ICPD Population Development Composite Index (PDCI)

Towards people-centred SDGs

(Pilot study for Arab states)

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Disclaimer

List of abbreviations

ASRO	Arab States Regional Office
BAP	Budget Allocation Process
CIs	Composite Indicators
CPD	Commission on Population and Development
FGM	Female genital mutilation
HDI	Human Development Index
HIV	Human Immunodeficiency Virus
ICPD	International Conference on Population and Development
ILO	International Labour Organization
MC	Monte Carlo
NCDs	Non-Communicable Diseases
OECD	Organization for Economic Co-operation and Development
PCA	Principal Component Analysis
POA	Programme of Action
PDCI	Population Development Composite Index
SDGs	Sustainable Development Goals
SRH	Sexual and Reproductive Health
STIs	Sexually Transmitted Infections
UN	United Nations
UN-DESA	United Nations Department of Economic and Social Affairs
UNICEF	United Nations Children's Fund
UNFPA	United Nations Population Fund
VIF	Variance-Inflation Factor

Acknowledgments

Preface

Twenty-five years ago, the landmark International Conference on Population and Development (ICPD) put people's rights at the heart of development and emphasized that empowering women and girls as a key to ensuring the well-being of individuals, families, nations and our world. The world has witnessed significant progress in implementing the ICPD Programme of Action since 1994. Despite the impressive gains, additional efforts are still needed to reach those who have been left behind. Full and effective implementation of the ICPD agenda remains essential to achieving the goals of the 2030 Agenda for Sustainable Development.

This report represents an attempt to promote a people-centred sustainable development agenda in the Arab region through a tool quantifying and tracking achievements made by Arab states towards the ICPD and related Sustainable Development Goals (SDGs) from a population dynamics lens. It is founded on the principle that individuals are the centre of SDG implementation, and that any success towards the SDGs must be evidenced by a positive change in the lives of people, while ensuring that "no one is left behind".

The report introduces a Composite Index for ICPD-based SDG dimensions called "Population Development Composite Index-PDCI". It is based on the five themes (pillars) stipulated in the United Nations General Assembly resolution 65/234 on the review of the implementation of the Programme of Action of the ICPD, namely; dignity and human rights, health, place and mobility, governance and accountability; and sustainability.

Development of the index had gone through extensive literature review, detailed investigation and holding various consultations to select and reach consensus on the relevant indicators as explained in the methodology chapter. Expert opinions, and key UNFPA strategic documents were consulted while constructing different scenarios of the composite index. Finally, relevant statistical and validity tests were conducted to confirm and validate the "final" list of indicators.

The scientific research work contained in the report, however should be considered a pilot phase. We expect to improve and fine tune indicators and data sources as well as calculation of weights and aggregation as we move forward.

We hope the index will be a valuable analytical tool to show in a quantitative manner the importance of accommodating a population agenda as a key enabler for achieving people-centred SDGs. It is envisaged that the tool can be used by governments and the development community at large to track progress on the ICPD and the SDGs, allowing users to compare across pillars, countries, regions to identify policy actions and directions that need to be implemented at national and potentially sub-national levels to accelerate a people-centred approach to SDG implementation in the Arab region.

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Executive summary

UNFPA Arab States Regional Office (ASRO) initiated a new composite index to quantify the progress in the implementation of ICPD plan of action, and reflect the position and status of Arab countries with regards the implementation of ICPD based SDGs within the context of the ICPD Beyond 2014 review and the post 2015 development agenda.

The objectives of the index are to provide a scientific measure and policy tool to advocate for people-centred SDGs, and to show in a quantitative manner the importance of accommodating population agenda as a key enabler for achieving SDGs. This index might be used to identify the policy directions at the country level in regard to gaps and achievements and the allocation of efforts and resources at national and sub-national level to accelerate the achievements of SDGs.

The proposed Population Development Composite Index (PDCI), is based on the framework of the thematic pillars of population and development post-2014, developed by UNFPA. It is based on 38 indicators categorized into five dimensions, namely dignity, sexual and reproductive health (SRH), mobility, governance, and sustainability. The development of PDCI indicators took several rounds of consultations and peer reviewing, and iteration of attempts to identify its ingredients and methodology of calculation to be in line with other relevant indices particularly the SDG progress index. Forty-four indicators were initially considered in constructing the PDCI. However, during the stage of statistical validation, six were eliminated. The remaining thirty eight indicators were distributed across the five dimensions as follows: dignity and human rights (13 indicators), SRH (7); place and mobility (5); governance and accountability (6); and sustainability (7).

The five dimensions of PDCI were reviewed through SDG lens to validate linkages, and we found that ICPD agenda is mainstreamed across 14 out of the 17 SDGs. Targets of the

14 SDGs were reviewed for alignment with the five ICPD dimensions. This ended up with aligning thirty-eight indicators. Global databases were consulted to identify best practices and standardization of the indicators on a 0 to 100 scale for each of the Arab countries.

Methodologically, the computation of the PDCI was conducted in two stages. In the first stage, standardized indicators were aggregated to estimate each of the five sub-indices for the five dimensions using the arithmetic mean with equal weights for each of the identified indicators. Using the arithmetic mean implies full substitutability between indicators within each dimension. Sub-indices were calculated for each country and presented in a dashboard format. In the second stage, full substitutability of dimensions was avoided, and replaced by the geometric mean to reduce substitutability and ensure less sensitivity to extreme values.

With regards to weights assigned to dimensions, three alternatives weighing modalities were considered in constructing PDCI. The first is the equal weights to all dimensions. The second is assigning subjective weights derived from the well-known UNFPA bull's eye model giving higher weights for dignity and SRH based on UNFPA strategic plan and experts' consultations[1], and the third employed the principal component analysis to estimate weights statistically.

Sensitivity analysis did not indicate significant differences when ranking countries using different weighting schemes, which justified using equal weights for simplicity. Results indicate that, on a scale from 0 to 100, the PDCI ranged from 29 for Somalia to 78 for Bahrain. The analysis lead to the conclusion that PDCI is an instrumental tool to make SDGs more people-centred during the course of implementation of SDG agenda at the national and regional level, and provides an opportunity for countries to get insights on the impact of SDG

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1 See methodology sections in the report

implementation on the lives of people in 5 dimensions of PDCI. The results also show that front runners in one dimension do not necessarily imply a better performance in other dimensions. In other words, the five ICPD dimensions are integrated rather than associated. This makes PDCI and its sub-indices valuable for evaluating achievements related to population policies and for setting priorities and allocating resources to interventions related to ICPD Programme of Action. By illustrating differences within countries and different level of performance on the five dimensions for each country the dashboard can be useful in identifying areas of improvements that need to get the attention of policy and decision makers. It can help as well in setting priorities and in allocating resources.

The results categorize Arab states in regard to performance of PDCI into four groups as follows:

1) Level 1: Front runners (Dark Green); the countries who have high level of performance. This included Bahrain, Oman, Qatar, UAE and Morocco

2) Level 2: Medium high runners (Light Green); the countries performed well but still some room of improvement is possible. This group included Algeria, Saudi Arabia, Lebanon, Tunisia, Egypt, Kuwait and Jordan.

3) Level 3: Low medium runners (Orange); the countries who need substantial improvements to cope with the needs of population agenda. This group included Palestine, Comoros, Djibouti, and Iraq.

4) Level 4: Low level (Red); those countries who are left behind in the population agenda; a lot need to be done to follow other performing countries. This group included Mauritania, Libya, Sudan, Syria, Yemen and Somalia.

Chapter one

Introduction and theoretical framework

1.1 Background

In its resolution 65/234 on the review of the implementation of the Programme of Action of the International Conference on Population and Development and its follow-up beyond 2014, the General Assembly underscored the need for a systematic, integrated and comprehensive approach to population and development, one that would respond to new challenges relevant to population and development and to the changing development ecosystem and environment. It called to reinforce the integration of the population and development agenda in global processes related to development. The findings and conclusions of the operational review suggest a new framework for population and development beyond 2014 built on five thematic pillars: dignity and human rights; health; place and mobility; governance and accountability; and sustainability.[2]

1.2 Justification of constructing Population Development Composite Index (PDCI)

To operationalize the use of the framework in monitoring and evaluating at the regional, national and potentially sub-national level, ASRO intended to construct a composite index to quantify the progress in the implementation of ICPD plan of action, and reflect the position and status of Arab countries with regards to the implementation of ICPD based SDGs indicators within the context of the ICPD Beyond 2014 review and the post 2015 development agenda.

The main justification of PDCI is originated in the assessment of the achievements of MDGs that emphasized on results indicators and ignored to some extent the process indicators.

This situation led to giving false picture of the progress where economic growth has accelerated in almost all countries and most of outcome and output level economic and social indicators showed progress (e.g. overall poverty rate, maternal mortality rate, economic growth, etc.), this picture did not show in a timely manner issues related to the impact on the lives and wellbeing of people and their quality of life (e.g. social inequality, gender inequality, urban-rural inequality, distorted distribution of income, wellbeing of vulnerable groups, etc.). Therefore, PDCI will fill a gap in policy tools that shed light on the impact of development agenda on the lives of people and measures if the implementation of development agenda is people-centred.

The main objective of the PDCI is to provide a scientific measure and policy tool to advocate for people-centred SDGs and to measure progress of development by means of promotion on the lives and wellbeing of people, and to show in quantitative manner the importance of accommodating population agenda as a key step in achieving SDGs. This index might be used to identify the policy directions at the country level in regard to gaps and achievements and the allocation of efforts and resources at country level to accelerate the achievements of SDGs.

1.3 Thematic pillars of ICPD post 2014

The new framework acknowledges that the motivations for development are generated by human aspirations for dignity and human rights, for good health including SRH, and for both security of place and mobility.[3] While these aspirations are interlinked and reaffirm one each another, they offer distinct organizing thematic pillars for reviewing the numerous principles, objectives and actions

2 http://www.un.org/en/development/desa/population/publications/pdf/policy/Compendium/ Volume%20I/t_Annex%20II.pdf on 8/9/2014

3 UN (2016)

contained within all the chapters of the Programme of Action. While the objectives of the ICPD touched on many different dimensions of well-being across the life cycle and many domains of population and development, they each contribute, in the main, to the fulfilment of dignity and human rights, good health including SRH, a safe and secure place to live, and mobility. Because the respect, protection, promotion and fulfilment of human rights are necessary preconditions for realizing all of the unfulfilled objectives of the PoA of ICPD, the elaboration and fulfilment of rights are a critical metric for determining whether, for whom, and to what extent these aspirations have been achieved.

Figure 1 illustrates and reaffirms the core message of the PoA of ICPD that the path to sustainable development is through the equitable achievement of dignity and human rights,

good health, security of place and mobility, and achievements secured through good governance and accountability.[4] The responsibilities of governance extend to the national and global promotion of integrated social, economic and environmental sustainability in order to extend opportunity and well-being to future generations.

Dignity and human rights is motivated by the assertion that completing the unfinished agenda of the PoA of ICPD will require a focused and shared commitment to human rights, non-discrimination and expanding opportunities for all. Any development agenda that aims at individual and collective well-being and sustainability has to guarantee dignity and human rights to all persons. Principle 1 of the PoA affirmed that all human beings are born free and equal in dignity and rights and are entitled to human rights and freedom.

| Figure 1 | Thematic pillars for ICPD PoA post-2014 |
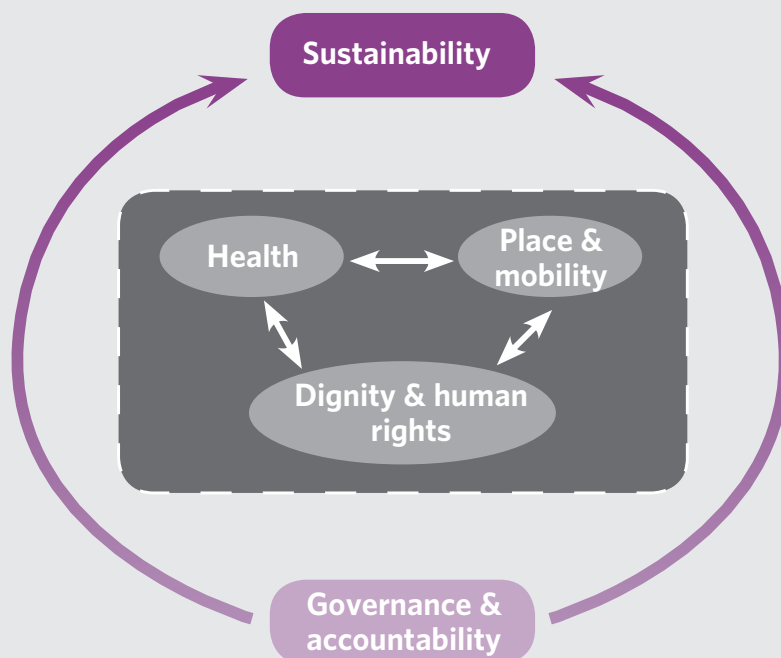
Source: United Nations, 2014. "Framework of actions for the follow-up to the ICPD-PoA beyond 2014"

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4 UN (2016) page 4

1.4 Composite indices

A composite index is a quantitative representation of a complex and multi-dimensional social phenomena. The composite index can be used for ranking countries or for monitoring progress over time. Composite indicators (CIs) which compare country performance are increasingly recognized as a useful tool in policy analysis and public communication. The number of CIs in existence around the world is growing year after year[5]. Such composite indices provide simple comparisons of countries that can be used to illustrate complex and sometimes elusive issues in wide-ranging fields (e.g. environment, economy, society or technological development). It often seems easier for the general public to interpret composite index than to identify common trends across many separate indicators. Composite indices have proven to be useful in benchmarking country performance[6].

