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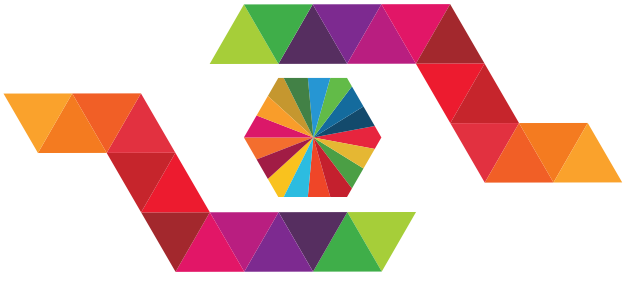

FROM THE ISTANBUL PROGRAMME OF ACTION TO THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT

UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific

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FOREWORD

From the Istanbul Programme of Action to the 2030 Agenda for Sustainable Development is a contribution by the Economic and Social Commission for Asia and the Pacific (ESCAP) to the deliberations of the Midterm Review of the Istanbul Programme of Action for Least Developed Countries (LDCs), to be held in Antalya, Turkey, from 27 to 29 May 2016.

The Istanbul Programme of Action has provided impetus to building productive capacities in LDCs and achieving graduation from that status through structural transformation. The Programme also stresses reducing the vulnerabilities of these countries to various shocks, such as the food, fuel and financial crises, which affected all countries in late 2000, as well as to climate change-related risks.

With the recent launch of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals, the timing of the Midterm Review could not be more opportune. As the priorities of the Programme are specific to the needs of LDCs and are ultimately expected to support the sustainable development of these countries, they should be seen as instrumental for the implementation of the 2030 Agenda.

However, with 251 actions included in the Istanbul Programme of Action and with 17 Goals and 169 associated targets with the 2030 Agenda, it is clear that governments should have a clear understanding of the complementarities between these two agendas, and set effective strategies to meet their objectives.

This report explores opportunities to address the challenge of simultaneous implementation of the Istanbul Programme of Action and the 2030 Agenda in LDCs. It presents an analytical framework, based on a set of 82 indicators, representing the 17 Goals, and the 174 countries for which data are available. This includes details about the interlinkages, synergies and trade-offs across different indicators from the viewpoint of each individual country. The framework aims to identify optimal, country-specific pathways for achieving sustainable development.

ESCAP is committed to support our member States, especially the LDCs, in adapting the Istanbul Programme of Action and the 2030 Agenda to their specific national circumstances and priorities, and to facilitate the subsequent follow-up and review processes at the regional level.

Shamshad Akhtar
Under-Secretary-General of the United Nations and
Executive Secretary, United Nations Economic and
Social Commission for Asia and the Pacific

EXECUTIVE SUMMARY

Despite recent technological advances and the commitments of international community to provide help, the Asia-Pacific least developed countries (LDCs) continue to face structural challenges in their development processes. Such challenges are highly idiosyncratic and, in most cases, associated with disadvantages in their initial endowments and geographic features, including remoteness, costly access to international markets, insufficient human, natural and financial resources, and vulnerability to disasters. Currently there are 12 LDCs in the Asia-Pacific region – Afghanistan, Bangladesh, Bhutan, Cambodia, Kiribati, the Lao People's Democratic Republic, Myanmar, Nepal, Solomon Islands, Timor-Leste, Tuvalu and Vanuatu – seven of which have met the criteria for graduation in the 2015 triennial review of the Committee for Development Policy.

The Istanbul Programme of Action aims at overcoming the structural challenges of the LDCs through building their human and productive capacities and enabling their graduation from the LDC category. The overarching objective of the Programme, which received a strong endorsement from the international community through the adoption in September 2015 of the 2030 Agenda for Sustainable Development, is to support the sustainable development of LDCs.

The last five years of the Istanbul Programme of Action will be implemented simultaneously with the first five years of the 2030 Agenda. With 251 actions included in the Programme and 17 Sustainable Development Goals and 169 associated targets in the 2030 Agenda, it is clear that a strategic approach with clearly defined priorities and sequencing of actions is necessary. This is particularly important in the light of the scarcity of financial and human resources that characterizes LDCs.

