.land-links.org/country-profile/papua-new-guinea/.

New Caledonia, Niue, Palau, Tokelau, and Tuvalu lack gender-disaggregated data on landownership.

In the agriculture and fisheries sectors, gender disaggregated data on employment are some of the most available in the region, although with high variability among countries. These data are mostly available for Melanesia, Samoa, Tonga, and Timor-Leste (FAO, n.d.; World Bank, n.d.). However, comparability is difficult as some countries have more fine-grained, specific data compared to the others, and not all countries use standardized parameters. Data on employment and roles of women in fisheries are available for Cook Islands, Federal State of Melanesia, Fiji, Papua New Guinea, Samoa, Solomon Islands, Timor-Leste, and Tuvalu. To a large extent, the information available on participation of women in fisheries belongs to country case studies and qualitative studies.[6]

For water and sanitation data, all countries rely only on non-disaggregated data by household; some countries also include WASH data for schools and health facilities (JMP, n.d.). Countries with higher availability of sex-disaggregated water and/or sanitation data include Fiji (data on access to water and WASH), Kiribati (access to drinking water and WASH), Marshall Islands (WASH for children and access to drinking water), Papua New Guinea (gender and water, irrigation and water collection), Solomon Islands (data on water deprivation and sanitation deprivation), Timor-Leste (access to water and sanitation), Tonga (access to drinking water, time spent collecting water, sanitation), and Vanuatu (access to WASH). In the energy sector, data on access to electricity are usually collected at the household level, therefore gender differences in energy security are usually difficult to identify. Cooperation development in the energy sector is including gender considerations and the overall goal of accelerating progress towards gender equality in the sector (UNWomen 2017; ADB 2021), although sex-disaggregated data collection to inform energy development investments is yet to be collected.

13.3 The Need for Integrative Gender Analyses and Sex-Disaggregated Water Data—Available Methodological Tools

The 2030 Agenda for Sustainable Development with its 17 Sustainable Development Goals (SDG) provided a roadmap for countries and asked for their commitments to overcoming poverty (SDG 1) and food insecurity (SDG 2) by investing in rural areas, supporting agricultural livelihoods, including fisheries (UN 2019), promoting sustainable and inclusive access to energy (SDG 7), and promoting strategies to cope and adapt to climate variabilities and change (SDG 13) while protecting marine (SDG 14) and land (SDG 15) resources. Relevant to all SDGs is the call for secured

[6] Contributions can be found in the Women in Fisheries Bulleting from the Pacific Community Coastal Fisheries Programme, available at https://coastfish.spc.int/en/publications/bulletins/women-in-fisheries/510.

water and sanitation access and sustainable water resources management (SDG 6) with special considerations to the role of women and girls in securing water for their households and families and overcoming gender inequalities (SDG 5). As a necessary input for integrative analyses, relevant data must be disaggregated by gender as called for in target 17.18 of SDG 17.

Recent reports assessing the achievements of the SDGs in the Pacific Region indicate slow progress toward the achievement of the critical SDGs for the Small Island Development States,[7] including SDGs 2, 5, 6, 7, 12, 13, 14, 15, and 17 (ADB/UN Women 2018; UNESCAP 2021). There is a clear and present need to re-think development programmes and reinforce holistic, integrative approaches. Secured water, energy, and food, and gender equality are intrinsically linked, hence the related SDGs should be analysed together to more realistically identify driving factors and root causes for vulnerabilities and inequalities. The specific linkages between water, energy, food, and gender equality need to more explicitly be recognized and addressed in implementation actions for SDGs.

Better informed, more effective planning, and implementation require methodological approaches able to capture the intersections between the social, technical, and environmental dimensions interplaying in water, energy, and food. Furthermore, accurate analytical methods and tools need gender disaggregated data to understand women's and men's (and other groups) different access and use of resources, diverse roles and responsibilities, and the social and cultural constructions they are based upon. Accurate gender disaggregated data are also needed to reduce and avoid misconceptions of needs and priorities of different groups, especially women. When these analyses include disaggregated data not only by gender but also by other dimensions of differences, whether age, locality, socio-economic, and vulnerability conditions, they become useful tools for designing programs to promote resilience and sustainable livelihoods (Thompson-Hall et al. 2016).