On the other hand, composite indices can send misleading policy messages if they are poorly constructed or misinterpreted. Their "big picture" results may invite users (especially policy makers) to draw simplistic analytical or policy conclusions. In fact, composite indices must be seen as a means of initiating discussion and stimulating public interest. Their relevance should be gauged with respect to constituencies affected by the composite index[7].

Human development index (HDI)

HDI is the most widely used composite index measuring average achievement in three basic dimensions of human development: a long and healthy life, knowledge and a decent standard of living. The index succeeded over the last three decades in advocating for human development concepts. To provide a more comprehensive scope of sustainable development,

UNDP is complementing the HDI with other indices such as Inequalityadjusted HDI, the co-efficient of human inequality, the Gender Development Index, the Gender Inequality Index, and, the Multidimensional Poverty Index.

Inventories for composite indices shows an increasing trend to produce more indices covering different aspects of life including children well-being, economic progress, environment, gender disparities, globalization, governance, human capabilities, poverty, quality of living, safety and security, social exclusion, social progress, subjective well-being, sustainability, technology and innovation, urbanization, vulnerability, and, well-being[8].

SDGs index[9]

A recent composite index, the SDG Index, aggregates available data on all SDGs into a composite index to provide countries with a quick assessment of how they are performing relative to their peers. In this way, the SDG Index helps to draw attention to the SDGs and their role as a tool for guiding national policies and long-term strategies for sustainable development. Its purpose is not to compare countries with vastly different development status, but to allow countries to benchmark themselves using a single holistic measure that encompasses all SDGs and treats each goal equally[10]. The SDGs Index and dashboards are preliminary analytical tools to help governments and other stakeholders take stock of where they currently stand with regards to achieving the SDGs and to identify priorities for early action. To identify appropriate indicators, all recently proposed official SDG Indicators were reviewed for data availability and suitability for inclusion in an SDG Index and Dashboards. Major gaps were filled with other metrics from official or other reputable sources. Indicators that meet the standards for inclusion have

5   Bandura (2011)
6   Saltelli (2007)
7   OECD (2008)

8   Yang (2014)
9   Sacks et al. (2018)
10   Bertelsmann Stiftung (2017).

been incorporated into the SDG Index and Dashboards.

The SDG Index for selected Arab countries is presented in table 1. It varies from 71.1% in Algeria which ranked 53 worldwide[11] to 51.4% in Djibouti which ranked 148. Among the nineteen Arab countries, ten scored 65 or higher, three scored 60 to less than 65, and six scored below 60. A dashboard illustrating the performance for separate goals, shows that no Arab countries are classified as "Green" for either Goal 3 or Goal 5[12]. For Goal 3 "Good health and well-being", only Bahrain, UAE and Qatar are classified among the second category "Yellow", four Arab countries are classified among the third category "Orange" and 12 Arab

countries are classified among the fourth category "Red". Classification of Arab countries according to performance related to Goal 5 shows that seven countries are classified among the third category and 12 among the fourth category.

Simultaneously, countries need to develop a full suite of monitoring systems to track the SDG metrics recommended by the UN Statistical Commission. This will require major investments in statistical capacity development, particularly in countries with limited resources or with low statistical capacity. Over time every country should be able to track critical SDG indicators to monitor progress towards achieving the goals.

Table 1: SDG index and sub-index for SDG 3 and SDG 5, selected Arab countries

Country	Global Index 2019 (Score (0-100	Global Index 2019 Rank	Goal 3 Dashboard	Goal 5 Dashboard
Algeria	71.1	53	orange	orange
Bahrain	68.7	76	yellow	orange
Comoros	53.0	137	red	red
Djibouti	51.4	148	red	orange
Egypt	66.2	92	red	red
Iraq	60.8	117	red	red
Jordan	68.1	81	red	red
Kuwait	63.5	106	orange	orange
Lebanon	65.7	94	red	red
Mauritania	53.3	134	red	red
Morocco	69.1	72	red	red
Oman	67.9	83	orange	red
Qatar	66.3	91	yellow	orange
Saudi Arabia	64.8	98	orange	red
Sudan	51.4	147	red	red
Syria	58.1	123	red	red
Tunisia	70.0	63	red	orange
UAE	69.7	65	yellow	orange
Yemen	53.7	133	red	red

Source: Sachs et al. (2019)

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11   Out of 162 countries

12   Color code reflects SDG achievement, Green is assigned to a country on a given SDG only if all the indicators under the goal are rated green. Yellow, orange and red indicate increasing distance from SDG achievement.

1.5 ICPD beyond 2014 monitoring framework[13]

A monitoring Framework for the follow-up to the PoA of ICPD Beyond 2014 was developed. It is guided by the human rights' conceptual framework and therefore "focuses on measuring the commitments of duty bearers to their obligations and the efforts they undertake to meet those obligations." The framework re-affirms the core message of the PoA, namely that the "pathway to sustainable development is through the equitable achievement of dignity and human rights, good health including SRH, security of place and mobility; achievements secured through good governance, and that governance responsibilities extend to the national and global promotion of integrated social, economic and environmental sustainability in order to extend opportunity and well-being to future generations."

For each of the main thematic domains of the ICPD Beyond 2014 review, objectives and sub-objectives are "specified based on the key areas of further actions identified in the operational review. The sub-objectives were discussed by theme and were later reviewed altogether to ensure there was no overlap. Illustrative areas of measurement along commitments-effort-result were identified for every sub-objective."

The monitoring framework is based on the following principles:

a. It is limited to a small number of indicators to reduce the burden of data collection in low-income countries and to make it easier to hold countries accountable for progress.

b. It includes input/structure indicators, effort/process indicators and outcome/impact indicators.

c. It goes beyond available data and beyond existing data collection mechanisms.

The following objectives and areas of measurement are included in the framework:

a. Ensure dignity, human rights and non-discrimination for all:

1) Eradicate poverty and promote equitable livelihood opportunities.

2) Empower women and girls, reduce all forms of violence against women, and achieve gender equality.

3) Invest in the capabilities of children, adolescents and youth.

4) Eliminate discrimination and promote a culture of respect for all.

b. Strengthen health systems to ensure universal access to SRH

1) Strengthen health care systems to accelerate progress towards universal access to quality SRH services and fulfilment of sexual and reproductive rights.

2) Protect and fulfil the rights of adolescents and youth to accurate information, comprehensive sexuality education, and health services for their sexual and reproductive wellbeing, and lifelong health.

3) Strengthen specific SRH services including, family planning, post abortion care; maternity care; and (STIs) including HIV.

4) Address the rising burden of NCDs through the promotion of healthy behaviors beginning in childhood and adolescence, and by providing routine screening, early treatment and referrals to higher levels of care.

13   UN (2016)

c. Ensure security of place and safe mobility

1) Ensure that the needs of persons living in an emerging diversity of households are included in public policies, including urban planning.

2) Extend the full benefits of urban life to all current and future urban residents, taking into account of projections of urban population growth.

3) Promote the developmental benefits of international migration.

4) Improve the living conditions and guarantee the full social inclusion of those lacking security of place.

d. Strengthen global leadership and accountability:

1) Strengthen national capacity to generate, disseminate and effectively use population and reproductive health data and projections in the formulation of sustainable development strategies/policies.

2) Ensure that budgeting and policy making processes are transparent and establish quality assurance mechanisms to redress shortfalls in both public and private sector services.

Operationalizing the monitoring framework depends on the ability to disaggregate national data by gender, age, income/wealth, residence, and disability to measure equality and nondiscrimination. It depends as well on how successful countries will be in developing new monitoring tools and new indicators to capture information on the emerging issues and new priorities identified in the Framework of Actions for the Follow-up of the PoA of ICPD beyond 2014.

A research agenda is needed to operationalize the monitoring framework including:

a. Normative work to provide standard definitions; create measurement and reporting tools; this will include identifying and gauging alternative data sources for new indicators.

b. Testing and validation to pilot and validate indicators in the field, improve measurement and reporting tools.

c. Advocacy and communication to promote the use of some indicators within existing measurement and reporting tools.

Chapter two

Methodology and validation

2.1 Rationale

This chapter presents the methods and techniques employed to estimate PDCI and explains the process of selecting the indicators. It discusses also issues related to data sources and data validation.

The methodology builds on the idea of Bertelsmann Stiftung to generate aggregate index to reflect achievement in each of the 17 SDG goals. The objective is to have population and development issues mainstreamed across several goals captured throughout a single index. The proposed index helps to monitor achievements at global, regional, and country levels. The suggested composite index (PDCI) will therefore provide countries with a quick assessment of how they are performing in comparison of their peers. It allows countries to benchmark themselves using a single holistic measure that encompasses Population and Development based SDGs.

The construction and development of the PDCI undertook rounds of consultations; four experts' group meetings (EGMs) were held to discuss the framework, suggested methodology and the set of relevant indicators. Discussions concluded that the suggested PDCI is useful and important advocacy tool and a metric measure for evaluating country performance and areas of improvement. It was suggested that population issues should be mainstreamed in the SDGs and that a more comprehensive approach should be adopted to reflect ICPD Framework including its right based approach. Moreover, a general overall consensus was reached among experts on the final set of relevant indicators to measure the population and development agenda.

2.2 Conceptual framework

PDCI is structured on the basis of thematic pillars of ICPD PoA beyond 2014, this global framework (Figure 1) recognizes the crucial linkages between population and sustainable development for reducing poverty, bridging inequality, and improving the standard of living and the impact on population, resources and environmental degradation. Consequently, PDCI was structured around five sub-indices reflecting the ICPD pillars as presented in figure 1 namely:

1) Dignity and human rights

2) Health measured in terms of SRH

3) Place and mobility

4) Governance and accountability

5) Sustainability

It should be noted that PDCI framework combines results with contextual and process issues, however the later cannot be waved out from the framework in order to maintain the collectivity of the SDGs, i.e., the five dimensions are mutually reinforcing.

Since the proposed index is based on the SDGs monitoring framework from a population perspective, the sustainable development goals and targets were mapped and compared to the five dimensions of the PDCI. Table 2 illustrates the mapping of the ICPD pillars on different SDGs goals, it emphasizes that ICPD agenda is mainstreamed across the SDGs goals and targets.

Table 2: Mapping of SDGs and dimensions of the PDCI

SDGs / ICPD	Dignity and Human rights	Health (SRH)	Place and Mobility	Governance and accountability	Sustainability
Goal 1. End poverty in all its forms everywhere	✓				
Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture	✓				
Goal 3. Ensure healthy lives and promote well-being for all at all ages		✓			✓
Goal 4. Ensure inclusive and equitable quality education and promote life-long learning opportunities for all	✓				
Goal 5. Achieve gender equality and empower all women and girls	✓	✓			
Goal 6. Ensure availability and sustainable management of water and sanitation for all					✓
Goal 7. Ensure access to affordable reliable sustainable and modern energy for all					✓
Goal 8. Promote sustained inclusive and sustainable economic growth full and productive employment and decent work for all	✓		✓		
Goal 9. Build resilient infrastructure promote inclusive and sustainable industrialization and foster innovation					✓
Goal 10. Reduce inequality within and among countries	✓		✓		
Goal 11. Make cities and human settlements inclusive safe resilient and sustainable			✓		✓
Goal 13. Take urgent action to combat climate change and its impacts					✓
Goal 16. Promote peaceful & inclusive societies for sustainable development provide access to justice for all & build effective accountable & inclusive institutions at all levels	✓		✓	✓	
Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development				✓	

The table shows that ICPD agenda is mainstreamed across fourteen out of the seventeen goals. Targets for the post-2015 development agenda were reviewed and a list of targets relevant to the five dimensions was developed (Table 3.)