Complementarities between the Istanbul Programme of Action and the 2030 Agenda

A mapping of the contribution of the Istanbul Programme of Action to the 2030 Agenda reveals that actions undertaken in the Programme can, at the same time, contribute to progress in implementing the 2030 Agenda. The Programme covers the 17 Sustainable Development Goals of the 2030 Agenda, with particular emphasis on Goal 2 (zero hunger), Goal 8 (decent work and economic growth), Goal 9 (industry, innovation and infrastructure), Goal 16 (peace, justice and strong institutions) and Goal 17 (partnerships for the Goals). The Programme and the 2030 Agenda are highly complementary in that the former provides concrete guidance for LDCs about how to achieve the Goals and their associated targets.

A unique analytical framework

This report proposes a unique analytical framework for the implementation of the 2030 Agenda based on cutting-edge methods from complexity science coupled with economic analyses. The Sustainable Development Goal system is conceptualized as a network consisting of (a) a set of 82 indicators representative of the 17 Goals, (b) 174 countries for which there are adequate data available for the indicators and (c) the linkages among and between countries and indicators. The framework allows the computation of a country-specific measure — termed "SDG capacity" — which quantifies the capacity of each country to implement the Goals. The analytical framework also proposes the optimal strategies of implementation of the Goals, including specific recommendations for their prioritization and sequencing.

Identifying priorities and sequencing

The report illustrates the functioning of the framework for Bangladesh. It proposes that the initial priority of Bangladesh should be placed on education, reduction of inequalities and infrastructure. The first two elements could be related to the importance of human capital for a country to increase the diversification and

sophistication of its production and the potential for a more even distribution of income to boost aggregate demand.

Identifying bottlenecks and trade-offs

In addition to identifying optimal strategies, the exercise singles out indicators that can be considered bottlenecks for making progress and isolated areas of the country networks that represent trade-offs. An important regularity found was the absence of progress expected in the environmental goals of the 2030 Agenda. This result seems to be due to the isolation of the environmental indicators in the countries' network from the core socioeconomic indicators. The finding suggests that the integration of the three pillars envisioned in the 2030 Agenda is not going to be easy to achieve.

The lack of progress in addressing issues related to the environmental pillar and the identification of bottlenecks to attaining Goals require careful consideration by national policymakers of LDCs and development partners. In particular, the identified bottlenecks represent areas that require the most attention and for which additional financial resources and support from development partners could be most effectively allocated.

The need to exploit synergies in formulating optimal policies for sustainable development

A comparison of different scenarios strongly indicates the importance of a thorough understanding of linkages, synergies and trade-offs across the Goals, as well as the relative benefits of different implementation plans for each country. The case study of Bangladesh demonstrates that the main areas of focus of the Istanbul Programme of Action could provide good guidance for the implementation of the 2030 Agenda in LDCs. Nevertheless, planning and prioritization are essential for making progress towards achieving sustainable development as the expected outcome from randomized policies are strictly inferior, justifying the need for policy coordination across different state agencies and different levels of governments.

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ACRONYMS

DESA	United Nations Department of Economic and Social Affairs
ESCAP	United Nations, Economic and Social Commission for Asia and the Pacific
FAO	Food and Agriculture Organization of the United Nations
GDP	gross domestic product
GNI	gross national income
ICAO	International Civil Aviation Organization
ICSU	International Council for Science
IEA	International Energy Agency
ILO	International Labour Organization
IMF	International Monetary Fund
ISSC	International Social Science Council
LDC	least developed country
SDG	Sustainable Development Goal
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNICEF	United Nations Children's Fund
UN-OHRLLS	United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States
UNSD	United Nations Statistics Division
WHO	World Health Organization

EXPLANATORY NOTES

Analyses in the *From the Istanbul Programme of Action to the 2030 Agenda for Sustainable Development* are based on data and information available up to the end of March 2016.

Asia-Pacific least developed countries refer to Afghanistan, Bangladesh, Bhutan, Cambodia, Kiribati, the Lao People's Democratic Republic, Myanmar, Nepal, Solomon Islands, Timor-Leste, Tuvalu and Vanuatu.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

1. INTRODUCTION

The category of least developed country (LDC) was established in 1971 to articulate international support measures for low-income developing countries that face severe structural impediments to growth. Since then, the Committee for Development Policy has been mandated to identify and make recommendations on which countries should be added or removed from this category.

