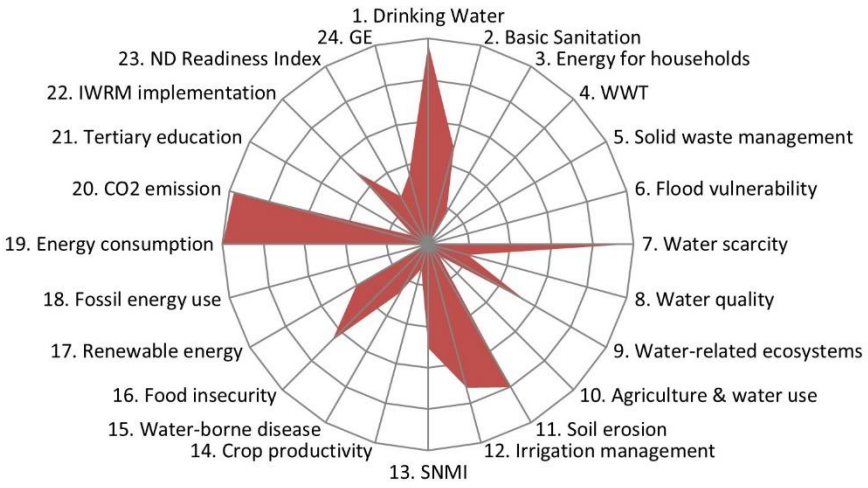
Utrecht University *Master Thesis (30 EC)*

Development of a Global National Water Management Index



A proposal for a set of water-related indicators for monitoring SDGs on a global scale

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Summary

With the pressures caused by economic development, population growth and changing consumption patterns, various water challenges will be more intensive in the future with regional differentiation.

In 2019, the National Blueprint Framework (NBF) was proposed as a water management framework to show the progress and challenges in water-related Sustainable Development Goals (SDGs) at the national level. The 2019 version of the NBF has been developed for the EU28. The NBF can be applied in developing countries too, provided that the input data are available, and that is exactly the point. Many input data to monitor the SDGs are currently not available in developing countries.

In developing countries, the water challenges tend to be even more intensive because of the higher population growth, urbanization and challenges regarding the governance capacity. Therefore, developing a National Blueprint Framework to be globally applicable and requiring as input data, data that are also available in developing countries will provide a way to assess and enhance water management and provides a comparison of water management for many countries, globally. With this aim, the following research question was addressed:

What updates can be proposed to optimize the current NBF framework to be applicable in developing countries, with complementary water-related indicators that can be used or linked to SDG6?

The main knowledge gaps are taking into consideration with the water-energy-food (WEF) nexus and the lack of water-related data in developing countries as the main challenges. The new NBF was developed by a system analysis of the WEF nexus and quantitative reviews of various datasets.

This newly developed NBF provides a data-driven overview of the current state of implementation of SDG 6 and other associated SDGs around the world. Using 24 indicators across 7 categories, the NBF contributes to assessing water-related challenges for more than 145 countries. The NBF provides a gauge for countries to assess how far to SDG targets. All NBF indicators are scored on a 0-10 scale from worst to the best performance for a broad audience to allow for a comparison among regions as well as countries.

Keywords: water, energy, food, nexus, integrated assessment, sustainability, SDG, IWRM

Contents

List of abbreviations

BCI	Blue City Index
CBF	City Blueprint Framework
Dem Rep	Democratic Republic
DeSA UN	United Nations Department of Economic and Social Affairs
EPI	Environmental performance index
EU	European Union
GDP	Gross domestic product
GE	Government Effectiveness
GHG	Greenhouse gas
IFPRI	International Food Policy Research Institute
IWRM	Integrated Water Resources Management
MDGs	Millennium Development Goals
NBF	National Blueprint Framework
NBI	National Blueprint Index
NDRI	Notre Dame Readiness Index
REP	Republic
SDGs	Sustainable Development Goals
SNMI	Sustainable nitrogen management index
SWM	Solid Waste Management
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United nations environmental program
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
UNISDR	United Nations Office for Disaster Risk Reduction
WHO	World Health Organization
WWAP	World Water Assessment Programme
WWT	Wastewater Treatment

Chapter 1 Introduction

1.1 Global challenges: water demand, availability, quality and extreme events

Water security is one of the most important global challenges and continues to cause multiple and complex problems worldwide (World Economic Forum, 2020). It is also recognized that those challenges will be more intensive in the future. In this section, the current status and trends on water challenges will be introduced to give a general background of the study.

- **Water demand and availability**

With the pressures caused by economic development, population growth and changing consumption patterns, contemporary global water use has been five times higher than it was 100 years ago (Wada et al., 2016), with an estimated annual global water demand of 4,600 km3 (Burek et al., 2016). It is forecasted that the global water use will grow at a rate of about 1% per year continually (AQUASTAT, n.d.), and the global water demand will increase to between 5,500 and 6,000 km3 per year by 2050, which is a 20% to 30% increment compared to the current data (Burek et al., 2016).

Population growth and economic development are two crucial factors driving the rapid growth of water demand. The world population is anticipated to increase between 9.4 and 10.2 billion by 2050, with more than 60% of which are urban populations. The growth in Africa (+1.3 billion) is accounted for more than 50% of global data, and Asia (+0.75 billion) is predicted as the second-largest contributor (UNDESA, 2017). Meanwhile, global gross domestic product (GDP) is projected to grow by 2.5 times from 2017 to 2050 (OECD, n.d.). Agriculture demand for water is the most massive water consumption on a global scale, while the growth rates of water demand in industrial and domestic areas are even higher (WWAP/ UN-Water, 2018).

In countries with developing or emerging economies, the challenges from increasing water demand are more prominent (Figure 1.1). Take the domestic water use as an example. It is estimated that the data will remain constant in Western Europe while the most significant growth will occur in African and Asian sub-regions with a growth factor around three and in Central and South America with a growth factor around two (Burek et al., 2016) with the main reason of the developing urban settlements related to water supply services (WWAP/UN-Water, 2018).

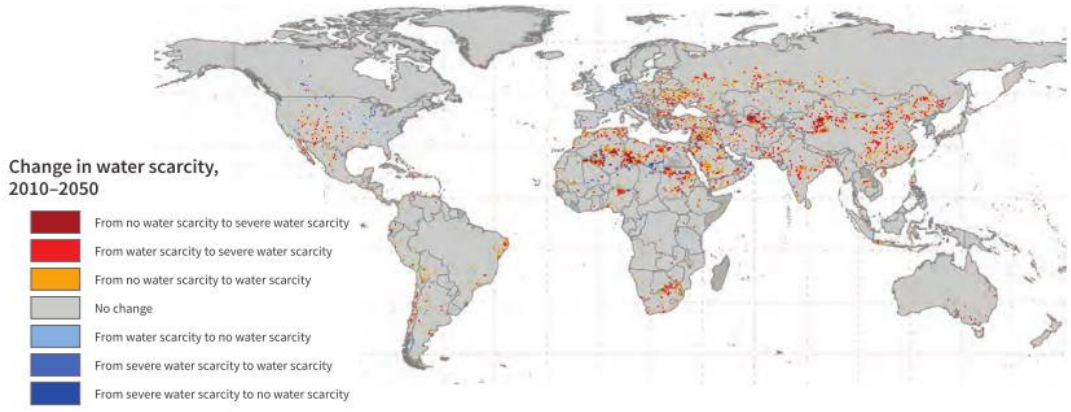


Figure 1.1 Projected change in water scarcity from 2010 to 2050; Source: Burek et al. (2016, fig. 4–39, p. 65).

Water availability is another long-standing issue and is projected to cause more severe problems accompanied with the increasing water demand in the future. Although at the continent level the total available surface water resources tends to remain constant despite the growth of the population, GDP as well as water demand, the influence and pressure under water scarcity will be pronounced at the country level (Burek et al., 2016) and will challenge the national governance capacity. Currently, countries located in a belt around NL10 to NL40 degrees, together with some states in the Southern Hemisphere (e.g., Southern Africa), are estimated to be the regions mostly affected by water scarcity (Veldkamp et al., 2017). Burek et al. (2016) assessed that more than 40% of the global population, the majority of which are from Southern and Eastern Asia and North Africa would be living under water stress in the 2050s.

- **Water quality**

Water pollution has also been a crucial issue in recent decades, especially in Africa, Asia and Latin America, with worsening water quality in almost all fresh-water resources since 1990 (UNEP, 2016). Veolia/IFPR (2015) conducted a study to explore the relationships between the regional water quality threats and a series of sociology related scenarios (e.g., economic growth, population densities) and identified the obvious positive correlation among them (Figure. 1.2). It is also recognized that the further escalation of the deterioration of water quality is ineluctable over the next decades, with an increasing threat to human health and the environment (IFPRI and VEOLIA, 2015).

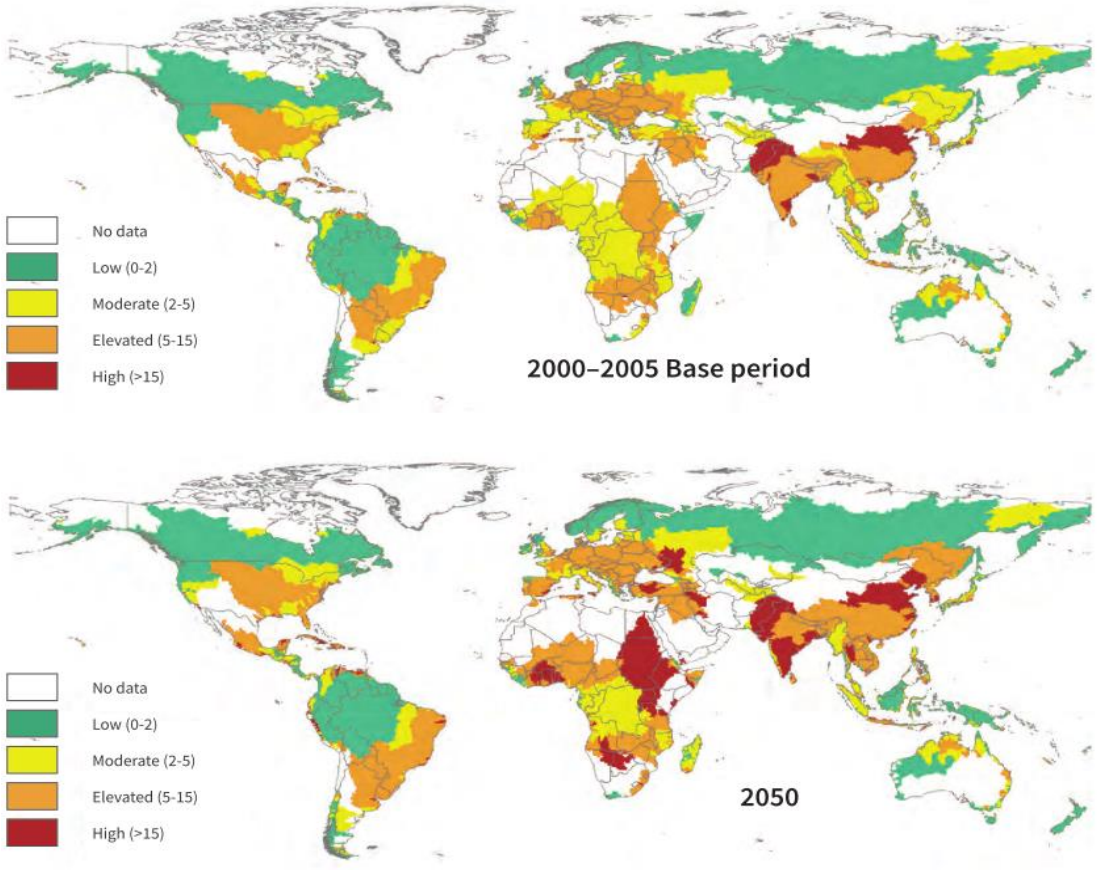


Figure 1.2 Water quality risk indices for major river basins during the base period (2000–2005) compared to 2050; Source: IFPRI and Veolia (2015, fig. 3, p. 9).

Various gaps can be found in the current wastewater treatment systems, and it is estimated that “80% of all industrial and municipal wastewater is released to the environment without any prior treatment” on a global scale (Weerasekara, 2017). Low- and lower-middle-income countries, especially those in Africa (UNEP, 2016), are facing more complicated situations because of higher population growth rates and GDP, while the municipal facilities are relatively behindhand.

- **Extreme events**
  Another important concern is that extreme events, such as floods and droughts, also significantly impact water availability. In some traditionally water-scarce areas (e.g., Chile, China and India), the situation is more challenging as there is a rapid increase of flood risks while the local governance capacity on flood risk management is relatively low compared to most developed countries (Water, 2018). Flood is recognized as the most destructive water-related natural hazards, as it tends to cause significant economic losses accompanied by loss of life in the short term (WWAP/UN-Water, 2018)., being more chronic and tends to involve long-term problems. Together with land degradation it is the most significant category of ‘natural disaster’ because of their mortality and socio-economic impact relative to GDP per capita (Low, 2013). It was reported that US$1.3 trillion of damage was caused by floods and droughts in the past two decades, with 4.2 billion people affected worldwide (Velasquez, 2012). Moreover, there are more than 3.2 billion people currently affected by land degradation/ desertification and drought (WWAP/UN-Water, 2018).

1.2 SDGs and Integrated Water Resource Management (IWRM)

The Millennium Development Goals (MDGs) set in 2000 are the forerunner of the Sustainable Development Goals (SDGs) which are widely known nowadays. MDGs “started a global effort in 2000 to tackle the indignity of poverty” (UNDP, n.d.) and was replaced by SDGs which cover more comprehensive issues with the aim to tackle pressing challenges on a global scale today.

SDGs were published in 2015 and consist of 17 interconnected goals covering issues on social, economic and environmental sustainability. Responding to 17 goals, 169 targets with a focus on poverty, inequality, climate change, environmental degradation, peace and justice were set.

Figure 1.3 Sustainable Development Goals; Source: United Nations (2015c)

SDG 6 *Clean Water and Sanitation* is the goal addressing the urban water issues among 17 goals, with the official wording on "Ensure availability and sustainable management of water

and sanitation for all" (United Nation, 2015). Target 6.5 of SDG 6 is to "implement Integrated Water Resources Management (IWRM) at all levels". IWRM was first discussed at the United Nations (UN) conference on environment and development in Rio de Janeiro in 1992 and is a policy making philosophy with the main objective on developing a comprehensive and holistic approach to water management.

Table 1.1 The six targets and associated indicators for SDG 6 of the SDGs (United Nations, 2015c)

Targets	Indicators
6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all	6.1.1 Proportion of population using safely managed drinking water services
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	6.2.1 Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water
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	6.3.1 Proportion of wastewater safely treated 6.3.2 Proportion of bodies of water with good ambient water quality
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	6.4.1 Change in water-use efficiency over time 6.4.2 Level of water stress: freshwater withdrawal as a proportion of available freshwater resources
6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate	6.5.1 Degree of integrated water resources management implementation (0-100) 6.5.2 Proportion of transboundary basin area with an operational arrangement for water cooperation
6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes	6.6.1 Change in the extent of water-related ecosystems over time

Although the concept of IWRM has gained popularity because of its broad scope, it is also criticized to be a too ambiguous concept (Biswas, 2004; Grigg, 2008) and its inapplicability in practice to create a holistic IWRM assessment framework for a national scale (Medema et al., 2008).

Various indicator frameworks have been developed for assessing the effectiveness of IWRM, the results of which is expected to providing feedback for decision makers. With the wide range of goals included within the broad scope of IWRM, there are diverse and numerous IWRM indicators that have been developed and most frameworks focus on individual problems (Essex et al., 2020)

The City Blueprint Framework (CBF) examining multiple factors is one of the first attempts to performing a basic assessment of IWRM in cities. Including 25 indicators, the performance-

orientated Index is split into seven categories related to city performance with the focuses on the different facets of IWRM (e.g., Water Quality, Solid waste treatment), with an aim on providing a holistic assessment of IWRM on the city level (Koop et al., 2015a, b). Recently further modifications and simplifications have been introduced in both the CBF and the Trends and Pressures Framework (TPF; Koop and van Leeuwen, 2020a, b).

1.3 Water, energy and food (WEF) nexus: a promising concept

The so-called "nexus" indicates the inextricable inter-linkages and inter-dependencies between water, energy and food (Smajgl et al. 2016). There is a growing recognition of the importance for decision-makers to take into account the synergies and trade-offs existing in the management of water, food and energy resources while making plans, policies and regulations, etc (Reinhard et al., 2017).

Among the three sectors of the water-energy-food nexus, water is the most directly subject to major natural variability, and therefore the WEF nexus is largely water-sector driven (Ray et al., 2015; Scott and Sugg, 2015). With the background that IWRM is of broad scope and IWRM achievements require integrated strategies and plans, WEF nexus is a promising concept to inspire research interests and efforts to develop new insights and novel approaches of IWRM (Cai et al, 2018).

1.4 Problem definition and knowledge gap

17 SDGs provide a broad scope of challenges and require interdisciplinary approaches to meet all objectives. Currently 169 targets have been agreed on internationally with the focuses on people, planet, prosperity, peace and partnerships. Although SDGs contribute to building a holistic view on sustainable development, it results in individualizing the different components on sustainable development (Essex et al., 2020), making it more difficult for countries to develop cohesive development strategies. Furthermore, there are conflicting interests which result in synergies and trade-offs between the ability to meet all SDGs, emerged because of the individualizing trends of the goals (Pradhan et al., 2017).

This issue is also revealed in water management: SDG6 is focusing on drinking water and sanitation, but the links to other relevant elements (e.g., energy, food) which are also crucial to sustainable development are not included and identified. In addition, to reach IWRM, nations must create their own policy integrated plans rather than single approaches to meet the goals due to the diverse situations that nations face (Petit, 2016).

Based on the above scientific problems, it has been proposed that a coordinated approach that incorporates indicators of multiple sectors at the national level is needed to be developed for holistic SDG monitoring in water management. Essex et al. (2020) developed the first version of a National Blueprint Framework (NBF) as a follow-up of the City Blueprint Framework aligning city-level indicators for sustainable living and water management to national targets (Koop et al., 2015a, b). The first version of NBF was developed mainly based on the interests associated with SDG6 and only included one energy indicator with an interest on climate adaptation. And food management issues were not discussed and taken into consideration.

Assessment of the SDGs is needed in every country since the SDGs need to be implemented at a national scale to reach the global goals set by the UN. The current NBF was developed

with a bias towards European countries as the set of indicators was primarily sourced from initiatives in the global north (Essex et al., 2020). And the differences in levels of development and regional characteristics (e.g., differences in natural resources and natural hazards) tend to result in the disparate starting points at the global scale, which lowers the feasibility of achieving the goals within 15 years. This is challenging for the EU countries but even more challenging for the developing countries.

Additionally, another knowledge gap has been defined in coping with relatively poorer data availability in non-EU countries. Observational gaps identified by Grabs (2009), which means the failure to observe and collect data or lack of access to data, is a common issue due to economics and ownership-related problems in developing countries. The shortcomings existing in data and information management is one of the main challenges when research is conducted in developing countries. And this challenge has been evidenced to be a hindrance to sustainable development in some nations (Ndzabandzaba, 2015). Therefore, to make the NBF applicable at global level, it is important to develop the existing NBF to a more comprehensive one to cope with the lack of data in non-EU countries (Koop et al., 2020).

1.5 Research questions

Main research aim:

Based on the knowledge gaps introduced in the previous section, this research project aims at developing a comprehensive National Blueprint Framework that can be applied in all countries, based on a previous critical assessment of SDG 6 at the level of the EU28. The indicator framework needs to take into consideration (a) the water-energy-food (WEF) nexus, (b) the lack of water-related data and (c) the focus on developing countries, where water challenges are enormous.

Research question:

What updates can be proposed to optimize the current NBF to be applicable in developing countries, with complementary water-related indicators that can be used or linked to SDG6?

Subquestions

1. What linkages exist among WEF sectors that can be taken into account for improving the IWRM on a national level?
2. Can a more suitable set of indicators be developed that takes into account the WEF nexus and the limited data availability in developing countries for an improved NBF to measure the progress on SDGs implementation?
3. To what extent does the proposed index represent regional variety on a global scale?

Chapter 2 Theories and Approaches

This research project has been conducted based on the previous work of City Blueprint® Approach and the NBF (Essex et al., 2020). Therefore, this section is to give an overview of CBF and the previous work on developing the NBF.

2.1 City Blueprint® Approach

As introduced in section 1.2, City Blueprint Framework (CBF) has been published in 2011 with a pilot study in Rotterdam and has a focus on urban water issues to perform a basic assessment of IWRM. Later, CBF has been being developed to a much more holistic assessment approach by subsequent research, applications and modifications (Koop and van Leeuwen, 2020a,b,c).

The City Blueprint® Approach is a diagnosis tool and consists of three frameworks (TPF, CBF and GCF) with different but complementary contents. Trends and Pressures Framework (TPF) is built to assess the main challenges on the city level. City Blueprint® Framework (CBF), as the core part of the approach, is to assess how cities are managing their water cycle. And by applying Governance Capacity Framework (GCF), the pathways for cities to improve their water governance are to be analyzed (Koop et al., 2017).

- Trends and Pressures Framework (TPF)

The TPF consists of 12 descriptive indicators covering three categories of social, environmental and financial pressures (Koop & van Leeuwen, 2015a,b). TPF helps to address the sections which need more recognition for stakeholders to achieve a sustainable practice by the quantification of existing pressures, in which process the trends priorities can be mapped. The result of TPF is presented in the form of Trends and Pressure Index (TPI) with scores ranging from 0 to 4 which is an arithmetic mean of the 12 indicators, and higher scores represent greater concerns is needed (Koop & van Leeuwen, 2015a,b).

- City Blueprint Framework (CBF)

The CBF, being the core part of City Blueprint® Approach, is used to measure the current state of water governance. Including 25 indicators, the performance-orientated Index is split to seven categories related to city performance with the focuses on the different facets of IWRM: *Water Quality, Solid waste treatment, Basic water services, Wastewater treatment, Infrastructure, Climate Robustness and Governance*. The result of CBF is presented in the form of Blue City Index (BCI) with scores ranging from 0 to 10, which is an arithmetic mean of the 254 indicators, and the performance is assessed as better with higher scores (Koop & van Leeuwen, 2016).

- Governance Capacity Framework (GCF)

Since the governance aspect is crucial for a sustainable IWRM, the GCF that assesses governance conditions is developed and composes the integrated BCA with TPF and CBF. Including 25 indicators, the problem-oriented Index is split into nine categories representing the identified challenges in governance conditions: *Awareness, Useful knowledge, Continuous Learning, Stakeholder engagement, Management ambition, Agents of Change, Multi-Level network potential, Financial viability and Implementing Capacity* (table 1). And the 27 indicators in the framework is presented in scores after a Likert scale scoring. And the score is ranging from very limiting (--) to very encouraging (++) (example from case Quito in figure 4).

This framework can help cities to know which governance conditions are fare well or less at the local levels and also contribute to the comparative studies among cities.

Table 2.1 Composition of Governance Capacity Framework (Source: Koop et al., 2017)

Dimensions	Condition	Indicators
Knowing	1 Awareness	1.1 Community knowledge 1.2 Local sense of urgency 1.3 Behavioral internalization
	2 Useful knowledge	2.1 Information availability 2.2 Information transparency 2.3 Knowledge cohesion
	3 Continuous learning	3.1 Smart monitoring 3.2 Evaluation 3.3 Cross-stakeholder learning
Wanting	4 Stakeholder engagement process	4.1 Stakeholder inclusiveness 4.2 Protection of core values 4.3 Progress and variety of options
	5 Management ambition	5.1 Ambitious and realistic management 5.2 Discourse embedding 5.3 Management cohesion
	6 Agents of change	6.1 Entrepreneurial agents 6.2 Collaborative agents 6.3 Visionary agents
Enabling	7 Multi-level network potential	7.1 Room to manoeuver 7.2 Clear division of responsibilities 7.3 Authority
	8 Financial viability	8.1 Affordability 8.2 Consumer willingness-to-pay 8.3 Financial continuation
	9 Implementing capacity	9.1 Policy instruments 9.2 Statutory compliance 9.3 Preparedness

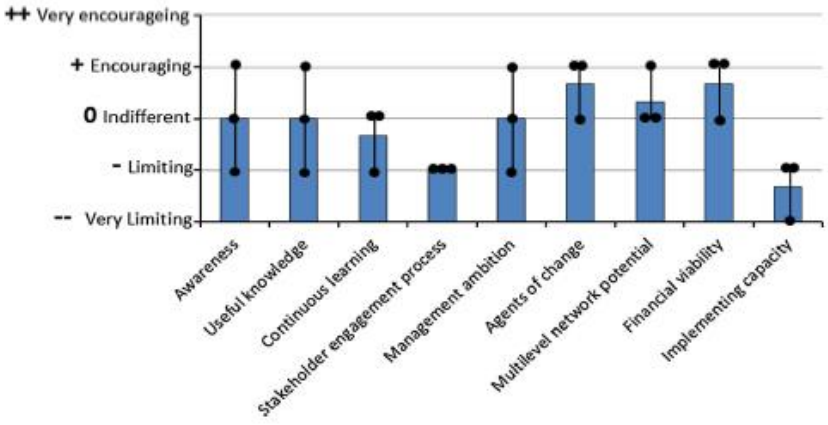


Figure 2.1 The GCF result of Quito (Source: Schreurs et al., 2018)

2.2 National Blueprint Framework: towards a national level

The primary step to developing a suitable set of indicators for further IWRM on national level is selecting feasible indicators associated with targets. This preliminary framework conducted by Essex (2020) is developed based on the 28 EU Member States (EU28) followed by a test of the applicability of the index to be used as a global indicator.

By giving a broad review of current IWRM indicators from different indicator frameworks and an assessment on the alignment to SDGs, 66 of them were explored being associated with SDG targets. With the possible alternatives from the existing IWRM indicators, an 'ideal' set of indicators on the current level was selected according to the best options for measurement end goals (Essex et al., 2020). The new build-up framework was split to seven

categories: Water Stress, *Water Quality, Access to Basic Services, Infrastructure Wastewater treatment, Solid waste treatment, Climate Adaptation,* and in each category 3-4 indicators were identified. The final set of feasible indicators for NBF is showed in Table 1.

Table 2.2 Feasible indicators for the NBF (Source: Essex et al., 2020)

Category	Indicator	AIWW targets*
Water stress	1. Water scarcity	M,U,I,F
	2. Flood Vulnerability	M,I
	3. Transboundary cooperation	M
	4. Tertiary education attainment	M
Water quality	5. Surface water quality	M,U,I,
	6. Groundwater quality	M,U
	7. Ecological water quality	M,U
Access to basic services	8. Drinking water quality	U
	9. Drinking water connection	U,I
	10. Sanitation connection	U,I
	11. Water affordability	M
Infrastructure	12. Infrastructure Investment	M,U,I
	13. Water leakage (%)	M,U,I,F
Wastewater treatment	14. Secondary WWT (%)	M,U,I,F
	15. Tertiary WWT (%)	M,U,I,F
	16. Nutrient recovery (%)	M,U,I,F
	17. Waste Water to Energy	M,U,I,F
Solid waste treatment	18. Solid waste generated	M,U
	19. Solid waste recycled (%)	M,U,
	20. Solid Waste to Energy (%)	M,U,I,F
Climate adaptation	21. CO2 emission per capita	M,U,I,F
	22. Renewable energy % total	M,U,I,F
	23. Notre Dame Readiness Index	M,U,I,F
	24. Integrated Water Resources Management	M,U,I,F

* Targets are Municipalities (authorities; M), Utilities (U), Industry (project developers/investors; I) and the Financial sector (investors; F) This needs further discussion with all stakeholders.

With the objective of Essex's study (2020) on "monitoring of water related SDGs at a national level in Europe", the indicators were assessed as the progression towards achieving the SDGs and an end target for agenda 2030 was set for each indicator.

The NBF was applied for the EU28 and the results were compared to the results of another IWRM framework to test its reliability. The comparative study between NBI and CBI showed that the NBF has a strong correlation for both the Netherlands and the United Kingdom (r=0.65 and r=0.84 respectively) (Essex et al., 2020).

Moreover, limitations and the foreground on promoting the NBF to a more comprehensive one were addressed by Essex et al. (2020):

1. Coping with the lack of data for non-EU countries to make the framework more applicable on a global scale.

2. Exploring more feasible targets for those indicators lacking SDG targets.

Chapter 3 Methodology

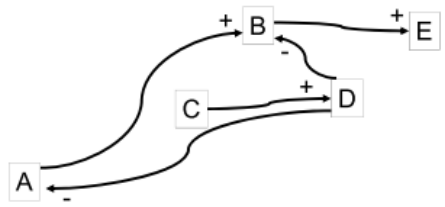
Phase 1 Understanding the linkages among water-energy-food nexus

Understanding the WEF nexus underpins the following work to develop a new NBF. This phase starts off with the literature view on water-, energy- and food security which are concepts internationally agreed being representative to cover vital aspects to understand water, energy and food issues.

For each security issue, theories providing views on classifying diverse dimensions of each system are referred to and selected as the entry points to build the matrix for assessing inter-linkages and inter-dependencies between the issues.

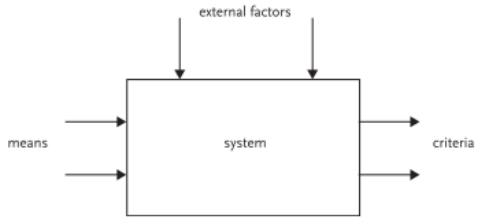
It is criticized that the nexus studies always focus on how one specific sector is influenced by another, but it ignores root causes (Staupe-Delgado, 2019). To avoid this situation, causal maps are developed and utilized as a means-ends system analysis tool to better understand the linkages among WEF nexus a shown in Box 1.

"…a system analysis should provide the problem owner with insight into the behavior of the system, the means and possibilities that the owner has to influence it and the consequences of this for the problem. In this way, the problem owner is assisted in making a reasonable deliberation."



System diagram notations:

- Variables
- Causal links that connect variables
- Polarities to indicate how one variable affects another one



External factors: are elements that cannot be affected by factors inside the system or the decision-maker, but that do place vital limitations or constraints on the linkages inside the system and outcome of the system.

Means: A decision-maker should have some **means** through which she/he can influence the system.

Criteria: "The realization of objectives is measured through the use of **criteria** that are linked to the main outcomes of interest of a system" (cf. Walker, 2000: 13).

Box 1. Approach and Terminology: Causal Map (Enserink et al., 2010)

Phase 2 Indicator framework development

- Re-categorize the framework

To make cross-sector dimensions related to water resources management clearer and intelligible in the new NBF, it is vital to explore a new applicable set of categories that covers different focus areas. Therefore, to quantify IWRM in a more comprehensive way, new interdependent categories have been developed, based on the previous work in Phase 1.

- Indicator improvements

a. Indicators focusing on water issues are updated from the indicators in the old NBF. All indicators are checked for data availability in developing countries. The applicable data will be kept (but re-categorized). For data that is unavailable while another data source can be found, the indicator will be kept and updated with a new dataset. For indicators without equitable data sources in developing counties, a new indicator will be added to replace the old one.
b. The indicator associated with energy and food is newly explored based on the system analysis in Phase 1. Elements that play an important role in the system will be selected for further study. The energy indicators from the old NBF are kept and complementary indicators are added to improve the energy category. The food category is totally newly developed with its basis in the WEF nexus.
c. The scoring is aligned with the old NBF to rescale the data into a 0-10 score (Annex 1)
d. Criteria for data selection is aligned with the old NBF.

SMART indicators (Koop & van Leeuwen, 2015a):

- Specific (simple, sensible, significant).
- Measurable (meaningful, motivating).
- Achievable (agreed, attainable).
- Relevant (reasonable, realistic and resourced, results-based).
- Time bound (time-based, time limited, time/cost limited, timely, time-sensitive).

It should be noted that, the spatial completeness of the dataset is a priority requirement.

Phase 3 Apply the new NBF to all countries

Apply the new NBF to all countries and draw the regional performance diagrams (Annex 2) and the spiderwebs (Annex 3) to represent the results, by which the regional characteristics and specific country's vulnerability on IWRM can be illustrated and be demonstrated.

Chapter 4 Results

4.1 Water-energy-food nexus

4.1.1 Structure the components of the nexus assessment

Water security, energy security and food security are concepts internationally agreed and cover vital aspects for decision makers to understand water, energy and food sectors. In the development process of associated theories, various dimensions of security referents have been proposed by past studies. They are used as a reference here to build the nexus matrices for an overview of the linkages between water, energy and food:

- Dimensions of Water Security (Staupe-Delgado, 2019):
- Sufficiency: Physical availability
- Safety: Water-related diseases
- Hazards: Floods and droughts
- Access: Geographical, affordability
- Sustainability: Water crisis

- Dimensions of Energy Security (Staupe-Delgado, 2019):
- Availability: Fuel sources in territory
- Access: Affordable to exploit and consume
- Stability: Supply, import price market
- Safety and security: Accidents, terrorism, sabotage
- Sustainability: Emissions, toxicity

- Dimensions of Food Security (Food and Agriculture Organization of the United States, 2013):
- Availability: Food supply
- Access: Economic and physical access
- Utilization: Food quality and preparations; health and hygiene conditions
- Stability: Stable production; price shocks

4.1.2 Identify the interlinkages matrix

This section shows the results of the quantitative review of the relationships between water, energy and food systems by drawing the nexus matrix based on the dimensions classified by each security referent introduced in the last section.

In the context of the sustainable development of each system, the synergies (in green) and trade-offs (in blue) of the relationship between two systems with specific linkages are also shown.

Table 4.1.a Water-food linkages classified by dimension

Water / Food	Sufficiency	Safety	Hazards	Access	Sustainability
Availability	Crop production → rising demand or even extra pressure on water resources. Water desalination → meet the water demand for high-value crops.		Extreme weather and climate (e.g., erratic precipitation patterns) → reduce crop yields. Crop production and grazing → accelerate soil erosion. Soil Erosion → reduce the productivity of land. Soil Erosion → reduce the water storage capacity → higher flood risks.	Irrigation management → higher yield growth and cropping intensity. Inequitable access to water and economic water scarcity → negatively impact on local food production.	Achievements in production → competition in land use and water systems. Fertilizer use → discharge of pollutants. Irrigation → groundwater abstraction → sinking water tables, water pollution and salinization. Livestock production → widespread degradation and pollution of water and land resources.
Access			Water-related disasters → food access at risk.		
Utilization		Access to safe and clean water → healthy and nutritious food preparation.			Polluted surface and groundwater → contaminate crops and poses risks to public health.
Stability	Water scarcity → higher dependency on food import → vulnerability to volatile food prices.		Water-related disasters → food supply shortage → spikes in food price.		

Table 4.1.b Water-energy linkages classified by dimension

Water \ Energy	Availability	Access	Stability	Sustainability
Sufficiency	Power generation → large water consumption. Water desalination → extreme large energy consumption. Hydropower → energy production.			
Safety		Increased access to energy services → economic development and technologies for resilience to water-related disasters.		
Hazards	Hydropower infrastructure → increase the risk of flooding.			
Access	Dams and hydropower → non-equitable rights for downstream communities.	Energy access at household level → boil and sterilize water. Access to modern energy facilitates →water and sanitation services.	Stable water supply → stable power generation	

Sustainability		Biogas produced from wastewater → production of mechanical work and electricity		Fossil energy use → water pollution. Renewable energy (e.g., wind, solar power) → less water pollutants. Hydropower infrastructure → affect water flows，sediment load, nutrient flows and water quality. Hydropower infrastructure → extra pressure on fishery and ecosystem.

4.1.3 System analysis of nexus

The linkages between water–energy–food systems are numerous, complex and dynamic (Lindberg & Leflaive, 2015), and the nexus approach (FAO, 2014) provides a cross-sectoral and dynamic perspective to better understand these interrelationships (Reinhard et al., 2017). With the aim of developing an improved NBF that effectively takes into consideration a WEF nexus intervention on water management, it is necessary to analyze the trade-offs and synergies between elements of the nexus.

In this section, a means-ends system analysis is conducted to provide insights into the behavior of the system to better understand the means and possibilities by which stakeholders can impact the nexus system. Causal maps, to present the linkages in the WEF systems, were drawn for each system based on the means-end system analysis approach introduced in *Chapter 3 box 1*.