Table 3: ICPD-based Sustainable Development Goals and Targets

Goal	Target
1) Dignity and human rights	
Goal 1. End poverty in all its forms everywhere	1.2 Reduce at least by half the proportion of men women and children of all ages living in poverty in all its dimensions according to national definitions
	1.3 Implement nationally appropriate social protection systems and measures for all including floors and by 2030 achieve substantial coverage of the poor and the vulnerable
Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	4.1 By 2030 ensure that all girls and boys complete free equitable and quality primary and secondary education leading to relevant and effective learning outcomes
Goal 5. Achieve gender equality and empower all women and girls	5.1 End all forms of discrimination against all women and girls everywhere
	5.2 Eliminate all forms of violence against all women and girls in public and private spheres including trafficking and sexual and other types of exploitation
	5.3 Eliminate all harmful practices such as child early and forced marriage and female genital mutilations
	5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political economic and public life
Goal 8. Promote sustained inclusive and sustainable economic growth full and productive employment and decent work for all	8.5 By 2030 achieve full and productive employment and decent work for all women and men including for young people and persons with disabilities and equal pay for work of equal value
	8.6 By 2020 substantially reduce the proportion of youth not in employment education or training
	8.8 Protect labour rights and promote safe and secure working environments for all workers including migrant workers in particular women migrants and those in precarious employment
Goal 10. Reduce inequality within and among countries	Target 10.3: Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard.
Goal 16. Promote peaceful & inclusive societies for sustainable development provide access to justice for all & build effective accountable & inclusive institutions at all levels	16.7 Ensure responsive inclusive participatory and representative decision-making at all levels
	16.b: Promote and enforce non-discriminatory laws and policies for sustainable development

Goal	Target
2) Health (SRH)	
Goal 3. Ensure healthy lives and promote well-being for all at all ages	3.1 Reduce the global maternal mortality ratio to less than 70 per 100000 live births
	3.2 End preventable deaths of newborns and under-five children
	3.3 End the epidemics of AIDS tuberculosis malaria and neglected tropical diseases and combat hepatitis water-borne diseases and other communicable diseases
	3.7 Ensure universal access to sexual and reproductive health care services including for family planning information and education and the integration of reproductive health into national strategies and programs
Goal 5. Achieve gender equality and empower all women and girls	Target 5.6: Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences.
3) Place and mobility	
Goal 8. Promote sustained inclusive and sustainable economic growth full and productive employment and decent work for all	8.8. Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment
Goal 10. Reduce inequality within and among countries	10.7. Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies.
Goal 11. Make cities and human settlements inclusive safe resilient and sustainable	11.1 By 2030 ensure access for all to adequate safe and affordable housing and basic services and upgrade slums
	11.3. By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries
Goal 16. Promote peaceful and inclusive societies for sustainable development provide access to justice for all and build effective accountable and inclusive institutions at all levels	16.1 Significantly reduce all forms of violence and related death rates everywhere
4) Governance and accountability	
Goal 16. Promote peaceful and inclusive societies for sustainable development provide access to justice for all and build effective accountable and inclusive institutions at all levels	16.9 By 2030 provide legal identity for all including birth registration
	16.10 Ensure public access to information and protect fundamental freedoms in accordance with national legislation and international agreements
	16.a Strengthen relevant national institutions including through international cooperation for building capacity at all levels in particular in developing countries to prevent violence and combat terrorism and crime

Goal	Target
Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development	17.8 Fully operationalize the technology bank and science technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology in particular information and communication technology.
	17.19 By 2030 build on existing initiatives to develop measurements of progress on sustainable development that complement gross domestic product and support statistical capacity-building in developing countries
5) Sustainability	
Goal 3. Ensure healthy lives and promote well-being for all at all ages	3.9 By 2030 substantially reduce the number of deaths and illnesses from hazardous chemicals and air water and soil pollution and contamination
Goal 6. Ensure availability and sustainable management of water and sanitation for all	6.1. By 2030, achieve universal and equitable access to safe and affordable drinking water for all
	6.2 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
Goal 7. Ensure access to affordable reliable sustainable and modern energy for all	7.2 Increase substantially the share of renewable energy in the global energy mix
Goal 9. Build resilient infrastructure promote inclusive and sustainable industrialization and foster innovation	9.5 Enhance scientific research upgrade the technological capabilities of industrial sectors in all countries in particular developing countries including by 2030 encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending.
Goal 11. Make cities and human settlements inclusive safe resilient and sustainable	11.b By 2020 substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion resource efficiency mitigation and adaptation to climate change resilience to disasters and develop and implement in line with the Sendai Framework for Disaster Risk Reduction 2015–2030 holistic disaster risk management at all levels
Goal 13. Take urgent action to combat climate change and its impacts	13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries

2.3 Selection of indicators

The PDCI depends on the SDGs monitoring framework, which is based on the official SDG indicators endorsed by the UN Statistical Commission, where a list of priority Population and Development Indicators were selected. SDGs indicators were reviewed in accordance with the Fundamental Principles of Official Statistics which was highlighted by the General Assembly and the Economic and Social Council for the global development agenda.[14] Besides, some additional indicators were proposed to reflect additional population and development aspects in formulating polices and strategies, e.g. the existence of policies for population,

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14 Resolution 68/261; accessed at https://undocs.org/A/RES/68/261

gender, disability, ageing, internal and international migration. The main purpose was to select, as much as possible, relevant indicators measuring country's performance in each topic related to the thematic pillar of the ICPD-PoA (see figure2).

| Figure 2 | The Component level framework of the PDCI |

Dignity and human rights
- Gender equality
- Adolescents and youth
- Poverty and inequality
- Population ageing
- Non-discrimination

Health (SRH)
- SRH, including maternal health
- SRH of young people
- Contraception and the unmet need for FP
- HIV/AIDS and STI

Place and mobility
- International migration
- Internal migration and urbanization
- IDPs and refugees

Governance and account-ability
- Cooperation and partnerships
- Participation e.g. civil society, women and youth
- Integrating population dynamics into development planning
- Strengthening knowledge and accountability

Sustainability
- Population dynamics
- Environmental sustainability
- Climate change

A preliminary list of 44 indicators are chosen to reflect the ICPD agenda. These indicators were categorized under the five dimensions in accordance to the report of the Secretary-General on the ICPD themes presented in the 47th sessions of the CPD in 2014. Testing the validity of indicators resulted in dropping six indicators due to collinearity. Therefore, a total of 38 indicators were selected to construct PDCI as shown in Table 2.

2.4 Data sources

The PDCI uses official data sources mainly the UN databases (e.g. UN-DESA, UNICEF, ILO, World Bank, WHO, etc.) as well as data extracted from official sources reported by national governments. We restricted ourselves to these two sources to ensure high quality in terms of relevance, completeness, timeliness, accuracy, accessibility and comparability of concepts and data collection methods. The quality of the indicators was validated and checked to ensure, as far as possible, that

1) Accuracy and consistency of the indicator reflect the country context, for instance,

it is observed that the maternal mortality ratio in few countries e.g. Libya; does not express the humanitarian situation in these countries.

2) Data will be available for future updates of the indicator. It is planned to update the PDCI and trace the country progress.

Most updated statistics were used. In particular, whenever data for recent years are not available or published, the most recent published data were utilized. Data reflect time periods after 2010 except for few indicators where recent data were not found.

In order to run statistical tests related to reliability test, collinearity diagnostics and derivation of weights using the principal component analysis, data from 195 countries was initially used to get enough number of observations. Countries having 25% or higher of missing data points were excluded from the analysis, therefore the final list of countries used in running the tests consisted of 157 countries.

2.5 Data limitations

Although, the proposed PDCI is based on the most of relevant indicators from ICPD PoA perspective, some indicators were not available. This highlights the need to increase investments in data collection and promote the monitoring systems of SDGs, especially, indicators measuring population and development aspects. Data gap was largely concentrated in indicators related to discrimination against disabled persons and migrants, harassment, human trafficking, supporting environment for older persons, disparities between urban and rural communities, urbanization and internal migration, labor rights protections, engagement of civil society, women empowerment to make their own informed decisions regarding SRH and the sustainable human settlement planning.

2.6 Missing data imputation

To overcome the challenge of data gaps, we employed the techniques of imputations using predictive distribution of missing values. The predictive distribution was generated by employing the observed data either through implicit or explicit modelling. (OECD, 2008). In this regards, the following two approaches were adopted

a. Implicit modelling (Hot deck imputation); by filling in blank cells with individual data, drawn from countries showing a similar profile with respect to variables under consideration; and

b. Explicit modelling (Regression imputation); where the missing values are substituted by the predicted values obtained from regression model. This approach was used mainly to estimate the missing values for domestic violence against women, where the regressor are the individual indicators showing a strong relationship with the dependent variable.

Moreover, calculations based on country micro datasets generated from household surveys were performed as well as seeking the assistance of the UNFPA country offices to provide missing data from the official data sources if available. The limitation of this source is the different time reference period across countries.

It is worth mentioning that only the missing data for Arab countries were treated, since the main focus is to construct the index for the Arab region and data from other countries was compiled only for the sake of running validity statistical tests. Moreover, imputation especially those driven from a regression model, was reviewed and compared to other estimates from non-official data sources to ensure accuracy and non-bias.

Table 4: List of indicators included in the PDCI

Dimension	Indicator
Dignity and Human rights	FGM prevalence (percentage) among girls aged 15-19
	Child marriage by age 18 (percentage of women ages 20-24 who are married)
	Women ever experienced Domestic physical violence
	Gender Parity Index for secondary education
	Female to male labor force participation rate (percentage)
	Share of seats in parliament (percentage held by women)
	Youth unemployment rate (ages 15–24)
	Share of seats in parliament (percentage held by members aged under 40)
	Vulnerable employment (percentage of total employment)
	Proportion of population living below the national poverty line (percentage)
	Secondary school dropout rate among youth
	Freedom of choice
	Old-age pension recipients
Health (SRH)	Neonatal mortality rates
	Proportion of births attended by skilled health personnel
	Antenatal care coverage- at least four visits
	Adolescent birth rate
	Providing school-based sexuality education.
	Unmet need for family planning
	HIV prevalence adult
Place and Mobility	Measures on integration of immigrants
	Refugees and IDPs by country of origin (percentage of population)
	Proportion of urban population living in slums
	Estimated direct deaths from major conflicts (per 100.000 population)
	Country in a conflict
Governance and Accountability	Birth registration (percentage under age five)
	Countries that have conducted population and housing census in the last 10 years
	Country adopted national population - related issues policies
	Proportion of individuals using the Internet
	Country adopted and implement constitutional statutory and/or policy guarantees for public access to information
	Country has an independent national human rights institution in compliance with the Paris Principles

Dimension	Indicator
Sustainability	Renewable energy consumption (percentage of total final energy consumption)
	Homeless people due to natural disaster (average annual per million people)
	Household and ambient air pollution (per 100.000 population)
	Research and development expenditure (percentage of GDP)
	Adoption and Implementation of national DRR strategies in line with the Sendai Framework
	GDP annual growth - Population annual growth
	Population using improved sanitation facilities

2.7 Construction and calculations of PDCI

The construction of PDCI went through three stages:

1) Normalization to rescale the indicators to ensure comparability,

2) Assigning weights, and,

3) Aggregating the indicators within and across dimensions.

Normalization

To make data comparable across indicators values for indicators were normalized by using a linear transformation to express the indicator into a scale from 0 to 100 where a value of 100 denotes the "technical optimum" and a value of 0 denotes the "worst performance". The technical optimum was identified based on the best performing country from the global databases of indicators. The worst performance was identified as the value of the bottom 2.5[th]

percentile in the databases. Censoring the data at the bottom 2.5[th] percentile was adopted to reduce the effect of extreme values, which might skew the results of a composite index.[15]

Since each indicator distribution was censored, so that all values exceeding the upper bound scored 100, and values below the lower bound scored 0.

The following equation was used to standardize the indicators:

$$xs = \left(\frac{x\text{-}min(x)}{max(x)\text{-}\ min(x)} \right) *100$$

Where xs = standardized value of the indicator

x = original indicator

$min(x)$ = the bounds for worst performance, and

$max(x)$ = the bounds for best performance.

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15 Recommended by OECD, 2008 and applied in the SDG index.

Calculation of weights

	equal weights	Mathematical weights (PCA)	Expert weights (BAP)
Dignity and human rights	1/5	0.215	2/7
Health (SRH)	1/5	0.218	2/7
Place and mobility	1/5	0.186	1/7
Governance	1/5	0.214	1/7
Sustainability	1/5	0.167	1/7
Total	**1.000**	**1.000**	**1.000**

Source: Authors' calculations

Since the PDCI is used as a tool for assessing the progress and ranking countries, it is crucial to be cautious in the selection of weights assigned to the ingredients indicators and thematic components (dimensions) used in the construction of index during the aggregation process. Indeed, weights can have a significant effect on the overall composite indicator and the country rankings.

When calculating each of the five sub-index, equal weights were assigned to indicators. On the other hand, when aggregating the five sub-indices to construct the composite index, three weighting scenarios where considered (Table 5.)

In the first scenario, equal weights are assigned which implies that the dimensions are considered equally important.

The second scenario used statistical weights resulting from principal component analysis which resulted in higher weights for the three dimensions: dignity, reproductive health and governance.

Assigning different weights to the dimensions based on the expert opinion, namely, Budget Allocation Process (BAP) is the third scenarios used. Accordingly, two dimensions (dignity and reproductive health) are given higher weights. The main rationale behind this is that most of the core interest of UNFPA is centred on these two dimensions. In fact, the goal of the strategic plan, 2018-2021, is to "achieve universal access to sexual and reproductive health, realize reproductive rights, and reduce maternal mortality to accelerate progress on the ICPD-PoA, to improve the lives of women, adolescents and youth, enabled by population dynamics, human rights and gender equality" (UNFPA, 2017.)

When comparing the ranks of countries resulting from three main schemes (equal, statistical and BAP weights) the results suggest that different set of weights have little impact on the resulting composite index and justify using equal weights for simplicity.

Aggregation

To calculate a composite index sub-index, need to be aggregated using one of the measures of location arithmetic mean or geometric mean. The arithmetic mean has several desirable statistical properties as the sum of deviations of observations from their arithmetic mean is equal to zero and the sum of square of deviations from the arithmetic mean is minimum. On the other hand, the arithmetic mean is not always the best way to aggregate observations if extreme values (low or high) exist and the geometric mean is preferable as it is less sensitive to extreme cases.