Since 1991, the Committee has been conducting triennial reviews of LDCs to assess which countries should be added to or dropped from the list through three criteria: (a) the income criterion; (b) the human assets criterion; and (c) the economic vulnerability criterion. During such reviews, the three indicators for each LDC are measured against specific graduation thresholds. If a country satisfies at least two of the three criteria for graduation in two consecutive triennial reviews, the Committee recommends to the Economic and Social Council that the country should be considered for graduation.[1]

In May 2011, the Fourth United Nations Conference on the Least Developed Countries adopted the Programme of Action for the Least Developed Countries for the Decade 2011-2020, informally called the Istanbul Programme of Action. The Istanbul Programme of Action aims at overcoming the structural challenges of LDCs through building their human and productive capacities and enabling their graduation from the LDC category. More specifically, the programme includes a goal that half of the LDCs as at 2010 meet the criteria for graduation by 2020.

After the graduation of Samoa in January 2014, there remain 12 LDCs in the Asia-Pacific region, seven of which met the criteria for graduation during the 2015 triennial review of the Committee for Development Policy (table 1.1). Bhutan, Nepal, Solomon Islands and Timor-Leste met the criteria for graduation for the first time in 2015. The Committee has also recommended Vanuatu for graduation. Although Kiribati met the criteria for graduation in 2012 and 2015, the country was not recommended for graduation at the latest review because of concerns about its high economic vulnerability. Finally, Tuvalu had been recommended for graduation in 2012, but the Economic and Social Council deferred its decision on this matter until 2018.[2]

The *Asia-Pacific Countries with Special Needs Development Report 2016* (ESCAP, 2016) updates the progress of the 12 Asia-Pacific LDCs towards meeting

Table 1.1 **Status of the graduation process at the March 2015 triennial review**

Country	Gross national income per capita	Human assets index	Economic vulnerability index	Have the criteria been met?	Recommended for graduation? (year)
Afghanistan	$ 672	43	35	-	
Bangladesh	$ 926	64	**25**	-	
Bhutan	**$ 2 277**	**68**	40	✓	
Cambodia	$ 852	**67**	38	-	
Kiribati	**$ 2 489**	**86**	72	✓	
Lao People's Democratic Republic	$ 1 232	61	36	-	
Myanmar	$ 1 063	**73**	34	-	
Nepal	$ 659	**69**	**27**	✓	
Solomon Islands	**$ 1 402**	**72**	51	✓	
Timor-Leste	**$ 3 767**	57	55	✓[a]	
Tuvalu	**$ 5 788**	**89**	54	✓	2012
Vanuatu	**$ 2 997**	**81**	48	✓	2015
Graduation thresholds	≥ $ 1 242	≥ 66	≤ 32		

Sources: Based on data from the Development Policy and Analysis Division (www.un.org/en/development/desa/policy/cdp/ldc/ldc_data.shtml); and the "Report on the seventeenth session (23-27 March 2015)" of the Committee for Development Policy, E/2015/33.

Notes: The table shows the values of the indicators for graduation and the corresponding thresholds at the March 2015 triennial review of the Committee for Development Policy. The numbers in bold represent the values that satisfy the graduation thresholds.

[a] Timor-Leste has met the "income-only" criterion for graduation.

[1] As an alternative, the "income-only" option allows countries to graduate if their income per capita is at least twice as high as the regular income graduation threshold.

[2] See Economic and Social Council resolutions 2012/32 and 2013/20.

the graduation criteria based on the latest available data, for 2014 (table 1.2).[3] The updated information shows that, apart from the seven countries that have already fulfilled the graduation requirements at the March 2015 review, three countries have cleared one of the three criteria and missed a second threshold by a margin of 5% or less. Details of their progress are discussed below for three groups of LDCs: those are neither landlocked developing countries nor small island developing States, those that are also landlocked developing countries, and those that are also small island developing States.

Least developed countries that are neither landlocked developing countries nor small island developing States – The three countries in this group have all met one of the three graduation criteria and two of them were very close to meeting a second criterion, as of 2014: Bangladesh met the economic vulnerability criterion but missed the human assets criterion by 2%, and Myanmar met the human assets criterion but missed both the income and economic vulnerability criteria by 4%. Although Cambodia has met the human assets index criterion, as of 2014, it had a 17% gap in meeting the economic vulnerability criterion and a 24% gap in meeting the gross national income per capita criterion. These observations suggest that both Bangladesh and Myanmar have good chances of meeting the graduation criteria at the 2018 review if they continue to progress at the same pace.