The causal map approach is applied for the system analysis. And the introduction of key elements in the map is as follows:

- External factors (at the top and bottom of the system boundary):

"Elements that cannot be influenced by the problem owner or by the factors inside the system" (Enserink et al., 2010, pp. 51-77).

The quantity and quality of water resources and energy resources, determined by natural conditions, are included as external factors. Population and country wealth, which cannot be influenced by water management policymakers, are included in this category as well.

- Means (on the right side of the system boundary):

"A problem owner should have some means through which she/he can influence the system, improving the degree to which objectives are being realized" (Enserink et al., 2010, pp. 51-77).

Water-, energy- and food-related factors that can be influenced by the decision-maker and are the start of causal chains are included in this category.

- Criteria (on the left side of the system boundary):

"The main outcomes of interest of a system" (Enserink et al., 2010, pp. 51-77).

This category comprises the vital elements of water, energy and food security (see section 4.1.2)

4.1.3.1 Water-energy nexus

Regional-specific interactions among W-E are excluded. For example, the use of hydropower is of quite different relevance and importance to various countries due to country typologies and geographic differences.

- Water-related aspects of energy security

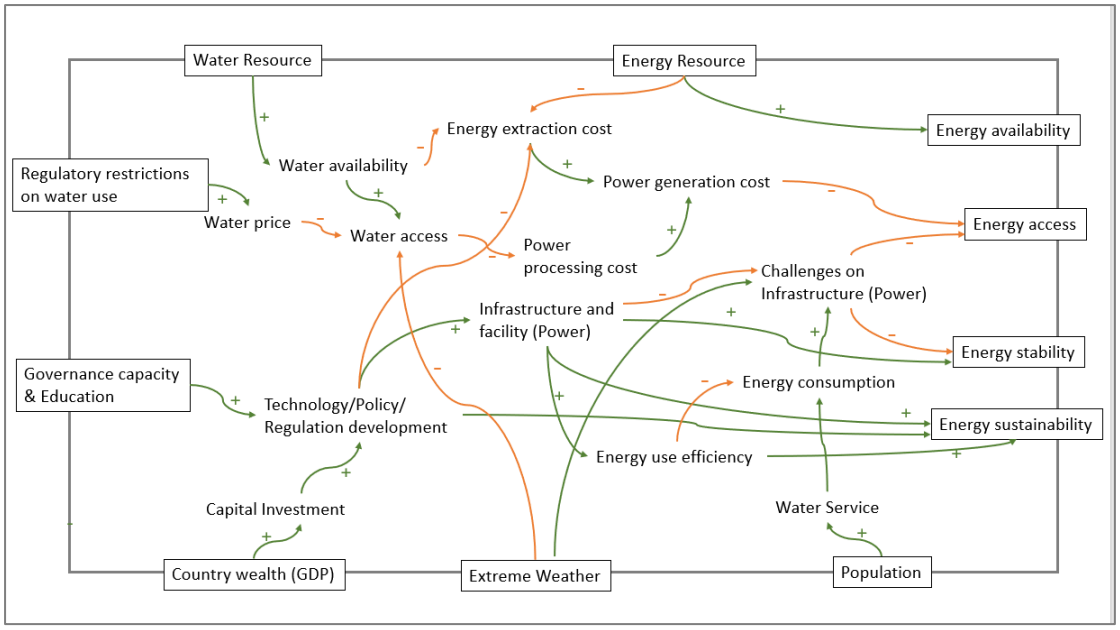


Figure 4.1.a Causal map: from water sectors to energy security

Water plays an important role in all processes of power generation, such as energy extraction and cooling of power-generation equipment. Therefore, the cost of water access (economic cost, time cost, etc.) will affect the cost of energy supply. In other words, the availability and quality of water are critical to the availability and access of energy. Shifts in water supply and water quality may be caused by both natural and man-made factors. Natural factors include the sufficiency and quality of natural water resources, which are essential for determining water supply. Man-made factors include restrictions and policies that may affect water prices, which affect power generation via the cost of energy extraction and power processing. This ultimately determines energy availability and accessibility for end users.

Extreme weather and climate will cause water access difficulties. On the one hand, extreme weather and even natural disasters affect hydrological distribution which basically lead to the shifts on water resource, and on the other hand, physical access to water, such as transportation and traffic, is also impeded. In addition, extreme weather will directly challenge power-generation infrastructures and equipment due to the possibility of damage and abnormal shifts in electricity consumption, which have negative effects on energy access and energy stability.

Water-related infrastructure (e.g., desalination, wastewater treatment) requires large amounts of energy, which increases the competition over energy use.

- Energy-related aspects of water security

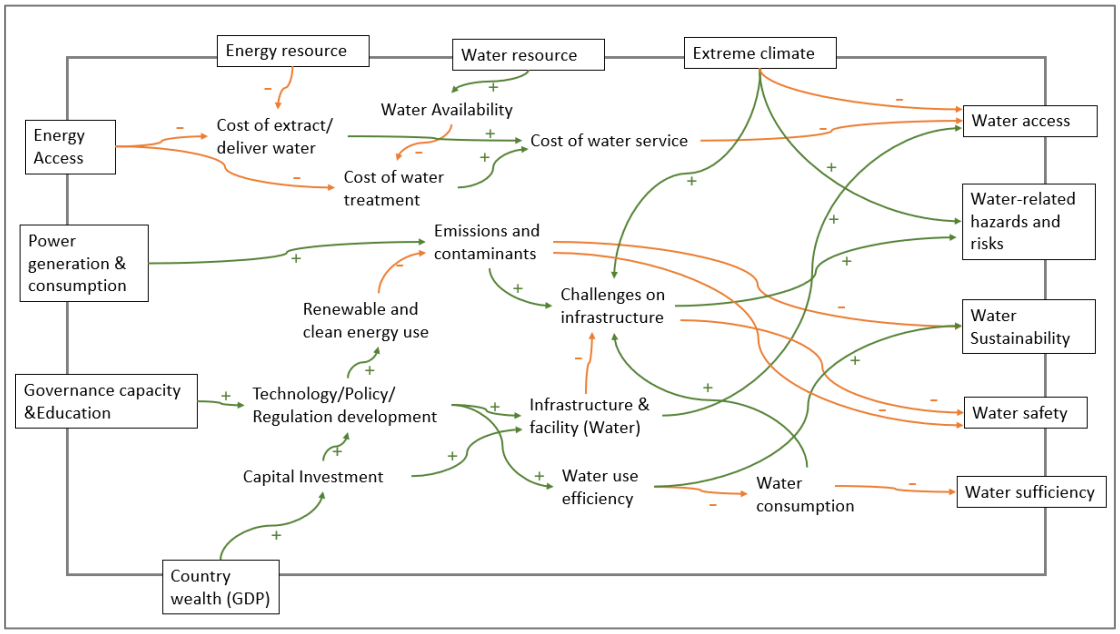


Figure 4.1.b Causal map: from energy sector to water security

Energy access is necessary for all water service processes, and therefore the quantity and quality of energy resources (natural factors) and energy access (man-made factors) are important to the cost of water services. The cost of water service influences water price, thus influencing water affordability.

The energy sector's intense consumption of water as well as the emissions and contaminants caused by power generation cannot be overlooked. For example, energy obtained from tar sands, shale gas and hydraulic fracturing are water intensive as well as polluting (Flammini et al., 2014). And compared to the use of energy from fossil fuels, the use of renewable energy, such as wind and solar power, has a less negative impact on water resources (Flammini et al., 2014). In other words, the use of fossil fuels as an energy source puts extra pressure on water treatment infrastructure. Therefore, the process of power generation and the use of renewable energy are crucial aspects of water safety and sustainability.

4.1.3.2 Water-food nexus

- Water-related aspects of food security

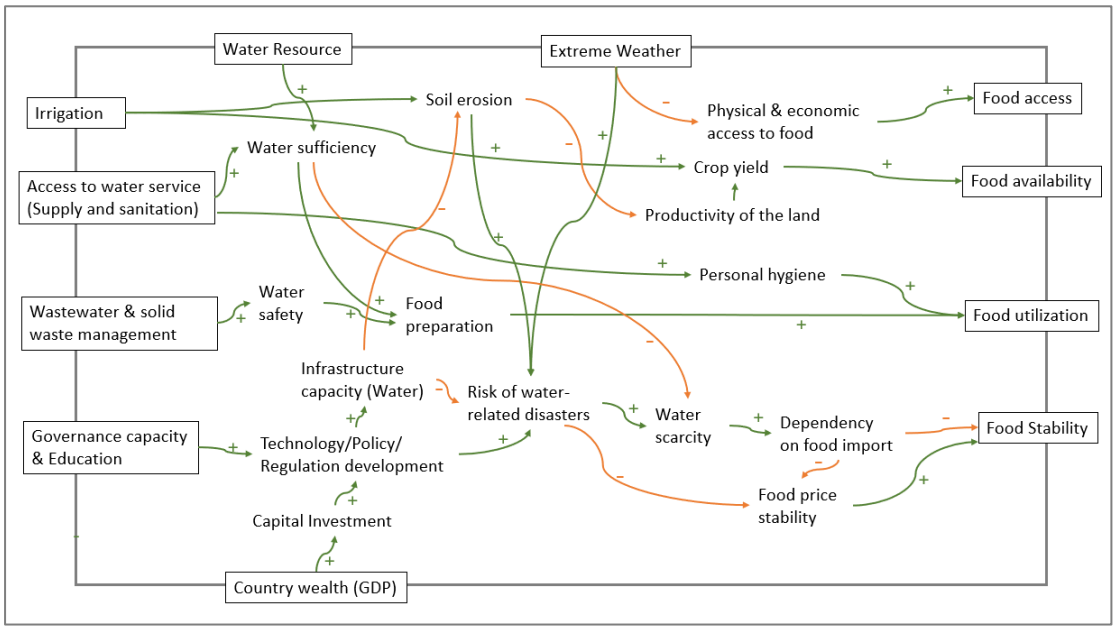


Figure 4.1.c Causal map: from water sector to food security

Water is crucial for crop growth, and thus irrigation is vital to crop yield. First, the quantity and quality of water resources and access to water services are both natural and man-made factors that influence water sufficiency. Irrigation, which is largely relying on sufficient water supply, strongly affects crop yield and thus influences food availability.

However, irrigation can also cause soil erosion in the long term and thus reduce the productivity of the land, which ultimately reduces crop yield and food availability. In addition, severe soil erosion can result in a greater risk of water-related disasters, such as floods caused by reduced natural water storage capacity. Water-related disasters can potentially lead to water scarcity and therefore have negative impact on food price stability.

Water safety, which is an outcome of effective water treatment (wastewater and water supply treatment), is essential for food preparation and thus has an important impact on food utilization. Access to sufficient water service contributes to improved hygiene, which benefits food utilization.

- Food-related aspects of water security

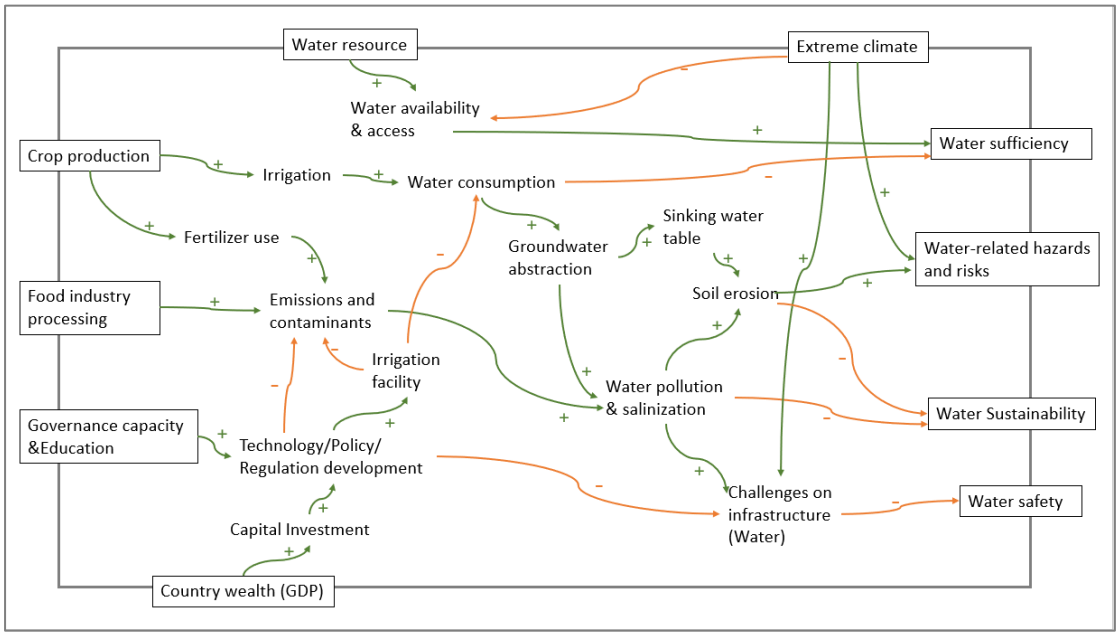


Figure 4.1.d Causal map: from food sector to water security

Food-related risks to water security can be found in the irrigation process. First, irrigation is a large source of water consumption, which may have a negative impact on water sufficiency.

Second, agricultural water use involves groundwater abstraction, which can lead to multiple ecosystem and sustainability problems, such as sinking water tables and salinization.

Finally, the emissions and contaminants as a result of irrigation, fertilizer use and industrial food processing pose problems with water resource quality and treatment, which in turn have negative impacts on water safety and sustainability.

Governance capacity and *public education,* as well as the external factor *country wealth*, have similar roles in the systems that contribute to the development of technology, policy and regulation, which in a long term enhance the water, energy and food nexus.

4.2 Indicator framework development

The following section describes the framework developed for a new NBF, including the re-categorizing phase of the indicators, the selection of the feasible indicators considering data availability for the developing countries, and water-energy-food nexus approaches.

4.2.1 Category improvements

UNEP defined IWRM as a cross-sectoral policy approach that emphasizes "water resources are an integral component of the ecosystem, a natural resource, and a social and economic good" (Martinez-Santos, 2014, pp. 17-19).

To make cross-sector dimensions related to water resource management clearer and intelligible in the new NBF, which consists of a composite index, it is vital to explore a new applicable set of categories that covers different focused areas. Therefore, to quantify IWRM in a more comprehensive way, seven interdependent categories are developed for the new NBF.

The following section introduces the background and the relevance of each new category, which illustrates the rationale for being chosen.

- **Category 1. Household Water Security**

Water services at the household level are the basis of water security (ADB, 2016). It was recorded that nearly 800 million people worldwide suffer from poor-quality drinking water, and 2 billion people lack access to basic sanitation services (UNICEF & WHO, 2019), which is recognized as a significant challenge for human rights. Achieving water security on the household level will contribute to efforts to eradicate poverty (ADB, 2016) and underpin public health.

- **Category 2. Urban Water Security**

More than 50% of humanity now lives in cities (UNDESA, 2017), but the rapidly growing population and the trend in urbanization rate increasing worldwide make it difficult for the infrastructure for water services at the city level (wastewater, stormwater, and solid waste management) to be improved at a corresponding pace (ADB, 2016).

- **Category 3. Environment and Water Resources**

Water as a natural resource is finite and irreplaceable (Duarte et al., 2019). And the trend of urbanization and industrialization keep causing high stress on water resources, from the quality and quantity perspectives at the same time. Considering the vital role that water plays in ecosystem service, it is necessary to attach importance to protecting the environment and water resources.

- **Category 4. Water, Land and Food**

Water is used for crop production and along the entire agrifood supply chain, and at the same time agriculture is the largest user of freshwater (OECD, n.d.). Besides becoming one of the main causes of water stress, agriculture and irrigation are also clearly linked to various environmental problems, such as soil erosion, land use transformation that damages ecosystems, habitat loss, water pollution, etc. (Alexandratos & Bruinsma, 2012).

- **Category 5. Human Health**

Water security underpins public health. The lack of water supply and access to sanitation will increase the risks of illness spread (e.g., waterborne diseases) (WHO & UNICEF, 2017). Besides, water is crucial to food availability and food utilization, while food security is highly relevant to a series of human health issues, such as undernourishment.

With the above background, data associated with human health can be utilized as a reasonable way of measuring the outcome of water management (Wendling et al., 2020).

- **Category 6. Water and Energy**

One of the crucial pillars for social and economic progress in a society is energy, and water remains fundamental throughout the lifecycle of energy infrastructure and resource development (Flammini et al., 2014). As in the review of the water-energy system in the previous section, energy and water are intricately connected.

- **Category 7. Governance and Resilience**

"Water governance refers to the political, social, economic and administrative systems in place that influence water's use and management" (*What Is Water Governance*, 2021). Essentially, water management and governance are the closest and the most direct dimensions relating to policymakers.

As the system analysis conducted in section 4.1 shows, the water-, energy- and food security can be enhanced by the development of technology, policy and regulation that mainly attribute to good governance capacity at the country level.

4.2.2 Indicators improvements

The re-categorizing phase shows there is a broader focus area of the new NBF. To determine the new indicator framework, the indicators from the previous NBF are checked for data availability at a global scale, as some of these indicators were limited in their application because of the lack of data for non-EU countries.

Those indicators available for developing countries are kept and then categorized to the new category where it should be. For those indicators not available on a global scale, highly relevant and replaceable indicators are explored and applied. At the same time, taking into consideration the water-energy-food nexus, new indicators are explored to replenish the new categories.

New indicators and their rationales are introduced below by categories.

- **Category 1. Household Water Security**

The new NBF metrics for this category assess to what extent household water, sanitation, and hygiene needs are reached on a national scale.

Compared to the old NBF, indicator *drinking water connection* and *sanitation (category: access to basic services) connection* are kept and sorted under this category. However, the data used in the old NBF are not applicable on a global scale and are therefore updated by other data sources.

Table 4.2.a. Feasible indicators for the NBF, category 1

Indicator	Rationale
1. Basic drinking water supply	Indicator 1 is corresponding to "achieve universal and equitable access to safe and affordable drinking water for all" indicating in SDG 6.1, which is the foundation for water security.
2. Basic sanitation connection	"Access to sanitation bestows benefits at many levels: public health, livelihoods and dignity-advantages that extend beyond households to entire communities" (Watkins, 2006).
3. Energy for household clean water	Energy access on the household level has a high relevance to clean drinking water and food utilization since it is essential for boiling water and food preparation.

- **Category 2. Urban Water Security**

The new NBF metrics for this category assess the key water-related factors relevant to better urban water services.

The old NBF includes the categories *wastewater treatment* and *solid waste treatment,* which are composed of detailed indicators monitoring the capacity of WWT and SWT for EU28. The data is of high quality but only applicable in non-EU countries; thus, new indicators representative for monitoring these two criteria are applied to replace the old ones. *Flood vulnerability* as an indicator from the old NBF (category: *water stress*) is kept, but re-categorized and updated by new data sources.

Table 4.2.b Feasible indicators for the NBF, category 2

Indicator	Rationale
4. Wastewater treatment	Water pollutants have negative impacts on the long-term welfare of our environment, economy, and public health. Effective wastewater management is necessary for nature and society (Wendling et al. 2020).
5. Solid waste management	Uncontrolled waste disposal jeopardizes the ecosystem and environment in multiple ways: soil contamination, toxic substances, methane emission, etc (Wendling et al. 2020).
6. Flood vulnerability	Floods can be destructive and threatens human urban settlements and human well-being (ADB, 2016).

- **Category 3. Environment and Water Resources**

The new NBF metrics for this category assess the environmental status of water resources and ecosystems.

Water scarcity as an indicator from the old NBF (category: *water stress*) is kept, but re-categorized and updated by new data sources since the original one is data available only in EU countries.

The old NBF includes the category *water quality* composed of detailed indicators monitoring the water quality of multiple resources in EU28, but the data is only applicable in EU countries; thus, they are replaced by new data and then re-categorized.

Table 4.2.c Feasible indicators for the NBF, category 3

Indicator	Rationale
7. Water scarcity	As introduced in section 4.1, water scarcity is crucial to water security.
8. Water quality risk	It enables an "assessment of the impact of human development on ambient water quality, as well as the potential to obtain future ecosystem services from the water body (e.g., drinking water production and biodiversity)" (UN water, 2016a).
9. Water-related ecosystems' change	"Knowing if and why changes in the extent of water-related ecosystems are occurring can be valuable information for water managers and ensure that ecosystem services continue to be provided" (UN water, 2016b).

- **Category 4. Water, Land and Food**

The new NBF metrics for this category assess to what extent agriculture and irrigation may influence the water sector.

Table 4.2.d Feasible indicators for the NBF, category 4 (See Annex 1 for data and calculations)

Indicator	Rationale
10. Agriculture and water use	The indicator provides a measure of water scarcity potentially caused by agriculture.
11. Soil erosion	Groundwater abstraction is in necessity for irrigation but has resulted in various environmental problems including soil erosion. At the same time, soil erosion is a major threat to food security and ecosystem viability (Wuepper et al., 2020).
12. Irrigation management	"This indicator provides a measure of the dependence of a country's or region's agriculture on irrigation. It shows the vulnerability of agriculture to water stress and climatic shocks (such as droughts), which has implications for national food security depending on production and trade patterns" (Food Security Information and Knowledge Sharing System, 2017).
13. Sustainable nitrogen management index	Fertilizers are rich in nitrogen and the use of them can lead to widespread damage through nitrogen pollution (Bodirsky et al., 2014).

14. Crop productivity	The indicator shows if a country can produce food, which has implications for many natural factors, such as climate (hydrological patterns, water-related disaster, etc.) and water resources.

- **Category 5. Human Health**

The new NBF metrics for this category track human health-related problems caused by unsafe sanitation, unsafe drinking water and food insecurity.

Table 4.2.e Feasible indicators for the NBF, category 5

Indicator	Rationale
15. Water-borne disease risks	This outcome indicator is a reasonable way to tracks diseases and deaths caused by unsafe sanitation and drinking water.
16. Prevalence of food insecurity	Hunger, malnutrition, and reduced health and quality of life are all potential public health consequences of food insecurity (Furness et al., 2004). This indicator provides a way to track the prevalence of moderate or severe food insecurity.

- **Category 6. Water and Energy**

The new NBF metrics for this category focus on the energy-related aspects that associated to water security or affected by the water sector.

Indicators *Renewable energy* and *CO2 emission* are consistent to the old NBF (category: *climate adaptation*).

Table 4.2.f Feasible indicators for the NBF, category 6

Indicators	Rationale
17. Renewable energy	In general, renewable energy (e.g., wind and solar power) leads to fewer water pollutants compared to fossil fuel energy, and the use of which is a way to mitigate climate change (Owusu & Asumadu-Sarkodie, 2016).
18. Electricity production from oil, gas and coal sources (%)	The lifecycle of fossil fuels is relevant to multiple water-related risks, e.g., pollutants that threat water quality, large water consumption threating water sufficiency. This indicator provides a way to assess water stress potentially caused by fossil fuels.
19. Energy consumption	This indicator provides a way to assess the stress on energy sufficiency.

20. CO2 emission	CO2 is the main composition of greenhouse gas (GHG) that in a long term have the global warming effect. High GHG emissions will negatively impact the climate and resources (van Vuuren et al., 2011).

- **Category 7. Management and Governance**

This category focuses on issues on governance and water management which tend to be associate with long-term water related issues.

Compared to the old NBF, indicator *Tertiary Education Attainment* (category: *water stress*) and *IWRM implementation, Notre Dame Readiness Index* (category: *climate adaptation*) are kept and sorted under this category. The data source for *Tertiary Education Attainment* is updated by a new one applicable at the global scale.

Table 4.2.g Feasible indicators for the NBF, category 7

Indicators	Rationale
21. Tertiary Education Attainment	Attainment of education at a tertiary level yields highly educated professionals who contribute to the creation or adoption of new technologies and enhance the skills. (Brunello et al., 2007).
22. IWRM implementation	Indicator 22 is corresponding to "By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate" indicating in SDG 6.5 (United Nations, 2015c).
23. Notre Dame Readiness Index	"Readiness measures a country's ability to leverage investments and convert them to adaptation actions" (Chen, 2015).
24. Government Effectiveness	A comprehensive indicator assessing the government effectiveness. Government effectiveness captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. (World Bank, 2021).

4.2.3 Linking the selected indicators with the SDGs

Each indicator aligns with specific SDGs and targets (Table 4.3). The indicators that developed directly based on SDG indicators are summarized under *SDG Targets Link*. Other indicators that direct link to specific SDGs but do not align with the specific SDG indicators are summarized under *SDG linkages*. The potential and indirect linkages of the indicators to SDGs are explored based on the system analysis of water-energy-food summarized under *SDG indirect linkages*.

Table 4.3 Links between NBF indicators and SDGs

Indicator	SDG Targets Link	SDG linkages	SDG indirect interlinkages
1. Basic drinking water supply	6.1.1		1.1; 2.1
2. Basic sanitation connection		6.2	1.1
3. Energy for household clean water	7.1.1		1.1; 2.1
4. Wastewater treatment	6.3.1		3.3
5. Solid waste management	11.6.1	6.3; 6.6	3.3; 12.5
6. Flood vulnerability		11.5; 13.1	3.3
7. Water scarcity	6.4.2		6.1; 2.c
8. Water quality risk		6.3	
9. Water-related ecosystems' change	6.6.1		
10. Agriculture and water use		6.4	
11. Soil erosion		2.4	6.6
12. Irrigation management			6.4; 6.6; 2.c
13. Sustainable nitrogen management index		2.4	6.3
14. Crop productivity		2.1	
15. Water-borne disease risks		3.3	6.3
16. Prevalence of food insecurity		2.2	2.1
17. Renewable energy	7.2.1		9.4
18. Electricity production from oil, gas and coal sources (%)			6.3
19. Energy consumption			7.3
20. CO2 emission			9.4; 13.2
21. Tertiary Education Attainment			4.3; 4.4; 12.a
22. IWRM implementation	6.5.1		
23. ND Readiness Index			13
24. Government Effectiveness			6.b; 10

4.3 Indicator results

The following section provides the results. Information on all indicators and all data available for at least 145 countries for each indicator are provided in detail in Annex 2.

4.3.1 Result assessment

4.3.2.1 Compare the country performances to the external factors

In section 4.1, the concept *external fact*or is cited for system analysis, and this concept will continue to be used in this section.

- Country wealth

As mentioned in section 4.1, achieving the multiple aspects that belong to water-energy-food sector requires sufficient economic prosperity. The interlinkages between country wealth and (some) environmental performances are direct: the capacity for investment on infrastructure can underpin the water service from household level to city level, and in a long term the public education and the effort put on research (nature science, social science and engineering) that

benefit from investment will contribute to the development on technologies and the improvement on policies and regulations.

Consistent with the analysis above, indicator results under category 1, 2, 3 and 5 that cover multi-level water-security aspects along with category 7 that assess the governance capacity show high correlation between GDP (per cap) and country performance.

Shown below is the sample calculation of the indicator *wastewater treatment*:

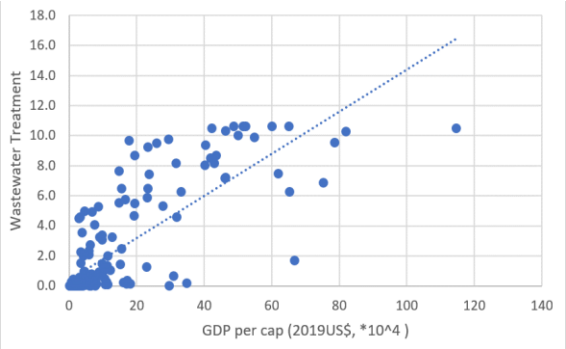


Figure 5.1 relationship between Wastewater Treatment score and country wealth, as measured by GDP per capita (Pearson correlation coefficient r=0.74)

- Population

Higher demand for water, energy and food service is consistent with population growth. And at the same time, high population will lead to higher pollutants emissions from household to country-level. Both of these two facts can give extra pressure on land, infrastructure and facility and ultimately lead to low scores.

Simple correlation analysis between indicator results cannot indicate the negative impact on achieving SDGs from high population, since before using the data of population, there is a need for data standardization (e.g., distribution-standardized, age-standardized measures).

But by comparing the global population distribution map and the regional performance figures (see Annex 2) from the NBF results, it can be observed that there is an apparent trend that high population-density regions tend to score lower based on the NBF.

4.3.2.2 Compare the country performances for different indicators

Based on the Pearson test between NBF indicators, compared to the trade-off and synergy among the indicators belonging to other categories, the governance-related indicators from category 7 have a universal positive relation to most other NBF indicators. Shown below are some results for *water-borne disease risks* and category 7 (Figures 5.2 and 5.3).

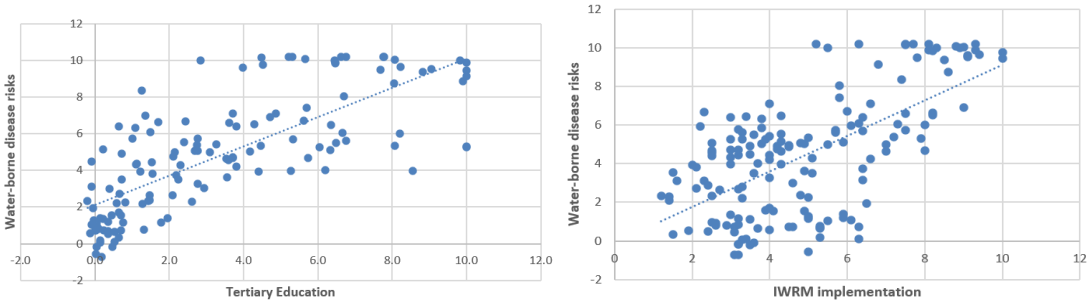


Figure 5.2. The relationship between the water-borne disease risks score (Y-axis) and *tertiary education attainment score (r=0.76; left) and IWRM implementation (%) (r=0.64; right)*

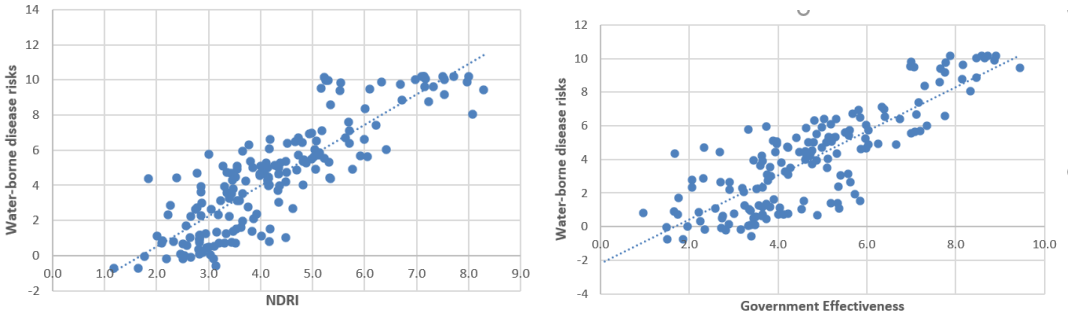


Figure 5.3. The relationship between water-borne disease risks scores and *Notre Dame Readiness Index* (NDRI) scores *(r=0.86; left) and the relationship between the water-borne disease risks* score and *government effectiveness (r=0.82; right) according to the World Bank (2021)*

These results can be mainly attributed to the role that governance plays as driving force for sustainable development. Meanwhile, it verifies the theory that positive environmental performance requires "good governance, including a strong rule of law, vibrant public engagement, an independent media, and well-crafted regulations" (Wendling et al., 2020).

4.3.3 Other findings from the NBF result

As shown by the regional performance figures (see Annex 2), the result of countries from the same region tends to distribute in a similar range on the scorecard. This is because peer nations often share similar cultural, history, and regional characteristics (e.g., climate). Thus, it is worth looking for countries that get scores exceeding those of their peer nations.

Taking Colombia's score on solid waste management as a case, it got a full score of 10.0 on waste management. This is because informal waste pickers, which play an integral role in waste management in many developing countries, got the local government's formal recognition and support by offering infrastructure and equipment (Medina, 2008). Their duties are to recycle and compost waste (Kaza et al., 2018). The case of Colombia can provide a good example that inspires other low- or medium-income countries to develop their national strategy to improve their sustainability by improving their circularity, i.e., by enhancing their waste management.

Chapter 5 Discussion

5.1 Data: limitations and further study

- Temporal completeness:

Temporal completeness means the dataset can provide information across time. Data provided by the snapshot always lacks temporal completeness since the snapshot is one-off measurements. In this situation, the performance of the indicator sometimes could be useful but cannot show trends. If data is available, the longitudinal data should be of priority selection. In the new NBF, with the preference for spatial completeness, some data temporally incomplete are selected. This limitation can be found in the data source for indicator soil erosion and water quality risks.

- Recency:

The NBF has the function of assessing current water challenges on a national scale. Therefore, newer datasets are more responsive to the aim of developing NBF. But since the data should be available worldwide, in some situations we need to sacrifice the recency of the data. This limitation can be found in the data source for tertiary education attainment.

- Data standardization:

It is common for variables standardization with a common denominator. The aim of processing data in this way is to ensure appropriate comparisons (Wendling et al., 2020).

To develop metrics that are comparable, it is needed to control country characteristics that could confound comparison (Wendling et al., 2020), which involves adding common denominators. For example, in this new NBF, population, population growth, GDP, GDP per cap, GDP growth and proportion of GHG are all reasonable data for further improvements on indicator *CO2 emissions*; the natural condition on energy resource is worthy to discuss for data standardization on indicator *energy consumption*.

This data processing is in need of more complex and accurate calculations based on associated theories, which can be a further perspective to improve the NBF.

- Data transformation:

An effective indicator framework that applies to a wide range of regions should avoid results' skewness. In other words, it must be inspected for most countries clustered at one end of the distribution. Due to the limitation on data availability, the criteria assessing water supply and sanitation at the household level is set as "basic" level, which is much easier to achieve than the "well-managed" level addressed in SDG 6. This limitation results in a big group of countries getting high scores on indicator 1 and 2.

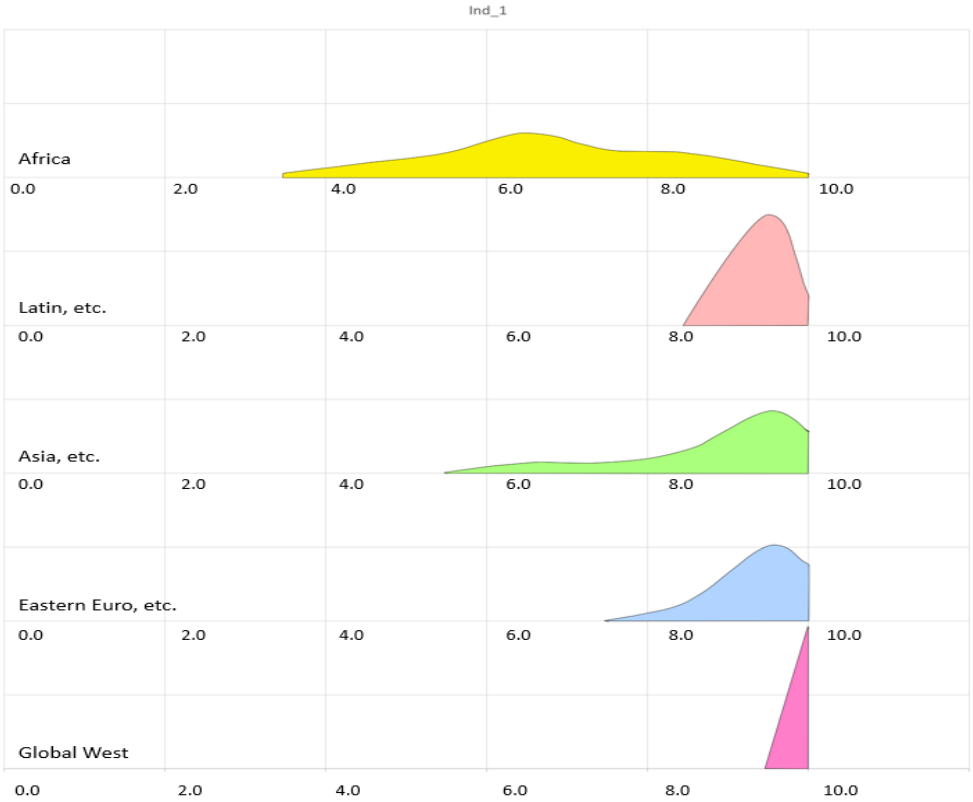


Figure 5.3.a Regional performance on basic drinking water supply

Thus, there is a need for data transformations to improve the NBF performance. Logarithmic transformations are a common way to shift the results to a more evenly distributed scores, but further work is needed to assess the rationality for applying it to the NBF.