The fact that the arithmetic mean is sensitive to extreme values suggests that it implies substitutability i.e. progress in one metric can offset lack of progress on another. The geometric mean which is less sensitive to extreme values reduces substitutability. By doing so the geometric mean penalizes discrepancy in indicators i.e. failure in one metric is not fully compensated by success in another. It is prov-

en mathematically that the geometric mean is less or equal than the arithmetic mean and the difference increase with the variance of the observations subject to aggregation. Hence the geometric mean can be seen as a conservative aggregate that reduces substitutability among sub-indices.

When constructing the sub-index for each of the five dimensions the arithmetic mean was calculated for the normalized indicators within each dimension as substitutability of indicators within each dimension make sense. The following equation was used to calculate sub-indices:

$$Y_j = \frac{\sum_{i=1}^{n_j} w_{ij} x s_{ij}}{\sum_{i=1}^{n_j} w_{ij}}$$

Where Y_j = sub-index j

W_{ij} = weight assigned to indicator i belonging to dimension j (*equal weights are used*).

XS_{ij} = standardized indicator i within dimension j and

n_j = number of indicators belonging to dimension j.

On the other hand, to construct the composite index the geometric mean was used to aggregate the five sub-indices as it is less sensitive to extreme values and is penalizing low performance in any sub-index. The calculation using the geometric mean will avoid full substitutability as in the case of the arithmetic mean and hence will give credit to countries making progress in each dimension[16]. The following equation was used to calculate sub-indices:

$$PDCI = \sqrt[1/\sum w_j]{\prod_{j=1}^{n} Y_j^{w_j}}$$

Where PDCI = composite index

Y_j = sub-index j

W_j = weight assigned to dimension j and

n_j = number of sub-indices.

2.8 Statistical soundness and validation

Reliability/inter-item consistency within dimension

Cronbach's alpha is used to estimate the reliability, or internal consistency, of a composite score. High Cronbach's alpha, or equivalently a high "reliability", indicates that the individual indicators measure the latent phenomenon well. Usually a Cronbach's alpha of 0.70 and above is used as a good indication of intern consistency between the indicators (OECD, 2008). Accordingly, inter-item consistencies are high (> 0.7) for 2 dimensions (dignity and human rights and health), and moderate (0.4 < x < 0.7) for the other dimensions (Table 6).[17]

16 Example: In country A, two sub-indices take the values 10% and 90%, the arithmetic mean is 50% and the geometric mean is 30%. In country B, the two sub-indices take the values 40% and 60%, the arithmetic mean is 50% and the geometric mean is 49%. The arithmetic is the same in two countries implying full substitutability while the geometric mean doesn't.

17 The result is acceptable compared to the other indices e.g., the SDG index where the inter-item correlations observed are high for 8 SDGs out of the 17 goals. In addition, two indicators were not included in the test (FGM prevalence and adopting population related polices) due to insufficient number of observations.

Table 6: Reliability test (Cronbach's alpha) for each dimension

Dimension	Average of inter-item covariance	Number of items	Scale reliability coefficient
Dignity and human rights	190.9	14	0.85
Health	279.2	8	0.78
Place and mobility	74.9	5	0.44
Governance	247.9	5	0.40
Sustainability	94.6	10	0.58

Source: Authors' calculations

Although Cronbach's alpha gives a real picture of the inter consistency (inter-item correlations) between the indicators measuring the same dimension, the collinearity between indicators is necessary to be assessed in order to omit the highly correlated ones, since the indicators are supposed to be non-redundant. Indeed, when combining two indicators with a strong degree of correlation, an element of double counting may be introduced into the index. The response has often been to test indicators for statistical correlation and to choose only indicators which exhibit a low degree of correlation (OECD, 2008).

Collinearity/ redundancy

Following, a summary of the statistical validation tests employed to finalize the list of indicators used in constructing PDCI.

A) One-way correlation

First the one-way correlation, using the Pearson's Correlation Coefficient, is computed to measure the strength of the association between the indicators within the same dimension. Usually, a strong correlation is assumed when the coefficient exceeds 0.7. Accordingly, Table 7 shows the correlation between the indicators under dignity and human rights dimension, the strong correlation exists between:

a) Youth literacy with "Gender Parity Index for secondary education", "Secondary school dropout rate among youth" and "Healthy life expectancy at birth".

b) Vulnerable employment with "Secondary school dropout rate among youth" and "Healthy life expectancy at birth"

c) Secondary school dropout rate among youth with "Youth literacy", "Vulnerable employment" and "Healthy life expectancy at birth"

d) Healthy life expectancy at birth with "Youth literacy", "Vulnerable employment" and "Secondary school dropout rate among youth"

e) Gender Parity Index for secondary education with "Youth literacy".

Similarly, health dimension shows strong correlation between some of its components, namely; maternal and neonatal mortality, skilled births attendance, antenatal care coverage and the adolescent birth rate. In addition, some indicators under sustainability dimension are strongly correlated with each other's, especially access to electricity and clean fuels for cooking, using improved drinking-water and improved sanitation and air pollution. It is worth mentioning that results from the two remaining dimensions (place and mobility and governance) indicate no significant correlation between their components.

Table 7: Pearson correlation of indicators under dignity dimension

	FGM prevalence (%) among girls aged 15-19	Child marriage by age 18 (% among women ages 20-24	Women ever experienced Domestic physical violence	Gender Parity Index for secondary education	Female to male labor force (%) participation rate	Share of seats in parliament (% held by women	Youth literacy rate (% of ages 15–24	Youth unemployment rate ((ages 15–24	Share of seats in parliament (% held by members aged under 40	Vulnerable employment (% of total employment	Proportion of population living below the national poverty line (%)	Secondary school dropout rate among youth	Freedom of choice	Healthy life expectancy at birth	Old-age pension recipients
FGM prevalence (%) among girls aged 15-19	1														
Child marriage by age 18 (% among women (ages 20-24	**309.	1													
Women ever experienced Domestic physical violence	159.	**304.	1												
Gender Parity Index for secondary education	**327.	**437.	**371.	1											
Female to male labour force participation rate (%)	025.	*234.-	*165.	151.	1										
Share of seats in parliament (% held by (women	089.	019.-	059.-	174.	**222.	1									
Youth literacy rate (% (of ages 15–24	**586.	**635.	**351.	**764.	035.-	053.	1								
Youth unemployment (rate (ages 15–24	093.-	**320.-	064.-	185.-	**296.	093.	**258.-	1							
Share of seats in parliament (% held by mem-(bers aged under 40	024.	136.	**251.	197.	167.	**286.	132.	011.-	1						
Vulnerable employment (% of total employ-(ment	**288.	**624.	**289.	**471.	**228.-	139.	**657.	**275.-	**264.	1					
Proportion of population living below the national (%) poverty line	**265.	**595.	147.	**344.	*252.-	080.-	**500.	154.-	135.	**567.	1				
Secondary school drop-out rate among youth	**528.	**688.	**316.	**662.	072.	*178.	**848.	**268.-	**355.	**740.	**631.	1			
Freedom of choice	095.	085.	007.	096.	143.	*204.	185.	**241.	171.	**264.	**293.	**253.	1		
Healthy life expectancy at birth	**390.	**581.	**380.	**573.	032.-	**250.	**739.	091.-	**373.	**778.	656.	**796.	361.	1	
Old-age pension recipients	**289.	**407.	**345.	**417.	*162.	**228.	**530.	*168.-	**366.	**676.	391.	**713.	**245.	**643.	1

Source: Authors' calculations

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

B) Collinearity diagnostics

In order to determine which of the correlated indicators would be excluded, collinearity was tested. Therefore, a regression model was constructed for each dimension, using the dimension score as the outcome (dependent) variable and its components as the explanatory (independent) variables. Variance-inflation factor (VIF) was computed to measure the collinearity diagnostics statistics which is the reciprocal of tolerance. A VIF value greater than 5.0 was applied as cut-off criterion for suggesting that there is collinearity problem. The procedure was applied to each dimension and results suggested excluding the following indicators[18]:

1) Youth literacy rate (percentage of ages 15–24)

2) Healthy life expectancy at birth

3) Maternal mortality ratio

4) Access to electricity

5) Access to clean fuels & technology for cooking

6) Population using improved drinking-water sources

Collinearity assessment among dimensions showed a VIF ranging from 1.7 to 3.2 suggesting that all dimensions are free from collinearity Indeed, this statistically supports using the proposed 5 dimensions as components of the PDCI.

Sensitivity/ robustness validation

Testing the sensitivity/ robustness is necessary to explore the extent to which ranking is robust regarding the choice of alternative weighting schemes, the aggregation methods and the upper and lower bound used in the normalization procedure.

Empirical studies have opted for taking a list of different weighting schemes and comparing the corresponding results, Monte Carlo simulations is usually used to test the sensitivity of the composite indicators to different weighting schemes e.g. SDGs index. However, due to the limited number of observations (22 countries), the uniform max–min bound approach was used to determine a set of alternative weighting schemes for checking the robustness of pairwise comparisons when there is neither any a priori reason for treating different dimensions with different importance nor any a priori reason for allowing weights to vary in different extents. In this case, the initial weighting scheme w_0 assigns equal weight to all dimensions (Seth, S., Mc-Gillivray, M. (2018).

The assumption used for this pwwurpose is that the weight on any dimension is not lower than $\alpha \in [0, 1/D)$ and the weight on any dimension not higher than $\beta \in (1/D, 1]$. Accordingly, $\Delta = \{w_1, \ldots, w_d \mid \alpha \leq wd \leq \beta \forall d$ and $\sum_{d=1}^{D} wd = 1$, and let $\beta = 0.25$ and $\alpha = 0.15$ so a set of 20 alternative weighting schemes are obtained as shown in Table 8.

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18 Two additional indicators "secondary school dropout rate among youth" and "access to sanitation" were kept in the final calculation of the composite index even though their corresponding VIF exceeded 5. This decision was based on expert opinion to make sure that the composite index reflects youth education and sanitation.

Although the VIF of MMR, in the first regression model, doesn't exceed 5 compared to the neonatal mortality rate, it was decided to drop MMR because it is not reported on a yearly basis. The second regression model showed that neonatal mortality is free of collinearity after dropping the MMR.

Table 8: Weights assigned to dimensions to assess sensitivity of weights

Dimension		α_1	α_2	α_3	α_4	α_5
Dignity	β_1		0.25	0.25	0.25	0.25
Health			0.15	0.20	0.20	0.20
Mobility			0.20	0.15	0.20	0.20
Governance			0.20	0.20	0.15	0.20
Sustainability			0.20	0.20	0.20	0.15
Dignity	β_2	0.15		0.20	0.20	0.20
Health		0.25		0.25	0.25	0.25
Mobility		0.20		0.15	0.20	0.20
Governance		0.20		0.20	0.15	0.20
Sustainability		0.20		0.20	0.20	0.15
Dignity	β_3	0.15	0.20		0.20	0.20
Health		0.20	0.15		0.20	0.20
Mobility		0.25	0.25		0.25	0.25
Governance		0.20	0.20		0.15	0.20
Sustainability		0.20	0.20		0.20	0.15
Dignity	β_4	0.15	0.20	0.20		0.20
Health		0.20	0.15	0.20		0.20
Mobility		0.20	0.20	0.15		0.20
Governance		0.25	0.25	0.25		0.25
Sustainability		0.20	0.20	0.20		0.15
Dignity	β_5	0.15	0.20	0.20	0.20	
Health		0.20	0.15	0.20	0.20	
Mobility		0.20	0.20	0.15	0.20	
Governance		0.20	0.20	0.20	0.15	
Sustainability		0.25	0.25	0.25	0.25	

Figure 3 illustrates the values of the PDCI scores calculated from the 20 different weighting schemes and the three main schemes (equal, statistical, and, BAP weights). One can notice that the differences in scores are considerably marginal. Furthermore, the country ranks' differences based on the 23 weighting schemes don't exceed 3 ranks which support the index robustness.