Least developed countries that are also landlocked developing countries – The four countries in this group are following diverse paths towards graduation from the LDC category. Both Bhutan and Nepal met the criteria for graduation for the first time at the 2015 review and will be considered for graduation at the 2018 review. Bhutan has met the graduation threshold for income and the human assets index, while falling short in the economic vulnerability criterion, and Nepal met the human assets index and economic vulnerability criteria but failed to meet the income criterion by a large margin. The Lao People's Democratic Republic, which has met the income criterion, may be able to meet the human assets index criterion in time for the 2018 review if its pace of progress in this indicator continues over the next two years.

Least developed countries that are also small island developing States – The five countries in this group have already met the graduation criteria by clearing either the "income-only" threshold or a combination of the income and human assets index criteria. However, there remains a significant margin for meeting the economic vulnerability criterion. As of 2014, Kiribati had the highest economic vulnerability index, 122% above the graduation threshold, followed by Timor-Leste (75%), Tuvalu (69%), Solomon Islands (62%) and Vanuatu (49%).

Table 1.2 **Gaps between the graduation thresholds and the latest indicators, 2014**

Country	Gross national income per capita	Human assets index	Economic vulnerability index	Income only	Have the criteria been met?
LDCs that are neither landlocked developing countries nor small island developing States					
Bangladesh	20%	2%	✓	-	-
Cambodia	24%	✓	17%	-	-
Myanmar	4%	✓	4%	-	-
LDCs that are also landlocked developing countries					
Afghanistan	43%	35%	9%	-	-
Bhutan	✓	✓	17%	5%	✓
Lao People's Democratic Republic	✓	5%	13%	42%	-
Nepal	45%	✓	✓	-	✓
LDCs that are also small island developing States					
Kiribati	✓	✓	122%	✓	✓
Solomon Islands	✓	✓	62%	34%	✓
Timor-Leste	✓	11%	75%	✓	✓
Tuvalu	✓	✓	69%	✓	✓
Vanuatu	✓	✓	49%	✓	✓

Source: ESCAP calculations based on data from various sources.

Note: See annex I of ESCAP (2016).

[3] The gaps in the table measure the difference between the graduation threshold and the value of the indicator expressed as a percentage of the graduation threshold.

In addition to the prospect of three more Asia-Pacific countries meeting the criteria for graduation, the second half of the Istanbul Programme of Action is very significant because it will be implemented simultaneously with the first five years of the 2030 Agenda for Sustainable Development.

The 2030 Agenda, which was adopted by more than 150 world leaders in September 2015, is an ambitious agenda of unprecedented scope and significance. Its 17 Goals (Sustainable Development Goals) and 169 associated targets aim at ending poverty and hunger, protecting the planet from degradation, ensuring that all human beings can enjoy prosperous and fulfilling lives and fostering peaceful, just and inclusive societies.

The 2030 Agenda recognizes that differences across countries in capacities and levels of development must be taken into account in its implementation. To that end, it states that "each Government will ...decide how these aspirational and global targets should be incorporated in [their] national planning processes, policies and strategies...".[4] The freedom accorded to Governments on how to achieve the universal and indivisible Goals leads to the question of what is the best way for LDCs to adapt the 2030 Agenda to their unique circumstances.

This report explores two possible answers to this question.

First, it considers the extent to which the 251 actions in the Istanbul Programme of Action support the achievement of specific Goals and targets of the 2030 Agenda. A mapping exercise reveals that the actions of the Programme cover the 17 Goals, with a stronger focus on the social pillar (Goals 1-6), the economic pillar (Goals 7-10) and governance and means of implementation (Goals 16-17). The importance for LDCs to focus on the social pillar, at least in the medium run, is confirmed by a survey of 71 experts and practitioners from 11 Asia-Pacific LDCs. This exercise suggests that the Programme and the 2030 Agenda are highly complementary in that the former provides concrete guidance to LDCs on how to achieve the Goals and their associated targets.

Second, the report proposes a unique analytical framework for the prioritization and sequencing of the 2030 Agenda in each country that allows for the identification of optimal strategies of implementation of the Goals. It illustrates the functioning of the framework for Bangladesh and proposes that the initial priority of the country should be placed on education, reduction of inequalities and infrastructure. The exercise allows not only the identification of optimal strategies but also of indicators that can be considered bottlenecks for making progress and isolated areas of the country networks that represent trade-offs.