The development of scoring could be a potential way for further improvements of the NBF.

Chapter 6 Conclusion

This thesis is based on the National Blueprint Framework developed for the EU28 (Essex et al., 2020) that assessed six targets and associated indicators for SDG6. With the aim of developing a new NBF framework for developing countries to solve the problems on data availability and taking into consideration the WEF nexus, a new NBF framework has been developed and quantitative data have been collected, reviewed and discussed for a variety of developing countries.

It is concluded that:

1) The concepts and theories of water-, energy- and food security can contribute to a better understanding of the sustainability of water, energy and food systems. A means-ends system analysis provides an effective way of understanding the dynamic and complex linkages of the WEF nexus.
2) The shifted focus to WEF nexus (with a firm basis in IWRM) leads to a wider range of focused areas and necessitated the re-categorizing of the framework.
3) By reformulating the indicators in a SMART manner, the newly developed NBF is easily applicable to a sufficient number (at least 145) of countries and the NBF results are effective in representing the regional characteristics and the vulnerability of specific countries.
4) The priority on the spatial completeness of the dataset still results in many restrictions on data selection.
5) The correlations between some NBF indicators and external factors are aligned with the inter-linkages and inter-dependencies that existed in the WEF nexus.
6) It is worth looking at countries that receive scores exceeding those of their peer nations, because they are potentially good examples to share their experiences and to provide guidance to other countries to improve their sustainability, i.e., to successfully implement the UN SDGs.
7) For further research towards a more effective and accurate indicator framework, it is suggested to do further research in data processing (data standardization and transformation).

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Annex 1. Indicators of the National Blueprint Framework

1.1 General description

Table 1 – Overview of the 24 indicators of the new NBF

Category	Indicator
Household Water Security	1. Basic drinking water supply
	2. Basic sanitation connection
	3. Energy for household clean water
Urban Water Security	4. Wastewater treatment
	5. Solid waste management
	6. Flood vulnerability
Environment and Water Resources	7. Water scarcity
	8. Water quality risk
	9. Water-related ecosystems' change
Water, Land and Food	10. Agriculture and water use
	11. Soil erosion
	12. Irrigation management
	13. Sustainable nitrogen management index
	14. Crop productivity
Human Health	15. Water-borne disease risks
	16. Prevalence of food insecurity
Water and Energy	17. Renewable energy
	18. Electricity production from oil, gas and coal sources (%)
	19. Energy consumption
	20. CO2 emission
Management and Governance	21. Tertiary Education Attainment
	22. IWRM implementation
	23. Notre Dame Readiness Index
	24. Government Effectiveness

Scoring method:

Assume X as the country's value from the data source.

a) For indicators which directly utilizing an indicator from another framework, the original index value X will be rescaled into a 0-10 score.

   Applicable for: Indicator 4, 5, 13, 15, 23 and 24.

b) For indicators that have specific values defined by SDG targets as the target value

   Indicator Score =10* (X – B) / (A – B)

   A: the target value; B: the lowest value

   Applicable for: Indicator 1, 2, 3, 16 and 22.

c) For indicators that don't have specific values as the target value, average of the maximum 10% countries' value was set as the target for countries, and the average of the minimum 10% of countries' value was set as the lowest value.

   Indicator Score =10* (X – B) / (A – B)

   A: the target value; B: the lowest value

   Applicable for: Indicator 6, 7, 10, 12, 14, 17, 18, 19, 20, 21

d) For indicators using snapshots (e.g., risks map) as data source, the legends provided by map in different colors will be valued with scores and then rescaled from 0 to 10.0.

   Applicable for: Indicator 8, 9 and 11

1.2 Data source and calculation example

Category 1. Household Water Security

Indicator 1. Basic drinking water supply

- **Raw data X:**

Population with an "at least basic" drinking water supply (%)

- **Data description:**

The data measures the percentage of population connected to a "at least basic" level drinking water supply in the national scale.

Data source:

https://washdata.org/data/downloads#WLD

Click *Household* and choose *World file*. After the dataset downloaded, check data under the sheet *Water → National → At least basic*

- **How to Calculate:**

$$\text{Indicator 1} = X/10$$

- **Example:**

In China, the percentage of population connecting to a at least basic drinking water supply in 2017 is 92.9%.

Therefore, the score for Indicator 1 =92.9/10 =9.3

A higher score shows a better situation of drinking water supply.

Indicator 2. Basic sanitation connection

- **Raw data X:**

Population with an "at least basic sanitation" connection (%)

- **Data description:**

The data measures the percentage of population connected to a "at least basic" level sanitation service at the national scale.

- **Data source:**

https://washdata.org/data/downloads#WLD

Click *Household* and then choose *World file*. After the dataset downloaded, check data under the sheet *Sanitation → National → At least basic.*

- **How to Calculate:**

Indicator 2 =X/10

- **Example:**

In China, the percentage of population connecting to a at least basic sanitation supply in 2017 is 84.8(%).

Therefore, the score for Indicator 2 =84.8/10 =8.5

A higher score shows a better situation of sanitation connection.

Indicator 3. Energy service for water and food

- **Raw data X:**

Access to clean fuels and technologies for cooking (% of population)

- **Data source:**

https://data.worldbank.org/indicator/EG.CFT.ACCS.ZS

- **Data description (quoted from the data source):**

Access to clean fuels and technologies for cooking is the proportion of total population primarily using clean cooking fuels and technologies for cooking. Under WHO guidelines, kerosene is excluded from clean cooking fuels.

- **How to Calculate:**

Indicator 3 =X/10

- **Example:**

In Indonesia, the percentage of population with the access to clean fuels and technologies for cooking in 2016 is 58.0 %.

Therefore, the score for Indicator 3 =58.0/10 =5.8

A higher score shows a better situation of energy supply at household level.

Category 2. Urban Water Security

Indicator 4. Wastewater treatment

- **Raw data X:**

Environmental Performance Indicator *Wastewater Treatment* under the category *Water Resource*

- **Data source:**

https://epi.yale.edu/downloads

Download EPI2020results.csv, and check the data under *WWT.new*

- **Data description:**

EPI WWT defines wastewater treatment as the percentage of wastewater that undergoes at least primary treatment in each country and the data is normalized by the proportion of the population connected to a municipal wastewater collection system (Wendling et al., 2020).

- **How to Calculate:**

$$\text{Indicator 4} = X/10$$

- **Example:**

In Brazil, the EPI WWT score for 2020 is 49.3.

Therefore, the score for Indicator 4 =X/10=4.9

A higher score means a better situation of the wastewater treatment service.

Indicator 5. Solid waste management

- **Raw data X:**

Environmental Performance Indicator *Controlled Solid Waste* under the category *Waste Management*

- **Data source:**

https://epi.yale.edu/downloads

Download EPI2020results.csv, and check the data under *MSW.new*

- **Data description:**

The EPI indicator *Controlled Solid Waste* "measures controlled solid waste as the percentage of generated waste collected and treated in a manner that controls environmental outcomes. This metric count waste as "controlled" if it is treated

through recycling, composting, anaerobic digestion, incineration, or disposed of in a sanitary landfill." (Wendling et al., 2020).

- **How to Calculate:**

Indicator 5 = X/10

- **Example:**

In Philippines, the EPI Controlled Solid Waste score for 2020 is 17.4.

Therefore, the score for Indicator 5 =17.4/10 =1.7

A higher score means a better situation of solid waste management.

Indicator 6. Flood vulnerability

- **Raw data X:**

Annual average population affected by river floods.

- **Data source:**

https://www.wri.org/aqueduct/data

Download *Aqueduct Global Flood Risk Country Ranking and* check the data *annual average population affected by river floods*.

- **Data description (quoted from the data source):**

The Aqueduct Global Flood Risk Country Ranking ranks 163 countries by their current annual average population affected by river floods.

- **How to Calculate:**

Y=X/National population

Max value Y (average of highest 10%): A=0.64%

Min value Y (average of lowest 10%): B=0.01%

Indicator 6 = 10-10* (Y-B)/(A-B)

- **Example:**

In Kenya, 0.128% of population affected by river floods annually.

Therefore, Indicator 6 =10-10*(0.128-0.01) / (0.64-0.01) =8.1

A higher score means a lower flood risk.

Category 3. Environment and Water Resources

Indicator 7. Water scarcity

- **Raw data X:**

Indicator 6.4.2 Level of water stress

- **Data source:**

https://sdg6data.org/indicator/6.4.2

Go to the table 6.4.2 Level of water stress: freshwater withdrawal as a proportion of available freshwater resources and check the column named *Overall (%)*

- **Data description (quoted from the data source):**

The data measures the ratio between total freshwater withdrawn by all major sectors and total renewable freshwater resources, after taking into account environmental flow requirements.

- **How to Calculate:**

Max value (average of highest 10%): A=117

Min value (average of lowest 10%): B=0.63

Indicator 7= 10-10* (X-B)/(A-B)

- **Example:**

In China, overall freshwater withdrawal as a proportion of available freshwater resources in 2017 is 43.22%.

Therefore, the score for Indicator 7 =10-10*(43.22-0.63) / (117-0.63) =6.3

A higher score means less stress on water scarcity.

Indicator 8. Water quality risk

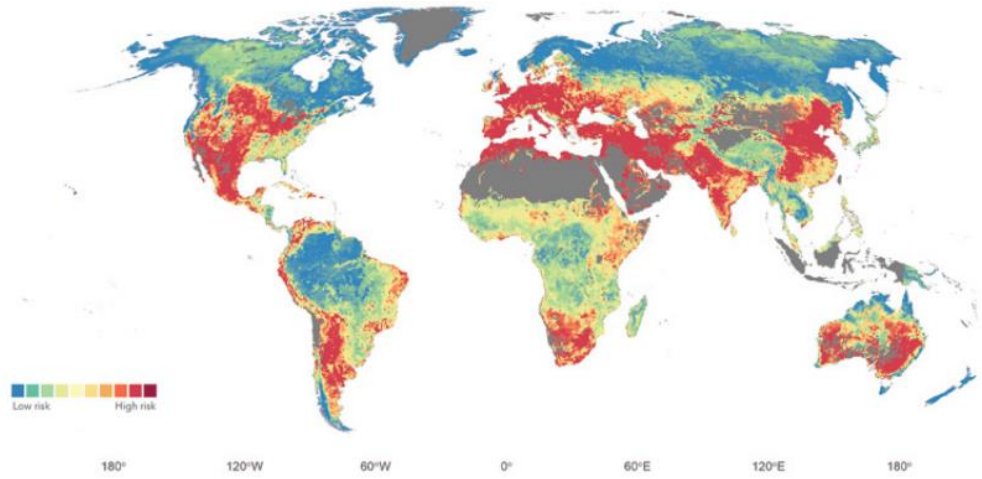
- **Raw data X:**

Risk of Poor Water Quality

- **Data source:**

https://openknowledge.worldbank.org/handle/10986/32245

MAP 1.2: Global Risk of Poor Water Quality



Check Map 1.2 Global Risk of Poor Water Quality in pp.7

Damania, R., Desbureaux, S., Rodella, A. S., Russ, J., & Zaveri, E. (2019). Quality unknown: The invisible water crisis. The World Bank.

- **Data description (quoted from the data source):**

This map shows a water quality index summarizing global predictions for biological oxygen demand, electrical conductivity, and nitrogen. Each value is scaled to a common support for comparability and then summed together. Average values for 2000–10 are displayed. Grey areas have no data for one or more parameters.

- **How to Calculate:**

In the map, ten color columns indicate the Risk of Poor Water Quality from low to high. Give each color column a score from 1 to 10, and a higher score indicates a higher risk. A weighted score is calculated for those countries which have more than one color. The final score = 10- the weighted score

- **Example:**

In South Africa, around 85% area is in red and 15% area in light green.

Therefore, the score for Indicator 8 =10-(85%*9+15%*4) =1.7

A higher score means a lower risk of poor water quality.

Indicator 9. Water-related ecosystems' change

- **Raw data X:**

Changes in the extent of water-related ecosystems over time (SDG indicator 6.6.1)

- **Data source:**

https://sdg6data.org/indicator/6.6.1

Check map *Global status of Indicator 6.6.1 Change in the extent of water-related ecosystems over time (2016)*, click the country and a specific value will be displayed。

- **Data description (quoted from the data source):**

SDG indicator 6.6.1 tracks changes in different types of water-related ecosystems, enabling decision makers to determine the extent of ecosystem change over time. The SDG661.app exists to serve countries with accurate, high resolution, time-series data on freshwater. The data should be used by countries to track national progress towards achieving SDG target 6.6; to inform all sector-wide decision-making processes that may impact the quantity and quality of water found in freshwater ecosystems; and drive action to secure their immediate protection and restoration.

- **How to Calculate:**

For X range from -30 to +30, Indicator 9 = X/6+5

For X < -30, Indicator the score for indicator 9 =0

For X > 30, Indicator 9 scores 10

Example:

In India, change in the extent of water-related ecosystems over time (%) is 13.

Therefore, the score for Indicator 9 =13/6+5 =7.2

A higher score means a lower value for Water-related ecosystems' change.

Category 4. Water, Land and Food

Indicator 10. Agriculture and water use

- **Raw data X:**

Agriculture withdrawal as % of total water withdrawal (%)

- **Data description:**

The data measures agricultural water withdrawal as percentage of total water withdrawal, using the following formula [Agricultural water withdrawal as % of total water withdrawal] = [Agricultural water withdrawal]/[Total water withdrawal]*100

- **Data source:**

http://www.fao.org/nr/water/aquastat/data/query/index.html?lang=en

Click *Water use → Water withdrawal by sector → Agricultural water withdrawal as % of total water withdrawal*

- **How to Calculate:**

Max value (average of highest 10%): A=94.9

Min value (average of lowest 10%): B=0.1

Indicator 10= 10-10* (X-B)/(A-B)

- **Example:**

In China, agriculture withdrawal as % of total water withdrawal in 2015 is 64.4%.

Therefore Indicator 10 =10-10*(64.4-0.1) / (94.9-0.1) =3.2

A higher score means lower stress from agriculture water use.

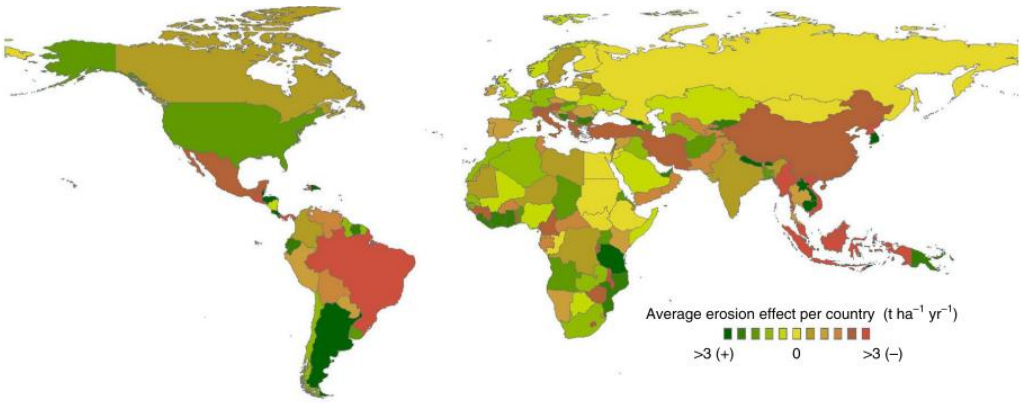
Indicator 11. Soil erosion

- **Raw data X:**

Global map of countries' soil erosion performance (Wuepper et al., 2020)

- **Data description:**

"The map is based on soil erosion discontinuities between each country and all of its neighbors (unweighted). Darker green indicates that a country has a more positive impact on the global rate of soil erosion than its neighbors (that is, it has a dampening effect), and darker red indicates that a country has a more negative impact on the global rate of soil erosion (that is, it has higher erosion rates)." (Wuepper et al., 2020)



Wuepper, D., Borrelli, P., & Finger, R. (2020). Countries and the global rate of soil erosion. Nature Sustainability, 3(1), 51-55.

- **Data source:**

https://www.nature.com/articles/s41893-019-0438-4

Check *Fig. 3 | A global map of countries' soil erosion performance.*

- **How to Calculate:**

The eleven colors on the map were each given a score from 10 to 0. Take the score of dark green as 10, and use 9, 8, 7, etc., to 0 for the following colors.

- **Example:**

For China, the color is brown, therefore the score for Indicator 11 =1.0

A higher score shows a more positive impact on the global rate of soil erosion.

Indicator 12. Irrigation management

- **Raw data X:**

Percentage irrigation potential equipped for irrigation (%)

- **Data source:**

http://www.fao.org/nr/water/aquastat/data/query/index.html?lang=en

Click *Irrigation and drainage development → Area under agricultural water management → % of irrigation potential equipped for irrigation.*

- **Data description (quoted from the data source):**

The data measures percent of the total area of potentially irrigable land (irrigation potential) that is equipped for irrigation, expressed in percentage, by using the formula [% of irrigation potential equipped for irrigation] = 100*[Area equipped for irrigation: total]/[Irrigation potential]

- **How to Calculate:**

Max value (average of highest 10%): A=88.00

Min value (average of lowest 10%): B=1.01

Indicator 12= 10* (X-B)/(A-B)

- **Example:**

In Mexico, the irrigation potential equipped for irrigation (%) in 2016 is 73.99, therefore Indicator 12=10*(73.99-1.01) / (88.00-1.01) =8.4

A higher score shows a higher dependence on irrigation, which is not directly linked a better or worse sustainability performance but linked to vulnerability of agriculture to water stress and climatic shocks.

Indicator 13. Sustainable nitrogen management index

- **Raw data X:**

Sustainable Nitrogen Management Index (SNMI)

- **Data source:**

https://dashboards.sdgindex.org/map/indicators/sdg2_snmi/ratings

Click on a country from the map, then the country's profile will be displayed left from the map. A value ranging from 0 to 1 can be found in the profile.

- **Data description (quoted from the data source):**

The Sustainable Nitrogen Management Index (SNMI) is a one-dimensional ranking score that combines two efficiency measures in crop production: Nitrogen use efficiency (NUE) and land use efficiency (crop yield). It seeks to balance efficient application of nitrogen fertilizer with maximum crop yields as a measure of the environmental performance of agricultural production.

- **How to Calculate:**

Indicator 13 = 10-10*X/1.4

- **Example:**

For Viet Nam, the SNMI value in 2015 is 0.6.

Therefore Indicator 13=10-10*0.6/1.4 =5.7

A higher score shows better performance for achieving sustainable nitrogen management.

Indicator 14. Crop productivity

- **Raw data X:**

Average value of food production (constant 2014-2016 I$/cap) (3-year average)

- **Data source:**

http://www.fao.org/faostat/en/#search/food%20production

Check the column *Year* and then filter 2014-2016.

- **Data description (quoted from the data source):**

The data measures average value of food production per capita constant in 3 years.

- **How to Calculate:**

Max value (average of highest 10%): A=863

Min value (average of lowest 10%): B=43

Indicator 14= 10* (X-B)/(A-B)

- **Example:**

Thailand, average value of food production from 2014 to 2016 is 386 I$ per person.

Therefore Indicator 14 =10*(386-43) / (863-43) =4.2

A higher score shows a higher ability of food production.

Category 5. Human Health

Indicator 15. Water-borne disease risks

- **Raw data X:**

EPI score of the issue category *Sanitation & Drinking Water*

- **Data source:**

https://epi.yale.edu/downloads

Download EPI2020results.csv, and check the data under *H2O.new*

- **Data description (quoted from the data source):**

The data measures the outcome of unsafe sanitation and unsafe drinking water by using the number of age-standardized disability-adjusted life-years lost per 100,000 persons (DALY rate) due to their exposure to inadequate sanitation facilities and exposure to unsafe drinking water.

- **How to Calculate:**

$$\text{Indicator 15} = X/10$$

- **Example:**

In Argentina, the EPI score of the issue category *Sanitation & Drinking Water* in 2020 is 64.7.

Therefore, Indicator 15=64.7/10=6.5

A higher score shows a lower water-borne disease risk.

Indicator 16. Prevalence of food insecurity

- **Raw data X:**

Prevalence of moderate or severe food insecurity in the total population (%)

- **Data source:**

http://www.fao.org/faostat/en/#search/Prevalence%20of%20moderate%20or%20severe%20food%20insecurity%20in%20the%20total%20population%20percent

- **Data description (quoted from the data source):**

The data measures the 3-year average percentage of total population suffered from prevalence of moderate or severe food insecurity from 2017-2019

- **How to Calculate:**

$$\text{Indicator 16} = 10-X/10$$

- **Example:**

For Zimbabwe, prevalence of moderate or severe food insecurity in the total population (%) in 2017-2019 is 66.7.

Therefore, Indicator 16 =10-66.7/10=3.3.

A higher score shows a better outcome for public health regarding food security.

Category 6. Water and Energy

Indicator 17. Renewable energy consumption (%)

- **Raw data X:**

Renewable energy consumption (% of total final energy consumption)

- **Data description:**

Renewable energy consumption is the share of renewable energy in total final energy consumption.

- **Data source:**

https://data.worldbank.org/indicator/EG.FEC.RNEW.ZS

- **How to Calculate:**

Max value (average of highest 10%): A=85.65

Min value (average of lowest 10%): B=0.05

Indicator 17= 10* (X-B)/(A-B)

- **Example:**

For Philippines, renewable energy share of TFEC in 2015 is 27.45%, therefore Indicator 17 =10*(27.45-0.05) / (85.65-0.05) =3.2

A higher score shows a broader use of renewable energy.

Indicator 18. Fossil energy use

- **Raw data X:**

Electricity production from oil, gas and coal sources (% of total)

- **Data source:**

https://data.worldbank.org/indicator/EG.ELC.FOSL.ZS

- **Data description (quoted from the data source):**

Sources of electricity refer to the inputs used to generate electricity. Oil refers to crude oil and petroleum products. Gas refers to natural gas but excludes natural gas liquids. Coal refers to all coal and brown coal, both primary (including hard coal and lignite-brown coal) and derived fuels (including patent fuel, coke oven coke, gas coke, coke oven gas, and blast furnace gas). Peat is also included in this category.

- **How to Calculate:**

Max value (average of highest 10%): A=99.8

Min value (average of lowest 10%): B=5.2

Indicator 18=10- 10* (X-B)/(A-B)

- **Example:**

In Morocco, electricity production from oil, gas and coal sources (%) of in 2015 is 81.5.

Therefore Indicator 18 =10-10*(81.5-5.2) / (99.8-5.2) =1.9

A higher score shows a lower dependency on fossil fuel energy.

Indicator 19. Energy consumption

- **Raw data X:**

Energy use (kg of oil equivalent per capita)

- **Data source:**

https://data.worldbank.org/indicator/EG.USE.PCAP.KG.OE

- **Data description (quoted from the data source):**

Energy use refers to use of primary energy before transformation to other end-use fuels, which is equal to indigenous production plus imports and stock changes, minus exports and fuels supplied to ships and aircraft engaged in international transport.

- **How to Calculate:**

Max value (average of highest 10%): A=9090.6

Min value (average of lowest 10%): B=360.7

Indicator 19= 10-10* (X-B)/(A-B)

- **Example:**

In Kenya, energy use (kg of oil equivalent per capita) in 2014 is 506.0.

Therefore Indicator 19 =10-10*(506.0-360.7) / (9090.6-360.7) =9.8

A higher score shows a lower energy consumption per capita.

Indicator 20. CO2 emission

- **Raw data:**

CO2 emissions (metric tons per capita)

- **Data source:**

https://data.worldbank.org/indicator/EN.ATM.CO2E.PC

- **Data description (quoted from the data source):**

Carbon dioxide emissions are those stemming from the burning of fossil fuels and the manufacture of cement. They include carbon dioxide produced during consumption of solid, liquid, and gas fuels and gas flaring.

- **How to Calculate:**

Max value (average of highest 10%): A=17.91

Min value (average of lowest 10%): B=0.16

Indicator 20= 10 10* (X-B)/(A-B)

- **Example:**

In China, CO2 emissions (metric tons per capita) in 2016 is 7.18.

Therefore, the score for Indicator 20 =10-10*(7.18-0.16) / (17.91-0.16) =6.0

A higher score shows a lower CO2 emission per capita.

Category 7. Management and Governance

Indicator 21. Tertiary Education Attainment (%)

- **Raw data X:**

Population with completed tertiary education (%)

- **Data source:**

https://ourworldindata.org/grapher/share-of-the-population-with-completed-tertiary-education

Check the map and put the cursor on each country, then the value will be displayed.

- **Data description (quoted from the data source):**

The data measures the share of the population with completed tertiary education. The share refers to the population 15 years and older.

- **How to Calculate:**

Max value (average of highest 10%): A=22.4

Min value (average of lowest 10%): B=0.6

Indicator 21 =10* (X-B)/(A-B)

- **Example:**

In Thailand, population with completed tertiary education (%) of in 2010 is 10.47.

Therefore, the score for Indicator 21 =(10.47-0.6) / (22.4-0.6) =4.5

A higher score shows a better performance on tertiary education attainment

Indicator 22. IWRM implementation

- **Raw data X:**

Degree of integrated water resources management implementation (0-100) (%)

- **Data source:**

https://sdg6data.org/indicator/6.5.1

Go to the bottom of the webpage and the table can be download.

- **Data description (quoted from the data source):**

The data measures the percentage of Integrated Water Resources Management (IWRM) in river basin management plans. The goal is for all basins to be managed using

IWRM.

- **How to Calculate:**

Indicator 22 = X/100

- **Example:**

For China, degree of integrated water resources management implementation (%) of in 2017 is 75, therefore the score for Indicator 22=7.5

A higher score shows a higher degree of IWRM implementation.

Indicator 23. Notre Dame Readiness Index

- **Raw data X:**

ND-GAIN Index Score

- **Data source:**

https://gain-new.crc.nd.edu/ranking/readiness

- **Data description (quoted from the data source):**

A country's ND-GAIN index score is composed of a vulnerability score and a readiness score. Readiness measures a country's ability to leverage investments and convert them to adaptation actions. ND-GAIN measures overall readiness by considering three components – economic readiness, governance readiness and social readiness.

- **How to Calculate:**

Indicator 23 = X*10

- **Example:**

For Brazil, ND-GAIN Index Score in 2018 is 0.346. Therefore Indicator 23=0.346*10=3.5

A higher score shows a higher ability of a country to leverage investments and convert them to adaptation actions.

Indicator 24. Government Effectiveness

- **Raw data X:**

Government Effectiveness: Estimate

- **Data source:**

https://databank.worldbank.org/source/worldwide-governance-indicators

On the left bar, open *Series* and then click *Government Effectiveness: Estimate;* open *Time* and then click *2019;* open *Country* and then click the country you want to check. Finally, click *Apply Changes* and then the Government Effectiveness score will be displayed.

- **Data description (quoted from the data source):**

Reflects perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

- **How to Calculate:**

Since X ranges from -2.5 to 2.5,

Indicator 24 ={(x-(-2.5)} / {2.5 - (-2.5)} x 10 =10*(x+2.5)/5

- **Example:**

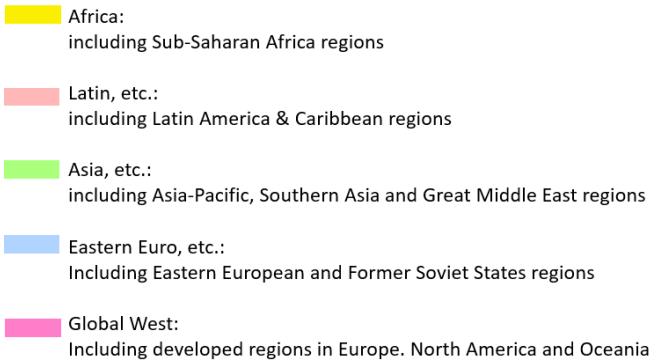
In Chile, Government Effectiveness indicator in 2019 is 1.1.

Therefore, Indicator 24 =10*(1.1+2.5)/5 =7.2

A higher score shows a better government effectiveness.

Annex 2. Regional Performance

Legends for regional Performance diagrams:



The height of the graph indicates the proportion of countries ranging in this score.

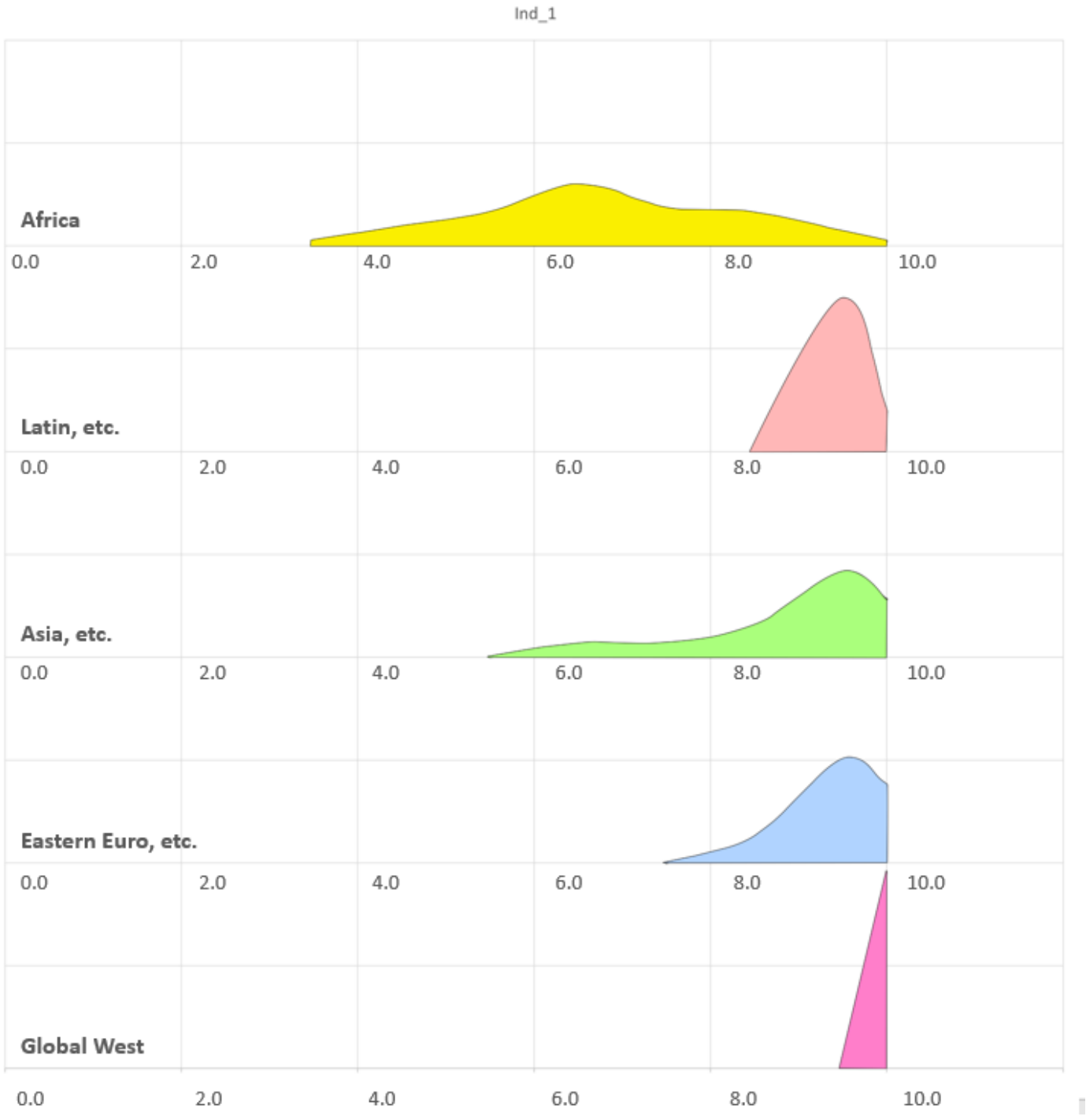
*The indicators (Indicator 8, 9 and 11) using snapshots display (e.g., risk map) as the dataset are excluded since the original display form of data can display the distribution of regional characteristics.