Figure 3

PDCI scores by weighting schemes
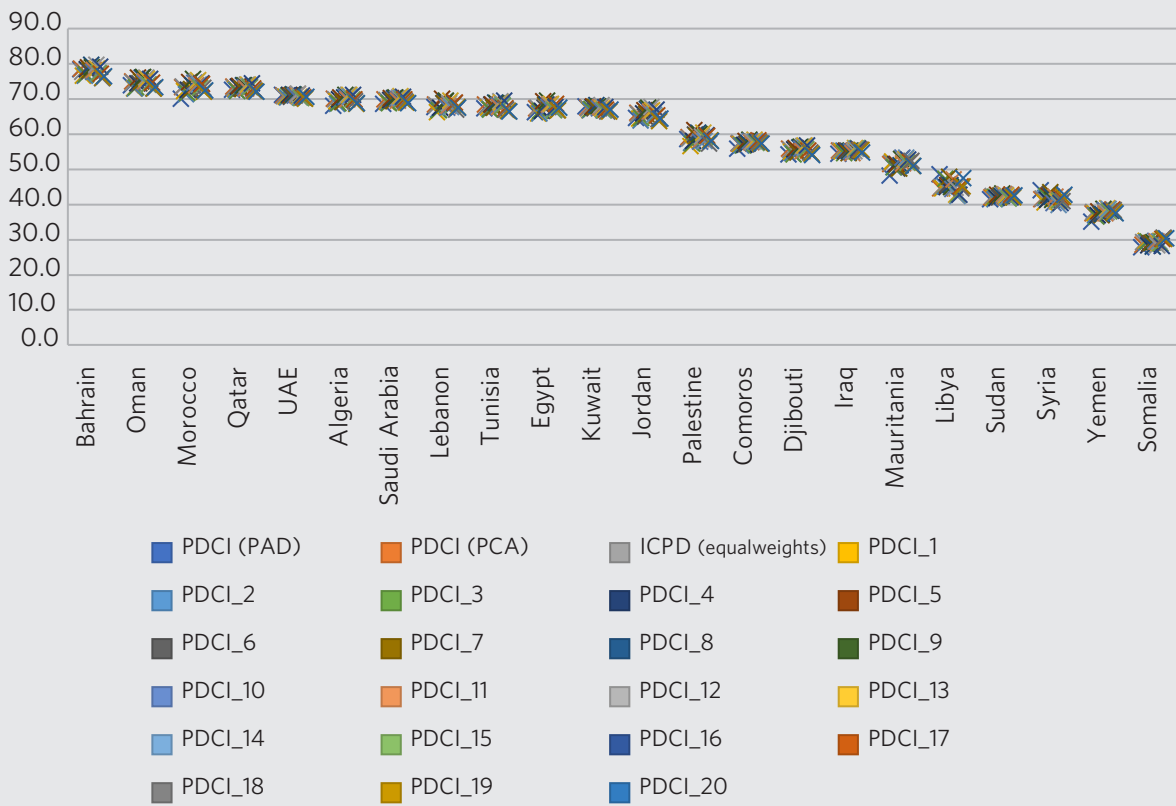
Source: Authors' calculations

Furthermore, an alternative approach to setting "worst" (=0) performance in order to test the robustness of changing the lower bounds was used for normalizing the indicators. Results indicate that the differences in country ranks ranged between 0 and 2 ranks.

Similarly results differ slightly when using the arithmetic mean for aggregating the dimensions into the final index since most of countries kept the same rank while some varied by one rank and a single country differed by three ranks.

Results from the quality assurance of the PDCI ensure its robustness and validity to measure the population and development agenda since; a) it includes relevant indicators; b) depends on official data with high quality c)it is free of collinearity within and among its dimensions; d) it has an acceptable level of inter-consistency between the indicators measuring the same dimension; e) and it is robust to the change in weighting schemes, aggregation, and bounds used for normalizing the indicators.

Chapter three

Main findings

3.1 Sub-indices

Sub-indices were calculated for each country. As presented in Table 7 the average score among Arab countries is higher for mobility (69.1) followed by reproductive health (66.0) then governance with an average score 64.7. Sustainability and dignity significantly lower with an average scores 55.2 and 51.2 respectively[19].

The dashboard presented in Table 7 indicates that performance of countries varies across the five dimensions. Worst performers are more likely to do so in most dimensions. This applies to Yemen, Sudan, Somalia and Syria, which indicates the impact of political instability and conflict on the ability of countries to perform in population related agenda. On the other hand, a front runner in one dimension does not imply a high performance in other dimensions. Except for Bahrain, who came among the best five countries in four of the five dimensions, countries performance in one dimension is not necessarily associated with their performance in other dimensions. The diversity illustrated in the dashboard suggests that countries might benefit from examining the sub-indices and not only focus on the composite index. Sub-indices might be useful in informing sectoral policies and might be used as a tool for setting priorities.

Variability level within Arab countries varies among different sub-indices. Reproductive health had a higher spread among Arab countries ranging from 22 to 94 followed by mobility and governance. Dignity and sustainability show less variability ranging from 27 to 70 for dignity and from 42 to 66 for sustainability. To reduce the measure of location effect on the variability the coefficient of variation was calculated for each dimension. Results indicated a similar pattern with governance having the highest variability among Arab countries. As illustrated in Figure 4, Arab countries are more homogeneous with regards to sustainability and dignity.

In Figure 5, results for Egypt, Lebanon and Tunisia were illustrated. The three countries have an almost equal composite index (68%) as will be demonstrated in Table 8, however they

have different performance level on the five dimensions. A comparison of Egypt and Lebanon shows that Lebanon is nine points higher in governance and 11 points lower in mobility. Similarly, comparing Egypt to Tunisia indicates that Egypt is higher than Tunisia with a difference of 12 points in sustainability and 10 points in SRH, but lower in dignity and governance with 13 and 16 points respectively.

Table 9: Sub-indices of the PDCI for the Arab countries

Country	Dignity	SRH	Mobility	Governance	Sustainability
Algeria	59.3	68.6	83.7	82.9	59.3
Bahrain	68.4	93.7	92.7	83.0	58.0
Comoros	47.9	55.8	64.8	63.1	58.2
Djibouti	46.1	57.1	64.3	71.5	43.5
Egypt	49.1	81.0	83.9	65.8	64.6
Iraq	51.6	52.7	51.3	67.1	55.3
Jordan	52.2	74.3	90.5	71.8	48.5
Kuwait	64.2	75.5	75.3	65.3	58.1
Lebanon	50.1	87.8	72.8	74.4	62.1
Libya	52.8	65.8	50.2	19.3	55.0
Mauritania	43.2	37.8	68.1	69.0	48.8
Morocco	52.8	73.2	97.1	86.9	66.0
Oman	58.8	89.1	91.7	80.5	59.7
Palestine	39.6	85.5	61.2	66.9	51.0
Qatar	66.5	75.8	79.6	84.7	62.0
Saudi Arabia	61.0	70.8	76.0	81.2	62.1
Somalia	27.6	22.2	28.8	23.8	51.4
Sudan	35.5	43.7	51.8	38.4	44.2
Syria	40.0	64.9	35.6	27.9	48.6
Tunisia	61.6	70.6	78.0	81.5	52.5
UAE	70.3	74.2	79.6	67.4	63.8
Yemen	26.9	31.7	42.9	50.1	42.1
Mean	51.2	66.0	69.1	64.7	55.2
Median	51.9	70.7	74.1	68.2	56.6
Minimum	26.9	22.2	28.8	19.3	42.1
Maximum	70.3	93.7	97.1	86.9	66.0
Range	43.3	71.5	68.3	67.6	24.0
Coefficient of variation[20]	24.0	28.7	27.6	31.3	13.0

Source: Authors' calculations

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19   Median score is confirming the same trend.

20 Coefficient of variation = 100*(standard deviation) / (mean)

Dark green refers to front runners (best five countries or fourth quartile), light green refers to countries belonging to the third quartile, orange refers to countries belonging to the second quartile and red refers to laggards (worst five countries or first quartile).

Variability in sub-indices of PDCI for the Arab countries

Source: Authors' calculations

Sub-indices for selected Arab countries

Figure 5: Sub-indices for selected Arab countries

Source: Authors' calculations
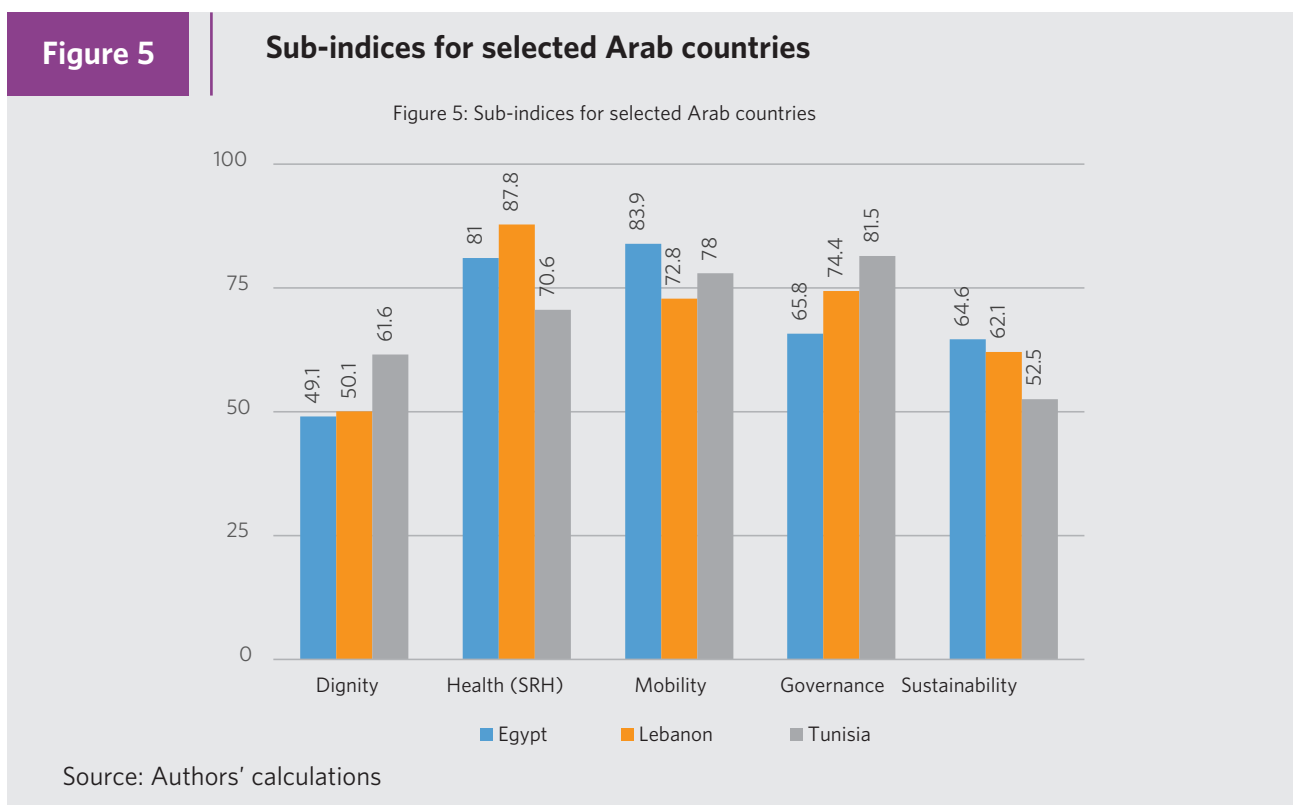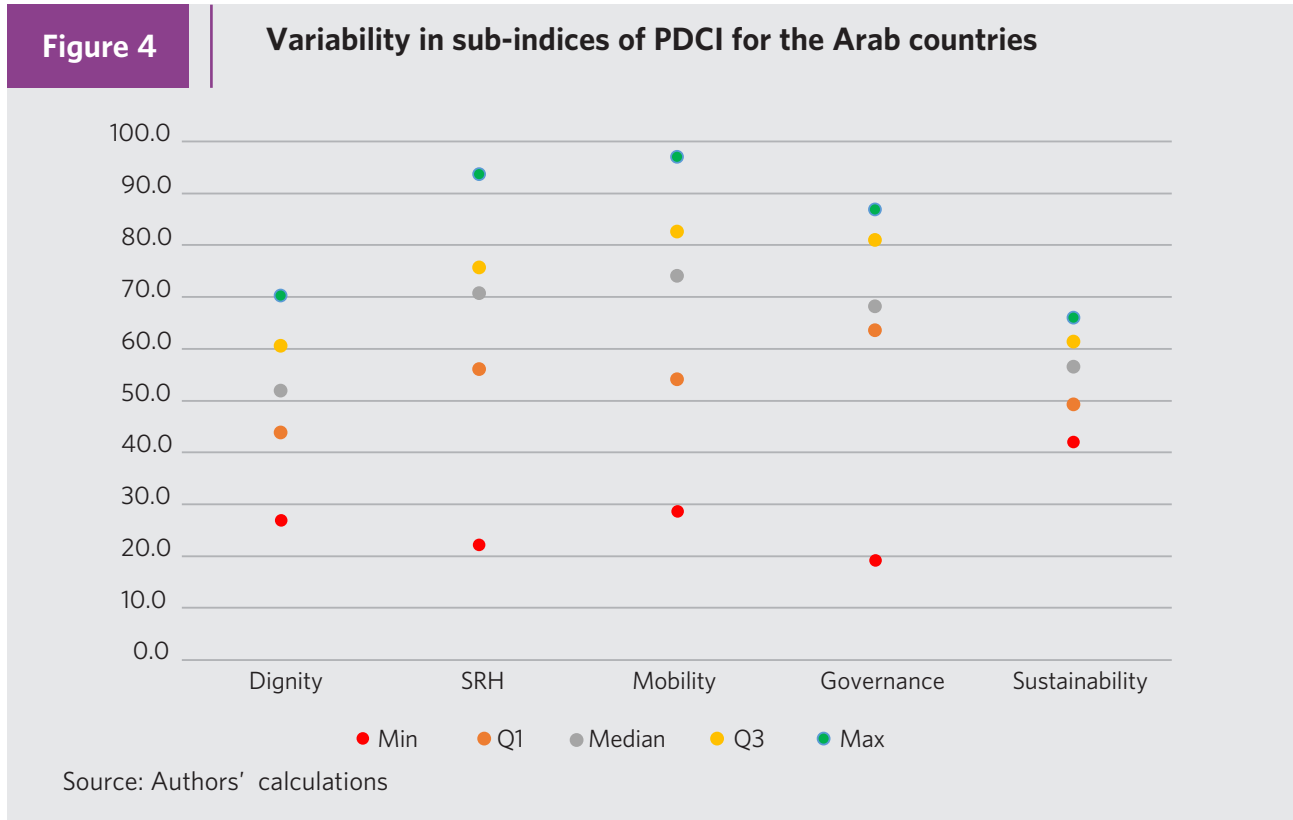
3.2 Performance per dimension