2. MAPPING THE RELATIONSHIP BETWEEN THE ISTANBUL PROGRAMME OF ACTION AND THE 2030 AGENDA

Despite recent technological advances and the commitments made by the international community, the Asia-Pacific LDCs continue to face severe constraints in their development processes. Such challenges are highly idiosyncratic and, in most cases, associated with disadvantages in their initial endowments and geographic features, including remoteness, costly access to international markets, insufficient human, natural and financial resources and vulnerability to disasters.

In recognition of the unique development challenges and vulnerabilities LDCs face, the international community has adopted specific programmes of action to support those countries at various United Nations conferences. The latest is the Istanbul Programme of Action, which aims to overcome the structural challenges of LDCs through building their human and productive capacities with the objective to enabling their graduation from LDC status. The priority areas of the Programme are listed in table 2.1. The 251 actions of the Programme are ultimately expected to support the sustainable development of LDCs.[5]

Because the Programme's ultimate objective is to contribute to sustainable development, it should be instrumental in implementing the 2030 Agenda for Sustainable Development. Indeed, the 2030 Agenda not only supports the implementation of the global programmes of action but it also states that they are an integral part of it.[6]

It is clear why the 2030 Agenda and the Istanbul Programme of Action are complementary. On one hand, the 2030 Agenda includes 17 Sustainable Development Goals, as listed in table 2.2, and 169 associated targets, but it does not include specific policy actions

[4] See A/RES/70/1, para. 55.

[5] See A/CONF.219/3/Rev.1, para. 8.

[6] See A/REF/70/1, para. 64.

Table 2.1 **Priority areas of the Istanbul Programme of Action**

Istanbul Programme of Action - 8 priorities and 251 actions
Priority 1: Productive capacity
Priority 2: Agriculture, food security and rural development
Priority 3: Trade
Priority 4: Commodities
Priority 5: Human and social development
Priority 6: Multiple crises and other emerging challenges
Priority 7: Mobilizing financial resources for development and capacity-building
Priority 8: Good governance at all levels

Note: See A/CONF.219/3/Rev.1.

Table 2.2 **The 2030 Agenda and the Sustainable Development Goals**

2030 Agenda - 17 Sustainable Development Goals and 169 associated targets	
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 lifelong 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 12:	Ensure sustainable consumption and production patterns
Goal 13:	Take urgent action to combat climate change and its impacts
Goal 14:	Conserve and sustainably use the oceans, seas and marine resources for sustainable development
Goal 15:	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
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
Goal 17:	Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

Note: See A/RES/70/1.

that countries can take to achieve the Goals. On the other hand, the Istanbul Programme of Action contains detailed actions aimed at addressing the structural challenges of LDCs with the ultimate goal of supporting their sustainable development. Thus, if it were possible to identify which actions of the Programme correspond to specific targets and goals of the 2030 Agenda, the implementation of the former could also contribute to the implementation of the latter.

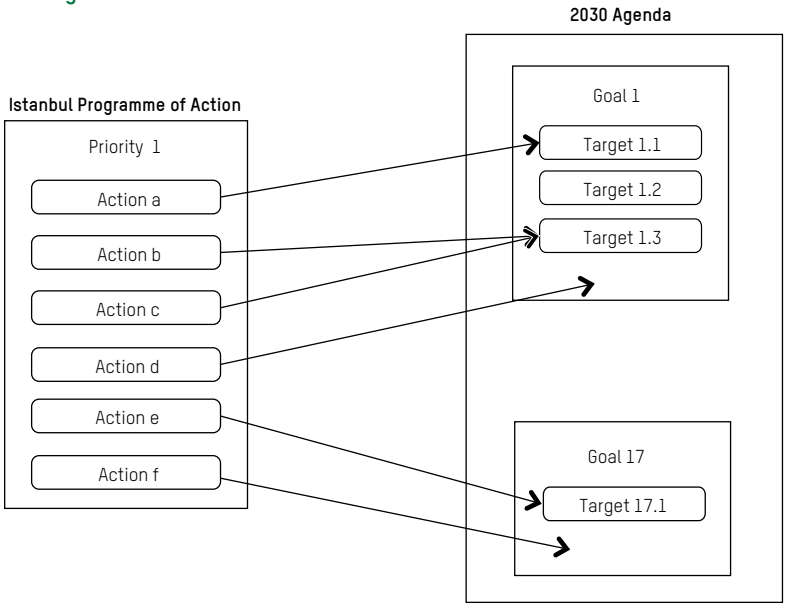
To understand how the actions of the Istanbul Programme of action can support the implementation of the 2030 Agenda, the results of a detailed mapping exercise between each action in the Programme and its corresponding goal and target of the 2030 Agenda are discussed below.