Scores on Basic drinking water supply (%) (Category 1. Indicator 1)

SUB-SAHARAN AFRICA		LATIN AMERICA & CARIBBEAN		ASIA-PACIFIC		GLOBAL WEST	
Mauritius	10.0	Argentina	10.0	Brunei Darussalam	10.0	Australia	10.0
Seychelles	9.6	Chile	10.0	Japan	10.0	Austria	10.0
South Africa	9.3	Costa Rica	10.0	Singapore	10.0	Belgium	10.0
Botswana	9.0	Mexico	10.0	South Korea	10.0	Canada	10.0
Cabo Verde	8.7	Paraguay	10.0	Thailand	10.0	Denmark	10.0
Gabon	8.6	Uruguay	10.0	Tonga	10.0	Finland	10.0
Sao Tome and Principe	8.4	Bahamas	9.9	Samoa	9.7	France	10.0
Namibia	8.3	Barbados	9.8	Malaysia	9.7	Germany	10.0
Ghana	8.1	Brazil	9.8	Viet Nam	9.5	Iceland	10.0
Senegal	8.1	Trinidad and Tobago	9.8	Fiji	9.4	Italy	10.0
Comoros	8.0	Saint Lucia	9.8	Philippines	9.4	Luxembourg	10.0
Mali	7.8	Belize	9.8	China	9.3	Malta	10.0
Gambia	7.8	El Salvador	9.7	Vanuatu	9.1	Netherlands	10.0
Djibouti	7.6	Colombia	9.7	Indonesia	8.9	New Zealand	10.0
Congo Rep	7.3	Antigua and Barbuda	9.7	Marshall Islands	8.8	Norway	10.0
Liberia	7.3	Dominican Rep	9.7	Mongolia	8.3	Portugal	10.0
Côte d'Ivoire	7.3	Panama	9.6	Myanmar	8.2	Spain	10.0
Nigeria	7.1	Venezuela	9.6	Cambodia	7.9	Sweden	10.0
Mauritania	7.1	Grenada	9.6	Timor-Leste	7.8	Switzerland	10.0
Eswatini	6.9	Guyana	9.6	Kiribati	7.2	United Kingdom	10.0
Malawi	6.9	Suriname	9.5	Solomon Islands	6.8	United States	10.0
Lesotho	6.9	Cuba	9.5	Papua New Guinea	4.1	Ireland	9.7
Guinea-Bissau	6.7	Saint Vincent and the Grenadines	9.5	**SOUTHERN ASIA**		**EASTERN EUROPE**	
Benin	6.6	Honduras	9.5	Maldives	10.0	Bulgaria	10.0
Togo	6.5	Guatemala	9.4	Bhutan	9.7	Croatia	10.0
Equatorial Guinea	6.5	Ecuador	9.4	Bangladesh	9.7	Cyprus	10.0
Zimbabwe	6.4	Bolivia	9.3	India	9.3	Czech Rep	10.0
Guinea	6.2	Peru	9.1	Pakistan	9.1	Estonia	10.0
Guinea	6.2	Jamaica	9.1	Sri Lanka	8.9	Greece	10.0
Burundi	6.1	Nicaragua	8.2	Nepal	8.9	Hungary	10.0
Sierra Leone	6.1	Haiti	6.5	Afghanistan	6.7	Poland	10.0
Cameroon	6.0	**GREATER MIDDLE EAST**		**FORMER SOVIET STATES**		Romania	10.0
Zambia	6.0	Bahrain	10.0	Armenia	10.0	Slovakia	10.0
Kenya	5.9	Qatar	10.0	Turkmenistan	9.9	Slovenia	10.0
Rwanda	5.8	Israel	10.0	Georgia	9.8	Turkey	9.9
Tanzania	5.7	Kuwait	10.0	Uzbekistan	9.8	Latvia	9.9
Angola	5.6	Egypt	10.0	Russia	9.7	Lithuania	9.8
Mozambique	5.6	Saudi Arabia	10.0	Belarus	9.6	Montenegro	9.7
Madagascar	5.4	Jordan	9.9	Kazakhstan	9.6	Bosnia and Herzegovina	9.6
Niger	5.0	United Arab Emirates	9.8	Ukraine	9.4	North Macedonia	9.3
Uganda	4.9	Iraq	9.7	Azerbaijan	9.1	Albania	9.1
Burkina Faso	4.8	Tunisia	9.6	Moldova Rep	8.9	Serbia	8.6
Congo Dem Rep	4.3	Iran	9.5	Kyrgyzstan	8.7		
Ethiopia	4.1	Algeria	9.4	Tajikistan	8.1		
Chad	3.9	Lebanon	9.3				

	Oman	9.2
	Morocco	8.7
	Sudan	6.0

Regional performance on Basic drinking water supply (%) (Category 1. Indicator 1)



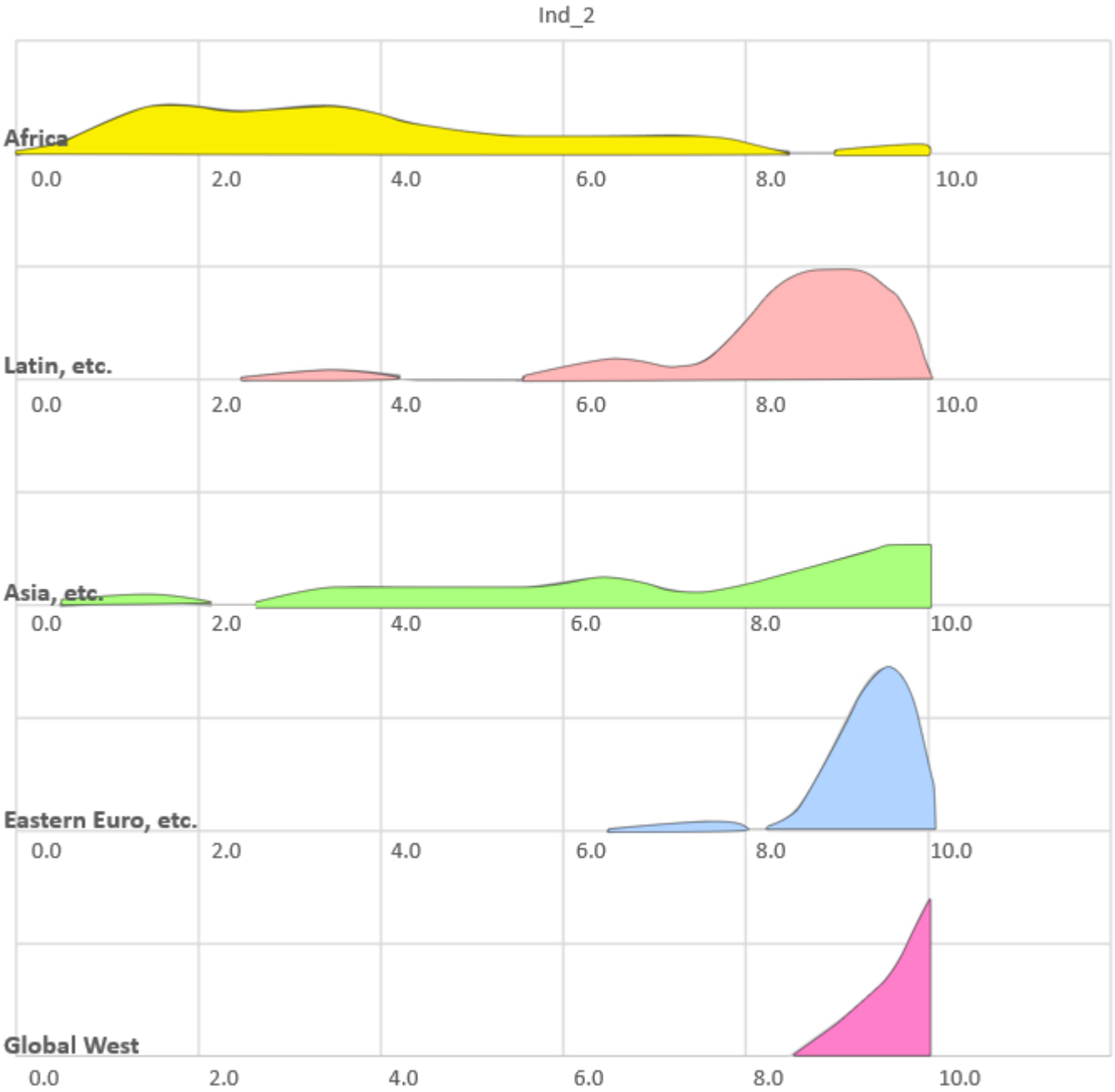
***Africa**: including Sub-Saharan Africa regions; **Latin, etc.**: including Latin America & Caribbean regions; **Asia, etc.**: including Asia-Pacific, Southern Asia and Great Middle East regions; **Eastern Euro, etc.**: Including Eastern European and Former Soviet States regions; **Global West**: Including developed regions in Europe, North America and Oceania*

Scores on Basic sanitation connection (%) (Category 1. Indicator 2)

SUB-SAHARAN AFRICA		LATIN AMERICA & CARIBBEAN		ASIA-PACIFIC		GLOBAL WEST	
Seychelles	10.0	Chile	10.0	Japan	10.0	Finland	10.0
Mauritius	9.6	Costa Rica	9.8	Singapore	10.0	Denmark	10.0
Botswana	7.7	Barbados	9.7	South Korea	10.0	Sweden	10.0
South Africa	7.6	Uruguay	9.7	Malaysia	10.0	Germany	10.0
Cabo Verde	7.4	Bahamas	9.5	Thailand	9.9	United Kingdom	10.0
Rwanda	6.7	Argentina	9.4	Samoa	9.8	Switzerland	10.0
Equatorial Guinea	6.6	Venezuela	9.4	Fiji	9.5	Australia	10.0
Djibouti	6.4	Trinidad and Tobago	9.3	Tonga	9.3	New Zealand	10.0
Eswatini	5.8	Cuba	9.3	China	8.5	Canada	10.0
Senegal	5.1	Grenada	9.1	Viet Nam	8.4	United States	10.0
Angola	5.0	Mexico	9.1	Marshall Islands	8.3	Portugal	10.0
Mauritania	4.8	Paraguay	9.0	Philippines	7.7	Malta	10.0
Gabon	4.7	Colombia	9.0	Indonesia	7.3	Austria	10.0
Burundi	4.6	Saint Lucia	8.8	Myanmar	6.4	Spain	10.0
Sao Tome and Principe	4.3	Brazil	8.8	Cambodia	5.9	Belgium	10.0
Lesotho	4.3	Ecuador	8.8	Mongolia	5.8	Iceland	9.9
Mali	3.9	Belize	8.8	Timor-Leste	5.4	Italy	9.9
Gambia	3.9	Antigua and Barbuda	8.8	Kiribati	4.8	France	9.9
Nigeria	3.9	El Salvador	8.7	Vanuatu	3.4	Norway	9.8
Cameroon	3.9	Jamaica	8.7	Solomon Islands	3.4	Netherlands	9.8
Zimbabwe	3.6	Saint Vincent and the Grenadines	8.7	Papua New Guinea	1.3	Luxembourg	9.8
Comoros	3.6	Guyana	8.6	**SOUTHERN ASIA**		Ireland	9.1
Namibia	3.5	Suriname	8.4	Maldives	10.0	**EASTERN EUROPE**	
Côte d'Ivoire	3.2	Dominican Rep	8.4	Sri Lanka	9.6	Slovenia	10.0
Tanzania	3.0	Panama	8.3	Bhutan	6.9	Estonia	10.0
Mozambique	2.9	Honduras	8.1	Nepal	6.2	Czech Rep	10.0
Kenya	2.9	Nicaragua	7.4	Pakistan	6.0	Cyprus	10.0
Zambia	2.6	Peru	7.4	India	6.0	North Macedonia	10.0
Malawi	2.6	Guatemala	6.5	Bangladesh	4.8	Greece	9.9
Guinea	2.3	Bolivia	6.1	Afghanistan	4.3	Poland	9.9
Guinea	2.3	Haiti	3.5	**FORMER SOVIET STATES**		Hungary	9.8
Guinea-Bissau	2.1	**GREATER MIDDLE EAST**		Uzbekistan	10.0	Slovakia	9.8
Congo Dem Rep	2.0	Bahrain	10.0	Turkmenistan	9.9	Montenegro	9.8
Congo Rep	2.0	Qatar	10.0	Kazakhstan	9.8	Albania	9.8
Burkina Faso	1.9	Israel	10.0	Belarus	9.8	Serbia	9.8
Uganda	1.8	Kuwait	10.0	Tajikistan	9.7	Turkey	9.7
Ghana	1.8	Oman	10.0	Kyrgyzstan	9.7	Croatia	9.7
Liberia	1.7	Saudi Arabia	10.0	Ukraine	9.6	Bosnia and Herzegovina	9.5
Benin	1.6	United Arab Emirates	9.9	Armenia	9.4	Lithuania	9.3
Togo	1.6	Lebanon	9.8	Azerbaijan	9.3	Latvia	9.2
Sierra Leone	1.6	Jordan	9.7	Russia	9.0	Bulgaria	8.6
Niger	1.4	Egypt	9.4	Georgia	9.0	Romania	8.4
Madagascar	1.1	Iraq	9.4	Moldova Rep	7.6		

Chad	0.8	Tunisia	9.1
Ethiopia	0.7	Morocco	8.9
		Iran	8.8
		Algeria	8.8
		Sudan	3.7

Regional performance on Basic sanitation connection (%) (Category 1. Indicator 2)



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Scores on Energy for household clean water (%) (Category 1. Indicator 3)

SUB-SAHARAN AFRICA		LATIN AMERICA & CARIBBEAN		ASIA-PACIFIC		GLOBAL WEST	
Mauritius	9.3	Bahamas	10.0	Brunei Darussalam	10.0	Australia	10.0
Seychelles	9.0	Barbados	9.9	Japan	10.0	Austria	10.0
South Africa	8.5	Antigua and Barbuda	9.9	Singapore	10.0	Belgium	10.0
Gabon	7.9	Trinidad and Tobago	9.9	South Korea	9.7	Canada	10.0
Cabo Verde	7.1	Argentina	9.8	Tonga	5.9	Denmark	10.0
Botswana	6.4	Uruguay	9.8	Thailand	7.4	Finland	10.0
Eswatini	5.0	Grenada	9.7	Samoa	3.2	France	10.0
Angola	4.8	St. Lucia	9.7	Malaysia	9.6	Germany	10.0
Mauritania	4.7	Brazil	9.6	Viet Nam	6.7	Iceland	10.0
Namibia	4.2	Ecuador	9.6	Fiji	4.0	Ireland	10.0
Lesotho	3.6	St. Vincent and the Grenadines	9.6	Philippines	4.3	Italy	10.0
Equatorial Guinea	3.4	Venezuela	9.6	China	5.9	Luxembourg	10.0
Senegal	3.2	Costa Rica	9.3	Vanuatu	1.3	Malta	10.0
Zimbabwe	2.9	Chile	9.2	Indonesia	5.8	Netherlands	10.0
Congo Rep	2.4	Colombia	9.2	Marshall Islands	6.5	New Zealand	10.0
Cameroon	2.3	Dominica	9.1	Mongolia	4.3	Norway	10.0
Ghana	2.2	Jamaica	9.1	Myanmar	1.8	Portugal	10.0
Cote d'Ivoire	1.8	Dominican Rep	9.0	Cambodia	1.8	Spain	10.0
Sao Tome and Principe	1.7	Suriname	9.0	Timor-Leste	0.7	Sweden	10.0
Zambia	1.6	Panama	8.9	Kiribati	0.6	Switzerland	10.0
Eritrea	1.6	El Salvador	8.6	Solomon Islands	0.8	United Kingdom	10.0
Kenya	1.3	Belize	8.5	Papua New Guinea	1.3	United States	10.0
Djibouti	1.2	Mexico	8.5	**SOUTHERN ASIA**		**EASTERN EUROPE**	
Comoros	0.9	Cuba	7.9	Maldives	9.4	Poland	10.0
Burkina Faso	0.9	Peru	7.5	Bhutan	5.3	Hungary	10.0
Togo	0.7	Guyana	7.4	Pakistan	4.3	Lithuania	10.0
Benin	0.6	Paraguay	6.6	India	4.1	Cyprus	10.0
Nigeria	0.5	Bolivia	6.4	Afghanistan	3.2	Czech Rep	9.7
Congo Dem Rep	0.4	Honduras	5.3	Nepal	2.8	Slovakia	9.7
Mozambique	0.4	Nicaragua	5.2	Sri Lanka	2.6	Slovenia	9.6
Ethiopia	0.4	Guatemala	4.5	Bangladesh	1.8	Latvia	9.5
Gambia	0.3	Haiti	0.4	**FORMER SOVIET STATES**		Greece	9.4
Chad	0.3	**GREATER MIDDLE EAST**		Turkmenistan	9.9	Estonia	9.3
Malawi	0.3	Bahrain	10.0	Russia	9.8	Croatia	9.3
Tanzania	0.2	Israel	10.0	Belarus	9.8	Bulgaria	8.9
Niger	0.2	Kuwait	10.0	Armenia	9.7	Romania	8.6
Guinea-Bissau	0.2	Tunisia	9.9	Ukraine	9.6	Albania	7.7
Guinea	0.1	Jordan	9.9	Azerbaijan	9.6	Serbia	7.6
Guinea	0.1	United Arab Emirates	9.9	Kazakhstan	9.5	Montenegro	6.9
Sierra Leone	0.1	Qatar	9.8	Moldova Rep	9.2	North Macedonia	6.6
Central African Rep	0.1	Iran	9.8	Uzbekistan	9.2	Bosnia and Herzegovina	6.3
Mali	0.1	Iraq	9.8	Tajikistan	8.0		
Madagascar	0.1	Egypt	9.8	Georgia	7.8		

Burundi	0.1	Morocco	9.7
Uganda	0.1	Saudi Arabia	9.6
Liberia	0.1	Oman	9.5
Rwanda	0.1	Algeria	9.3
		Sudan	4.1

Regional performance on Energy for household clean water (%) (Category 1. Indicator 3)

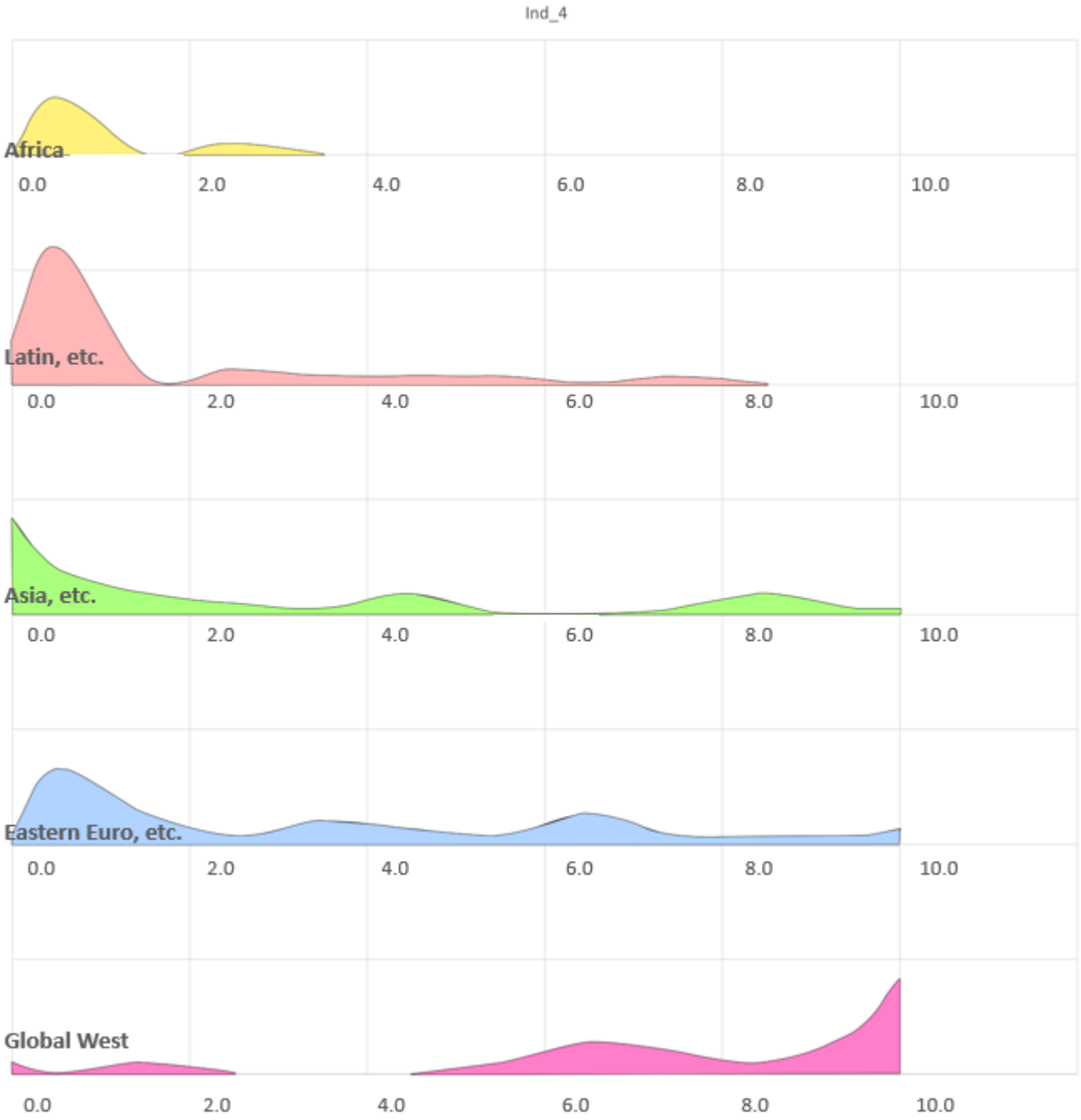
***Africa**: including Sub-Saharan Africa regions; **Latin, etc.**: including Latin America & Caribbean regions; **Asia, etc.**: including Asia-Pacific, Southern Asia and Great Middle East regions; **Eastern Euro, etc.**: Including Eastern European and Former Soviet States regions; **Global West**: Including developed regions in Europe, North America and Oceania*

Scores on Wastewater treatment (Category 2. Indicator 4)

SUB-SAHARAN AFRICA		LATIN AMERICA & CARIBBEAN		ASIA-PACIFIC		GLOBAL WEST	
South Africa	2.2	Chile	7.2	Singapore	10.0	Denmark	10.0
Cabo Verde	2.1	Brazil	4.9	South Korea	7.7	Finland	10.0
Namibia	0.6	Peru	4.6	Japan	7.5	Netherlands	10.0
Eswatini	0.6	Mexico	3.2	Malaysia	1.2	Sweden	10.0
Zambia	0.4	Colombia	2.6	China	0.9	Luxembourg	9.9
Mauritius	0.3	Panama	2.3	Brunei Darussalam	0.6	United Kingdom	9.9
Seychelles	0.2	Costa Rica	1.0	Fiji	0.4	Germany	9.7
Tanzania	0.1	Guatemala	0.7	Mongolia	0.3	Switzerland	9.7
Equatorial Guinea	0.1	Venezuela	0.6	Thailand	0.2	Austria	9.4
Botswana	0.1	Argentina	0.6	Philippines	0.1	Australia	9.3
Cote d'Ivoire	0.1	Dominican Rep	0.6	Samoa	0.0	Spain	9.2
Kenya	0.1	Cuba	0.4	Timor-Leste	0.0	Ireland	9.0
Senegal	0.1	Bolivia	0.4	Tonga	0.0	France	8.8
Uganda	0.0	Trinidad and Tobago	0.3	Viet Nam	0.0	New Zealand	8.0
Congo Rep	0.0	Honduras	0.3	Cambodia	0.0	Belgium	6.8
Lesotho	0.0	Jamaica	0.3	Indonesia	0.0	Canada	6.7
Sao Tome and Principe	0.0	Uruguay	0.2	Kiribati	0.0	Norway	6.4
Mozambique	0.0	Bahamas	0.1	Marshall Islands	0.0	United States	5.9
Nigeria	0.0	Antigua and Barbuda	0.1	Myanmar	0.0	Italy	5.9
Comoros	0.0	Barbados	0.1	Papua New Guinea	0.0	Portugal	5.5
Gambia	0.0	Dominica	0.1	Solomon Islands	0.0	Iceland	1.6
Angola	0.0	Grenada	0.1	Vanuatu	0.0	Malta	0.0
Benin	0.0	Saint Lucia	0.1	**SOUTHERN ASIA**		**EASTERN EUROPE**	
Burkina Faso	0.0	Saint Vincent and the Grenadines	0.1	Maldives	0.4	Latvia	9.1
Burundi	0.0	Paraguay	0.1	India	0.2	Slovenia	8.9
Cameroon	0.0	Belize	0.1	Pakistan	0.0	Greece	8.2
Chad	0.0	El Salvador	0.0	Afghanistan	0.0	Estonia	7.0
Congo Dem Rep	0.0	Ecuador	0.0	Bangladesh	0.0	Poland	6.1
Djibouti	0.0	Guyana	0.0	Bhutan	0.0	Czech Rep	6.1
Ethiopia	0.0	Haiti	0.0	Nepal	0.0	Hungary	5.4
Gabon	0.0	Nicaragua	0.0	Sri Lanka	0.0	Croatia	5.2
Ghana	0.0	Suriname	0.0	**FORMER SOVIET STATES**		Lithuania	5.1
Guinea	0.0	**GREATER MIDDLE EAST**		Georgia	4.7	Cyprus	5.0
Guinea	0.0	Bahrain	8.7	Kazakhstan	2.9	Slovakia	4.4
Guinea-Bissau	0.0	Israel	8.2	Russia	1.9	Romania	3.0
Liberia	0.0	United Arab Emirates	7.7	Ukraine	1.4	Turkey	3.0
Madagascar	0.0	Qatar	7.0	Turkmenistan	1.0	Bulgaria	1.4
Malawi	0.0	Kuwait	4.3	Moldova Rep	0.9	Montenegro	0.8
Mali	0.0	Tunisia	4.3	Armenia	0.9	Albania	0.3
Mauritania	0.0	Egypt	4.2	Belarus	0.7	Serbia	0.2
Niger	0.0	Lebanon	3.8	Azerbaijan	0.4	Bosnia and Herzegovina	0.1
Rwanda	0.0	Algeria	3.3	Tajikistan	0.2	North Macedonia	0.1
Sierra Leone	0.0	Iraq	2.0	Kyrgyzstan	0.0		

Togo	0.0	Jordan	1.9	Uzbekistan	0.0
Zimbabwe	0.0	Oman	1.3		
		Saudi Arabia	1.2		
		Morocco	0.5		
		Iran	0.4		
		Sudan	0.0		

Regional performance on Wastewater treatment (Category 2. Indicator 4)



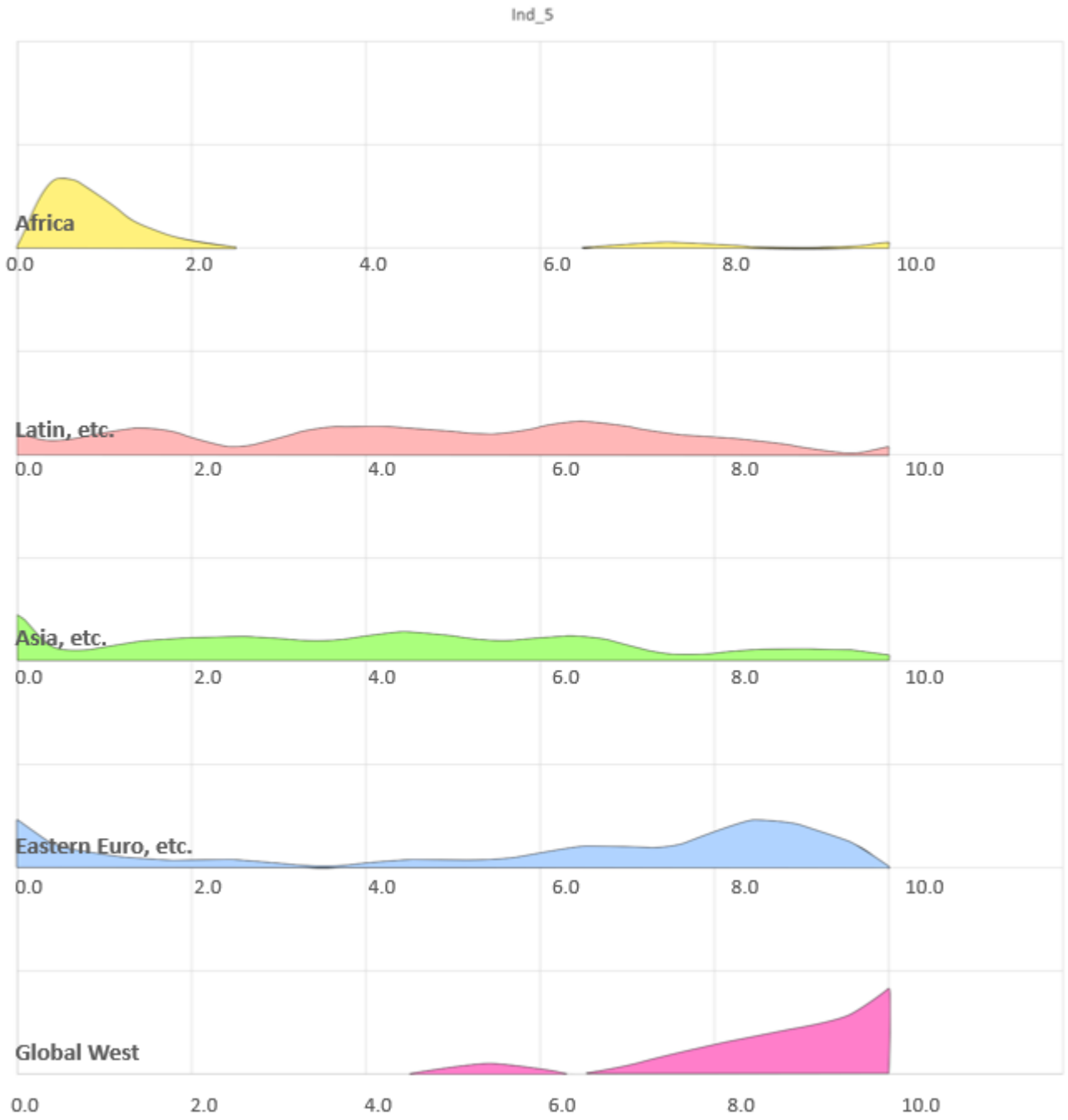
***Africa**: including Sub-Saharan Africa regions; **Latin, etc.**: including Latin America & Caribbean regions; **Asia, etc.**: including Asia-Pacific, Southern Asia and Great Middle East regions; **Eastern Euro, etc.**: Including Eastern European and Former Soviet States regions; **Global West**: Including developed regions in Europe, North America and Oceania*

Scores on Solid waste treatment (Category 2. Indicator 5)

SUB-SAHARAN AFRICA		LATIN AMERICA & CARIBBEAN		ASIA-PACIFIC		GLOBAL WEST	
Mauritius	9.8	Colombia	10.0	Singapore	10.0	Netherlands	10.0
South Africa	7.7	Grenada	7.9	South Korea	9.7	Denmark	10.0
Mauritania	1.3	Saint Lucia	7.8	Japan	8.7	Sweden	10.0
Zimbabwe	1.1	Antigua and Barbuda	7.5	Malaysia	8.1	Switzerland	9.9
Burkina Faso	1.0	Mexico	7.4	China	5.2	Germany	9.8
Cameroon	1.0	Saint Vincent and the Grenadines	7.3	Samoa	5.2	Finland	9.8
Nigeria	0.8	Barbados	6.7	Indonesia	5.0	Belgium	9.8
Benin	0.6	Brazil	6.6	Papua New Guinea	4.4	Norway	9.8
Kenya	0.6	Chile	6.6	Brunei Darussalam	4.3	Austria	9.7
Uganda	0.5	Costa Rica	6.5	Fiji	4.0	Malta	9.7
Namibia	0.4	Dominica	6.2	Thailand	3.3	Luxembourg	9.6
Congo Dem Rep	0.4	El Salvador	5.6	Vanuatu	3.1	France	9.5
Guinea	0.3	Ecuador	5.4	Tonga	2.7	United Kingdom	9.3
Guinea	0.3	Uruguay	4.9	Viet Nam	2.3	Portugal	9.0
Cote d'Ivoire	0.2	Argentina	4.5	Marshall Islands	2.2	Spain	8.9
Niger	0.1	Guyana	4.4	Philippines	1.7	Iceland	8.5
Togo	0.1	Panama	4.2	Cambodia	0.0	Canada	8.5
Senegal	0.1	Honduras	4.0	Kiribati	0.0	Italy	8.4
Botswana	0.1	Paraguay	3.5	Mongolia	0.0	Ireland	8.2
Mozambique	0.1	Jamaica	3.2	Myanmar	0.0	Australia	7.7
Madagascar	0.1	Bolivia	3.1	Solomon Islands	0.0	New Zealand	6.8
Angola	0.0	Peru	3.0	Timor-Leste	0.0	United States	4.8
Burundi	0.0	Cuba	2.6	**SOUTHERN ASIA**		**EASTERN EUROPE**	
Cabo Verde	0.0	Belize	1.7	Bhutan	6.0	Poland	9.1
Chad	0.0	Guatemala	1.7	Pakistan	3.1	Czech Rep	9.0
Comoros	0.0	Nicaragua	1.1	Nepal	3.1	Hungary	8.9
Congo Rep	0.0	Trinidad and Tobago	1.0	India	1.6	Lithuania	8.8
Djibouti	0.0	Dominican Rep	0.6	Maldives	1.0	Slovenia	8.4
Equatorial Guinea	0.0	Haiti	0.1	Bangladesh	0.5	Bulgaria	8.4
Eswatini	0.0	Bahamas	0.0	Sri Lanka	0.4	Greece	8.3
Ethiopia	0.0	Suriname	0.0	Afghanistan	0.0	Slovakia	8.1
Gabon	0.0	Venezuela	0.0	**FORMER SOVIET STATES**		Croatia	8.0
Gambia	0.0	**GREATER MIDDLE EAST**		Belarus	7.8	Cyprus	7.8
Ghana	0.0	Algeria	9.2	Ukraine	7.3	Estonia	7.4
Guinea-Bissau	0.0	Israel	7.2	Turkmenistan	5.9	North Macedonia	7.2
Lesotho	0.0	Lebanon	6.1	Moldova Rep	1.4	Romania	6.6
Liberia	0.0	Saudi Arabia	6.1	Russia	0.3	Latvia	6.1
Malawi	0.0	Bahrain	6.0	Kazakhstan	0.2	Turkey	4.9
Mali	0.0	Qatar	6.0	Georgia	0.0	Serbia	4.5
Rwanda	0.0	Sudan	5.4	Armenia	0.0	Bosnia and Herzegovina	2.8
Sao Tome and Principe	0.0	Jordan	4.3	Azerbaijan	0.0	Montenegro	0.5
Seychelles	0.0	Morocco	4.0	Tajikistan	0.0	Albania	0.0
Sierra Leone	0.0	Tunisia	4.0	Uzbekistan	0.0		
Tanzania	0.0	United Arab Emirates	2.7	Kyrgyzstan	0.0		
Zambia	0.0	Iran	1.9				

	Egypt	1.6
	Kuwait	0.0
	Iraq	0.0
	Oman	0.0

Regional performance on Solid waste treatment (Category 2. Indicator 5)



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Scores on Flood vulnerability (Category 2. Indicator 6)

SUB-SAHARAN AFRICA		LATIN AMERICA & CARIBBEAN		ASIA-PACIFIC		GLOBAL WEST	
Djibouti	10.0	Jamaica	10.0	Timor-Leste	9.9	Iceland	10.0
Angola	10.0	Uruguay	9.8	Brunei Darussalam	9.7	Denmark	10.0
Equatorial Guinea	9.7	Cuba	9.8	Japan	9.1	Switzerland	9.9
Uganda	9.6	El Salvador	9.6	South Korea	9.0	Portugal	9.9
South Africa	9.5	Costa Rica	9.5	Mongolia	7.9	Sweden	9.7
Lesotho	9.1	Panama	9.5	Papua New Guinea	7.7	Finland	9.7
Zambia	9.1	Colombia	9.2	Philippines	7.6	United Kingdom	9.6
Botswana	9.0	Venezuela	9.0	Malaysia	6.8	Norway	9.6
Burundi	9.0	Dominican Rep	8.9	China	6.5	Netherlands	9.6
Ghana	9.0	Paraguay	8.6	Indonesia	6.5	New Zealand	9.6
Zimbabwe	8.8	Chile	8.6	Fiji	5.9	Ireland	9.5
Senegal	8.3	Nicaragua	8.5	Thailand	4.4	Canada	9.5
Namibia	8.3	Guatemala	8.5	Myanmar	0.0	Australia	9.4
Kenya	8.1	Ecuador	8.5	Viet Nam	0.0	Spain	9.4
Gabon	8.1	Brazil	8.2	Cambodia	0.0	Italy	9.4
Cameroon	8.1	Mexico	8.1	**SOUTHERN ASIA**		Luxembourg	9.4
Ethiopia	8.0	Honduras	7.9	Sri Lanka	5.9	United States	9.4
Nigeria	7.9	Haiti	7.9	Pakistan	4.9	Austria	8.9
Guinea	7.9	Peru	7.6	India	4.6	France	8.7
Guinea	7.9	Argentina	7.5	Bhutan	3.7	Germany	8.7
Guinea-Bissau	7.8	Bolivia	7.4	Nepal	1.5	Belgium	8.6
Tanzania	7.6	Belize	6.6	Afghanistan	0.0	**EASTERN EUROPE**	
Malawi	7.3	Suriname	4.2	Bangladesh	0.0	Cyprus	10.0
Niger	7.2	Guyana	2.5	**FORMER SOVIET STATES**		Greece	9.8
Togo	7.0	**GREATER MIDDLE EAST**		Russia	9.2	Estonia	9.7
Mauritania	6.3	Lebanon	10.0	Belarus	8.6	Poland	9.2
Congo Dem Rep	5.8	Jordan	10.0	Azerbaijan	8.5	Turkey	9.2
Gambia	5.7	Israel	10.0	Kazakhstan	8.1	Lithuania	8.9
Benin	5.7	Oman	10.0	Turkmenistan	8.1	Czech Rep	8.7
Sierra Leone	5.0	Kuwait	10.0	Uzbekistan	7.3	Latvia	8.6
Madagascar	4.6	Saudi Arabia	9.7	Ukraine	7.1	Slovenia	8.5
Mozambique	4.4	Algeria	9.0	Armenia	6.4	Croatia	8.3
Liberia	2.0	Tunisia	9.0	Kyrgyz Rep	6.0	Bulgaria	8.2
Chad	1.3	Iran	8.8	Moldova Rep	4.3	Slovakia	7.7
Rwanda	0.0	Morocco	7.3	Georgia	3.7	Albania	7.6
Mali	0.0	Syrian Arab. Rep	5.9	Tajikistan	3.0	Romania	7.3
		Sudan	4.3			Montenegro	7.3
		Egypt	2.8			Hungary	7.2
		Iraq	2.4			Serbia	6.4
						Bosnia and Herzegovina	4.8