Although disaggregated data are still sparse in the Pacific Region, it was possible to identify that in Solomon Islands, Marshall Islands, and Tonga, 60% of the administrative and clerical staff officers in government fisheries departments are women; however, only 18% of women work as researchers or managers roles in those offices (Michalena et al. 2020). Proper analyses must identify and describe differences within the islands, which are characterized by very high geographical, environmental, and socio-cultural diversity. Moreover, these analyses should note traditional knowledge and gender roles in daily life and also in decision making, which determine to a large extent those socio-cultural differences. Unless more complete and disaggregated data are incorporated in policy, planning, and implementation, advances in gender equality and inclusivity will continue to be unacceptably slow and insufficient.

[7] According to UNDESA, related SDGs for SIDS include SDG 2, 5, 6, 7, 12, 13, 14, 15 and Available at: https://sdgs.un.org/goals.

13.3.1 An Integrative Methodological Framework for WEF and Gender

To address the need for comprehensive and better-informed analyses, the use of an integrative gender methodological framework to examine WEF systems is proposed that combines the technical dimensions of WEF systems and management, and the social relations dimension of WEF governance (see Imburgia 2019 for a full description).This approach has a focus on the results and practices determined by social behaviour and interactions, notably, gender access, gender roles and relations, and the effect on livelihood strategies.

This framework concentrates on the intersections and nuanced relationships of the technical and social relations aspects of natural resource management (NRM) (of which WEF systems are a part) in three key variables: access, participation, and decision making. This framework was motivated by the analytical approach of the feminist political ecology (FPE), which aims at capturing the social differences and inequalities present in ecological, economic, and development processes due to social relations of power (Rocheleau et al. 1996; Elmhirst 2015). In order to introduce robustness to the "ecology" aspect of the FPE framework, the methodological approach was combined with the conceptualization of NRM system managed collectively as a social-ecological system (SES) of diverse complexity (Anderies et al. 2004), including their interactions and outcomes (McGinnis and Ostrom 2014). For the further construction of this framework, appropriate elements of the social relations framework (Kabeer 1994) were incorporated to more accurately examine gender social interactions that condition uneven access to resources, imbalance in power, and decision making.

By combining selected elements of the three theoretical ideas, FPE, SES, and social relations frameworks, the integrative gender-analytical approach allows examining the nuanced dynamics of social relations that drive the processes and outcomes of NRM governance (see Fig. 13.1).

By applying the methodological framework, four outcomes (see bottom of Fig. 13.1) synthesise the core elements of the functioning of NRM, including WEF systems: (1) security of access to the resources (be these water, energy, food); (2) security of livelihood strategies; (3) autonomy for decision-making and for financial sustenance, and (4) adaptive strategies to environmental, climate, economic, policy, and other changes. The analysis of these outcomes provides key entry points to explain why and how gender differences shape access, use, and participation in resources governance. These outcomes are useful to organize and analyze the empirical evidence. The analysis of these interrelated outcomes allows for a detailed account of the processes of gender differences and inequalities in the sector under study. Importantly, this methodological approach helps to identify entry points for policy and planning implications and highlights critical areas where disregarding gender issues will increase the likelihood of WEF systems failure.

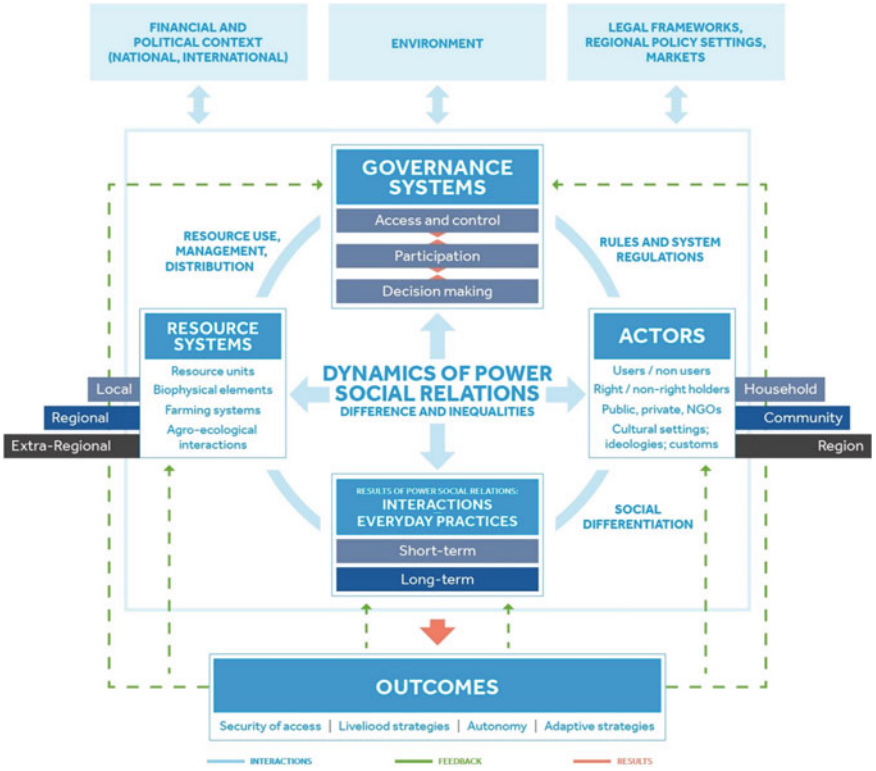

Fig. 13.1 The integrative gender-analytical approach to natural resource governance (*Source* Imburgia 2019)