To map the Istanbul Programme of Action onto the 2030 Agenda, each of the 251 actions of the Programme is

matched to a single target of the 2030 Agenda based on: (a) similarity in wording; (b) similarity in meaning; or (c) similarity of objective. If none of these criteria are met, the action is considered as "not matching at the target level", in which case it is matched to the Goal to which it contributes the most. Given the integrated nature of the 2030 Agenda, many actions contribute to more than one Goal. However, the mapping exercise matches the actions with one target or one Goal only as illustrated in figure 2.1.[7]

The main results of the mapping exercise are shown in table 2.3 and figure 2.2. Table 2.3 shows the distribution of the 251 actions of the Istanbul Programme of Action across the three pillars of sustainable development plus governance and means of implementation of the 2030 Agenda. The social pillar refers to actions related to Goals 1-6, the economic pillar corresponds to Goals 7-10, the environmental pillar comprises Goals 11-15, and governance and means of implementation include actions categorized under Goals 16-17. The table shows that the Istanbul Programme of Action covers the three pillars of sustainable development with greater emphasis on the social pillar (30% of the actions), the economic pillar (23% of the actions), and governance and means of implementation (34% of the actions).

Figure 2.1 Mapping the actions of the Istanbul Programme of Action onto the Sustainable Development Goals and their targets



Source: ESCAP.

Table 2.3 Distribution of actions by pillar of sustainable development

	Social pillar (Sustainable Development Goals 1-6)	Economic pillar (Sustainable Development Goals 7-10)	Environmental pillar (Sustainable Development Goals 11-15)	Governance and means of implementation (Sustainable Development Goals 16-17)	Total
Number of actions	75	57	32	87	251
Percentage	30%	23%	13%	34%	100%

Source: ESCAP.

Notes: The first row shows the numbers of actions; the second line shows the percentages of the total number of actions. See Isgut and others (forthcoming) for details.

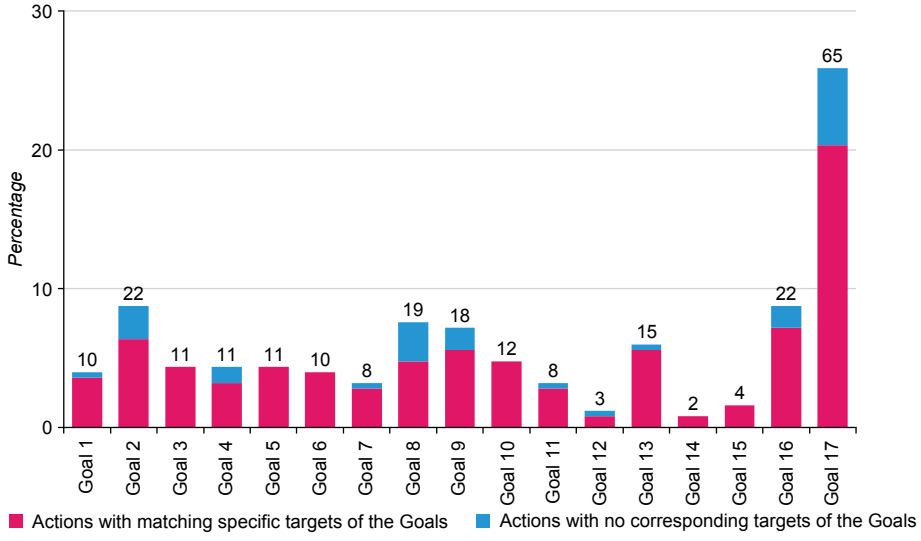
[7] Box 2.1 of ESCAP (2016) contains examples of the criteria used for matching actions to Goals and targets. Complete details of this exercise are available in Isgut and others (forthcoming).

Figure 2.2 further details the distribution of actions across the 17 Goals. The values on top of the bars are the number of actions that contribute to each Goal, and the percentages on the vertical axis represent the share of the actions that contribute to each of the Goals. The figure also shows the distribution of actions matching specific targets of the Agenda (red portion of the bars) and those matching Goals but with no specific targets (blue portion of the bars). The figure shows that the Programme covers all the Goals, with greater emphasis on Goal 2 (zero hunger), Goal 8 (decent work and economic growth), Goal 9 (infrastructure), Goal 16 (peace, justice and strong institutions) and Goal 17 (partnerships for the Goals). Of the 251 actions of the Istanbul Programme of Action, 208 actions (83%) closely match a specific target of the 2030 Agenda.