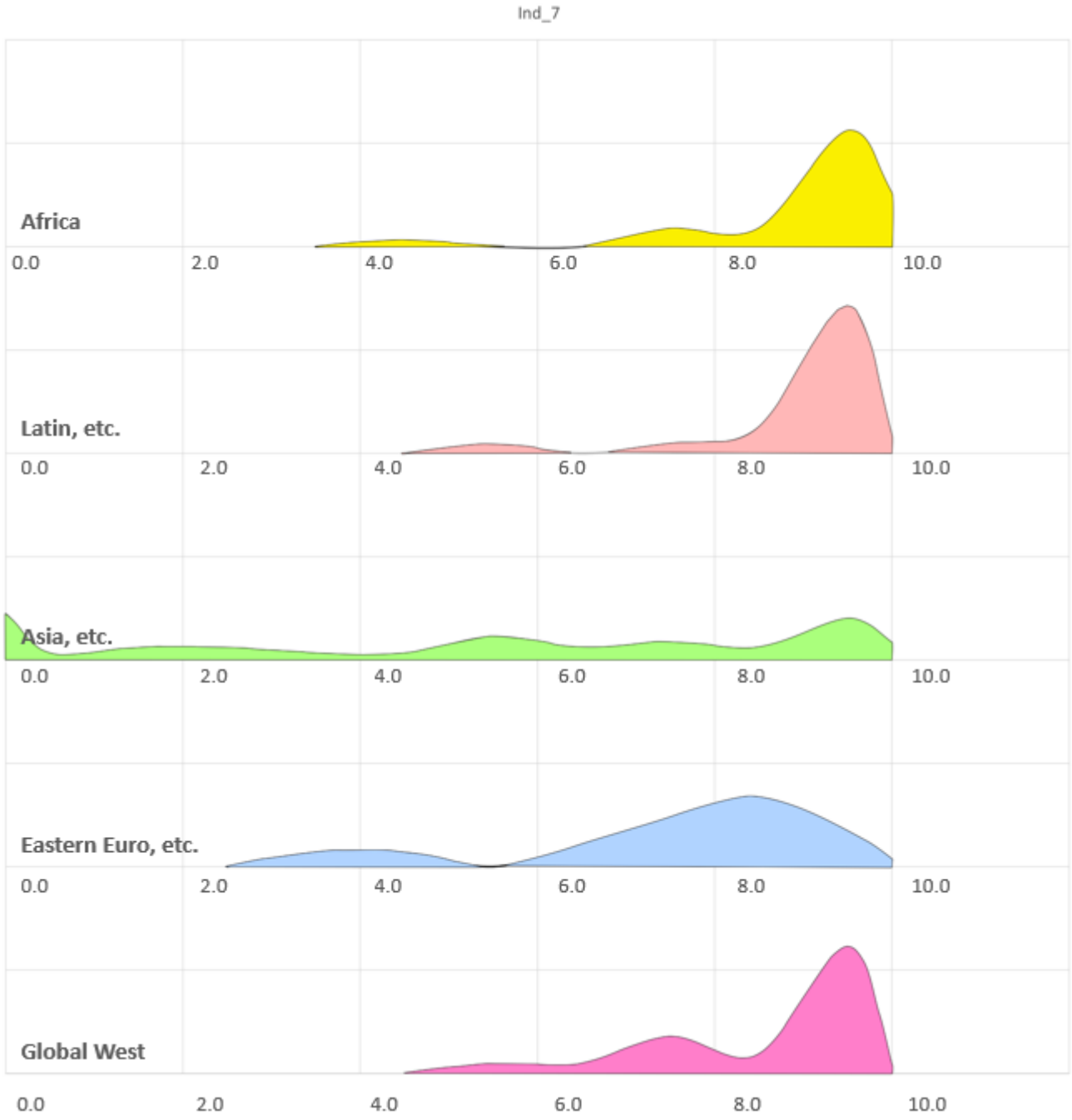
Regional performance on Flood vulnerability (Category 2. Indicator 6)

***Africa**: including Sub-Saharan Africa regions; **Latin, etc.**: including Latin America & Caribbean regions; **Asia, etc.**: including Asia-Pacific, Southern Asia and Great Middle East regions; **Eastern Euro, etc.**: Including Eastern European and Former Soviet States regions; **Global West**: Including developed regions in Europe, North America and Oceania*

Scores on Water scarcity (Category 3. Indicator 7)

SUB-SAHARAN AFRICA		LATIN AMERICA & CARIBBEAN		ASIA-PACIFIC		GLOBAL WEST	
Equatorial Guinea	10.0	Panama	10.0	Fiji	10.0	Iceland	10.0
Congo Dem Rep	10.0	Bolivia	10.0	Papua New Guinea	10.0	Norway	9.9
Liberia	10.0	Belize	9.9	Cambodia	10.0	Sweden	9.8
Gabon	10.0	Colombia	9.9	Mongolia	9.8	Ireland	9.7
Sierra Leone	10.0	Paraguay	9.9	Malaysia	9.8	Canada	9.7
Namibia	10.0	Nicaragua	9.8	Brunei Darussalam	9.8	Luxembourg	9.7
Guinea	10.0	Peru	9.8	Myanmar	9.6	Australia	9.5
Guinea	10.0	Brazil	9.8	Viet Nam	8.5	Switzerland	9.4
Benin	10.0	Guyana	9.8	Thailand	8.1	Austria	9.2
Guinea-Bissau	9.9	Suriname	9.7	Timor-Leste	7.6	United Kingdom	8.8
Cameroon	9.9	Honduras	9.7	Philippines	7.6	Netherlands	8.8
Mozambique	9.9	Costa Rica	9.6	Indonesia	7.5	New Zealand	8.8
Angola	9.9	Guatemala	9.6	Japan	6.9	Finland	8.7
Botswana	9.9	Ecuador	9.5	China	6.3	Portugal	8.5
Gambia	9.9	Venezuela	9.4	South Korea	2.7	Denmark	8.3
Lesotho	9.8	Chile	9.3	**SOUTHERN ASIA**		France	8.1
Zambia	9.8	Uruguay	9.2	Bhutan	9.9	United States	7.6
Togo	9.8	Argentina	9.2	Bangladesh	9.6	Italy	7.5
Chad	9.7	Jamaica	9.0	Nepal	9.3	Germany	7.2
Uganda	9.6	El Salvador	8.9	Afghanistan	5.4	Spain	6.4
Rwanda	9.5	Haiti	8.9	India	4.4	Belgium	5.8
Ghana	9.5	Cuba	8.0	Sri Lanka	2.3	**EASTERN EUROPE**	
Djibouti	9.5	Mexico	7.2	Pakistan	0.0	Latvia	10.0
Niger	9.4	Dominican Rep	5.7	**FORMER SOVIET STATES**		Croatia	9.9
Mali	9.4	**GREATER MIDDLE EAST**		Russia	9.7	Lithuania	9.9
Nigeria	9.2	Morocco	5.7	Belarus	9.7	Slovakia	9.8
Burundi	9.2	Iraq	5.4	Georgia	9.5	Bosnia and Herzegovina	9.8
Madagascar	9.1	Lebanon	5.0	Ukraine	9.1	Serbia	9.5
Senegal	9.0	Iran	3.1	Moldova Rep	9.0	Slovenia	9.5
Tanzania	8.9	Jordan	1.5	Kazakhstan	7.4	Romania	9.5
Mauritania	8.9	Israel	1.2	Kyrgyzstan	5.8	Albania	9.4
Malawi	8.6	Oman	0.1	Azerbaijan	5.2	Hungary	9.4
Zimbabwe	7.4	Egypt	0.0	Armenia	5.1	Estonia	8.4
Ethiopia	7.3	Sudan	0.0	Tajikistan	4.2	Greece	8.1
Kenya	7.2	Tunisia	0.0	Turkmenistan	0.0	Czechia	7.9
South Africa	4.7	Syrian Arab Rep	0.0	Uzbekistan	0.0	Cyprus	7.5
		Algeria	0.0			Poland	7.1
		Saudi Arabia	0.0			Bulgaria	6.5
		Kuwait	0.0			Turkey	6.2
						Montenegro	0.0

Regional performance on Water scarcity (Category 3. Indicator 7)



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Scores on Agriculture and water use (Category 4. Indicator 10)

SUB-SAHARAN AFRICA		LATIN AMERICA & CARIBBEAN		ASIA-PACIFIC		GLOBAL WEST	
Seychelles	9.4	Saint Vincent and the Grenadines	10.0	Papua New Guinea	10.0	Iceland	10.0
Congo Rep	9.1	Trinidad and Tobago	9.6	Mongolia	4.3	Netherlands	10.0
Congo Dem Rep	9.0	Dominica	9.5	South Korea	4.3	Finland	10.0
Angola	7.9	Jamaica	9.2	Fiji	3.8	Luxembourg	10.0
Sierra Leone	7.8	Grenada	8.5	China	3.2	Belgium	10.0
Gabon	7.0	Antigua and Barbuda	8.4	Japan	3.0	Germany	9.9
Botswana	6.3	Panama	6.2	Philippines	2.3	Austria	9.8
Uganda	5.8	Colombia	4.3	Indonesia	1.0	Sweden	9.7
Nigeria	5.4	Guatemala	4.0	Thailand	0.5	Canada	9.3
Togo	5.3	Brazil	3.7	Timor-Leste	0.4	Switzerland	9.2
Benin	5.3	Cuba	3.2	Cambodia	0.1	France	8.8
Burkina Faso	4.6	El Salvador	2.9	Viet Nam	0.0	United Kingdom	8.6
Cote d'Ivoire	4.6	Barbados	2.9	**SOUTHERN ASIA**		Norway	7.1
Guinea	4.5	Suriname	2.6	Maldives	10.0	United States	5.9
Guinea	4.5	Saint Lucia	2.5	Sri Lanka	0.8	Malta	5.8
Mauritius	4.1	Costa Rica	2.4	Bangladesh	0.7	Denmark	5.4
South Africa	3.8	Honduras	2.3	India	0.5	Italy	4.8
Sao Tome and Principe	3.4	Venezuela	2.2	Pakistan	0.1	New Zealand	3.5
Namibia	2.7	Argentina	2.2	Bhutan	0.1	Australia	3.3
Mozambique	2.3	Mexico	2.0	Nepal	0.0	Spain	3.1
Zambia	2.3	Nicaragua	1.9	**FORMER SOVIET STATES**		**EASTERN EUROPE**	
Chad	2.0	Paraguay	1.7	Moldova Rep	9.5	Estonia	10.0
Kenya	1.6	Dominican Rep	1.6	Russia	7.0	Slovenia	10.0
Zimbabwe	1.3	Peru	1.4	Belarus	6.8	Montenegro	10.0
Malawi	1.0	Ecuador	1.4	Ukraine	6.4	Czechia	9.8
Niger	0.8	Chile	1.3	Georgia	3.9	Slovakia	9.5
Tanzania	0.6	Haiti	1.2	Kazakhstan	3.5	Poland	9.0
Mauritania	0.5	Bolivia	0.3	Azerbaijan	2.4	Croatia	8.9
Cabo Verde	0.4	Guyana	0.1	Armenia	2.2	Hungary	8.8
Ethiopia	0.3	**GREATER MIDDLE EAST**		Tajikistan	0.4	Serbia	8.8
Senegal	0.2	Qatar	6.7	Uzbekistan	0.3	Bulgaria	8.5
Madagascar	0.0	Bahrain	6.5	Kyrgyzstan	0.2	Romania	7.7
Mali	0.0	Lebanon	6.0	Turkmenistan	0.1	Lithuania	7.7
		Jordan	4.4			North Macedonia	7.3
		Kuwait	4.4			Latvia	6.5
		Israel	4.3			Albania	5.9
		Algeria	3.3			Cyprus	3.8
		Tunisia	1.9			Greece	1.5
		Egypt	1.7			Turkey	1.0
		Saudi Arabia	1.3				
		United Arab Emirates	1.3				
		Oman	1.0				
		Morocco	0.8				
		Iraq	0.4				

	Iran	0.3
	Sudan	0.0

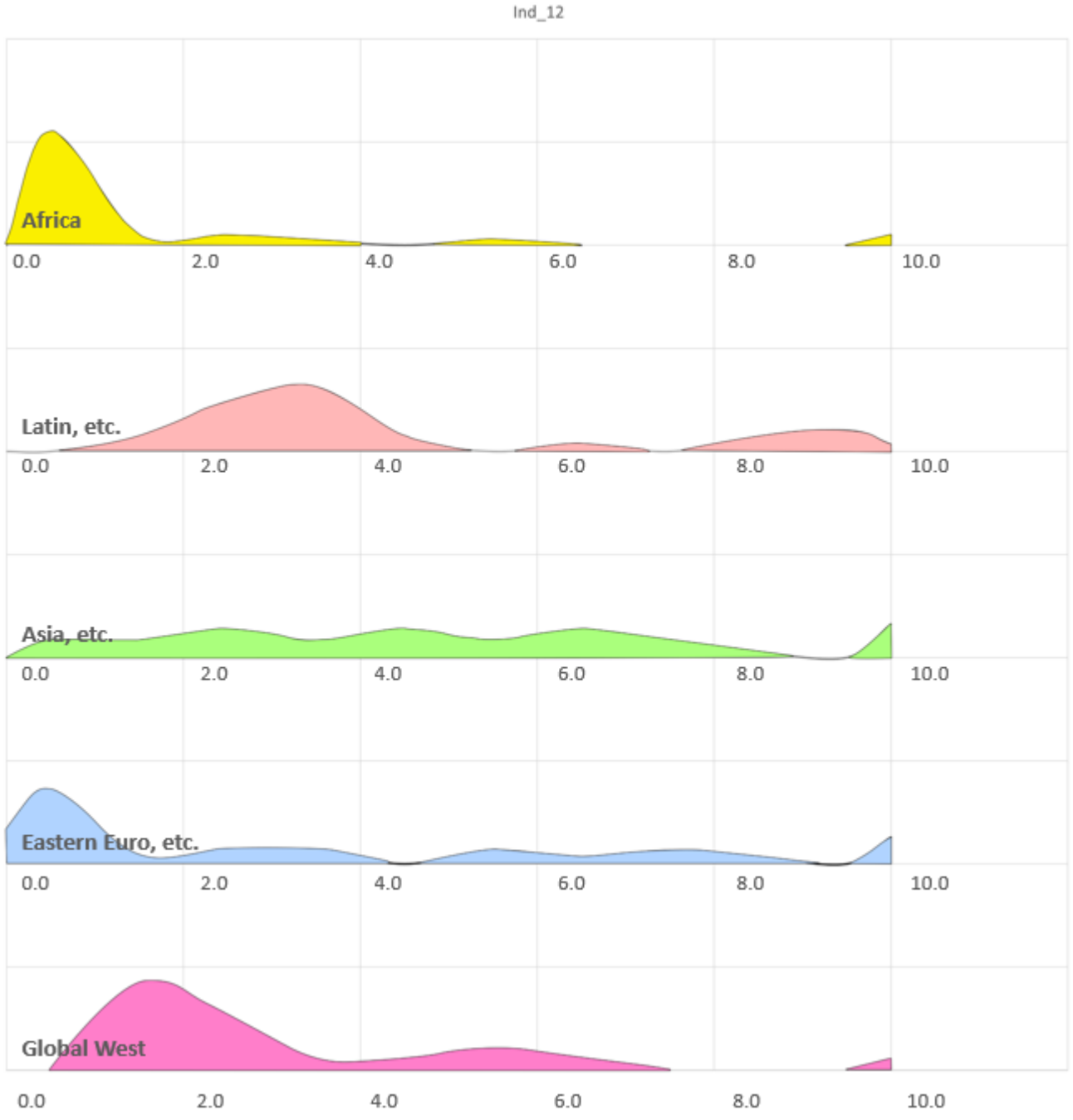
Regional performance on Agriculture and water use (Category 4. Indicator 10)

***Africa**: including Sub-Saharan Africa regions; **Latin, etc.**: including Latin America & Caribbean regions; **Asia, etc.**: including Asia-Pacific, Southern Asia and Great Middle East regions; **Eastern Euro, etc.**: Including Eastern European and Former Soviet States regions; **Global West**: Including developed regions in Europe, North America and Oceania*

Scores on Irrigation management (%) (Category 4. Indicator 12)

SUB-SAHARAN AFRICA		LATIN AMERICA & CARIBBEAN		ASIA-PACIFIC		GLOBAL WEST	
Sao Tome and Principe	10.0	Ecuador	10.0	Viet Nam	6.6	New Zealand	10.0
Seychelles	10.0	Saint Lucia	10.0	China	6.1	Italy	6.1
Djibouti	5.0	Suriname	9.3	Japan	5.9	Portugal	5.5
Madagascar	3.6	Chile	8.7	Malaysia	5.3	Netherlands	5.1
Eswatini	2.9	Peru	7.8	South Korea	5.1	Malta	4.3
Mauritius	2.5	Barbados	7.4	Thailand	3.8	Spain	3.2
South Africa	1.4	Grenada	6.7	Philippines	3.3	United States	1.7
Mauritania	1.1	Colombia	6.3	Indonesia	2.7	Switzerland	1.6
Guinea-Bissau	0.8	Venezuela	4.1	Timor-Leste	2.3	France	1.5
Cabo Verde	0.7	Costa Rica	4.0	Myanmar	2.1	Denmark	1.1
Mali	0.6	Guatemala	3.9	Brunei Darussalam	2.0	Norway	1.0
Ethiopia	0.5	Dominican Rep	3.9	Mongolia	1.5	Australia	0.8
Zimbabwe	0.4	Guyana	3.4	Cambodia	0.9	Austria	0.7
Zambia	0.4	Mexico	3.1	Fiji	0.2	Sweden	0.6
Senegal	0.3	Trinidad and Tobago	2.8	**SOUTHERN ASIA**		Germany	0.5
Guinea	0.3	Jamaica	2.6	Bangladesh	7.2	Canada	0.3
Guinea	0.3	Cuba	1.9	Pakistan	6.6	Belgium	0.2
Tanzania	0.2	Nicaragua	1.3	Nepal	6.5	Finland	0.2
Kenya	0.2	Bahamas	1.2	Sri Lanka	4.9	United Kingdom	0.1
Cote d'Ivoire	0.2	Brazil	1.2	India	4.5	**EASTERN EUROPE**	
Malawi	0.2	Uruguay	1.1	Afghanistan	4.2	Greece	7.2
Mozambique	0.2	Antigua and Barbuda	0.9	Bhutan	3.3	Albania	5.8
Burundi	0.2	Haiti	0.9	**GREATER MIDDLE EAST**		Cyprus	5.0
Sierra Leone	0.2	Honduras	0.9	Bahrain	10.0	Romania	3.7
Angola	0.1	Bolivia	0.7	United Arab Emirates	10.0	North Macedonia	3.1
Gabon	0.1	El Salvador	0.6	Qatar	10.0	Montenegro	2.6
Gambia	0.1	Argentina	0.6	Kuwait	10.0	Turkey	2.6
Botswana	0.1	Panama	0.5	Egypt	10.0	Hungary	0.5
Namibia	0.1	Belize	0.4	Oman	10.0	Slovakia	0.4
Burkina Faso	0.1	Dominica	0.3	Lebanon	8.0	Croatia	0.3
Lesotho	0.1	Paraguay	0.2	Iraq	7.1	Bulgaria	0.3
Nigeria	0.1	Saint Vincent and the Grenadines	0.0	Israel	7.0	Slovenia	0.3
Benin	0.0	**FORMER SOVIET STATES**		Iran	6.6	Serbia	0.3
Ghana	0.0	Georgia	10.0	Jordan	4.9	Poland	0.2
Rwanda	0.0	Turkmenistan	10.0	Saudi Arabia	4.7	Czechia	0.1
Chad	0.0	Tajikistan	10.0	Morocco	2.0	Estonia	0.0
Liberia	0.0	Uzbekistan	10.0	Tunisia	1.8	Bosnia and Herzegovina	0.0
Niger	0.0	Kyrgyzstan	8.0	Algeria	1.8	Lithuania	0.0
Cameroon	0.0	Azerbaijan	7.2	Sudan	0.9	Latvia	0.0
Congo Rep	0.0	Armenia	6.2				
Togo	0.0	Moldova Rep	1.3				
Comoros	0.0	Kazakhstan	0.7				
Uganda	0.0	Ukraine	0.6				
Congo Dem Rep	0.0	Russia	0.3				
		Belarus	0.0				

Regional performance on Agriculture and water use (Category 4. Indicator 12)



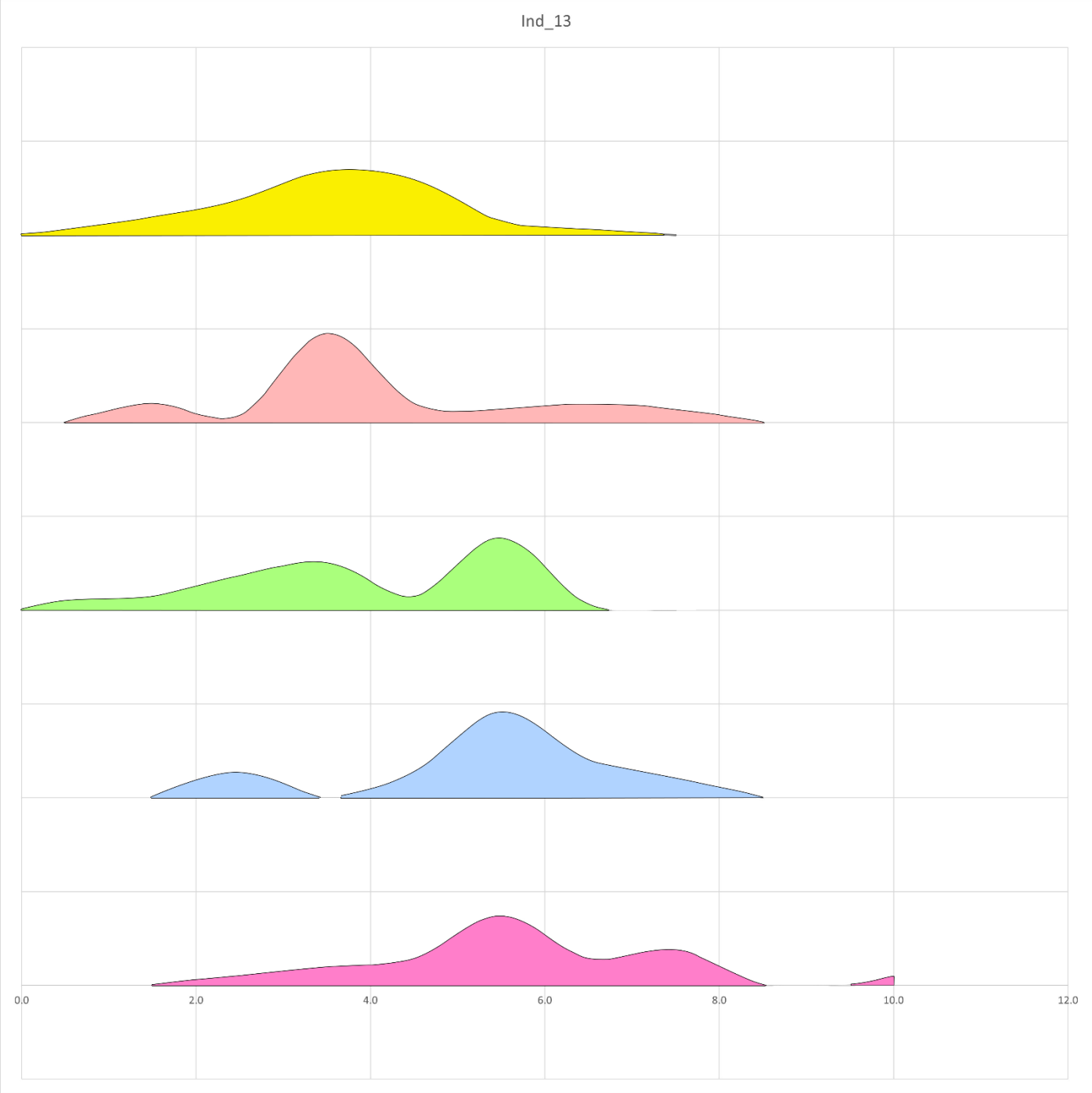
***Africa**: including Sub-Saharan Africa regions; **Latin, etc.**: including Latin America & Caribbean regions; **Asia, etc.**: including Asia-Pacific, Southern Asia and Great Middle East regions; **Eastern Euro, etc.**: Including Eastern European and Former Soviet States regions; **Global West**: Including developed regions in Europe, North America and Oceania*

Scores on Nitrogen management (Category 4. Indicator 13)

SUB-SAHARAN AFRICA		LATIN AMERICA & CARIBBEAN		ASIA-PACIFIC		GLOBAL WEST	
South Africa	6.5	Argentina	7.9	Malaysia	6.5	Ireland	10.0
Ethiopia	5.0	Paraguay	7.9	South Korea	5.7	United States	7.9
Madagascar	5.0	Brazil	6.5	Japan	5.7	Denmark	7.2
Malawi	5.0	Bolivia	6.5	Vietnam	5.7	Austria	7.2
Eswatini	4.3	Uruguay	6.5	Cambodia	5.7	France	7.2
Zambia	4.3	Guyana	5.0	Myanmar	5.7	Sweden	6.5
Tanzania	4.3	Suriname	5.0	China	5.0	Germany	6.5
Uganda	4.3	Chile	4.3	Indonesia	5.0	Canada	6.5
Nigeria	4.3	Peru	4.3	Philippines	4.3	Finland	5.7
Benin	4.3	Mexico	4.3	Thailand	3.6	United Kingdom	5.7
Burkina Faso	4.3	St. Vincent and the Grenadines	3.6	Timor-Leste	3.6	Australia	5.7
Cameroon	4.3	Belize	3.6	Papua New Guinea	3.6	New Zealand	5.7
Chad	4.3	Haiti	3.6	Vanuatu	3.6	Italy	5.7
Ghana	4.3	Panama	2.9	Samoa	2.9	Iceland	5.7
Mali	4.3	Guatemala	2.9	Tonga	2.9	Switzerland	5.0
Rwanda	4.3	Venezuela	2.9	Kiribati	2.9	Belgium	5.0
Sierra Leone	4.3	Dominican Republic	2.9	Singapore	2.2	Netherlands	4.3
Cote d'Ivoire	3.6	Honduras	2.9	Mongolia	2.2	Luxembourg	4.3
Kenya	3.6	Grenada	2.9	Fiji	1.5	Spain	4.3
Senegal	3.6	El Salvador	2.9	Solomon Islands	1.5	Norway	3.6
Congo	3.6	Ecuador	2.9	Marshall Islands	0.8	Malta	3.6
Mozambique	3.6	Nicaragua	2.9	Brunei Darussalam	0.1	Portugal	2.2
Comoros	3.6	Colombia	2.2	**SOUTHERN ASIA**		**EASTERN EUROPE**	
Gambia	3.6	Costa Rica	2.2	Afghanistan	5.0	Hungary	7.2
Angola	3.6	Cuba	2.2	Bangladesh	5.0	Slovakia	7.2
Burundi	3.6	Jamaica	2.2	Bhutan	5.0	Bulgaria	6.5
Congo Dem Rep	3.6	Bahamas	2.2	Nepal	5.0	Croatia	6.5
Guinea	3.6	Dominica	2.2	India	3.6	Czech	6.5
Guinea	3.6	Barbados	1.5	Pakistan	3.6	Lithuania	6.5
Mauritania	3.6	Trinidad and Tobago	0.8	Sri Lanka	3.6	Romania	6.5
Niger	3.6	Antigua and Barbuda	0.8	Maldives	2.2	Serbia	6.5
Togo	3.6	St. Lucia	0.8	**FORMER SOVIET STATES**		Estonia	5.7
Equatorial Guinea	2.9	**GREAT MIDDLE EAST**		Ukraine	7.2	Greece	5.7
Lesotho	2.9	Egypt	5.7	Moldova	5.7	Latvia	5.7
Gabon	2.9	Jordan	5.7	Russia	5.7	Poland	5.7
Guinea-Bissau	2.9	Saudi Arabia	5.7	Armenia	5.7	Turkey	5.7
Liberia	2.9	Kuwait	5.0	Azerbaijan	5.7	North Macedonia	5.0
Zimbabwe	2.9	Algeria	5.0	Kyrgyzstan	5.7	Slovenia	5.0
Mauritius	2.2	Oman	5.0	Tajikistan	5.0	Albania	4.3
Sao Tome and Principe	2.2	Iraq	4.3	Uzbekistan	5.0	Bosnia and Herzegovina	2.9
Cabo Verde	1.5	Morocco	4.3	Belarus	4.3	Cyprus	2.2
Namibia	1.5	Bahrain	3.6	Turkmenistan	4.3	Montenegro	2.2
Seychelles	1.5	Israel	3.6	Kazakhstan	4.3		
Djibouti	1.5	Lebanon	3.6	Georgia	2.2		
Botswana	0.8	Iran	3.6				

Qatar	2.9
Tunisia	2.9
United Arab Emirates	1.5

Regional performance on Nitrogen management (Category 4. Indicator 13)



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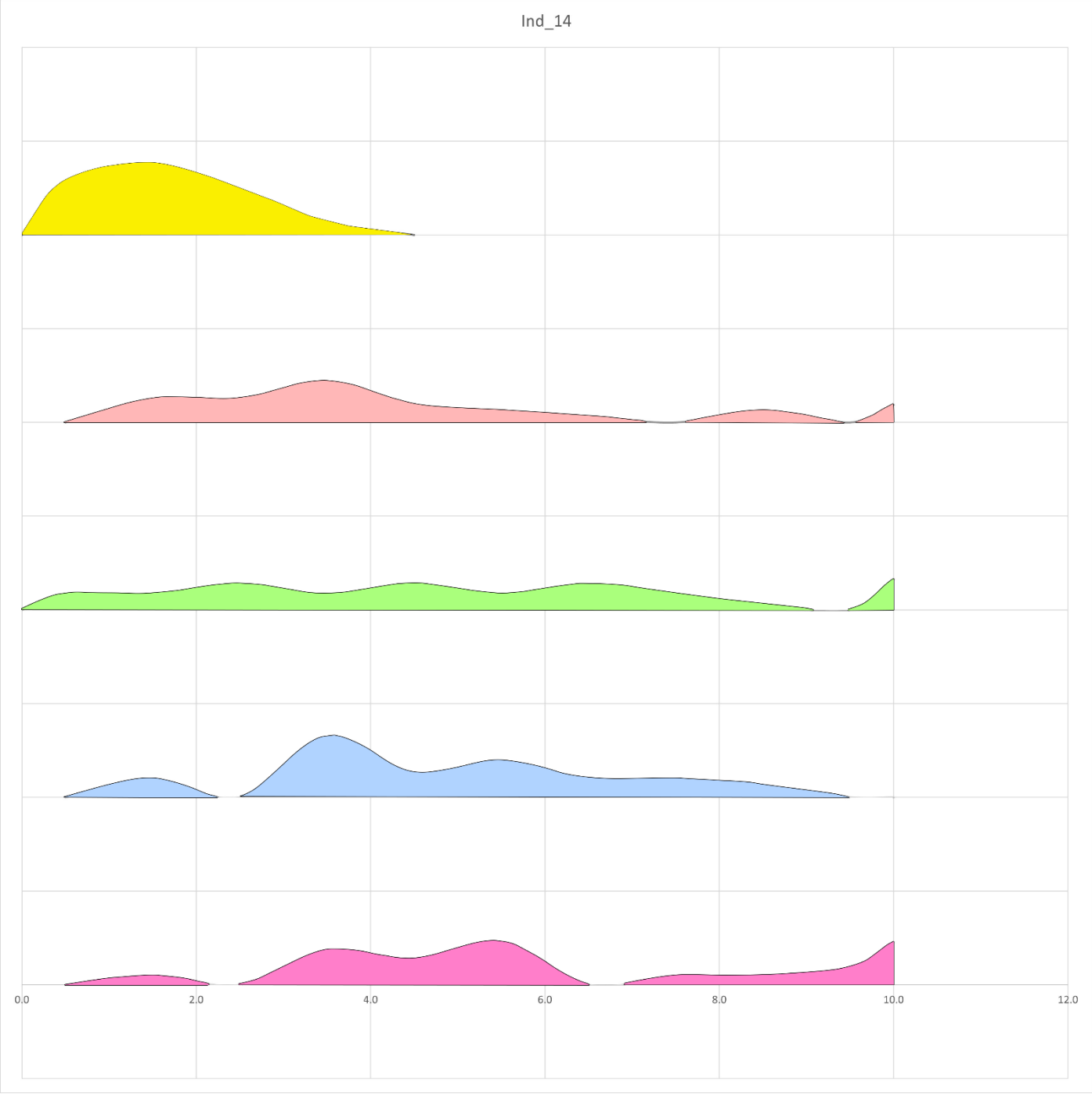
Scores on Crop productivity (Category 4. Indicator 14)

SUB-SAHARAN AFRICA		LATIN AMERICA & CARIBBEAN		ASIA-PACIFIC		GLOBAL WEST	
Ghana	3.0	Uruguay	10.0	Malaysia	5.3	New Zealand	10.0
Eswatini	2.9	Argentina	10.0	Thailand	4.2	Denmark	10.0
Cote d'Ivoire	2.8	Paraguay	9.8	China	4.1	Australia	10.0
Mali	2.5	Brazil	7.9	Papua New Guinea	3.7	Ireland	10.0
Cameroon	2.4	Costa Rica	7.2	Tonga	3.5	Netherlands	9.4
South Africa	2.3	Guyana	6.1	Myanmar	3.4	Canada	8.6
Guinea-Bissau	2.1	Belize	5.0	Mongolia	3.3	United States	8.0
Benin	2.1	Chile	5.0	Viet Nam	3.2	Spain	7.4
Rwanda	2.1	Dominica	4.1	Samoa	3.0	France	6.8
Nigeria	2.1	Ecuador	4.0	Cambodia	2.9	Austria	5.2
Tanzania	2.0	Bolivia	3.8	Vanuatu	2.8	Italy	5.1
Mauritius	1.8	Mexico	3.2	Indonesia	2.4	Belgium	4.7
Guinea	1.7	Guatemala	3.2	Fiji	2.2	Portugal	4.6
Guinea	1.7	Peru	3.1	South Korea	1.9	Germany	4.5
Botswana	1.7	Dominican Republic	3.1	Solomon Islands	1.9	Finland	3.7
Niger	1.7	Colombia	3.0	Philippines	1.9	Iceland	3.7
Sierra Leone	1.7	Cuba	2.6	Japan	1.1	Luxembourg	3.7
Namibia	1.6	Suriname	2.5	Kiribati	1.0	Switzerland	3.2
Mauritania	1.4	Panama	2.4	Brunei Darussalam	0.9	Sweden	3.0
Chad	1.4	Nicaragua	2.3	Timor-Leste	0.7	Norway	2.7
Kenya	1.3	Saint Vincent and the Grenadines	2.0	Marshall Islands	0.1	United Kingdom	2.6
Malawi	1.3	Venezuela	2.0	Singapore	0.0	Malta	1.5
Sao Tome and Principe	1.3	Jamaica	1.8	**SOUTHERN ASIA**		**EASTERN EUROPE**	
Angola	1.2	Honduras	1.8	Bhutan	2.9	Lithuania	7.7
Madagascar	1.2	Grenada	1.6	Nepal	2.1	Greece	7.1
Gabon	1.1	El Salvador	1.4	India	1.8	Hungary	6.2
Uganda	1.0	Barbados	1.2	Pakistan	1.8	Poland	5.5
Togo	1.0	Haiti	1.1	Bangladesh	1.2	Turkey	5.4
Burkina Faso	1.0	Trinidad and Tobago	0.7	Sri Lanka	1.0	Romania	5.4
Zambia	0.9	Bahamas	0.6	Afghanistan	0.7	Latvia	5.2
Ethiopia	0.9	Saint Lucia	0.5	Maldives	0.0	Albania	5.2
Burundi	0.8	Antigua and Barbuda	0.4	**FORMER SOVIET STATES**		Bulgaria	5.0
Senegal	0.8	**GREATER MIDDLE EAST**		Ukraine	6.6	Estonia	4.8
Mozambique	0.7	Tunisia	3.9	Belarus	6.5	Serbia	4.3
Comoros	0.6	Israel	3.7	Kazakhstan	4.8	North Macedonia	4.0
Congo Rep	0.6	Iran	3.4	Armenia	4.7	Croatia	3.8
Zimbabwe	0.5	Morocco	2.5	Turkmenistan	3.5	Czechia	3.7
Djibouti	0.5	Egypt	2.4	Russia	3.4	Slovenia	3.3
Lesotho	0.4	Algeria	2.2	Uzbekistan	3.4	Slovakia	3.0
Liberia	0.4	Lebanon	1.5	Moldova	3.3	Cyprus	2.8
Cabo Verde	0.4	Sudan	1.5	Kyrgyzstan	2.8	Bosnia and Herzegovina	2.6
Gambia	0.3	Jordan	1.3	Azerbaijan	2.7	Montenegro	1.4
Seychelles	0.1	Oman	0.9	Georgia	1.4		
Congo Dem Rep	0.1	Saudi Arabia	0.7	Tajikistan	1.2		
Equatorial Guinea	0.0	Kuwait	0.6				

	United Arab Emirates	0.3
	Iraq	0.2
	Bahrain	0.0
	Qatar	0.0

Regional performance on Crop productivity (Category 4. Indicator 14)