Cross country comparisons of the computed five sub-indices indicate that countries performed differently with regard to each of the dimensions. This is a positive finding and expresses priorities with countries and the ability of each country to act. At the same time shows how countries interacted with external conditions and factors. However, on the average, Arab countries have a higher mean/median score for mobility, reproductive health and governance. This might be due partially to the selection of variables reflecting each dimension.
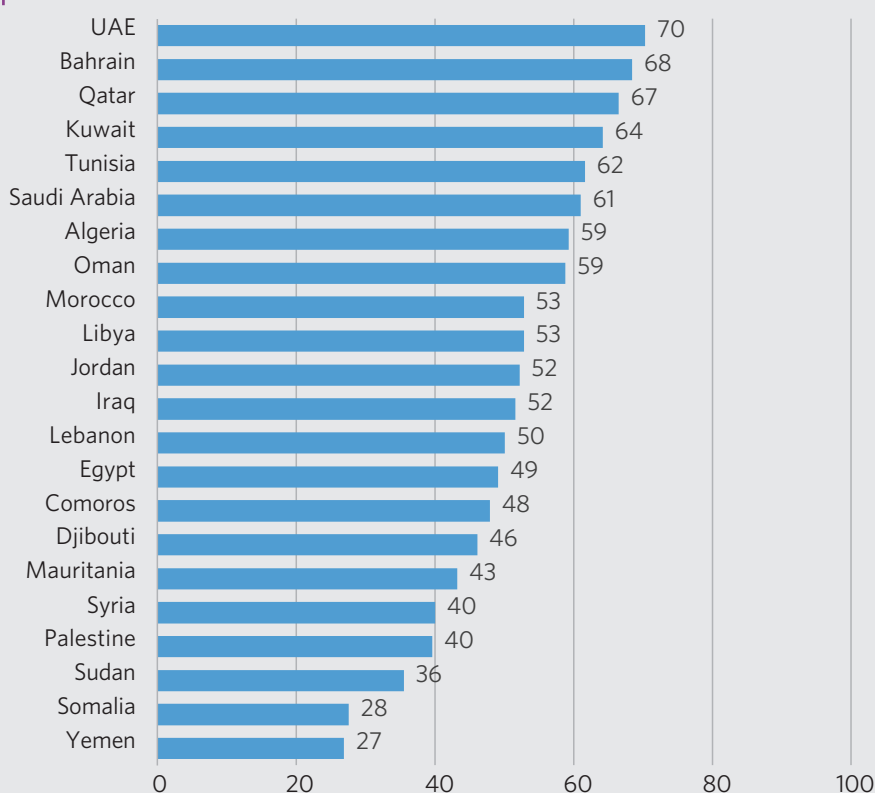
Most importantly is the relative performance of countries compared to their peers. As previously illustrated, front runners in one dimension does not necessarily imply a better performance in other dimensions. As illustrated in Figure 6, GCC countries are taking the highest four places (UAE, Bahrain, Qatar and Kuwait) when Arab countries are ranked

according to their performance on the dignity dimension. The share of GCC countries is lower when Arab countries are ranked on their performance on other dimensions (Figures 6 to Figure 10). Other Arab countries who are among the first five front runners include Algeria (governance), Egypt (reproductive health, mobility and sustainability), Jordan (mobility), Lebanon (reproductive health and sustainability), Morocco (mobility, governance and sustainability), Palestine (reproductive health), and Tunisia (dignity and governance).

This makes PDCI valuable for evaluating achievements related to population policies and for setting priorities and allocating resources to interventions related to ICPD-PoA. For example, Morocco who falls in the third place among all Arab countries on the composite index, comes in the first place among Arab countries in mobility, governance and sustainability, but rank 9th in dignity and 10th in reproductive health, which might a useful insight to the priority setting process.

| Figure 6 | **Dignity and human rights sub-index in the Arab countries** |

Source: Authors' calculations

Figure 7

Health (SRH) sub-index in the Arab countries

Country	Value
Bahrain	94
Oman	89
Lebanon	88
Palestine	86
Egypt	81
Qatar	76
Kuwait	76
Jordan	74
UAE	74
Morocco	73
Saudi Arabia	71
Tunisia	71
Algeria	69
Libya	66
Syria	65
Djibouti	57
Comoros	56
Iraq	53
Sudan	44
Mauritania	38
Yemen	32
Somalia	22
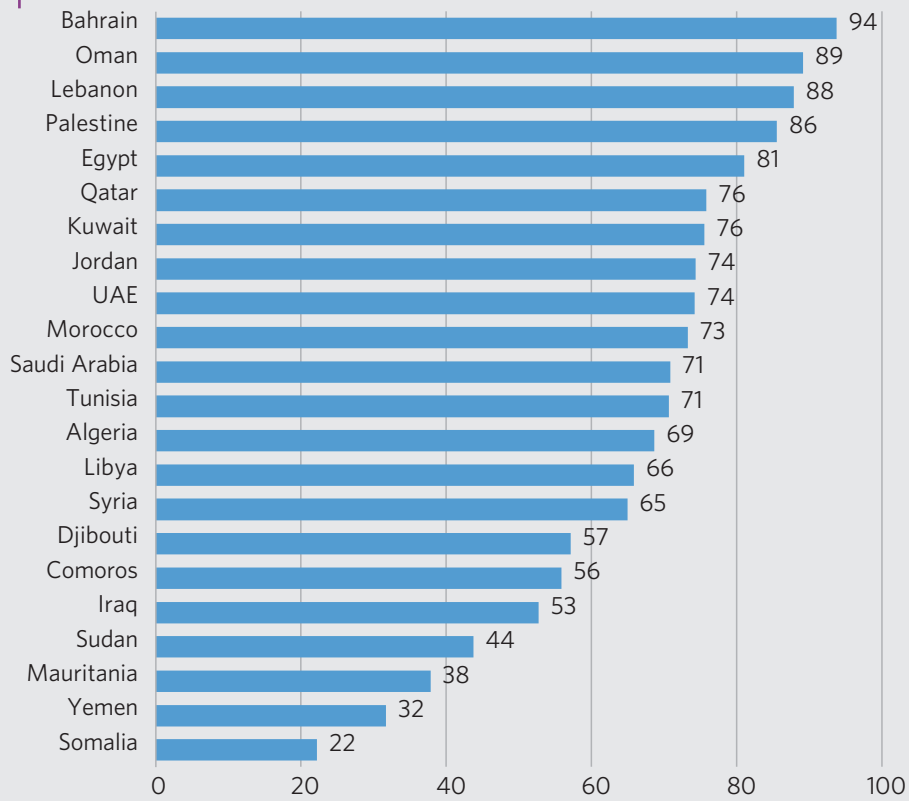
Source: Authors' calculations

Figure 8

Place and mobility sub-index in the Arab countries

Country	Value
Morocco	97
Bahrain	93
Oman	92
Jordan	91
Egypt	84
Algeria	84
UAE	80
Qatar	80
Tunisia	78
Saudi Arabia	76
Kuwait	75
Lebanon	73
Mauritania	68
Comoros	65
Djibouti	64
Palestine	61
Sudan	52
Iraq	51
Libya	50
Yemen	43
Syria	36
Somalia	29
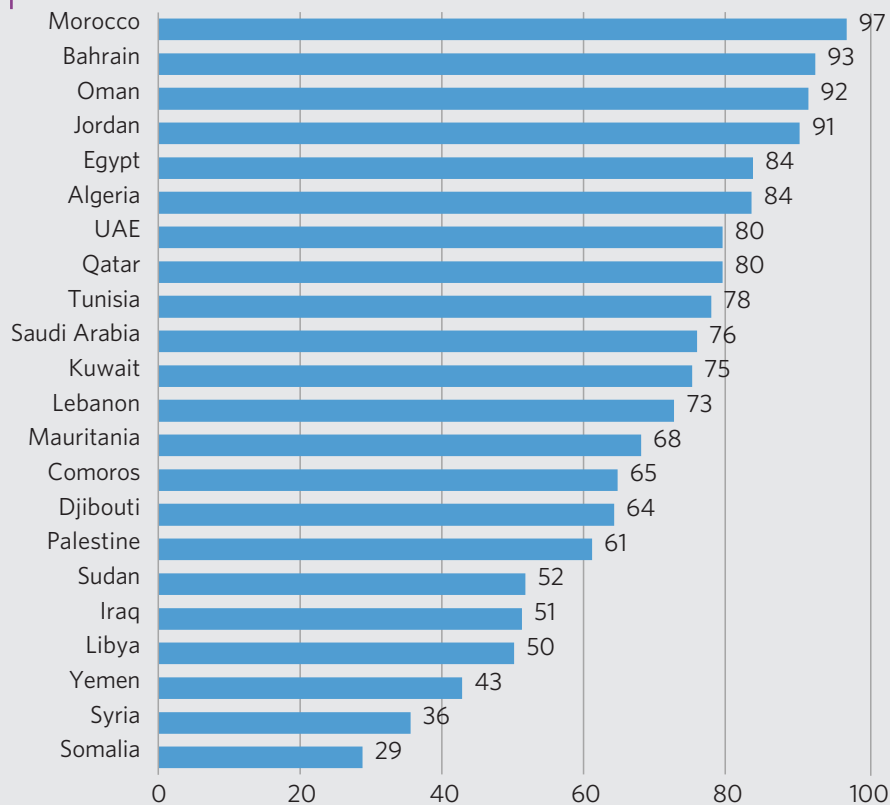
Source: Authors' calculations

Figure 9

Governance and accountability sub-index in Arab countries

Country	Value
Morocco	87
Qatar	85
Bahrain	83
Algeria	83
Tunisia	82
Saudi Arabia	81
Oman	81
Lebanon	74
Jordan	72
Djibouti	72
Mauritania	69
UAE	67
Iraq	67
Palestine	67
Egypt	66
Kuwait	65
Comoros	63
Yemen	50
Sudan	38
Syria	28
Somalia	24
Libya	19
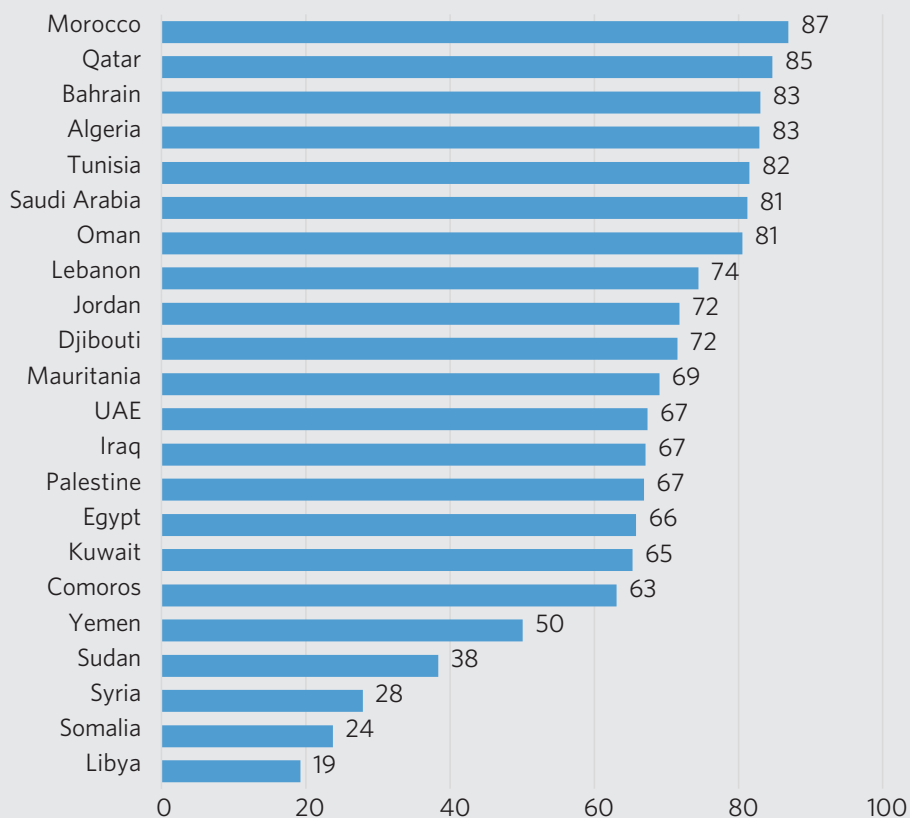
Source: Authors' calculations