The fisheries sector of the Pacific SIDS is suitable to illustrate the use of the framework. This sector integrates complex **resource systems** related to water, biodiversity, food security, and livelihoods, adaptation to climate change and governance. The largest portion of the global workforce in fisheries and aquaculture (85%) is located in Asia; Oceania accounts for 1% of this global workforce (FAO 2020). In the Pacific SIDS, fisheries have a critically important role as a main source of food, employment, and income generation (Charlton et al. 2016). Women involved in the marine resource are **key actors** in these systems. Their involvement influences management results shaped by their knowledge and traditional expertise, but also by cultural norms and beliefs that influence their role in the sector value chain. For example, traditional beliefs in the region hold that fisheries are a male domain (Harper et al. 2013; Michalena et al. 2020) with men mostly involved in the commercial fisheries and in deep-sea fishing (Makhoul 2021), and women mostly filling roles in subsistence fisheries (Harper et al. 2013). It has been observed that women harvesting and selling marine products such as mussels and seaweed close to shores

are not considered fishers (Thomas et al. 2021), and in many cases the resource is under male control (Michalena et al. 2020).

On the other hand, social changes evolving from **every day practices** are increasingly evident. Examples are fish farming in Fiji (Michalena et al. 2020) and the tuna fishing in Solomon Islands (Barclay et al. 2020), in which women are increasing their participation at commercial and management levels. This appears to result in a higher level of female agency and empowerment. The increasing presence of professional women in the **governance** of the Pacific marine economic sector, including governmental agencies for the marine and fishing sector, and as retailers of fishery products in cities improves the visibility of the contribution of women to the sector. Still, the support to women in fishing is mostly focused on improving their technical skills, processing, and marketing; efforts are less oriented to support the managerial abilities of women (Michalena et al. 2020). Male leadership continues to dominate the marine and environmental management.

Legal frameworks for property ownership determine **security of access** for women and men. Even though the Kiribati Constitution determines that women have the same rights as men, cultural practices result in women not being represented in decision making for the nearshore, the main area of fishing for Kiribati women; these areas are under the control of the Island Councils, instances in which women have only 3% of the seats (Gotschall 2020). Similarly, the traditional systems of village council in Samoa—mostly led by men-, influences the communal management of fisheries and marine resources (SPC 2018b). Studies in Solomon Islands indicate that even in matrilineal descent systems, customary traditions of decision making over land and marine areas continues to be based on male leadership (SPC 2018a; Lawless et al. 2019). The underrepresentation of women in community decision-making processes and coastal management activities result in the vicious cycle of maintaining women in poverty and increases the gender gap in employment, and worsen issues such as domestic violence (Gotschall 2020).

Security of livelihoods, therefore, is also linked to the differentiated roles of women and men in production and management of resource systems. When analyzing gender roles, traditional division of labour in male and female roles is found; reports tend to identify men occupying roles associated with fishing, heavy physical labour, and positions with authority and high remuneration. Women are more associated with fish and sea products processing, informal cooking, retailing in domestic markets, and business administration. They are poorly represented in positions of high remuneration and authority. Women are highly involved in subsistence catch activities in Melanesia (80%), while only about a quarter of these activities are performed by women in Micronesia and Polynesia (Harper et al. 2013). Women tend to have only basic fishing equipment and mostly lack motorized vessels, which limits their fishing income options (Makhoul 2021; Barclay et al. 2020). Therefore, social relations, in particular those of gender also determine the **degree of autonomy**, thus the capacity to effectively exercise agency that women can have to make their own financial, personal, and managerial decisions. In the Solomon Islands, it was found that women tend to have fewer livelihood alternatives to opt than men; likewise, women

were found having less involvement in decisions related to communal resources and social issues (Lawless et al. 2019).