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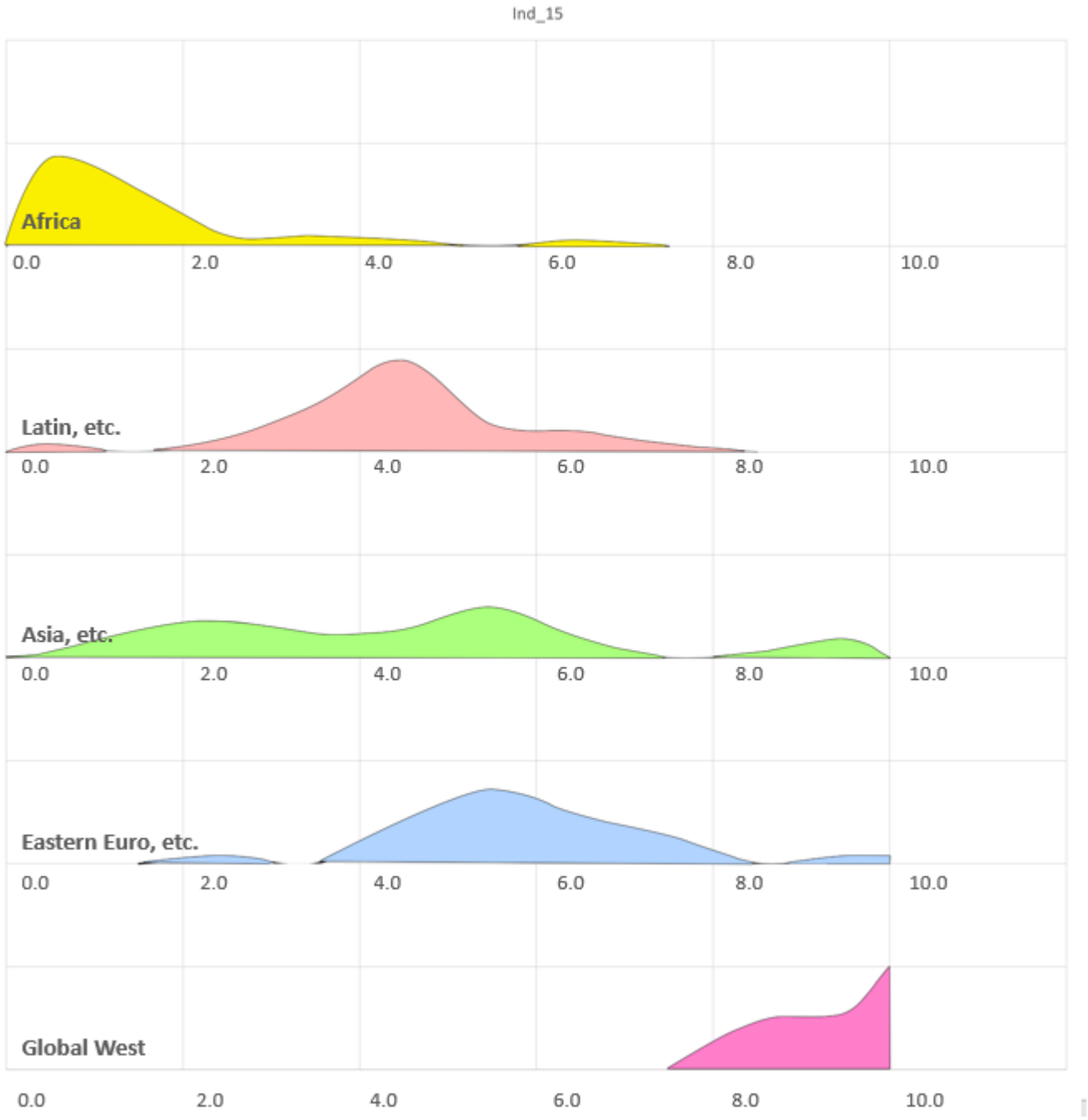
Scores on Water-borne disease risks (Category 5. Indicator 15)

SUB-SAHARAN AFRICA		LATIN AMERICA & CARIBBEAN		ASIA-PACIFIC		GLOBAL WEST	
Mauritius	6.5	Uruguay	7.1	Japan	9.5	Finland	10.0
Seychelles	5.1	Chile	6.8	Singapore	9.3	Iceland	10.0
Cabo Verde	3.6	Costa Rica	6.6	South Korea	9.1	Netherlands	10.0
Sao Tome and Principe	3.5	Argentina	6.5	Brunei Darussalam	8.6	Norway	10.0
Equatorial Guinea	3.3	Colombia	5.6	China	5.9	Switzerland	10.0
Gabon	2.8	Bahamas	5.5	Malaysia	5.8	United Kingdom	10.0
South Africa	2.5	Trinidad and Tobago	5.3	Thailand	5.6	Malta	10.0
Botswana	2.1	Mexico	5.3	Viet Nam	5.3	Germany	9.9
Ghana	2.1	Barbados	5.2	Samoa	4.9	Luxembourg	9.9
Namibia	2.0	Ecuador	5.0	Tonga	4.6	Sweden	9.9
Gambia	1.9	Antigua and Barbuda	5.0	Mongolia	4.3	Italy	9.8
Tanzania	1.8	Cuba	5.0	Philippines	3.9	Denmark	9.7
Djibouti	1.8	Jamaica	4.9	Fiji	3.5	Ireland	9.7
Uganda	1.8	Paraguay	4.8	Cambodia	3.4	Spain	9.7
Cote d'Ivoire	1.7	Dominica	4.7	Marshall Islands	3.2	France	9.6
Rwanda	1.7	Grenada	4.7	Myanmar	3.1	Austria	9.5
Zimbabwe	1.7	Venezuela	4.7	Indonesia	2.8	Belgium	9.4
Mozambique	1.6	Brazil	4.6	Timor-Leste	2.6	Canada	8.8
Comoros	1.5	Saint Lucia	4.5	Vanuatu	2.1	Australia	8.7
Congo Rep	1.5	Panama	4.4	Kiribati	1.6	United States	8.6
Kenya	1.4	Saint Vincent and the Grenadines	4.4	Papua New Guinea	1.6	Portugal	8.3
Mauritania	1.4	Peru	4.3	Solomon Islands	1.4	New Zealand	8.0
Congo Dem Rep	1.3	Nicaragua	4.3	**SOUTHERN ASIA**		**EASTERN EUROPE**	
Benin	1.3	Belize	4.3	Sri Lanka	4.8	Greece	9.8
Zambia	1.3	El Salvador	4.2	Maldives	4.8	Cyprus	9.4
Senegal	1.3	Bolivia	4.0	Bhutan	3.1	Czech Republic	7.6
Angola	1.3	Suriname	3.9	Afghanistan	2.8	Slovenia	7.5
Eswatini	1.3	Dominican Republic	3.9	Bangladesh	2.7	Slovakia	7.2
Malawi	1.2	Guyana	3.5	Nepal	2.7	Poland	7.2
Sierra Leone	1.2	Honduras	3.2	India	1.9	Croatia	7.0
Guinea	1.1	Guatemala	2.8	Pakistan	1.7	Bulgaria	6.8
Guinea	1.1	Haiti	1.4	**FORMER SOVIET STATES**		Montenegro	6.6
Ethiopia	1.1	**GREATER MIDDLE EAST**		Belarus	6.0	Serbia	6.6
Liberia	1.0	Bahrain	5.7	Armenia	5.7	Hungary	6.2
Mali	0.8	United Arab Emirates	6.7	Russia	5.5	Estonia	6.2
Burkina Faso	0.8	Qatar	6.6	Kazakhstan	5.5	Bosnia and Herzegovina	6.1
Cameroon	0.8	Israel	9.3	Ukraine	5.5	North Macedonia	6.1
Lesotho	0.7	Kuwait	6.7	Uzbekistan	5.2	Latvia	5.9
Guinea-Bissau	0.7	Egypt	3.7	Georgia	5.2	Lithuania	5.8
Madagascar	0.6	Iraq	5.0	Moldova	5.0	Romania	5.6
Burundi	0.5	Lebanon	6.0	Turkmenistan	4.7	Albania	5.4
Togo	0.5	Jordan	6.3	Azerbaijan	4.6	Turkey	5.3
Nigeria	0.5	Oman	5.8	Kyrgyzstan	4.5		
Niger	0.1	Sudan	2.2	Tajikistan	3.1		

Chad	0.0	Morocco	4.1
		Algeria	5.3
		Tunisia	5.3
		Iran	5.4
		Saudi Arabia	5.9

Regional performance on Water-borne disease risks (Category 5. Indicator 15)



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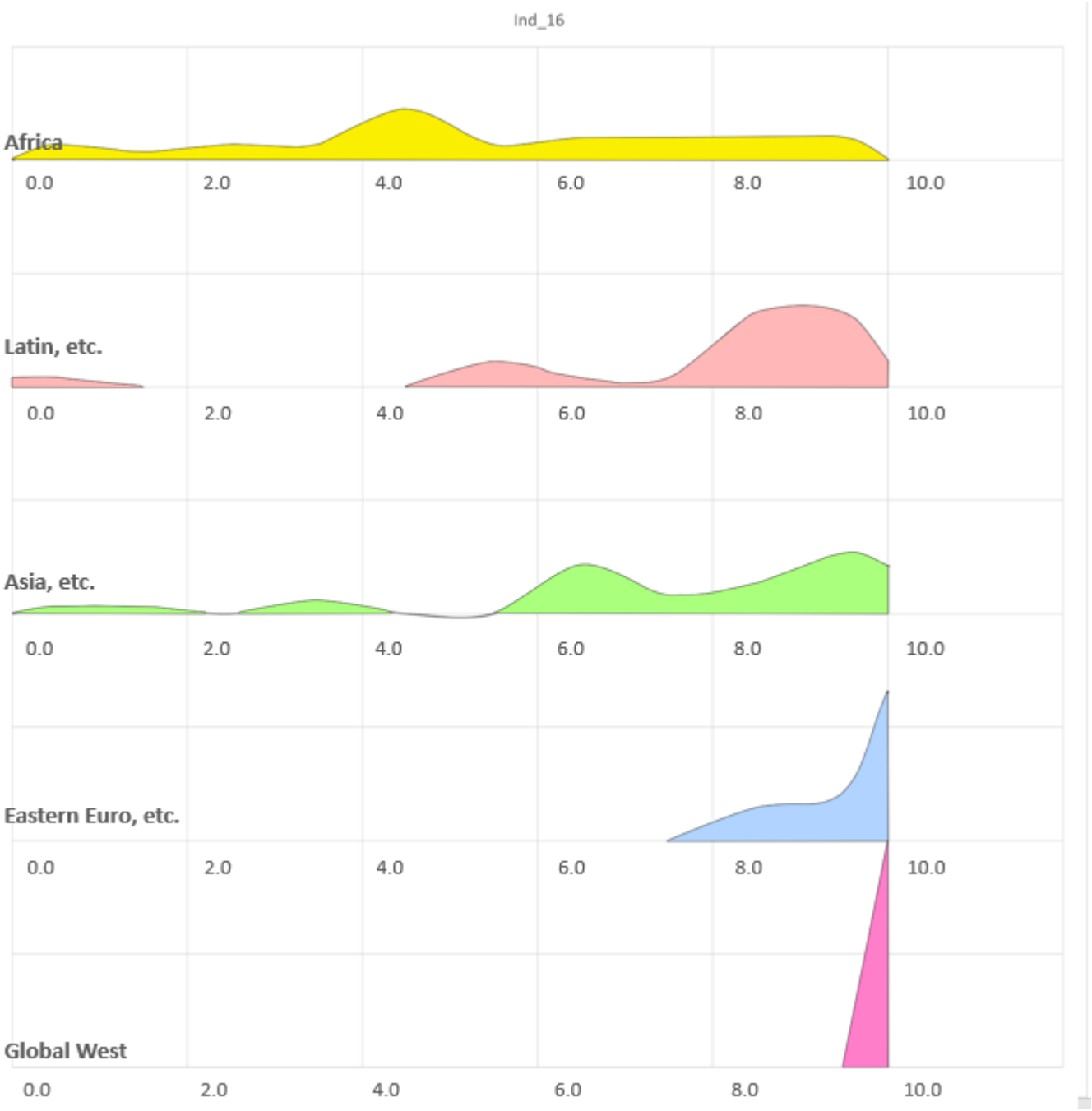
Scores on Prevalence of food insecurity (Category 5. Indicator 16)

SUB-SAHARAN AFRICA		LATIN AMERICA & CARIBBEAN		ASIA-PACIFIC		GLOBAL WEST	
Mali	9.2	Brazil	10.0	Brunei Darussalam	10.0	Australia	10.0
Mauritius	9.1	Cuba	10.0	China	10.0	Austria	10.0
South Africa	9.0	Uruguay	10.0	Japan	10.0	Belgium	10.0
Cameroon	8.8	Costa Rica	9.8	Samoa	10.0	Canada	10.0
Ghana	8.7	Chile	9.7	South Korea	10.0	Denmark	10.0
Benin	8.4	Argentina	9.6	Kiribati	9.8	Finland	10.0
Senegal	7.8	Barbados	9.4	Malaysia	9.8	France	10.0
Gambia	7.0	Colombia	9.0	Fiji	9.5	Germany	10.0
Mauritania	7.0	Dominican Republic	9.0	Viet Nam	8.7	Iceland	10.0
Sao Tome and Principe	6.9	Trinidad and Tobago	9.0	Indonesia	7.9	Ireland	10.0
Nigeria	6.7	Guyana	9.0	Thailand	7.8	Italy	10.0
Namibia	6.1	Saint Vincent and the Grenadines	9.0	Vanuatu	7.6	Luxembourg	10.0
Gabon	5.4	Dominica	8.9	Solomon Islands	6.5	Malta	10.0
Eswatini	5.3	Peru	8.6	Myanmar	6.2	Netherlands	10.0
Cabo Verde	4.8	Panama	8.6	Cambodia	6.1	New Zealand	10.0
Angola	4.8	Mexico	8.5	Philippines	6.1	Norway	10.0
Malawi	4.7	Belize	8.3	Mongolia	3.9	Portugal	10.0
Burkina Faso	4.6	Suriname	8.2	Timor-Leste	0.8	Spain	10.0
Ethiopia	4.4	Jamaica	8.0	**SOUTHERN ASIA**		Sweden	10.0
Côte d'Ivoire	4.4	Ecuador	8.0	Nepal	8.8	Switzerland	10.0
Togo	4.1	Paraguay	8.0	Sri Lanka	8.3	United Kingdom	10.0
Kenya	3.4	El Salvador	7.9	Pakistan	6.8	United States	10.0
Botswana	3.0	Honduras	6.3	Bangladesh	6.6	**EASTERN EUROPE**	
Tanzania	2.7	Bolivia	5.8	India	6.3	Bosnia and Herzegovina	10.0
Sierra Leone	2.4	Guatemala	5.6	Afghanistan	1.1	Croatia	10.0
Congo Dem Rep	1.7	Nicaragua	5.2	**FORMER SOVIET STATES**		Czech	10.0
Lesotho	0.3	Venezuela	0.6	Kazakhstan	10.0	Estonia	10.0
Mozambique	0.3	Haiti	0.0	Azerbaijan	10.0	Greece	10.0
Rwanda	0.0	**GREATER MIDDLE EAST**		Belarus	10.0	Hungary	10.0
Liberia	0.0	Israel	10.0	Russia	10.0	Latvia	10.0
Chad	0.0	Kuwait	10.0	Armenia	10.0	Lithuania	10.0
Madagascar	0.0	Tunisia	10.0	Uzbekistan	10.0	Montenegro	10.0
		Algeria	9.9	Ukraine	9.7	Poland	10.0
		United Arab Emirates	9.8	Turkmenistan	9.5	Romania	10.0
		Morocco	9.4	Kyrgyzstan	8.7	Slovenia	10.0
		Egypt	9.3	Georgia	8.2	Turkey	10.0
		Iran	9.3			Bulgaria	9.8
		Saudi Arabia	9.3			North Macedonia	9.8
		Lebanon	9.0			Albania	9.6
		Oman	8.3			Serbia	9.3
		Jordan	8.1			Slovakia	8.8
		Sudan	6.8			Cyprus	8.6
		Iraq	3.1				

Regional performance on Prevalence of food insecurity (Category 5. Indicator 16)



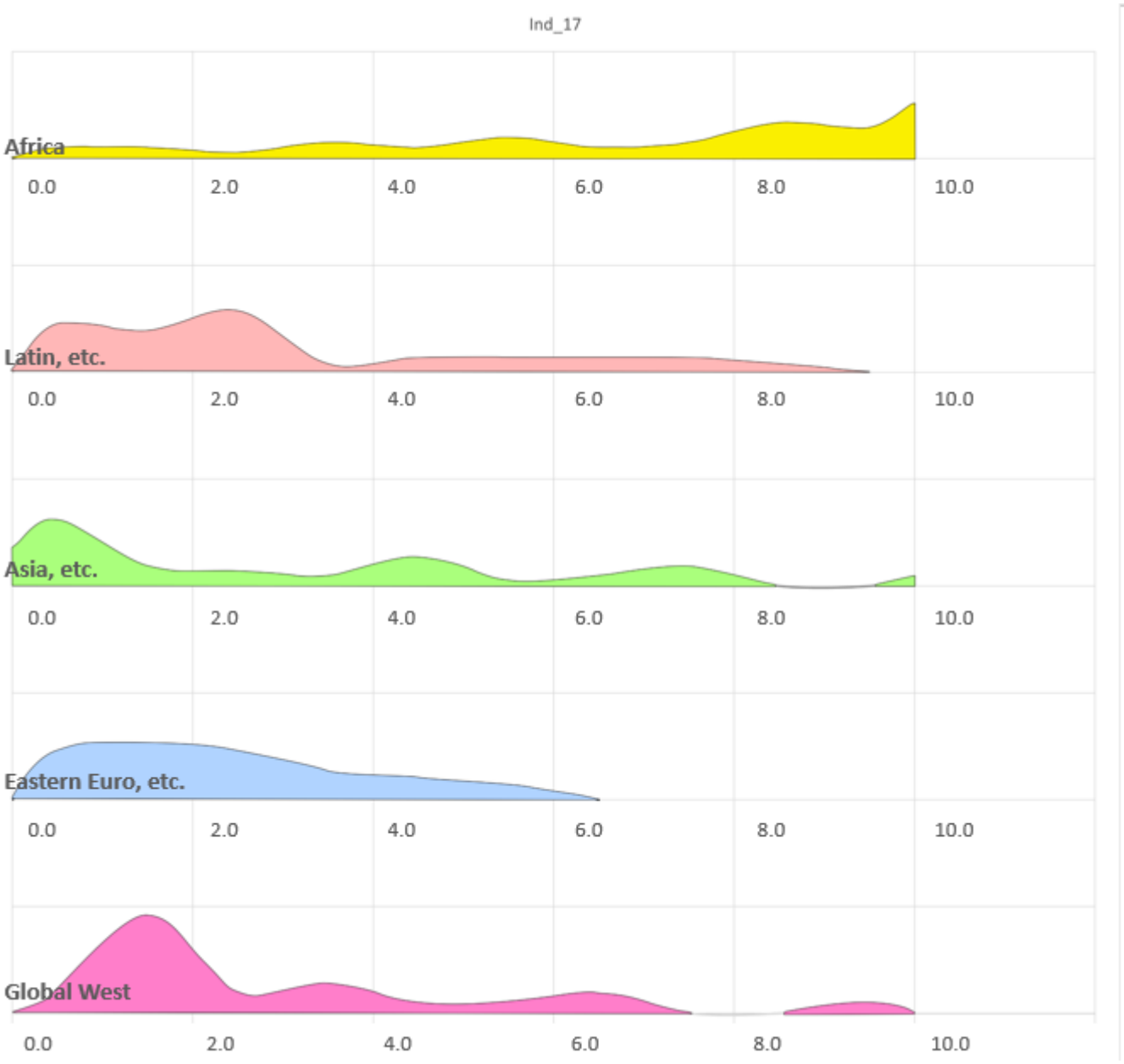
***Africa**: including Sub-Saharan Africa regions; **Latin, etc.**: including Latin America & Caribbean regions; **Asia, etc.**: including Asia-Pacific, Southern Asia and Great Middle East regions; **Eastern Euro, etc.**: Including Eastern European and Former Soviet States regions; **Global West**: Including developed regions in Europe, North America and Oceania*

Scores on Renewable energy consumption (%) (Category 6. Indicator 17)

SUB-SAHARAN AFRICA		LATIN AMERICA & CARIBBEAN		ASIA-PACIFIC		GLOBAL WEST	
Congo Dem Rep	10.0	Haiti	8.9	Cambodia	7.6	Iceland	9.0
Burundi	10.0	Guatemala	7.4	Solomon Islands	7.4	Norway	6.7
Ethiopia	10.0	Paraguay	7.2	Myanmar	7.2	Sweden	6.2
Chad	10.0	Uruguay	6.8	Papua New Guinea	6.1	Finland	5.0
Uganda	10.0	Honduras	6.0	Indonesia	4.3	Austria	4.0
Zambia	10.0	Nicaragua	5.6	Vanuatu	4.2	Denmark	3.9
Guinea-Bissau	10.0	Brazil	5.1	Viet Nam	4.1	New Zealand	3.6
Rwanda	10.0	Costa Rica	4.5	Samoa	4.0	Portugal	3.2
Nigeria	10.0	Belize	4.1	Fiji	3.6	Switzerland	2.9
Mozambique	10.0	Peru	3.0	Philippines	3.2	Canada	2.6
Tanzania	10.0	Guyana	2.9	Thailand	2.7	Italy	1.9
Liberia	9.8	Suriname	2.9	Timor-Leste	2.1	Spain	1.9
Malawi	9.8	Chile	2.9	China	1.4	Germany	1.7
Gabon	9.6	El Salvador	2.8	Marshall Islands	1.3	France	1.6
Zimbabwe	9.5	Colombia	2.7	Japan	0.7	Belgium	1.1
Niger	9.2	Panama	2.5	Malaysia	0.6	Australia	1.1
Sierra Leone	9.1	Cuba	2.2	Kiribati	0.5	Ireland	1.1
Cameroon	8.9	Bolivia	2.0	Mongolia	0.4	Luxembourg	1.0
Guinea	8.9	Jamaica	2.0	South Korea	0.3	United States	1.0
Guinea	8.9	Dominican Republic	1.9	Tonga	0.2	United Kingdom	1.0
Burkina Faso	8.7	Ecuador	1.6	Singapore	0.1	Netherlands	0.7
Kenya	8.5	Venezuela	1.5	Brunei Darussalam	0.0	Malta	0.6
Togo	8.3	Grenada	1.3	**SOUTHERN ASIA**		**EASTERN EUROPE**	
Madagascar	8.2	Argentina	1.2	Bhutan	10.0	Montenegro	5.0
Cote d'Ivoire	7.5	Mexico	1.1	Nepal	10.0	Bosnia and Herzegovina	4.8
Congo Rep	7.3	Dominica	0.9	Sri Lanka	6.2	Albania	4.5
Mali	7.2	St. Vincent and the Grenadines	0.7	Pakistan	5.4	Latvia	4.4
Lesotho	6.1	Barbados	0.3	India	4.2	Croatia	3.9
Gambia	6.0	St. Lucia	0.2	Bangladesh	4.1	Lithuania	3.4
Benin	5.9	Bahamas	0.1	Afghanistan	2.1	Estonia	3.2
Angola	5.8	Trinidad and Tobago	0.0	Maldives	0.1	Macedonia, FYR	2.8
Comoros	5.3	Antigua and Barbuda	0.0	**FORMER SOVIET STATES**		Romania	2.8
Senegal	5.0	**GREATER MIDDLE EAST**		Tajikistan	5.2	Serbia	2.5
Ghana	4.8	Sudan	7.2	Georgia	3.3	Slovenia	2.4
Sao Tome and Principe	4.8	Tunisia	1.5	Kyrgyz Republic	2.7	Bulgaria	2.1
Mauritania	3.8	Morocco	1.3	Armenia	1.8	Greece	2.0
Botswana	3.4	Egypt	0.7	Moldova	1.7	Hungary	1.8
Namibia	3.1	Israel	0.4	Belarus	0.8	Czech Republic	1.7
South Africa	2.0	Lebanon	0.4	Ukraine	0.5	Slovak Republic	1.6
Djibouti	1.8	Jordan	0.4	Russia	0.4	Turkey	1.6
Mauritius	1.3	Iran	0.1	Uzbekistan	0.3	Poland	1.4
Equatorial Guinea	0.9	Iraq	0.1	Azerbaijan	0.3	Cyprus	1.2
Seychelles	0.2	United Arab Emirates	0.0	Kazakhstan	0.2		
		Algeria	0.0	Turkmenistan	0.0		
		Saudi Arabia	0.0				

	Bahrain	0.0
	Qatar	0.0
	Kuwait	0.0
	Oman	0.0

Regional performance on Renewable energy consumption (%) (Category 6. Indicator 17)

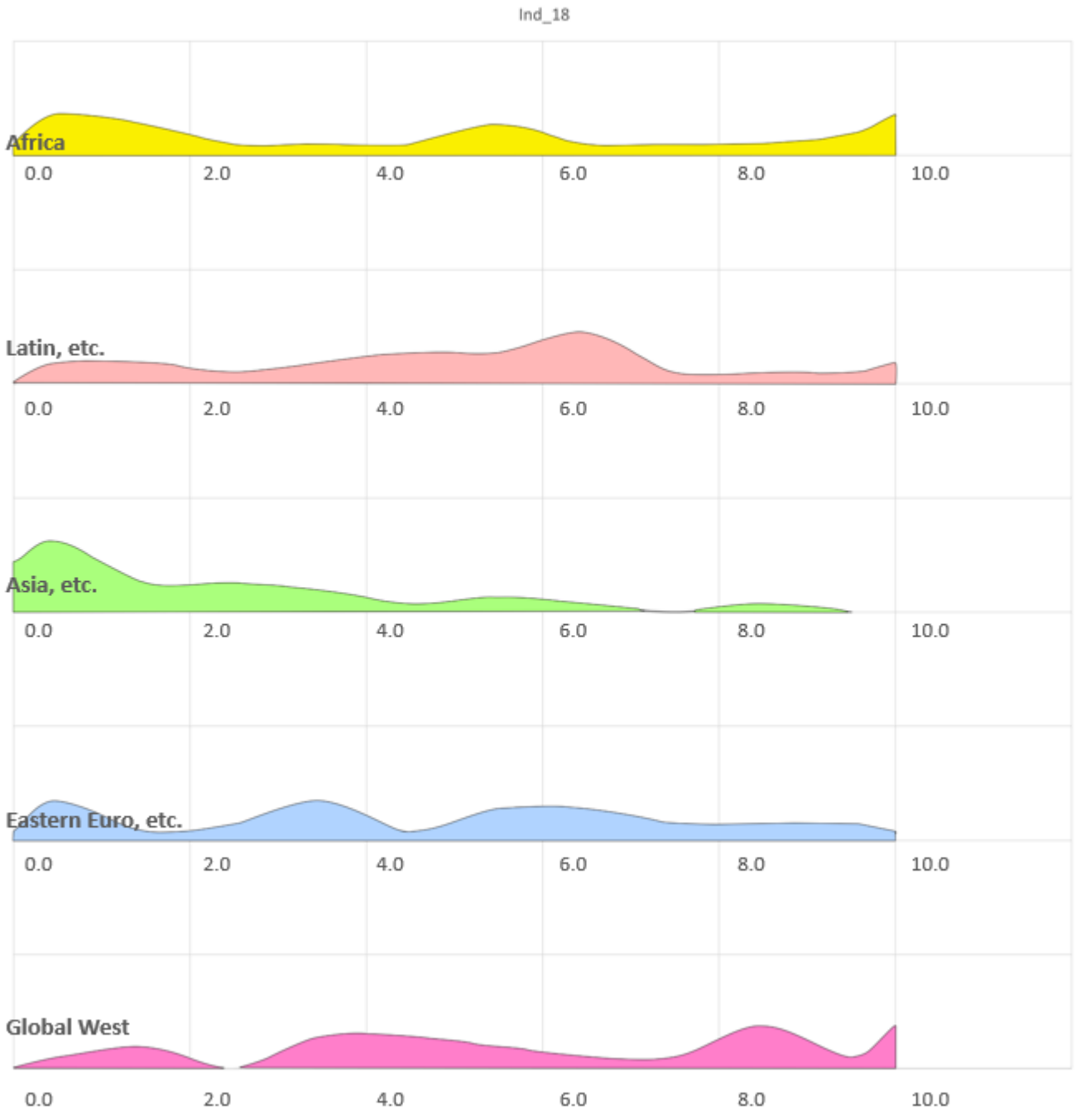


***Africa**: including Sub-Saharan Africa regions; **Latin, etc.**: including Latin America & Caribbean regions; **Asia, etc.**: including Asia-Pacific, Southern Asia and Great Middle East regions; **Eastern Euro, etc.**: Including Eastern European and Former Soviet States regions; **Global West**: Including developed regions in Europe, North America and Oceania*

Scores on Fossil energy use (%) (Category 6. Indicator 18)

SUB-SAHARAN AFRICA		LATIN AMERICA & CARIBBEAN		ASIA-PACIFIC		GLOBAL WEST	
Ethiopia	10.0	Paraguay	10.0	Myanmar	6.2	Iceland	10.0
Congo Dem Rep	10.0	Costa Rica	10.0	Cambodia	4.9	Switzerland	10.0
Namibia	10.0	Uruguay	9.3	Viet Nam	3.9	Sweden	10.0
Zambia	10.0	Brazil	8.1	South Korea	3.4	Norway	10.0
Kenya	9.2	Colombia	7.2	China	2.8	France	9.9
Mozambique	9.1	Panama	6.9	Philippines	2.7	Finland	8.8
Cameroon	8.0	Venezuela	6.7	Japan	2.1	New Zealand	8.5
Togo	7.9	Guatemala	6.4	Indonesia	1.1	Canada	8.3
Ghana	6.4	Suriname	6.3	Malaysia	1.0	Austria	8.2
Congo Rep	5.6	El Salvador	6.1	Thailand	0.9	Denmark	7.2
Angola	5.6	Ecuador	5.6	Mongolia	0.3	Belgium	6.4
Zimbabwe	5.6	Peru	5.6	Singapore	0.3	Spain	5.9
Gabon	4.6	Nicaragua	5.3	Brunei Darussalam	0.0	Portugal	5.1
Tanzania	3.6	Chile	4.6	**SOUTHERN ASIA**		United Kingdom	4.9
Mauritius	2.4	Honduras	4.4	Sri Lanka	5.1	Germany	4.7
Nigeria	1.9	Cuba	4.2	Pakistan	3.9	Italy	4.2
Cote d'Ivoire	1.7	Argentina	3.5	India	1.9	Luxembourg	3.9
Senegal	1.3	Bolivia	3.3	Bangladesh	0.1	Ireland	3.9
South Africa	0.7	Mexico	2.0	**FORMER SOVIET STATES**		United States	3.5
Benin	0.6	Dominican Republic	1.2	Tajikistan	10.0	Netherlands	1.9
Niger	0.1	Jamaica	1.1	Kyrgyz Republic	9.0	Australia	1.4
Botswana	0.0	Haiti	0.8	Georgia	8.2	Malta	0.8
		Trinidad and Tobago	0.0	Armenia	6.8	**EASTERN EUROPE**	
		GREATER MIDDLE EAST		Ukraine	6.2	Estonia	9.8
		Sudan	8.2	Russia	3.6	Slovakia	8.4
		Iraq	5.2	Uzbekistan	2.2	Slovenia	7.1
		Saudi Arabia	2.5	Kazakhstan	0.9	Croatia	7.0
		Morocco	1.9	Azerbaijan	0.8	Hungary	6.7
		Egypt	0.9	Moldova	0.5	Romania	6.0
		Iran	0.6	Belarus	0.1	Latvia	5.3
		Tunisia	0.4	Turkmenistan	0.0	Montenegro	5.2
		Lebanon	0.3			Bulgaria	5.2
		Israel	0.2			Lithuania	5.0
		Jordan	0.1			Czech Republic	4.6
		Algeria	0.0			North Macedonia	3.8
		United Arab Emirates	0.0			Bosnia and Herzegovina	3.7
		Bahrain	0.0			Turkey	3.4
		Qatar	0.0			Greece	3.0
		Kuwait	0.0			Serbia	2.8
		Oman	0.0			Poland	1.4
						Cyprus	0.9

Regional performance on Fossil energy use (%) (Category 6. Indicator 18)



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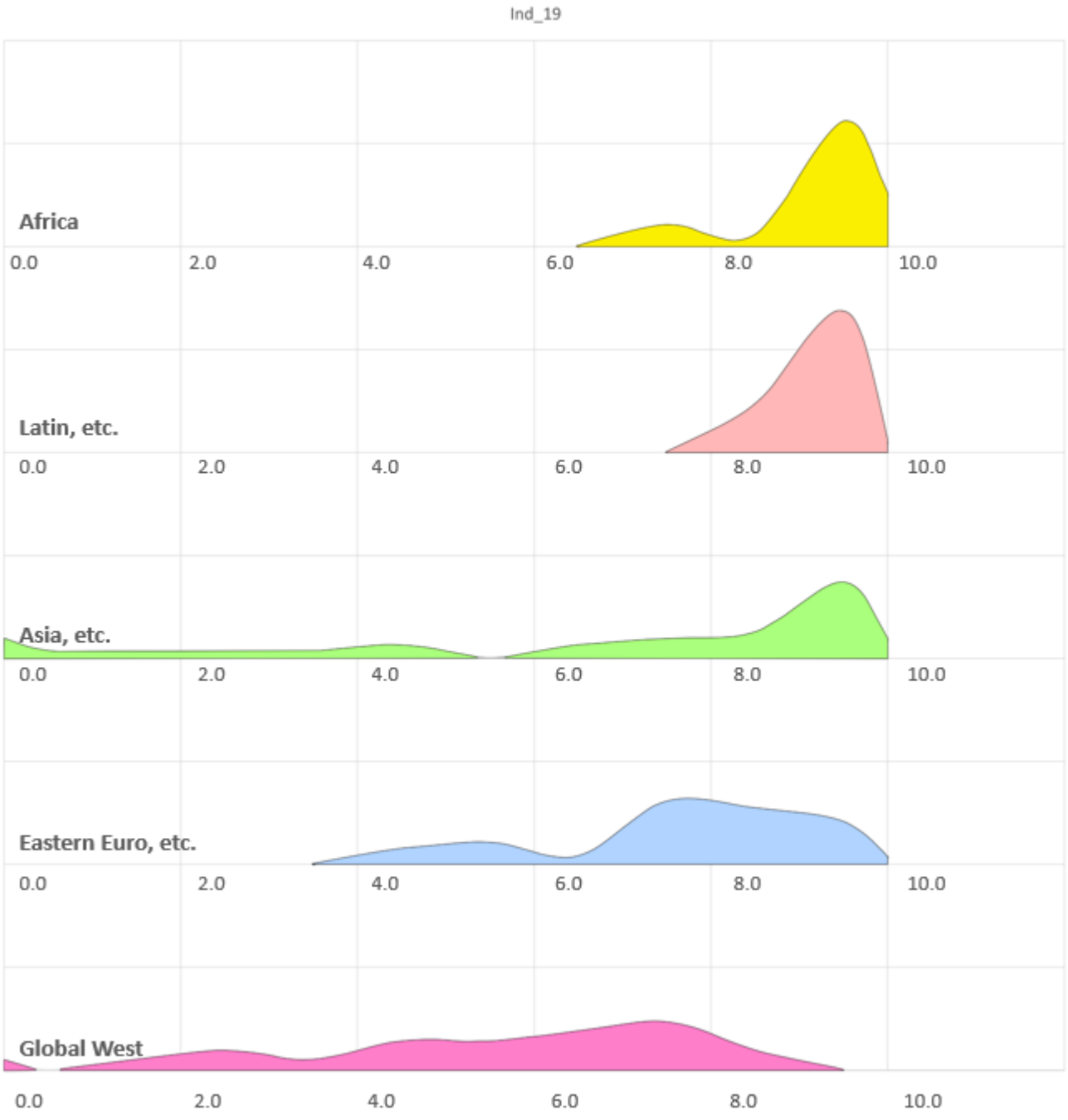
Scores on Energy consumption (Category 6. Indicator 19)