Figure 10

Sustainability sub-index in the Arab countries

Country	Value
Morocco	66
Egypt	65
UAE	64
Saudi Arabia	62
Lebanon	62
Qatar	62
Oman	60
Algeria	59
Comoros	58
Kuwait	58
Bahrain	58
Iraq	55
Libya	55
Tunisia	53
Somalia	51
Palestine	51
Mauritania	49
Syria	49
Jordan	49
Sudan	44
Djibouti	44
Yemen	42
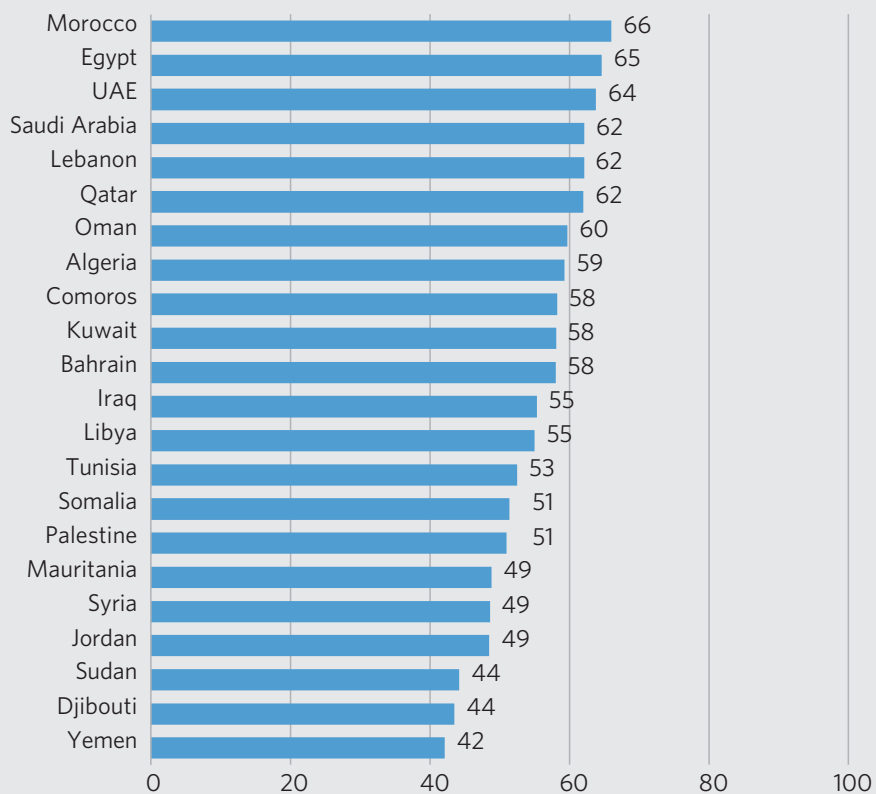
Source: Authors' calculations

3.3 The Population development composite Index (PDCI)

Table 8 presents the results of the composite index in the 22 Arab countries using three weighting schemes. In the first scheme equal weights were given to dimensions, in the second scheme higher weights were assigned to dignity and reproductive health and in the third scheme weights were based on principal component analysis (as presented in Table 6).

Based on the first weighting scheme the composite index ranges from 77.8 in Bahrain to 29.3 in Somalia. The index was above 70 in five front runner countries (Bahrain, Oman, Morocco, Qatar and UAE). Seven countries had an index ranging from 65 to <70 (Algeria, Saudi Arabia, Lebanon, Tunisia, Egypt, Kuwait and Jordan) indicating a moderate performance. The list of low performance countries with index ranging from 55 to < 65 includes Palestine, Comoros, Djibouti and Iraq. The six countries with lowest performance are Mauritania, Libya, Sudan, Syria, Yemen and Somalia which reflects the impact of conflicts and political instability on achieving the ICPD agenda (Figure 5). The PDCI mean was estimated to 60.1 and its median was 66.5 showing a negative skewed distribution within the Arab countries, with 50% of the countries ranging from 29.3 to 66.5 and 50% ranging from 66.5 to 77.8.

Table 10: PDCI value and ranking for Arab countries by weighting scheme

Country	Equal weights		Non-equal weights		Statistical weights		Range	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Algeria	69.9	6	68.1	7	70.1	6	2.0	1
Bahrain	77.8	1	78.5	1	78.6	1	0.8	0
Comoros	57.6	14	55.9	14	57.4	14	1.7	0
Djibouti	55.5	15	54.3	16	55.9	15	1.6	1
Egypt	67.6	10	66.3	11	67.4	11	1.3	1
Iraq	55.3	16	54.4	15	55.4	16	1.0	1
Jordan	65.7	12	64.7	12	66.1	12	1.4	0
Kuwait	67.3	11	68.0	8	67.6	10	0.7	3
Lebanon	68.2	8	67.7	9	68.5	9	0.8	1
Libya	45.0	18	48.6	17	44.5	18	4.1	1
Mauritania	51.8	17	48.3	18	51.5	17	3.5	1
Morocco	73.5	3	70.1	5	73.3	4	3.4	2
Oman	74.6	2	73.9	2	75.0	2	1.1	0
Palestine	58.9	13	58.7	13	59.3	13	0.6	0
Qatar	73.2	4	72.6	3	73.6	3	1.0	1
Saudi Arabia	69.8	7	68.6	6	70.0	7	1.4	1
Somalia	29.3	22	27.9	22	28.5	22	1.4	0
Sudan	42.4	19	41.5	20	42.1	19	0.9	1
Syria	41.6	20	44.1	19	41.6	20	2.5	1
Tunisia	68.0	9	67.4	10	68.5	8	1.1	2

| Country	Equal weights		Non-equal weights		Statistical weights		Range	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank
UAE	70.8	5	71.2	4	71.0	5	0.4	1
Yemen	37.8	21	35.1	21	37.4	21	2.7	0
Mean	60.1		59.4		60.2			
Median	66.5		65.5		66.8			
Min	29.3		27.9		28.5			
Max	77.8		78.5		78.6			
Range	48.5		50.6		50.1			
Standard deviation	13.6		13.6		13.9			
Coefficient of variation	22.7%		22.9%		23.1%			

Source: Authors' calculations

When comparing the ranks of countries resulting from the three methods of calculation it turns out that the ranks within Arab countries were identical in seven out of the 22 countries. In twelve countries the difference between the two ranks was one and in three countries namely Morocco, Tunisia and Kuwait the rank's difference was two or three. Results suggest that different set of weights have little impact on the resulting composite index and justify using equal weights for simplicity of interpretation for non-technical users who are the main target of this report.

Figure 11 **Value of PDCI in the Arab countries by performnce**
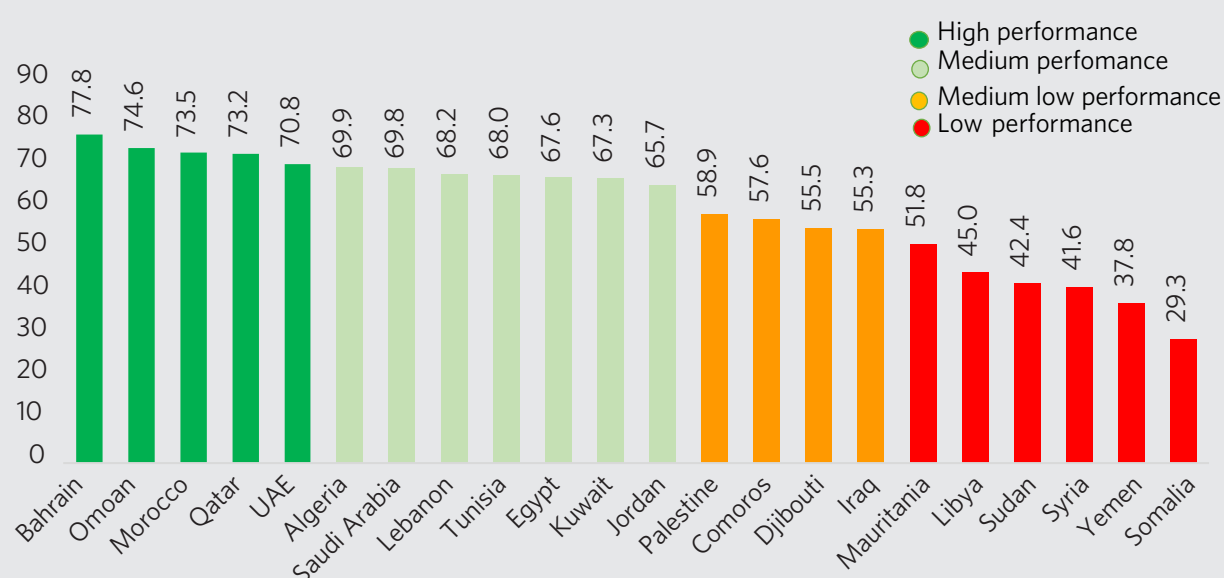
Source: Authors' calculations

3.4 PDCI and other indices

Comparing the ICPD Composite Index (PDCI) with the SDG Composite Index[21] shows that the two indices are linearly correlated among Arab countries (Figure 11), however the ranks of countries on the two metrics are different for many countries. Countries such as Qatar and Oman have a relative better position on the PDCI (4th vs. 8th for Qatar and 2nd vs. 7th for Oman). On the other hand, Jordan and Tunisia have a relative worst position on the PDCI, while Mauritania maintains the same rank on the two metrics (Table 9).

When the PDCI among Arab countries are compared to the Human Development Index[22], data show a correlation between the two indices (Table 10). The difference in ranks shows a much better rank for Morocco on the PDCI (3rd vs. 15th). Another important difference was observed among countries who are (or were recently) in status of conflict. The ranks of those countries are more likely to be relatively better on the Human Development Index. This result is expected as the HDI does not reflect short term changes in basic service delivery. Furthermore, the HDI places Arab countries with high income in the top driven by economic indicator, while the PDCI is basically measuring the impact on people's lives and seems to go beyond income and echo a more comprehensive multidimensional assessment of countries' achievements.

| Figure 12 | SDG Index and PDCI for the Arab countries |
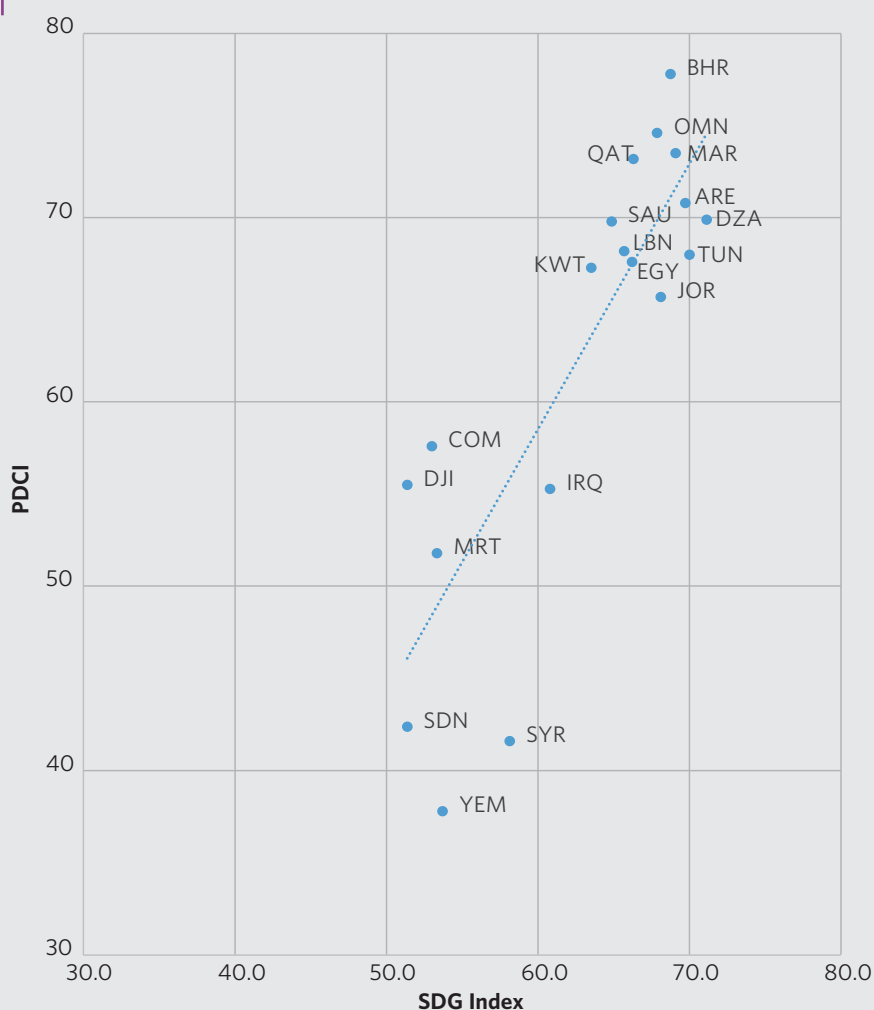
Source: Authors' calculations

21   Data available for 19 out of the 22 Arab countries.
22   Data available for 21 out of the 22 Arab countries.

Table 11: PDCI and SDG index for Arab countries

Country	PDCI Index		SDG Index (2019)	
	Value	Rank	Value	Rank
Algeria	69.9	6	71.1	1
Bahrain	77.8	1	68.7	5
Comoros	57.6	13	53.0	17
Djibouti	55.5	14	51.4	19
Egypt	67.6	10	66.2	9
Iraq	55.3	15	60.8	13
Jordan	65.7	12	68.1	6
Kuwait	67.3	11	63.5	12
Lebanon	68.2	8	65.7	10
Mauritania	51.8	16	53.3	16
Morocco	73.5	3	69.1	4
Oman	74.6	2	67.9	7
Qatar	73.2	4	66.3	8
Saudi Arabia	69.8	7	64.8	11
Sudan	42.4	17	51.4	18
Syria	41.6	18	58.1	14
Tunisia	68	9	70.0	2
UAE	70.8	5	69.7	3
Yemen	37.8	19	53.7	15

Table 12: PDCI and HDI for Arab countries

Country	PDCI Index		Human Development Index (HDI)	
	Value	Rank	Value	Rank
Bahrain	77.8	1	0.846	4
Oman	74.6	2	0.821	5
Morocco	73.5	3	0.667	15
Qatar	73.2	4	0.856	2
UAE	70.8	5	0.863	1
Algeria	69.9	6	0.754	8
Saudi Arabia	69.8	7	0.853	3
Lebanon	68.2	8	0.757	7
Tunisia	68	9	0.735	10
Egypt	67.6	10	0.696	12
Kuwait	67.3	11	0.803	6
Jordan	65.7	12	0.735	9
Palestine	58.9	13	0.686	13
Comoros	57.6	14	0.503	18
Djibouti	55.5	15	0.476	20
Iraq	55.3	16	0.685	14
Mauritania	51.8	17	0.520	17
Libya	45	18	0.706	11
Sudan	42.4	19	0.502	19
Syria	41.6	20	0.536	16
Yemen	37.8	21	0.452	21

3.5 Country performance

The following is a summary brief for the performance of Arab countries in as explained by the PDCI and its key dimensions.