As livelihoods strategies across the Pacific SIDS are highly linked to agriculture and fishing, **adaptive strategies** to changing conditions due to climate variability, unpredictable weather patterns, and climate extremes are critically important. Food systems and water and energy infrastructure are prone to destruction; increasing urbanization also determines changing livelihoods (ADB 2020). Women, who are more involved in informal employment and low value activities as described above, may face more challenges to secure their livelihoods.

13.3.2 The Need of Gender Disaggregated Data for Monitoring Impact and Progress in Equality

These examples demonstrate the critical need to collect and analyze gender disaggregated data for more realistic analyses. The analytical approach proposed here allows diverse methods for the collection and use of sex-disaggregated data in order to obtain robust empirical evidence for decision making. The use of disaggregated data by gender allows for the important task of assessing impact of policy and projects but also of measuring progress in gender equality commitments. The results of such analyses are useful to inform development investment decisions. It is important to understand whether, for example, water services are reaching more people of different groups, or improvements in management of farming or fishing resources are being equitably distributed; who is able to afford water services and energy, and who is not. These data, when informing programs, contribute to close the persistent gender gaps, to better address water, energy, and food needs, leading to fairer and more resilient communities.

With this purpose, UNESCO WWAP has developed a methodology, indicators, and tools for the collection and analysis of sex-disaggregated data to tackle the information gap on water and gender (Miletto et al. 2019). The 2019 edition of this set of tools includes 105 gender-responsive indicators on ten priority topics aligned with the SDGs and aims to help decision makers adopt data-driven water policies that can transform gender inequalities across development dimensions including governance, climate, migration, agricultural production, education, and health. Through the application of the WWAP Toolkit it was possible to identify that women acting as secretaries of water users organizations in Cundinamarca, Colombia, were the ones making water managerial decisions, despite those organizations being presided by men.[8] In an extensive study of the participation of women in academia, science, and management of water resources in Argentina, the application of the WWAP methodology and indicators allowed to set discussions about the need to include

[8] Results report on the research study "Participation of women in water management in rural areas: case study in Cundinamarca, Colombia", conducted by the Institute of Environment of Florida University with support of UNESCO-IHP and UNESCO WWAP, 2021 (unpublished).

disaggregated water data at the ministerial level and promoted the mainstreaming of a gender perspective into water infrastructure and service programs (Imburgia et al. 2020). Application of the toolkit to water, energy, and food sectors in the Pacific would provide much needed standardized data across the region.

The WWAP Toolkit has gained international recognition in water and development, having been endorsed by a 2018 resolution of the Intergovernmental Council of UNESCO IHP and a renewed resolution in 2021.[9] The flexibility in adaptation of these tools to different and interlinked development sectors have resulted in the international recognition of the WWAP Toolkit as a useful tool to complement the efforts towards national and global monitoring of gender equality in WASH (JMP, n.d.; Caruso et al. 2021). The application of the Toolkit extends not only to the water sector but to other resources management areas including food production, traditional knowledge and customary rights, and participation in governance, employment and education in water and energy sectors (Miletto et al. 2019). The flexibility and ability to apply the WWAP Toolkit across interlinked sectors makes it highly suited to integrating gendered data and gender-informed decisions into a WEF security approach.

13.4 Conclusions and Final Considerations

Integrative gender analysis is required to make gender inequalities visible in natural resources management studies and to uncover the considerable potential for synergies realized in integrative programs and in gender-responsive policies. The risks of ill-informed studies for those vulnerable to water, food, and energy shortages seem to be clear.

Importantly, securing water, energy, and food require practical inclusion strategies to build resilience. It is vital that these strategies are effectively informed, planned, and applied recognizing and using the knowledge and capacities of all members of the communities. Disaggregated data by gender and other socio-economic dimensions of difference are key inputs for better informed policies and programs. Well-designed studies require disaggregation of gender data and statistics also by specific production sectors (agriculture, fishing, forestry), due to their differential roles and dynamics (Michalena et al. 2020).

Ultimately, the advancement of gender equality in all development areas including the WEF nexus requires to purposely work on enabling strategies to improve the presence of women both in number and in meaningful participation in decision making. A critical step towards this end is to make knowledge accessible to women. Experiences in the region indicate that this can be successfully done through agricultural extension programs (Akter et al. 2020), on-the-job training, and recruiting more women to careers that relate to the technical dimensions of the WEF systems. Furthermore, supporting women leadership at local and community levels in public services, with

[9] For more information and access to the Toolkit, see https://en.unesco.org/wwap.

locally-adapted strategies, as well as supporting a multi-scale effort for increasing the leadership of women in the Pacific region is a concrete and ongoing approach led by the key donor and development agencies working in the region (Australian Aid 2017).

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