SUB-SAHARAN AFRICA		LATIN AMERICA & CARIBBEAN		ASIA-PACIFIC		GLOBAL WEST	
Niger	10.0	Haiti	10.0	Myanmar	10.0	Malta	8.4
Senegal	10.0	Nicaragua	9.7	Cambodia	9.9	Portugal	8.1
Ghana	10.0	Honduras	9.7	Philippines	9.9	Italy	7.7
Cameroon	10.0	El Salvador	9.7	Indonesia	9.4	Spain	7.6
Congo Dem Rep	10.0	Colombia	9.6	Mongolia	8.3	Ireland	7.3
Benin	9.9	Dominican Republic	9.6	Thailand	8.2	United Kingdom	7.2
Mozambique	9.9	Bolivia	9.5	China	7.9	Denmark	7.1
Togo	9.9	Paraguay	9.5	Malaysia	7.0	Switzerland	6.9
Ethiopia	9.9	Peru	9.5	Japan	6.4	France	6.2
Tanzania	9.8	Guatemala	9.4	Singapore	4.5	Austria	6.1
Kenya	9.8	Ecuador	9.4	South Korea	4.4	Germany	6.1
Angola	9.8	Jamaica	9.3	Brunei Darussalam	0.5	Netherlands	5.5
Congo Rep	9.8	Costa Rica	9.2	SOUTHERN ASIA		New Zealand	5.2
Cote d'Ivoire	9.7	Cuba	9.2	Bangladesh	10.0	Belgium	5.0
Nigeria	9.5	Panama	9.2	Nepal	9.9	Sweden	4.7
Namibia	9.5	Suriname	9.0	Pakistan	9.9	Australia	4.3
Mauritius	9.1	Uruguay	8.8	Sri Lanka	9.8	Norway	4.0
Botswana	8.9	Brazil	8.7	India	9.7	Finland	3.3
Gabon	7.3	Mexico	8.6	**FORMER SOVIET STATES**		Luxembourg	2.6
South Africa	7.3	Argentina	8.1	Tajikistan	10.0	United States	2.4
		Chile	8.1	Kyrgyzstan	9.7	Canada	1.4
		Trinidad and Tobago	0.0	Armenia	9.3	Iceland	0.0
		GREATER MIDDLE EAST		Moldova	9.1	**EASTERN EUROPE**	
		Sudan	10.0	Georgia	9.1	Albania	9.5
		Morocco	9.8	Azerbaijan	8.7	North Macedonia	9.0
		Egypt	9.5	Ukraine	7.7	Montenegro	8.7
		Jordan	9.4	Belarus	7.1	Turkey	8.6
		Tunisia	9.3	Kazakhstan	5.3	Romania	8.6
		Lebanon	9.0	Turkmenistan	4.8	Cyprus	8.5
		Algeria	8.9	Russia	4.8	Serbia	8.3
		Iraq	8.8			Croatia	8.2
		Israel	7.3			Greece	8.0
		Iran	6.9			Latvia	7.9
		Oman	3.5			Bosnia and Herzegovina	7.8
		Saudi Arabia	2.5			Hungary	7.8
		United Arab Emirates	1.7			Lithuania	7.7
		Kuwait	0.0			Poland	7.6
		Bahrain	0.0			Bulgaria	7.6
		Qatar	0.0			Slovak Republic	7.0
						Slovenia	6.7
						Czech Republic	5.9
						Estonia	5.2

Regional performance on Energy consumption (Category 6. Indicator 19)

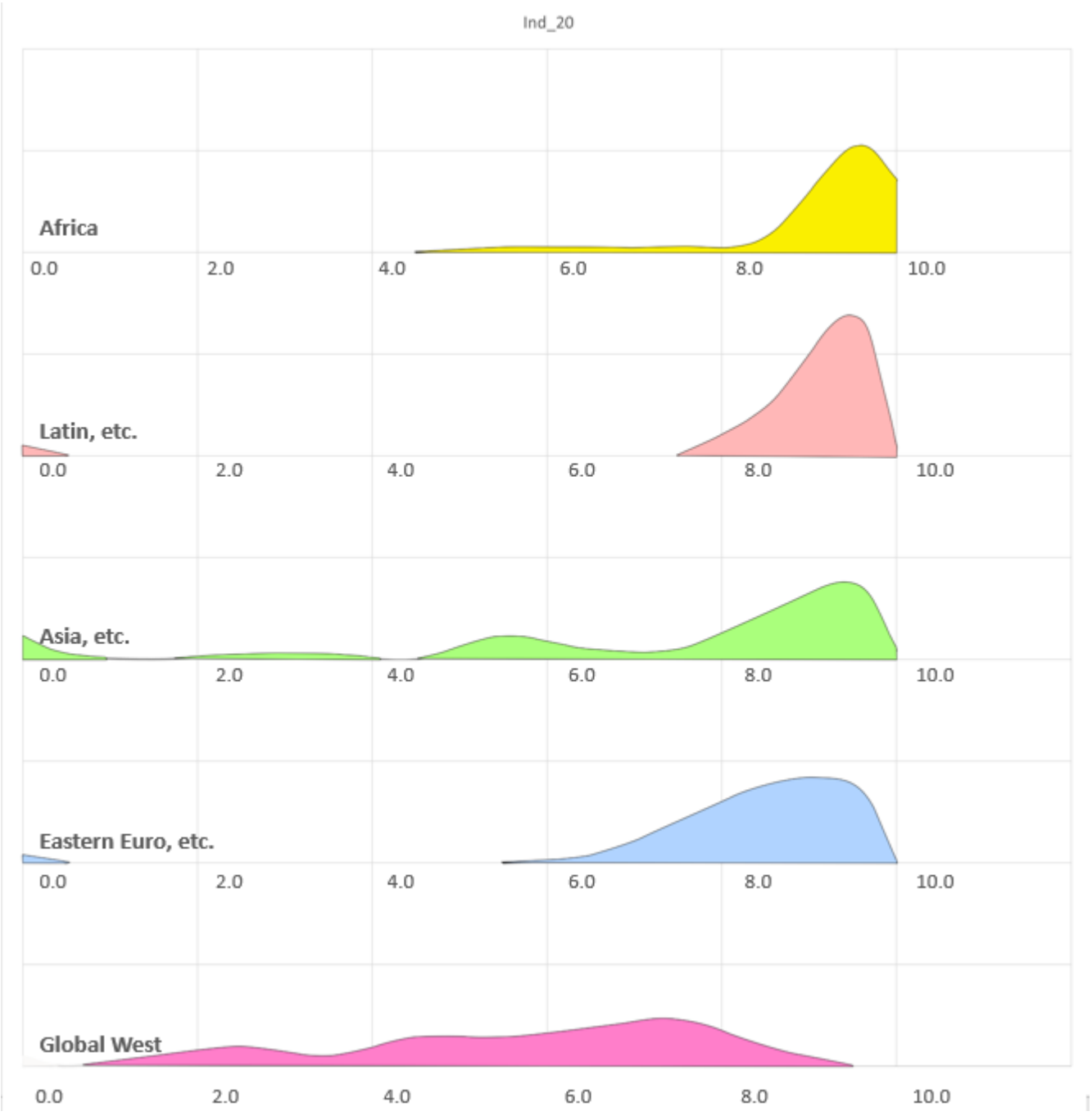


Scores on CO2 emission (Category 6. Indicator 20)

SUB-SAHARAN AFRICA		LATIN AMERICA & CARIBBEAN		ASIA-PACIFIC		GLOBAL WEST	
Congo Dem Rep	10.0	Haiti	9.9	Solomon Islands	9.9	Malta	8.4
Burundi	10.0	Nicaragua	9.6	Timor-Leste	9.9	Switzerland	7.7
Chad	10.0	Honduras	9.5	Myanmar	9.8	Sweden	7.5
Malawi	10.0	Guatemala	9.5	Vanuatu	9.8	Portugal	7.3
Rwanda	10.0	Paraguay	9.5	Kiribati	9.8	Spain	7.0
Niger	10.0	El Salvador	9.4	Cambodia	9.7	Denmark	6.8
Uganda	10.0	Belize	9.2	Papua New Guinea	9.6	United Kingdom	6.7
Ethiopia	10.0	Costa Rica	9.1	Philippines	9.4	Iceland	6.5
Sierra Leone	10.0	Peru	9.0	Samoa	9.3	Austria	5.9
Madagascar	10.0	Bolivia	8.9	Tonga	9.3	New Zealand	5.8
Guinea-Bissau	10.0	Uruguay	8.9	Viet Nam	8.9	Norway	5.5
Mali	10.0	St. Vincent and the Grenadines	8.9	Indonesia	8.8	Ireland	5.4
Burkina Faso	10.0	Colombia	8.9	Fiji	8.7	Finland	5.2
Tanzania	10.0	Brazil	8.8	Marshall Islands	8.6	Belgium	5.0
Gambia	10.0	St. Lucia	8.7	Thailand	7.7	Germany	4.9
Comoros	9.9	Grenada	8.7	Singapore	6.1	Netherlands	4.2
Guinea	9.9	Dominican Republic	8.7	China	5.8	Canada	1.2
Guinea	9.9	Cuba	8.6	Malaysia	5.3	Luxembourg	0.9
Mozambique	9.9	Ecuador	8.6	Mongolia	5.2	United States	0.9
Liberia	9.9	Dominica	8.6	Japan	4.8	Australia	0.9
Zambia	9.9	Panama	8.5	South Korea	2.9	**EASTERN EUROPE**	
Cameroon	9.9	Jamaica	8.4	Brunei Darussalam	0.0	Albania	9.2
Kenya	9.9	Suriname	8.3	**SOUTHERN ASIA**		Montenegro	8.2
Togo	9.9	Guyana	8.3	Afghanistan	10.0	North Macedonia	8.1
Cote d'Ivoire	9.9	Mexico	7.8	Nepal	9.9	Romania	8.0
Ghana	9.8	Barbados	7.5	Bangladesh	9.8	Latvia	8.0
Sao Tome and Principe	9.7	Argentina	7.4	Pakistan	9.5	Croatia	7.6
Benin	9.7	Chile	7.3	Sri Lanka	9.4	Lithuania	7.4
Nigeria	9.7	Bahamas	7.3	Bhutan	9.1	Hungary	7.3
Mauritania	9.7	Venezuela	6.8	India	9.0	Turkey	7.3
Congo Rep	9.7	Antigua and Barbuda	6.6	Maldives	8.3	Cyprus	6.7
Djibouti	9.7	Trinidad and Tobago	0.0	**FORMER SOVIET STATES**		Greece	6.7
Senegal	9.7	**GREATER MIDDLE EAST**		Tajikistan	9.7	Bulgaria	6.6
Zimbabwe	9.6	South Sudan	10.0	Kyrgyz Republic	9.1	Slovak Republic	6.6
Cabo Verde	9.5	Morocco	9.1	Armenia	9.1	Slovenia	6.5
Eswatini	9.5	Egypt	8.6	Moldova	9.0	Serbia	6.3
Angola	9.4	Jordan	8.5	Georgia	8.5	Bosnia and Herzegovina	6.3
Lesotho	9.4	Tunisia	8.5	Uzbekistan	8.4	Poland	5.4
Namibia	9.0	Lebanon	7.9	Azerbaijan	7.8	Czech Republic	4.4
Gabon	8.5	Algeria	7.9	Ukraine	7.4	Estonia	2.6
Botswana	8.4	Iraq	7.0	Belarus	6.5		
Mauritius	8.1	Israel	5.6	Russia	3.0		
Equatorial Guinea	7.3	Iran	5.2	Turkmenistan	2.7		
Seychelles	6.3	Oman	1.7	Kazakhstan	1.9		

South Africa	5.1	Saudi Arabia	0.0
		United Arab Emirates	0.0
		Bahrain	0.0
		Kuwait	0.0
		Qatar	0.0

Regional performance on CO2 emission (Category 6. Indicator 20)



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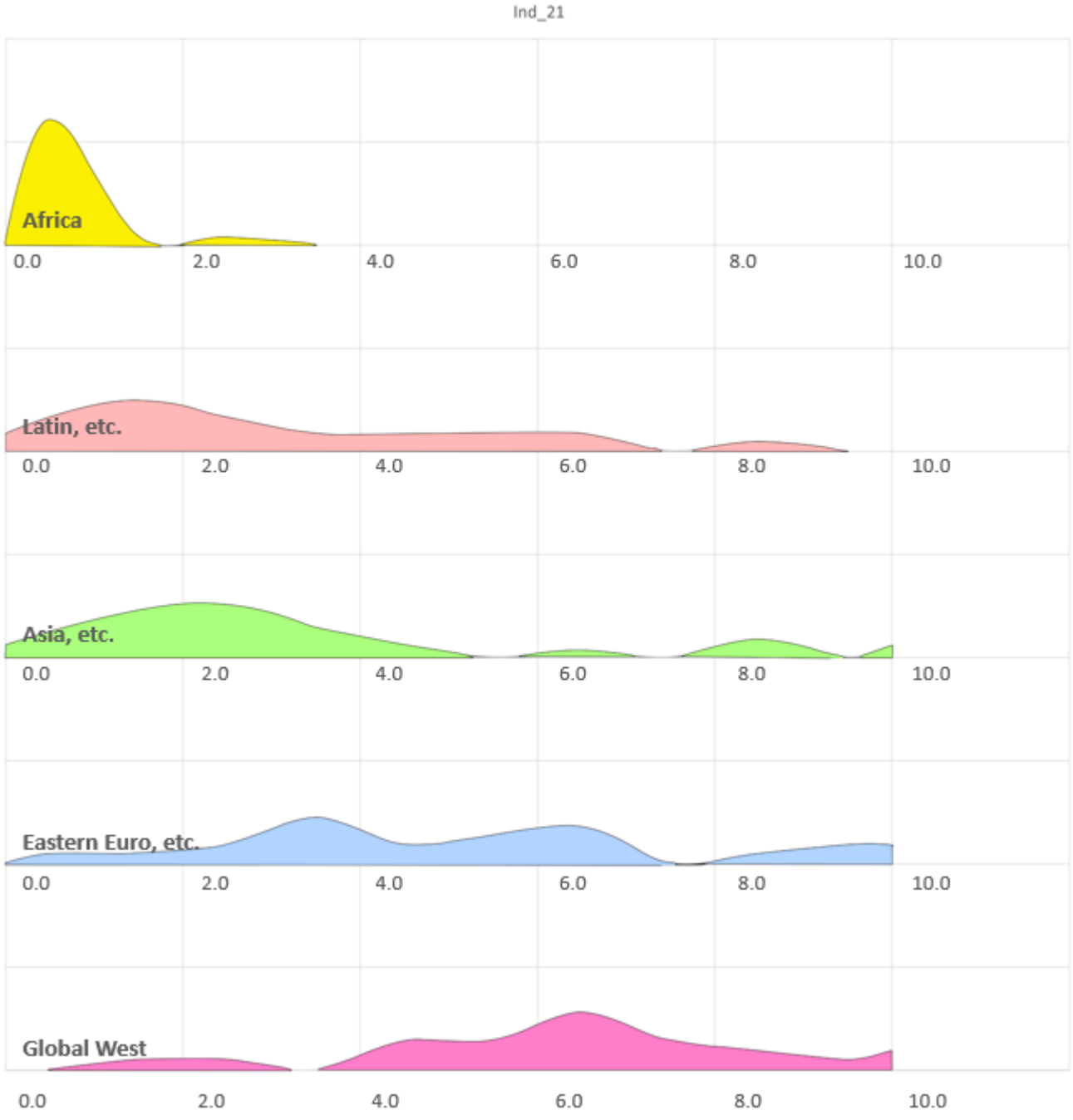
Scores on Tertiary education attainment (%) (Category 7. Indicator 21)

SUB-SAHARAN AFRICA		LATIN AMERICA & CARIBBEAN		ASIA-PACIFIC		GLOBAL WEST	
Gabon	2.6	Colombia	8.1	South Korea	10.0	United States	10.0
Kenya	1.3	Costa Rica	6.3	Singapore	10.0	Ireland	10.0
Cote d'Ivoire	0.8	Panama	6.2	Mongolia	8.6	Canada	9.9
Botswana	0.7	Cuba	5.7	Japan	8.2	Luxembourg	8.1
Benin	0.7	Peru	5.3	Thailand	4.5	Australia	8.1
Liberia	0.7	Nicaragua	4.4	Fiji	2.9	Iceland	7.8
Mauritius	0.6	Mexico	4.2	Malaysia	2.4	Switzerland	7.8
Eswatini	0.5	Bolivia	3.6	Philippines	2.2	Belgium	7.7
Cameroon	0.5	Jamaica	3.5	Myanmar	2.1	Netherlands	6.8
Togo	0.5	Trinidad and Tobago	2.7	Indonesia	1.5	New Zealand	6.7
Ghana	0.4	Chile	2.4	Viet Nam	1.3	United Kingdom	6.6
Senegal	0.4	Brazil	2.3	Tonga	1.1	Denmark	6.5
Uganda	0.4	Ecuador	2.1	China	1.0	Spain	6.5
Sierra Leone	0.3	El Salvador	1.6	Cambodia	0.4	Sweden	6.5
Mauritania	0.2	Paraguay	1.5	Papua New Guinea	0.0	Germany	5.7
Gambia	0.2	Uruguay	1.4	**SOUTHERN ASIA**		Finland	5.3
Mali	0.2	Belize	1.2	Sri Lanka	3.6	Norway	5.2
Namibia	0.1	Venezuela	1.1	India	2.0	France	4.5
Lesotho	0.1	Argentina	1.1	Pakistan	1.8	Malta	4.5
Congo Rep	0.1	Barbados	0.7	Afghanistan	1.4	Austria	4.0
Burundi	0.0	Dominican Republic	0.7	Bangladesh	0.8	Italy	2.9
Congo Dem Rep	0.0	Honduras	0.7	Nepal	0.6	Portugal	1.3
Rwanda	0.0	Haiti	0.1	Maldives	0.0	**EASTERN EUROPE**	
Niger	0.0	Guyana	0.0	**FORMER SOVIET STATES**		Greece	9.8
Zambia	0.0	Guatemala	0.0	Russia	10.0	Cyprus	9.0
Zimbabwe	0.0	**GREATER MIDDLE EAST**		Ukraine	10.0	Estonia	8.2
Tanzania	0.0	Israel	8.8	Armenia	6.5	Lithuania	6.8
South Africa	0.0	Iran	6.3	Kazakhstan	6.1	Hungary	6.7
Mozambique	0.0	Qatar	4.3	Kyrgyzstan	3.8	Slovenia	5.7
Malawi	0.0	Iraq	3.7	Moldova	3.7	Bulgaria	5.6
		United Arab Emirates	3.6	Tajikistan	1.5	Latvia	5.3
		Bahrain	3.3			Poland	4.9
		Tunisia	3.1			Croatia	4.7
		Saudi Arabia	2.8			Serbia	3.8
		Algeria	2.8			Czechia	3.2
		Egypt	2.8			Slovakia	3.7
		Morocco	2.2			Romania	2.7
		Kuwait	1.7			Turkey	2.2
		Jordan	1.5			Albania	0.2
		Sudan	0.6				

Regional performance on Tertiary education attainment (Category 7. Indicator 21)

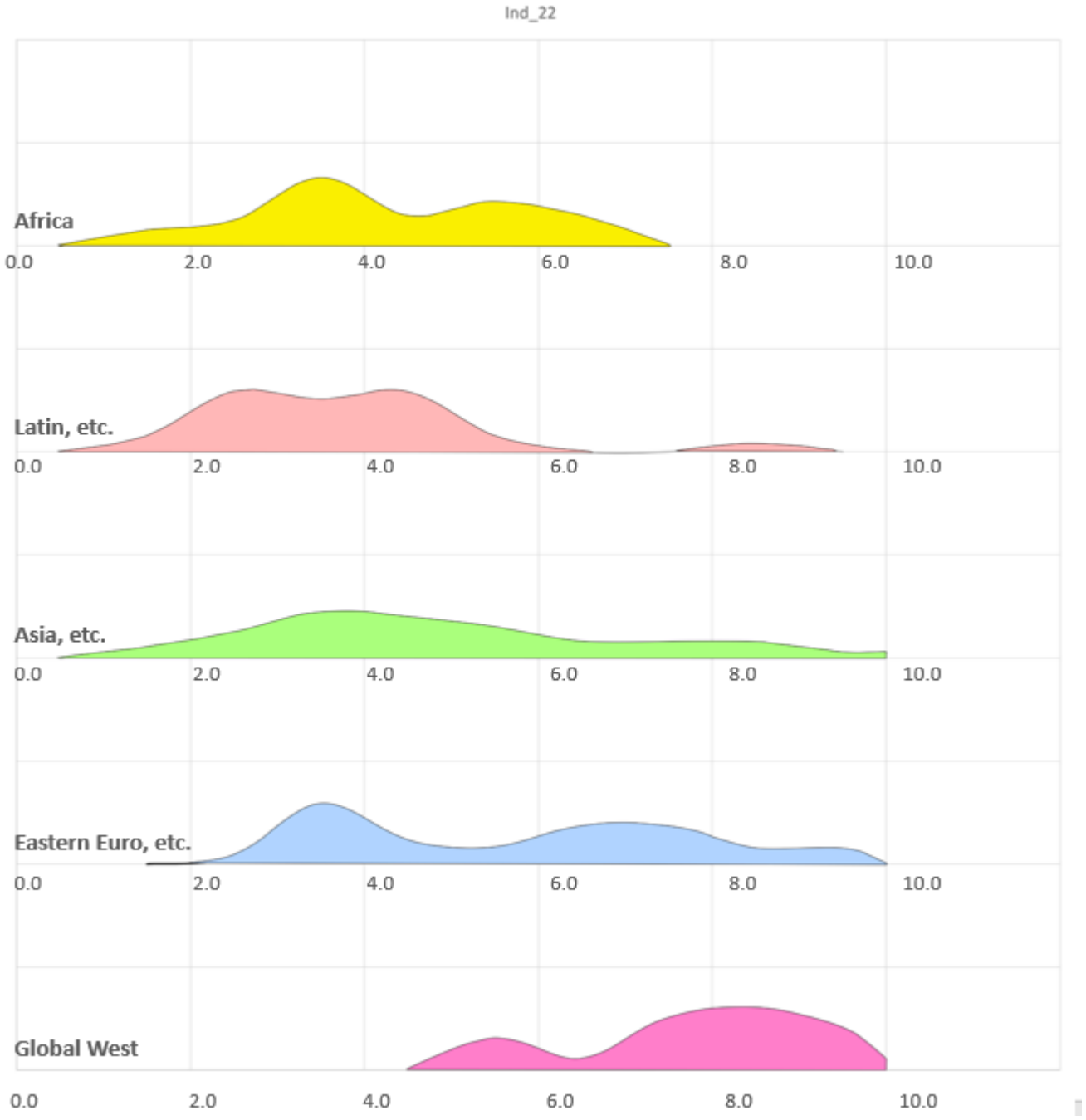


***Africa**: including Sub-Saharan Africa regions; **Latin, etc.**: including Latin America & Caribbean regions; **Asia, etc.**: including Asia-Pacific, Southern Asia and Great Middle East regions; **Eastern Euro, etc.**: Including Eastern European and Former Soviet States regions; **Global West**: Including developed regions in Europe, North America and Oceania*

Scores on IWRM implementation (%) (Category 7. Indicator 22)

SUB-SAHARAN AFRICA		LATIN AMERICA & CARIBBEAN		ASIA-PACIFIC		GLOBAL WEST	
South Africa	6.5	Cuba	8.0	Singapore	10.0	France	10.0
Cabo Verde	6.4	Brazil	5.1	Japan	9.4	Denmark	9.3
Mauritius	6.4	Colombia	5.0	China	7.5	Netherlands	9.3
Benin	6.3	Mexico	4.9	Samoa	7.0	Austria	9.1
Burkina Faso	6.3	Bolivia	4.9	South Korea	6.8	Luxembourg	9.0
Zimbabwe	6.1	Costa Rica	4.3	Philippines	5.1	Sweden	8.9
Namibia	5.9	Jamaica	4.3	Indonesia	4.8	Germany	8.8
Uganda	5.9	Barbados	4.2	Cambodia	4.6	Australia	8.6
Mozambique	5.5	Ecuador	4.2	Malaysia	4.3	Spain	8.2
Eswatini	5.3	Dominica	4.0	Mongolia	4.3	Switzerland	8.1
Kenya	5.3	Saint Lucia	4.0	Vanuatu	3.9	Ireland	8.1
Senegal	5.3	Argentina	3.8	Viet Nam	3.8	Belgium	7.8
Mali	5.3	Panama	3.7	Marshall Islands	3.3	United Kingdom	7.7
Tanzania	5.0	Dominican Republic	3.6	Tonga	3.0	Finland	7.5
Niger	5.0	Bahamas	3.3	Myanmar	2.7	Malta	7.5
Ghana	4.9	Paraguay	3.2	Solomon Islands	2.6	Portugal	7.4
Zambia	4.6	Peru	3.0	Papua New Guinea	2.5	Norway	6.3
Seychelles	4.5	Antigua and Barbuda	3.0	Timor-Leste	1.4	New Zealand	5.8
Mauritania	4.5	Haiti	2.9	**SOUTHERN ASIA**		Italy	5.5
Botswana	4.1	Guatemala	2.5	Pakistan	5.0	Iceland	5.2
Malawi	4.0	Trinidad and Tobago	2.5	Bangladesh	5.0	**EASTERN EUROPE**	
Angola	3.7	Grenada	2.5	Maldives	3.5	Cyprus	9.1
Madagascar	3.6	Chile	2.3	Nepal	3.3	Croatia	9.0
Nigeria	3.5	Honduras	2.1	Bhutan	3.2	Greece	8.3
Rwanda	3.5	El Salvador	2.1	Sri Lanka	2.5	Estonia	8.0
Cameroon	3.4	Belize	2.0	Afghanistan	1.2	Czechia	7.9
Lesotho	3.3	Guyana	1.6	**FORMER SOVIET STATES**		Hungary	7.3
Cote d'Ivoire	3.2	Suriname	1.5	Russia	7.9	Romania	7.2
Congo Rep	3.2	**GREATER MIDDLE EAST**		Azerbaijan	6.6	Turkey	7.0
Burundi	3.2	Israel	8.5	Uzbekistan	4.5	Slovakia	6.6
Chad	3.2	Qatar	8.2	Ukraine	3.9	Latvia	6.4
Togo	3.2	Kuwait	8.2	Belarus	3.8	Bosnia and Herzegovina	6.1
Congo Dem Rep	3.1	United Arab Emirates	7.5	Armenia	3.6	Bulgaria	6.0
Ethiopia	3.1	Morocco	6.4	Georgia	3.5	Slovenia	5.8
Gambia	3.0	Jordan	6.3	Moldova	3.2	Lithuania	5.7
Comoros	2.6	Iran	5.9	Kazakhstan	3.0	Albania	4.3
Equatorial Guinea	2.4	Saudi Arabia	5.7			Poland	4.0
Guinea	2.4	Tunisia	5.5			Montenegro	3.4
Guinea	2.4	Algeria	4.8			Serbia	3.0
Sao Tome and Principe	2.3	Bahrain	4.0			North Macedonia	2.2
Sierra Leone	1.9	Egypt	4.0				
Liberia	1.5	Sudan	4.0				
Gabon	1.4	Oman	3.3				
		Lebanon	3.2				
		Iraq	2.5				

Regional performance on IWRM implementation (%) (Category 7. Indicator 22)



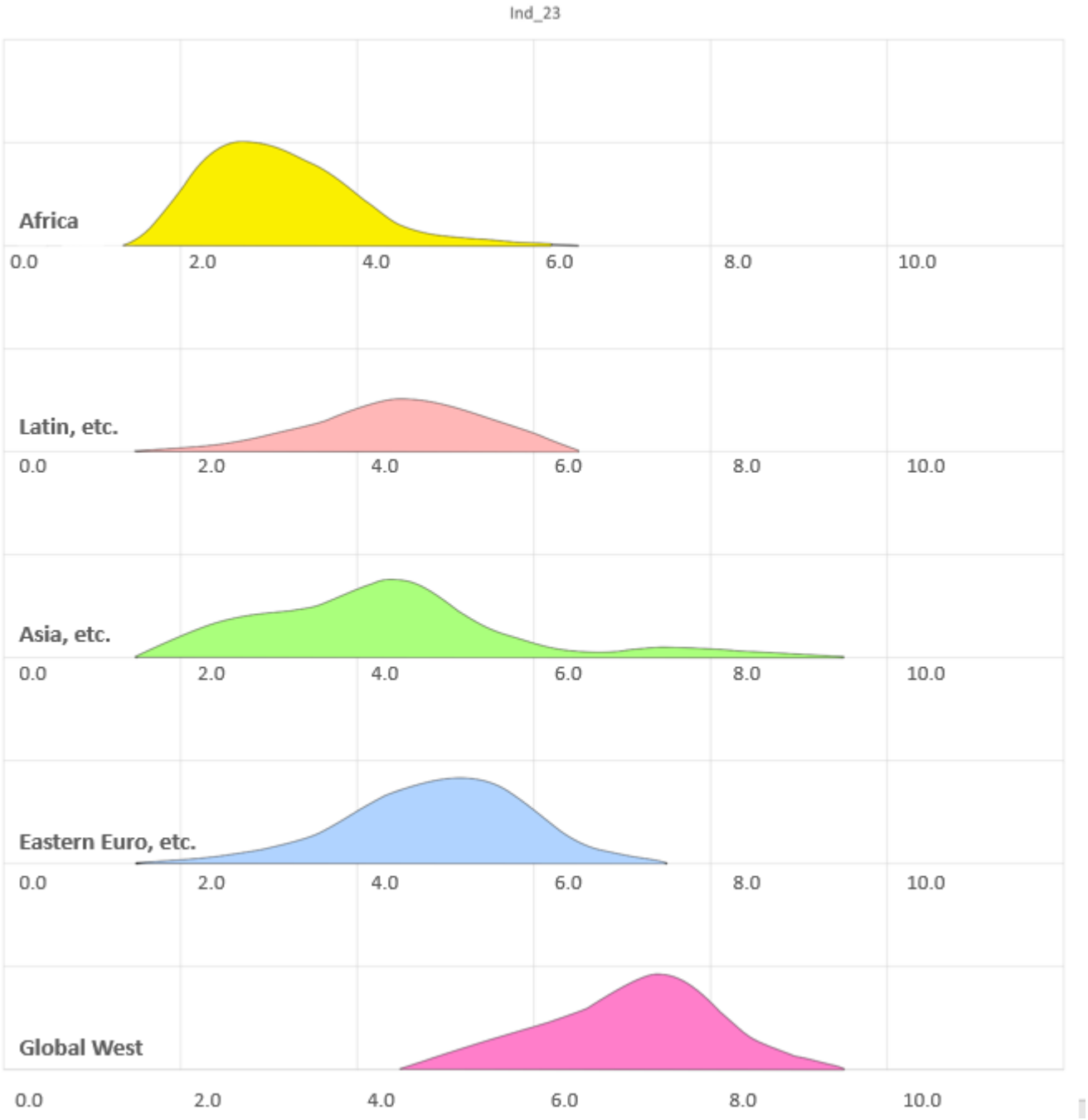
***Africa**: including Sub-Saharan Africa regions; **Latin, etc.**: including Latin America & Caribbean regions; **Asia, etc.**: including Asia-Pacific, Southern Asia and Great Middle East regions; **Eastern Euro, etc.**: Including Eastern European and Former Soviet States regions; **Global West**: Including developed regions in Europe, North America and Oceania*

Scores on Notre Dame Readiness Index (Category 7. Indicator 23)

SUB-SAHARAN AFRICA		LATIN AMERICA & CARIBBEAN		ASIA-PACIFIC		GLOBAL WEST	
Mauritius	5.7	Chile	5.6	Singapore	8.3	New Zealand	8.1
Seychelles	4.7	Grenada	5.4	South Korea	7.5	Norway	8.0
Cape Verde	4.4	Dominica	5.3	Japan	7.3	Denmark	8.0
Botswana	4.2	Barbados	5.1	Brunei Darussalam	5.3	Finland	7.7
Rwanda	4.0	Uruguay	5.0	Malaysia	5.2	Sweden	7.5
Namibia	3.8	Saint Vincent and the Grenadines	4.8	Thailand	4.8	Iceland	7.5
South Africa	3.7	Costa Rica	4.7	China	4.7	Australia	7.2
Sao Tome and Principe	3.6	Antigua and Barbuda	4.5	Kiribati	4.5	Germany	7.2
Ghana	3.5	Saint Lucia	4.5	Mongolia	4.4	Austria	7.2
Senegal	3.5	Bahamas	4.4	Samoa	4.4	Netherlands	7.1
Mauritania	3.4	Panama	4.2	Fiji	4.4	Switzerland	7.1
Djibouti	3.3	Peru	4.2	Viet Nam	4.2	United Kingdom	7.1
Benin	3.3	Jamaica	4.0	Solomon Islands	4.2	Luxembourg	7.0
Zambia	3.2	Mexico	3.9	Tonga	4.1	United States	6.9
Gambia	3.2	Colombia	3.8	Indonesia	3.9	Canada	6.7
Niger	3.1	Argentina	3.8	Timor-Leste	3.9	France	6.7
Sierra Leone	3.1	Dominican Republic	3.7	Marshall Islands	3.8	Ireland	6.3
Togo	3.1	Trinidad and Tobago	3.5	Vanuatu	3.6	Belgium	6.1
Lesotho	3.0	Paraguay	3.5	Philippines	3.4	Portugal	6.0
Guinea	3.0	El Salvador	3.5	Cambodia	2.9	Spain	5.5
Guinea	3.0	Brazil	3.5	Papua New Guinea	2.8	Italy	5.3
Ethiopia	3.0	Cuba	3.4	Myanmar	2.8	Malta	5.2
Tanzania	2.9	Ecuador	3.3	**SOUTHERN ASIA**		**EASTERN EUROPE**	
Mali	2.9	Suriname	3.3	Bhutan	4.6	Estonia	6.4
Gabon	2.9	Belize	3.3	Maldives	4.2	Slovenia	6.2
Uganda	2.8	Guyana	3.2	Sri Lanka	4.0	Lithuania	6.1
Kenya	2.8	Guatemala	3.2	India	3.5	Latvia	5.9
Burkina Faso	2.8	Bolivia	2.9	Nepal	3.4	Poland	5.7
Comoros	2.8	Nicaragua	2.8	Pakistan	2.8	Czech Republic	5.7
Cote d'Ivoire	2.8	Honduras	2.8	Bangladesh	2.7	Macedonia	5.3
Liberia	2.8	Haiti	2.3	Afghanistan	2.2	Greece	5.3
Madagascar	2.7	Venezuela	1.8	**FORMER SOVIET STATES**		Slovakia	5.2
Mozambique	2.6	**GREATER MIDDLE EAST**		Georgia	5.8	Cyprus	5.2
Malawi	2.6	United Arab Emirates	6.0	Russia	5.3	Hungary	5.0
Guinea-Bissau	2.5	Israel	5.5	Belarus	5.1	Croatia	4.9
Angola	2.5	Saudi Arabia	5.1	Armenia	5.0	Montenegro	4.8
Burundi	2.5	Qatar	5.1	Kazakhstan	4.9	Bulgaria	4.7
Cameroon	2.5	Oman	5.0	Azerbaijan	4.1	Serbia	4.5
Equatorial Guinea	2.3	Bahrain	4.8	Ukraine	4.1	Romania	4.5
Nigeria	2.2	Tunisia	4.3	Moldova	4.1	Albania	4.3
Congo Rep	2.1	Morocco	4.3	Kyrgyzstan	3.7	Turkey	4.1
Congo Dem Rep	2.1	Kuwait	4.2	Uzbekistan	3.5	Bosnia and Herzegovina	3.7
Zimbabwe	2.0	Jordan	4.2	Tajikistan	3.0		
Chad	1.7	Iran	4.0	Turkmenistan	2.4		
		Egypt	3.4				
		Algeria	3.3				

	Lebanon	3.0
	Iraq	2.8
	Sudan	2.6

Regional performance on Notre Dame Readiness Index (Category 7. Indicator 23)