Bahrain PDCI is estimated to 77.8. The best performing dimensions are SRH and mobility, the worst dimensional performance is sustainability. The performance of Bahrain was pulled up by set of indicators namely: gender education parity, using improved sanitation, antenatal care coverage, and providing sexuality education, birth registration and conducting census, public access to information, existence of human rights national institution, and disaster risk reduction strategy. While, Bahrain was pulled down by three indicators namely; adoption of national population - related policies, renewable energy consumption and the expenditure on research and development as percentage of GDP.

Oman | PDCI is estimated to 74.6. The best dimensional performance is mobility and the worst dimensional performance are dignity and sustainability. The performance of Oman's PDCI was pulled up by set of indicators including: birth registration, conducting census, public access to information, existence of human rights national institution and disaster risk reduction strategy. While Oman's PDCI was pulled down by youth unemployment and renewable energy consumption.

Morocco | PDCI is estimated to 73.5. The best dimensional performance is mobility and the worst dimensional performance is dignity. The performance of Morocco was pulled up by adopting measures on integration of immigrants, conducting census, public access to information, existence of human rights national institution and disaster risk reduction strategy. While Morocco's PDCI was pulled down by female to male labour force participation rate and the expenditure on research and development as percentage from GDP.

Qatar | PDCI is estimated to 73.2. The best dimensional performance is governance and the worst dimensional performance is sustainability. The performance of Qatar's PDCI was pulled up by gender education parity, using improved sanitation, birth registration, conducting census, public access to information, existence of human rights national institution, and disaster risk reduction strategy indicators. While Qatar's PDCI was pulled down by three indicators; adoption measure on integration of immigrant, providing sexuality education and renewable energy consumption.

United Arab Emirates (UAE) | PDCI is estimated to 70.8. The best performing dimension is mobility and the worst dimensional performance is sustainability. The performance of UAE's PDCI was pulled up by gender education parity, using improved sanitation, birth registration, conducting census, public access to information, and disaster risk reduction strategy. While UAE' PDCI was pulled down by adoption measure on integration of migrants, providing sexuality education, existence of human rights national institution and renewable energy consumption.

Algeria | PDCI is estimated to 69.9. The best performing dimension is mobility and the worst dimensional performances are dignity and sustainability. The performance of Algeria's PDCI was pulled up by gender education parity, birth registration, conducting census, public access to information, existence of human rights national institution and disaster risk reduction strategy. While Algeria was pulled down by female to male labour force participation, providing sexuality education and renewable energy consumption.

Saudi Arabia | PDCI for Saudi Arabia is estimated to 69.8. The best performance dimension is governance and the worst dimensional performance is dignity. The performance of Saudi Arabia's PDCI was pulled up by set of indicators including; using improved sanitation, birth registration, conducting census, public access to information, existence of human rights national institution and disaster risk reduction strategy. While Saudi PDCI was pulled down by three indicators including; providing sexuality education, adoption measure on integration of migrants and renewable energy consumption.

Lebanon | PDCI estimated to 68.2. The best dimensional performance is SRH and the worst dimensional performance is dignity. The performance of Lebanon was pulled up by gender education parity, providing sexuality education, birth registration, public access to information, existence of human rights national institution, and disaster risk reduction strategy indicators. While Lebanon was pulled down by two indicators share of seats held by women in parliament and conducting census.

Tunisia | PDCI is estimated to 68. The best dimensional performance is governance and the worst dimensional performance is sustainability. The performance of Tunisia's PDCI was pulled up by gender education parity, conducting census, public access to information, existence of human rights national institution. While Tunisia was pulled down by providing sexuality education, adoption measure on integration of migrants and existence of disaster risk reduction strategy.

Egypt | PDCI is estimated to 67.6. The best performing dimension is mobility and the worst dimensional performance is dignity. The performance of Egypt's PDCI was pulled up by gender education parity, providing sexuality education, conducting census, existence of human rights national institution, and existence of disaster risk reduction strategy. While Egypt was pulled down by public access to information and renewable energy consumption.

Kuwait | PDCI is estimated to 67.3. The best performing dimensions are SRH and mobility and the worst dimensional performance is sustainability. The performance of Kuwait's PDCI was pulled up by gender education parity, using improved sanitation, birth registration, conducting census, public access to information, and existence of disaster risk reduction strategy. While Kuwait's PDCI was pulled down by share of seats held by women in parliament, providing sexuality education, adoption measure on integration of migrants, existence of human rights national institution and renewable energy consumption.

Jordan | PDCI is estimated to 65.7. The best dimensional performance is mobility and the worst dimensional performance is sustainability. The performance of Jordan's PDCI was pulled up by gender education parity, conducting census and existence of human rights national institution. While Jordan's PDCI was pulled down by female to male labour force participation, providing sexuality education, public access to information and existence of disaster risk reduction strategy.

Palestine | PDCI is estimated to 58.9. The best dimensional performance is SRH and the worst dimensional performance is dignity. The performance of Palestine's PDCI was pulled up by gender education parity, providing sexuality education, conducting census and existence of human rights national institution. While Palestine was pulled down by public access to information and existence of disaster risk reduction strategy.

Comoros | PDCI is estimated to 57.6. The best performance dimension is mobility and the worst dimensional performance is dignity. The performance of Comoros' PDCI was pulled up by gender education parity, providing sexuality education, conducting census and existence of disaster risk reduction strategy. While Comoros was pulled down by share of seats held by women in parliament and using the internet.

Djibouti | PDCI is estimated to 55.5. The best performing dimension is governance and the worst dimensional performance is sustainability. The performance of Djibouti's PDCI was pulled up by providing sexuality education, conducting census, public access to information and existence of human rights national institution. While Djibouti's PDCI was pulled down by FGM prevalence among adolescent girls, antenatal care coverage and existence of disaster risk reduction strategy.

Iraq | PDCI is estimated to 55.3. The best performing dimension is governance and the worst dimensional performance are mobility and dignity. The performance of Iraq was pulled up by public access to information and existence of human rights national institution and disaster risk reduction strategy. While Iraq was pulled down by conducting census, research and development expenditure as percentage of GDP and the conflict situation

Mauritania | PDCI is estimated to 51.8. The best dimensional performance is governance and the worst dimensional performance is SRH. The performance of Mauritania's PDCI was pulled up by conducting census and existence of human rights national institution. While Mauritania's PDCI was pulled down two main indicators, namely providing sexuality education and unmet need for family planning.

Libya | PDCI is estimated to 45. Libya is not performing well in general. The good performing dimension is SRH and the worst dimensional performance is governance. The performance of Libya was pulled up by two indicators; gender education parity and using improved sanitation. While Libya was pulled down by set of indicators including; providing sexuality education, existence of human rights national institution, conducting census, adoption of national population related policies and the conflict situation.

Sudan | PDCI is estimated to 42.4. Sudan is among the least performing countries. The good dimensional performance is mobility and the worst dimensional performance is dignity. The performance of Sudan's PDCI was pulled up by existence of human rights national institution and disaster risk reduction strategy and the renewable energy consumption. While Sudan's PDCI was pulled down by FGM prevalence among adolescent girls, providing sexuality education, conducting census and public access to information.

Syria | PDCI is estimated to 41.6. Syria is not performing well as well due to conflict situation. Data about Syria was also relatively scarce. The best performing dimension is SRH and the worst dimensional performance is governance. The performance of Syria's PDCI was pulled up by gender education parity and birth registration. While Syria's PDCI was pulled down by providing sexuality education, existence of human rights national institution, conducting census and the conflict situation.

Yemen | PDCI is estimated to 37.8; it is among the worst performing due to many reasons including conflict, poor infrastructure and social norms. The good performing dimension is governance and the worst dimensional performance is dignity. The performance of Yemen's PDCI was pulled up by three indicators namely access to information, existence of human rights national institution and disaster risk reduction strategy. While Yemen's PDCI was pulled down by set findicators including female to male labour force participation, providing sexuality education, conducting census and the conflict situation.

Somalia | PDCI is estimated to 29.3. Somalia is the farthest left behind. The good dimensional performance is sustainability and the worst dimensional performance is SRH. The performance of Somalia's PDCI was pulled up by access to information, existence of human rights national institution and disaster risk reduction strategy and the renewable energy consumption. While Somalia's PDCI was pulled down by many indicators including FGM, skilled birth attendance, antenatal care coverage, providing sexuality education and the conflict situation.

Chapter four

Conclusions and recommendations

4.1 Conclusions

The current report shows that the goals of the ICPD agenda are spread over several Sustainable Development Goals. Since the SDGs are becoming integrated in the planning process of many developing as well as developed countries and producing the corresponding indicators is expected to be a priority for the statistical offices then it will be useful to capitalize on the momentum of the post-2015 development agenda to develop a composite index for ICPD-based SDGs namely PDCI to make SDG implementation a people-centred agenda.

A mapping exercise was conducted to identify targets and indicators of the SDGs that respond to the ICPD beyond 2014 agenda. The mapping exercise ended up with 14 of the 17 goals covering 28 targets of the Post 2015 Agenda. Thirty-eight indicators were identified to reflect the ICPD agenda. Using available global databases to identify best and worst practice indicators for each Arab country were standardized on a scale from 0 to 100.

The computation of the composite index was conducted in two stages. In the first stage standardized indicators were aggregated to estimate each of the five sub-indices using the arithmetic mean with equal weights. Using the arithmetic mean implies full substitutability between indicators within each dimension. When computing the composite index full substitutability of dimensions was avoided and the geometric mean was applied as it reduces substitutability and is less sensitive to extreme values. By doing so the geometric mean penalizes discrepancy in sub-indices i.e. failure in one metric is not fully compensated by success in another. Reducing substitutability is preferable as countries need to make progress on each dimension.

With regards to weights assigned to dimensions three alternatives were applied when computing the composite index. The first alternative is assigning equal weights to all indicators, the second alternative is giving higher weights to dignity and reproductive health and the third alternative depended on the principal component analysis to estimate weights statistically. The analysis showed that the value of the PDCI and its corresponding rank within Arab countries is not sensitive to the weights scheme.

The PDCI presents valuable trial for having a somewhat a tool that can be repeated across countries and over time. At this stage various data sources and data sets were consulted with establishing a baseline of the tool as the priority. This is one of the strengths of the tool, which helps further improvement driven by fine-tuned and most up-to-date information.

4.2 Recommendations

As presented in the report, the PDCI reflects an overall metric for achieving the ICPD Programme of Action in the context of people-centred SDG approach. Accordingly, stakeholders interested in population issues are urged to use this new index for the purpose of benchmarking, monitoring and evaluating progress of SDGs from population lens. The index can be an integral part of the set of KPI's that should complement population strategies and should be integrated into social policies. We recommend that UNFPA compiles the PDCI and disseminate it on yearly basis as part of knowledge sharing and benchmarking for people-centred development performance in Arab countries.

Given the different level of performance across dimensions within each country, the analysis of the sub-indices on the country level can be useful in assessing strengths and weaknesses. It will also stimulate and inform public debates discussing setting priorities and allocating resources, whether for state actors (parliamentarians) or for non-state actors (NGO's). Countries might also be interested to calculate the values of the PDCI at sub-national level which give another opportunity for exploring

priority areas as well as priority dimensions to accelerate coherent and equal achievements of SDGs across the country. Therefore, depending on the level of decentralization adopted by each country, the index can be computed on the local level whenever useful. This can be particularly important for underdeveloped part of the country and can contribute to the country policy for inclusion and for achieving the goal of leaving no one behind.

Comparing the country performance on the PDCI metric to its performance on other metrics can also be insightful. Comparing PDCI to the SDG Index indicates whether the country is population centred. Comparing PDCI to HDI points to the short term vs. long term improvement. However, communicating such comparisons to policy makers and to the public at large should explain carefully the meaning and emphasize of each metric.

Presenting the results of sub-indices in a dashboard format illustrates differences within countries and different level of performance on the five dimensions for each country. On the national level, the dashboard can be useful in identifying areas of improvements that need to get the attention of policy/decision makers. It can help as well in setting priorities and in allocating resources and benchmarking. On the international/regional level, the dash board can inform international organizations and donners on strengths, weaknesses, priorities and gaps within country and within regions.

National statistical offices are advised to review its statistical system frameworks to assure that all data requirements to produce the PDCI are within its regular data collection framework to make it available in a timely manner to all stakeholders. This implies including the production of the index as part of the country's national statistical strategy.

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