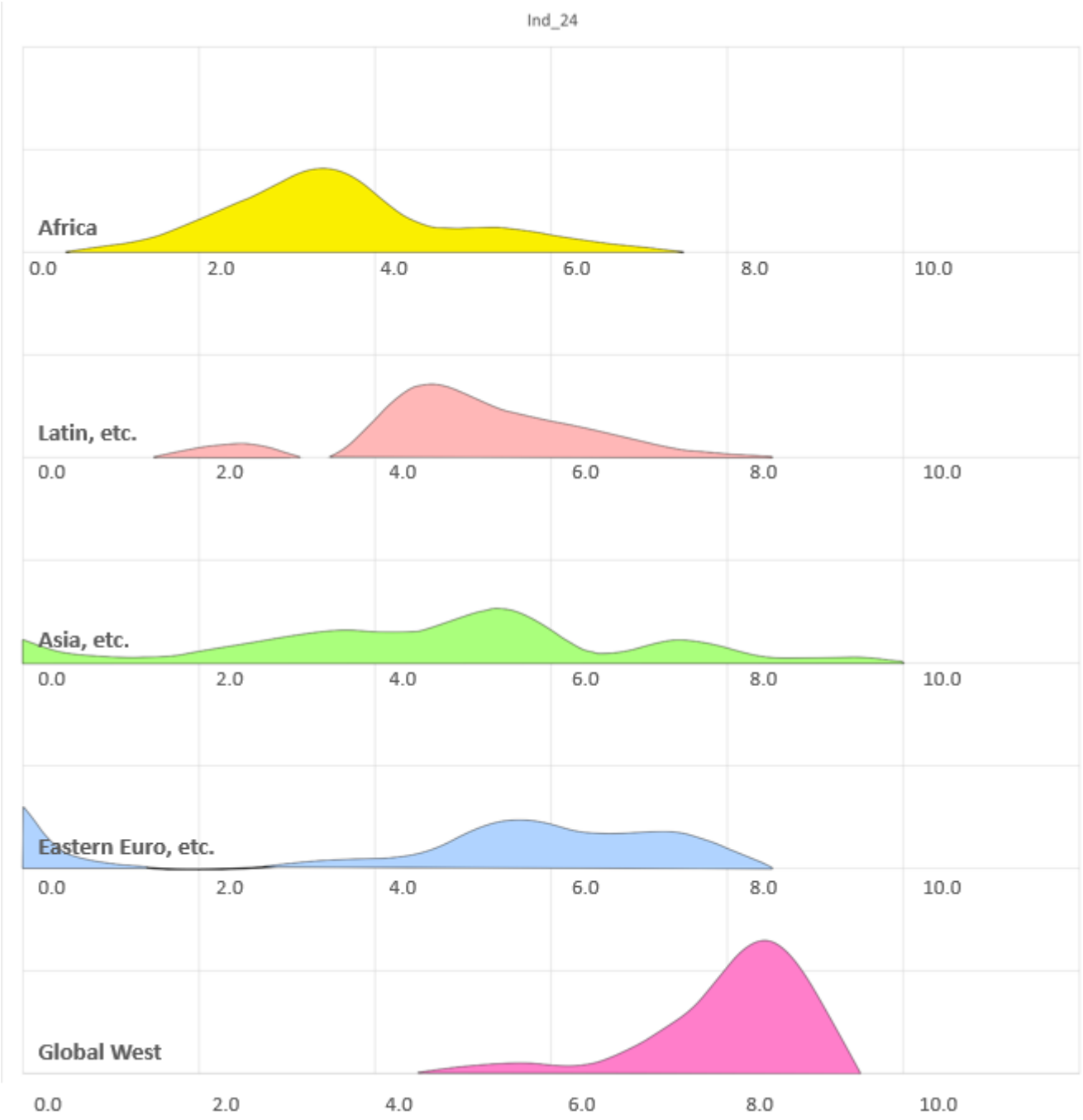
***Africa**: including Sub-Saharan Africa regions; **Latin, etc.**: including Latin America & Caribbean regions; **Asia, etc.**: including Asia-Pacific, Southern Asia and Great Middle East regions; **Eastern Euro, etc.**: Including Eastern European and Former Soviet States regions; **Global West**: Including developed regions in Europe, North America and Oceania*

Scores on Government effectiveness (Category 7. Indicator 24)

SUB-SAHARAN AFRICA		LATIN AMERICA & CARIBBEAN		ASIA-PACIFIC		GLOBAL WEST	
Mauritius	6.7	Chile	7.1	Singapore	9.4	Switzerland	8.9
Seychelles	6.0	Uruguay	6.4	Japan	8.2	Denmark	8.9
Botswana	5.9	Barbados	6.3	South Korea	7.8	Finland	8.9
South Africa	5.7	Jamaica	6.0	Brunei Darussalam	7.6	Norway	8.7
Cabo Verde	5.6	Bahamas	6.0	Malaysia	7.0	Sweden	8.7
Rwanda	5.4	Costa Rica	5.8	China	6.0	Netherlands	8.6
Namibia	5.2	St. Lucia	5.5	Samoa	5.9	Luxembourg	8.5
Senegal	4.9	St. Vincent and the Grenadines	5.5	Thailand	5.7	Canada	8.5
Ghana	4.6	Trinidad and Tobago	5.2	Fiji	5.4	New Zealand	8.3
Kenya	4.2	Colombia	5.1	Indonesia	5.4	Germany	8.2
Benin	4.1	Panama	5.1	Tonga	5.3	Australia	8.1
Cote d'Ivoire	4.0	Antigua and Barbuda	5.0	Philippines	5.1	Iceland	8.0
Mauritania	4.0	Peru	4.9	Viet Nam	5.1	Austria	8.0
Uganda	3.8	Argentina	4.8	Mongolia	4.6	United States	8.0
Sao Tome and Principe	3.7	Grenada	4.7	Kiribati	4.5	United Kingdom	7.9
Gambia	3.7	Mexico	4.7	Vanuatu	3.9	France	7.8
Ethiopia	3.7	Cuba	4.7	Cambodia	3.8	Ireland	7.6
Zambia	3.6	Brazil	4.6	Papua New Guinea	3.4	Portugal	7.3
Eswatini	3.6	Dominica	4.5	Timor-Leste	3.2	Belgium	7.1
Djibouti	3.6	Dominican Republic	4.3	Solomon Islands	3.0	Spain	7.0
Malawi	3.5	Guyana	4.2	Myanmar	2.7	Malta	6.7
Burkina Faso	3.5	Ecuador	4.2	North Korea	2.2	Italy	5.9
Guinea	3.4	El Salvador	4.1	Marshall Islands	2.1	**EASTERN EUROPE**	
Guinea	3.4	Paraguay	3.9	**SOUTHERN ASIA**		Estonia	7.3
Niger	3.4	Suriname	3.8	Maldives	4.6	Latvia	7.2
Cameroon	3.4	Honduras	3.8	Bhutan	5.6	Slovenia	7.2
Mozambique	3.4	Belize	3.6	India	5.3	Lithuania	7.1
Lesotho	3.3	Guatemala	3.6	Sri Lanka	4.8	Cyprus	7.0
Tanzania	3.2	Bolivia	3.6	Pakistan	3.6	Czech Republic	6.8
Gabon	3.2	Nicaragua	3.5	Bangladesh	3.5	Slovakia	6.3
Togo	3.2	Venezuela	1.7	Nepal	2.9	Poland	6.2
Mali	2.9	Haiti	1.0	Afghanistan	2.1	Hungary	6.0
Nigeria	2.8	**GREATER MIDDLE EAST**		**FORMER SOVIET STATES**		Croatia	5.8
Angola	2.8	United Arab Emirates	7.8	Georgia	6.7	Greece	5.8
Sierra Leone	2.7	Israel	7.7	Russia	5.3	Bulgaria	5.7
Madagascar	2.7	Qatar	6.4	Kazakhstan	5.2	Montenegro	5.3
Zimbabwe	2.6	Saudi Arabia	5.6	Armenia	4.9	Turkey	5.1
Burundi	2.3	Bahrain	5.6	Azerbaijan	4.7	Serbia	5.0
Equatorial Guinea	2.3	Oman	5.5	Belarus	4.6	North Macedonia	5.0
Liberia	2.2	Jordan	5.2	Ukraine	4.4	Albania	4.9
Congo Rep	2.2	Kuwait	5.0	Moldova	4.2	Romania	4.4
Guinea-Bissau	2.0	Tunisia	4.8	Uzbekistan	4.0	Bosnia and Herzegovina	3.7
Chad	1.9	Morocco	4.8	Kyrgyzstan	3.6		
Congo Dem Rep	1.7	Egypt	4.2	Tajikistan	2.9		
Comoros	1.7	Algeria	4.0	Turkmenistan	2.7		

	Iran	3.9
	Lebanon	3.3
	Iraq	2.3
	Sudan	1.8

Regional performance on Government effectiveness (Category 7. Indicator 24)



***Africa**: including Sub-Saharan Africa regions; **Latin, etc.**: including Latin America & Caribbean regions; **Asia, etc.**: including Asia-Pacific, Southern Asia and Great Middle East regions; **Eastern Euro, etc.**: Including Eastern European and Former Soviet States regions; **Global West**: Including developed regions in Europe, North America and Oceania*

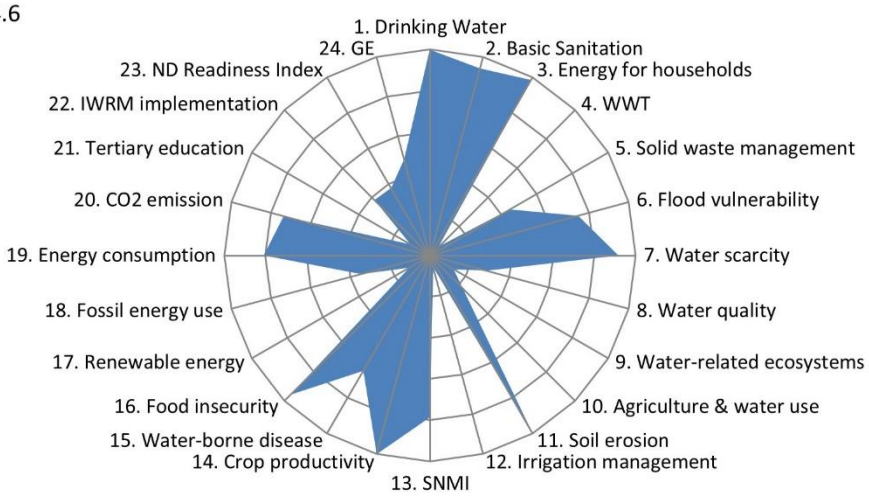
Annex 3. Country Performance

Table of NBI scores

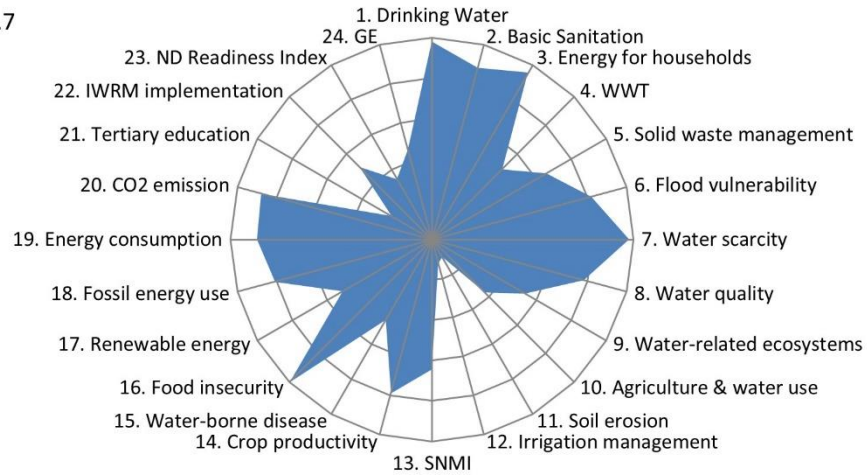
Africa	NBI	Latin America	NBI	Asia	NBI	Europe	NBI
Egypt	3.8	Argentina	4.6	Bangladesh	3.0	Germany	6.3
Morocco	4.3	Brazil	5.7	Cambodia	3.4	Netherlands	6.4
South Africa	4.2	Chile	6.0	China	4.7	Poland	5.4
Tanzania	3.0	Mexico	4.7	Iraq	3.2	Spain	6.3
Mozambique	2.9	Peru	5.4	Pakistan	3.4	Romania	5.7

The following section gives the results for some countries with spider diagrams.

Argentina
NBI=4.6

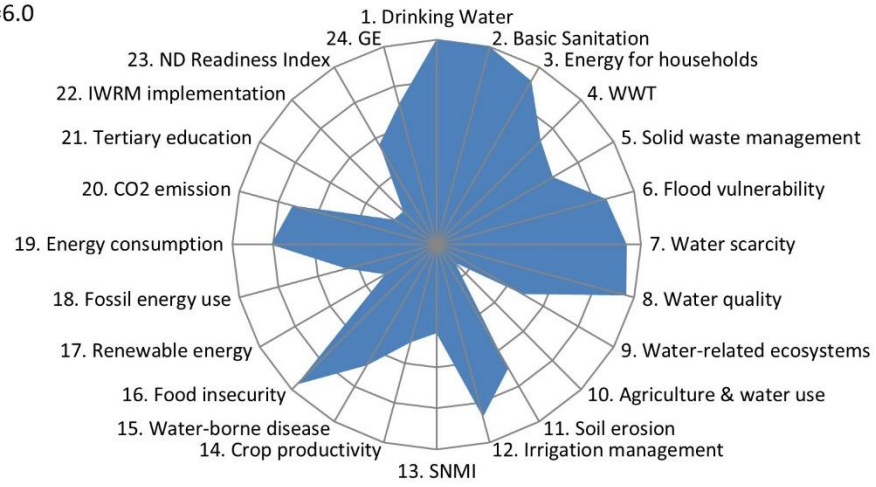


Brazil
NBI=5.7



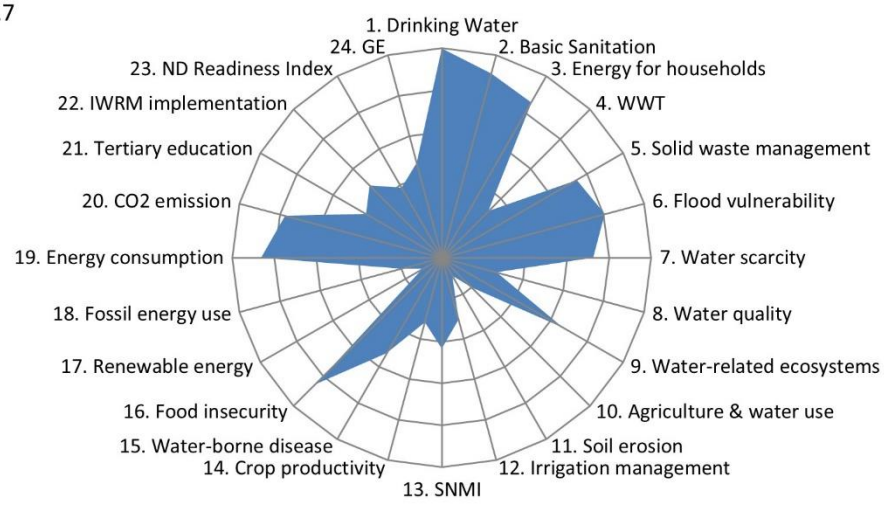
Chile

NBI=6.0



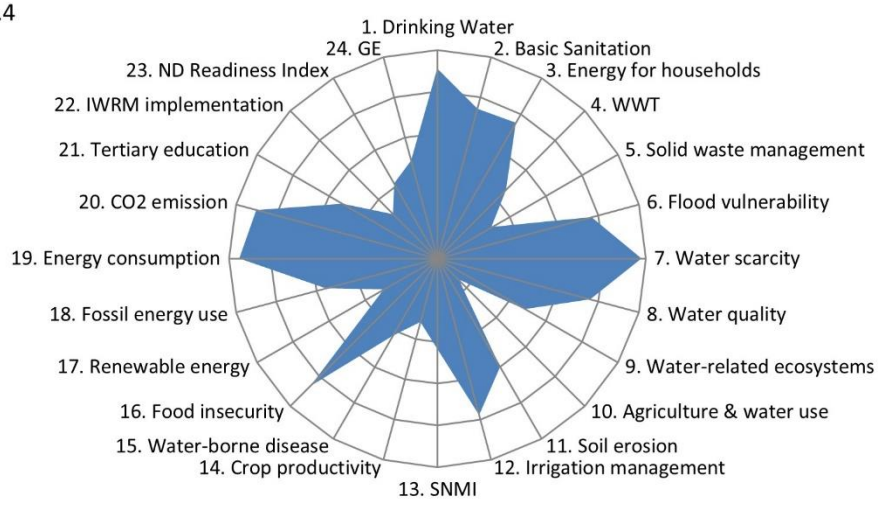
Mexico

NBI=4.7



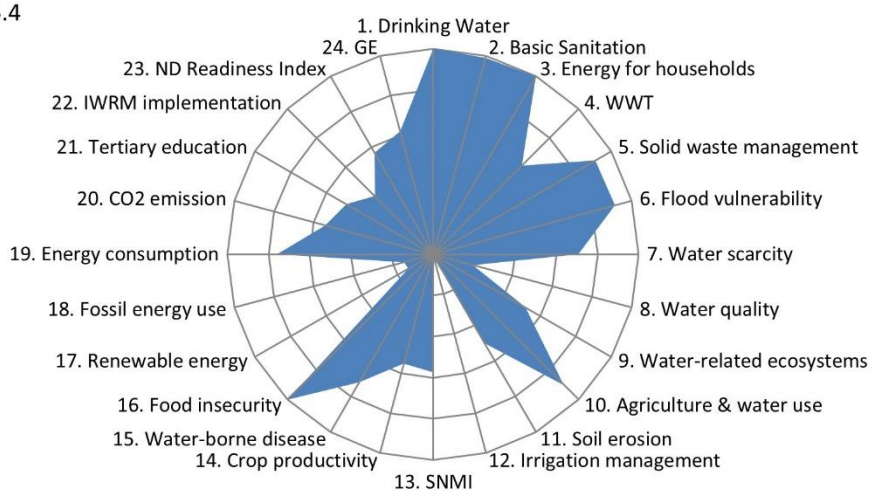
Peru

NBI=5.4



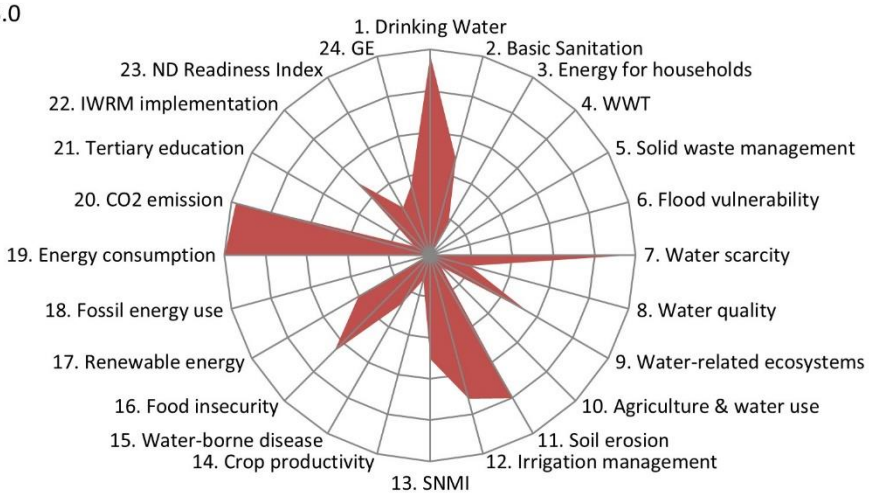
Poland

NBI=5.4



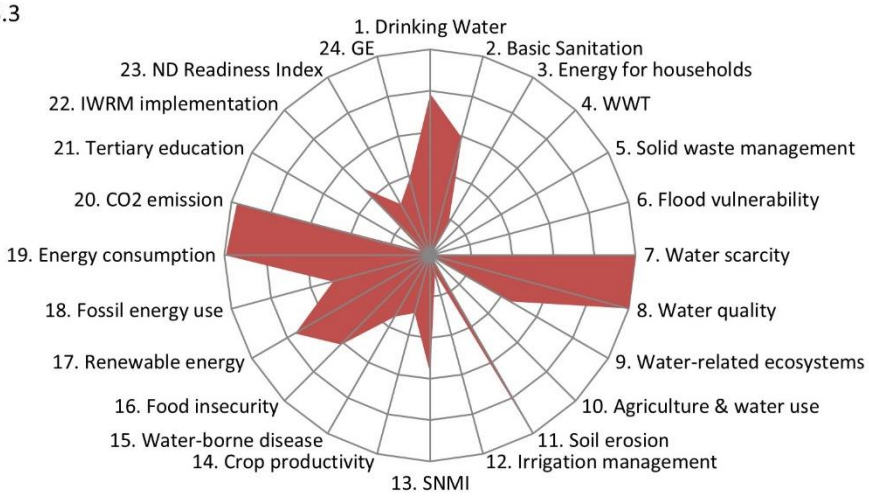
Bangladesh

NBI=3.0



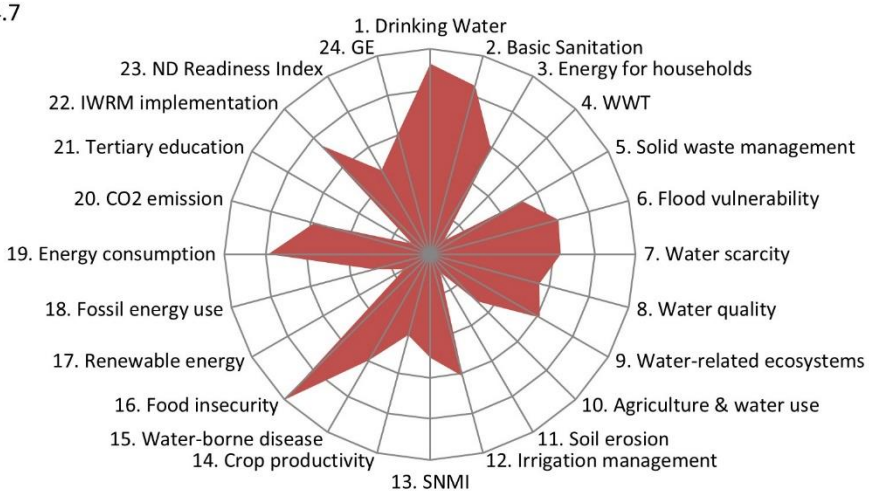
Cambodia

NBI=3.3



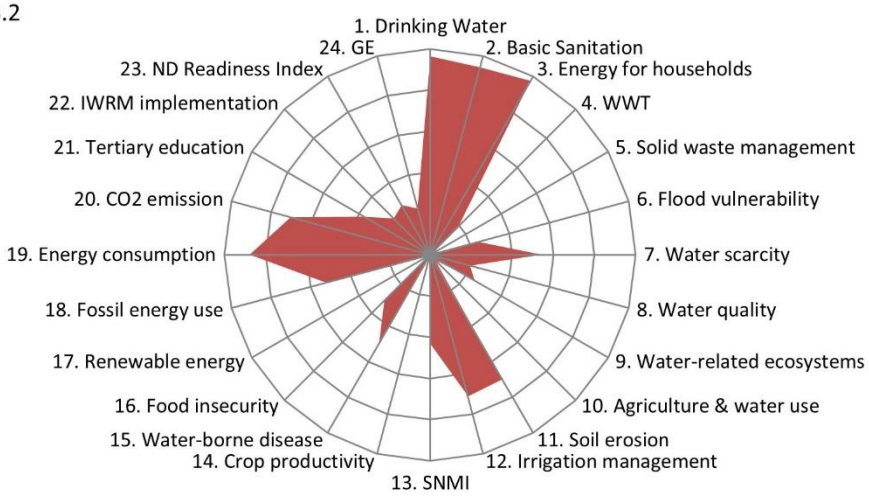
China

NBI=4.7



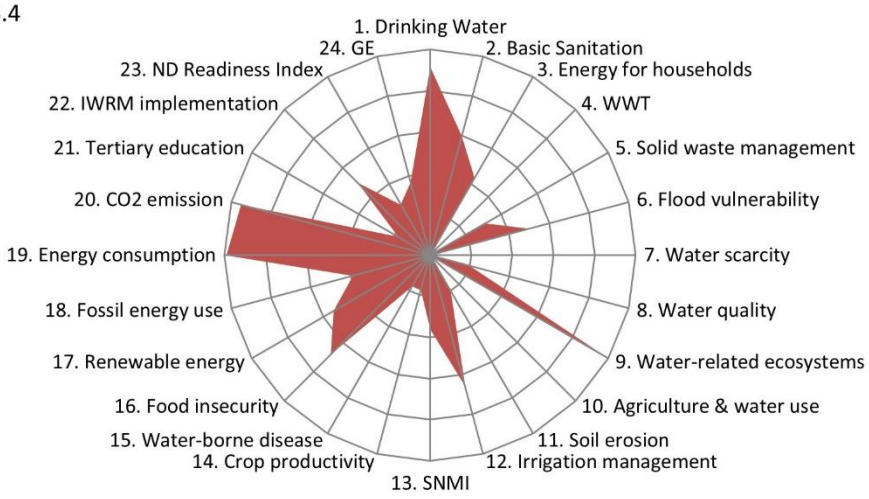
Iraq

NBI=3.2



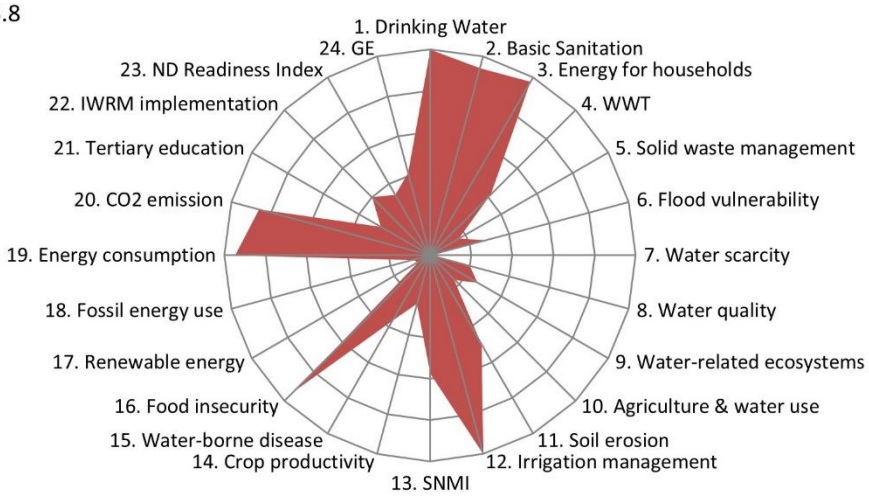
Pakistan

NBI=3.4



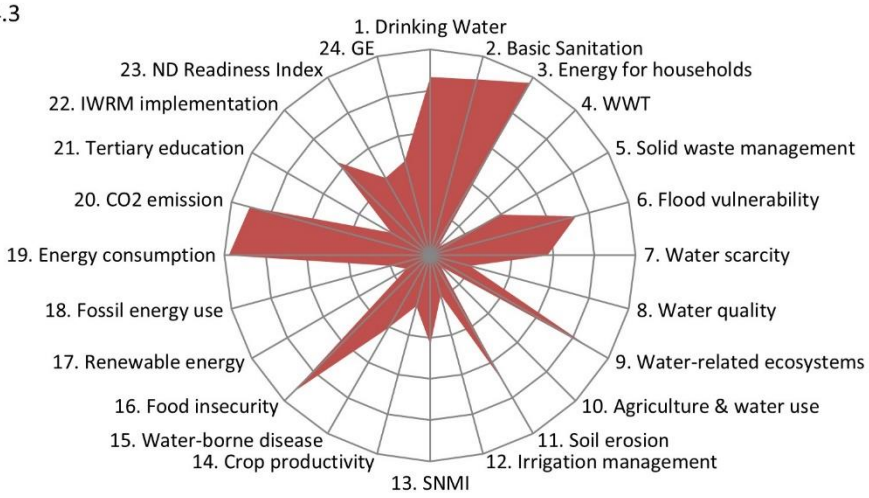
Egypt

NBI=3.8



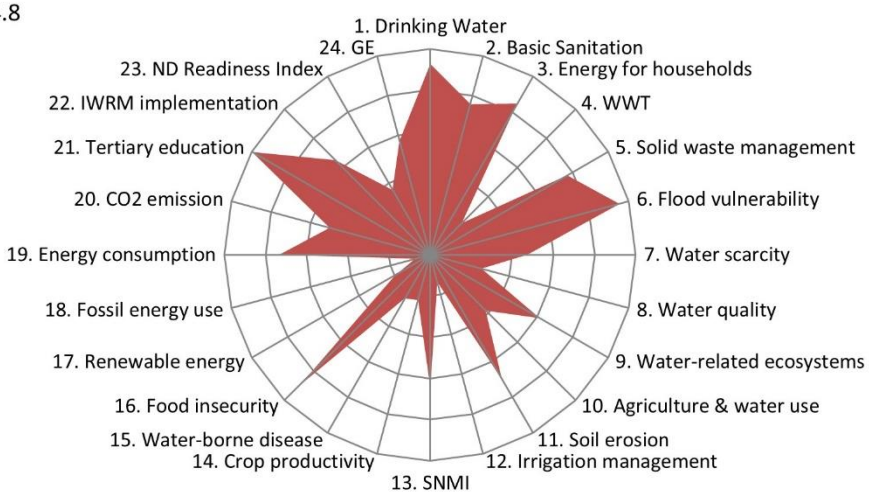
Morocco

NBI=4.3

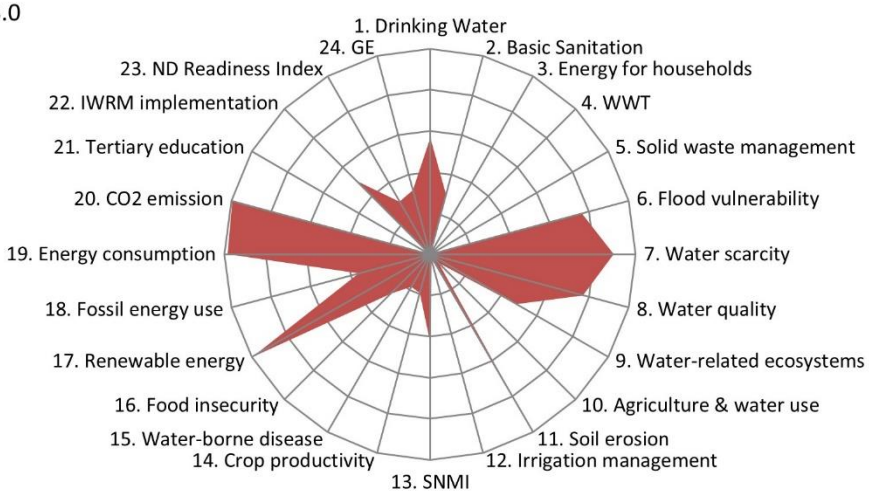


South Africa

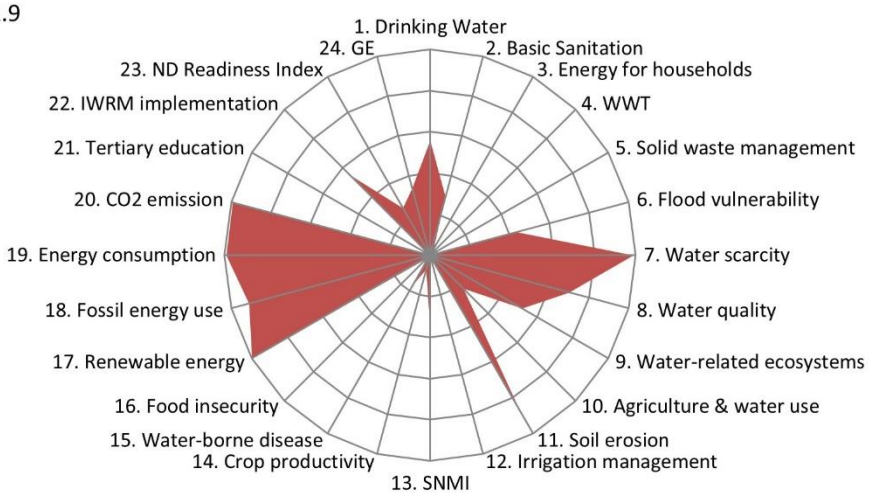
NBI=4.8



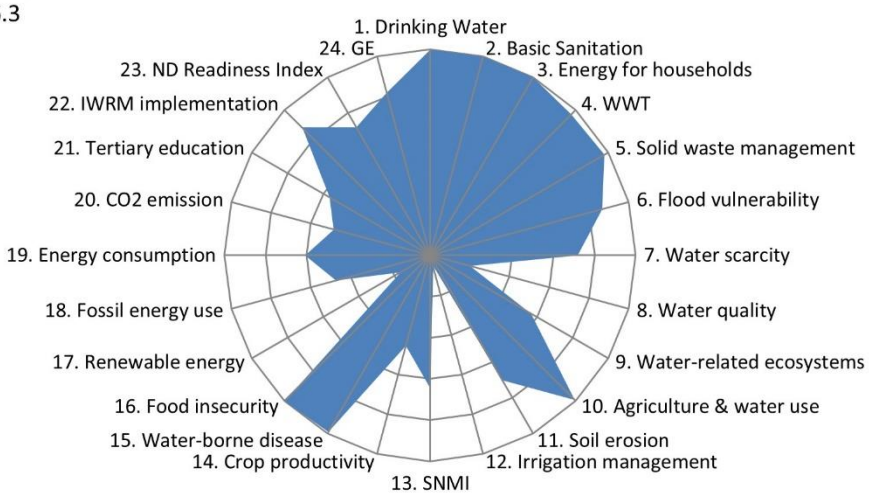
Tanzania
NBI=3.0



Mozambique
NBI=2.9

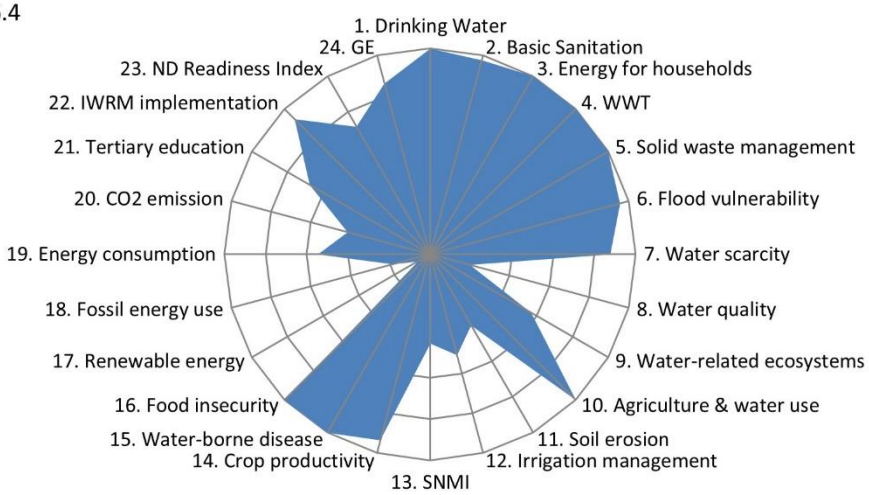


Germany
NBI=6.3



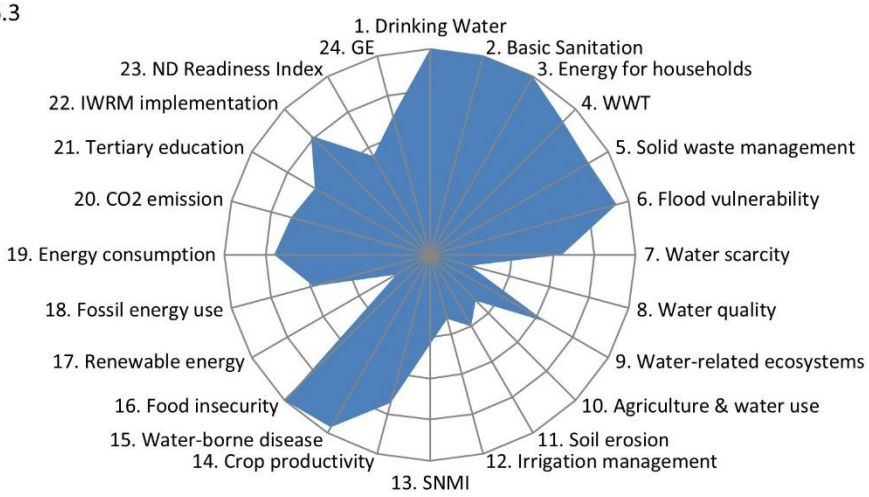
Netherlands

NBI=6.4



Spain

NBI=6.3



Romania

NBI=5.7