The results of the mapping exercise can be also described by the percentage of targets in each Goal that are covered by actions of the Istanbul Programme of Action (figure 2.3). The actions of the Programme

Figure 2.2

Distribution of actions of the Istanbul Programme of Action across the Sustainable Development Goals

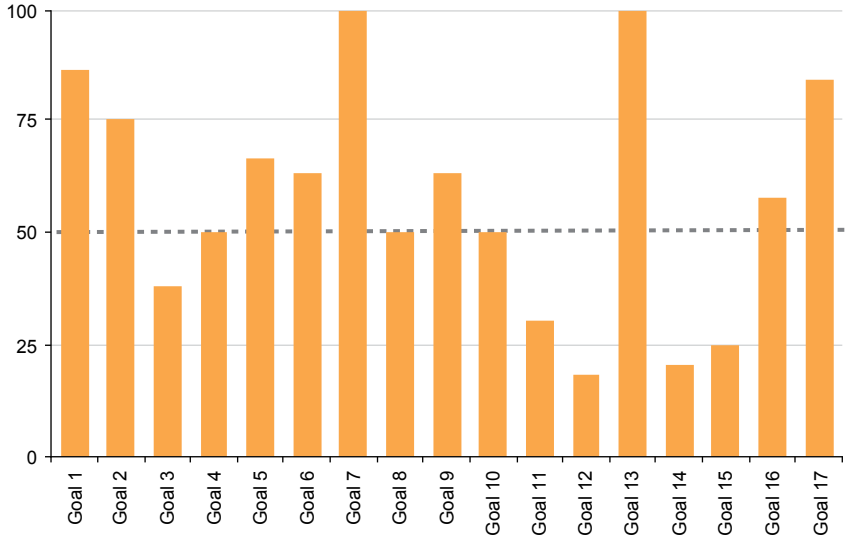


Source: ESCAP.

Notes: The numbers on top of the bars denote the numbers of actions in the Istanbul Programme of Action that correspond to each Goal. See Isgut and others (forthcoming) for details.

Figure 2.3

Percentage of targets of each Sustainable Development Goal covered by actions of the Istanbul Programme of Action



Source: ESCAP.

Note: The figure shows the percentages of targets of the Sustainable Development Goals that are covered by the actions of the Istanbul Programme of Action.

cover at least one of the associated targets of each of the 17 Goals, and 12 Goals have a coverage of 50% or higher. This figure confirms the observation that the Programme has a strong emphasis on the social pillar (Goals 1-6), the economic pillar (Goals 7-10), and governance and means of implementation (Goals 16-17).

Differences in the intensity of coverage of the Sustainable Development Goals by the actions of the Istanbul Programme of Action may be due to the Programme's specific focus on addressing the structural vulnerabilities of the least developed countries. As such, its actions support the achievement of the targets and goals that are most relevant for LDCs.

Complementarities between the Istanbul Programme of Action and the 2030 Agenda

The mapping exercise, by identifying overlaps between actions in the Istanbul Programme of Action and the Sustainable Development Goals and their targets, reveals that by pursuing actions in the Programme, the region's LDCs can, at the same time, make progress in implementing the 2030 Agenda. The Programme and the 2030 Agenda are complementary in that the former provides very specific guidance within its respective timeframe and is customized to the specific circumstances of LDCs. In some areas related to the specific structural vulnerabilities of LDCs, the Programme includes many relevant actions that also facilitate the achievement of the Goals and associated targets.

For instance, target 2.3 under Goal 2 (zero hunger) aims to double the agricultural productivity and incomes of small-scale food producers by 2030, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition, and non-farm employment. Several actions in the Programme provide specific details on how to reach this target. Examples include:

(a) Strengthen institutions, including cooperatives, to boost small-holder farmer food production, agricultural productivity and sustainable agricultural practices;
(b) Make rural markets work better for the poor by linking small-scale farmers to markets throughout the food chains, including the provisions of price and other relevant information and improving sanitary and phytosanitary services;
(c) Enhance land tenure security, access to irrigation systems, credit, other farm inputs and markets for small-holder farmers.[8]

In addition to the specificity and comprehensiveness of the Programme on the specific aspects of the 2030 Agenda of interest to LDCs, the simultaneous implementation of the Programme and the 2030 Agenda could lower administrative and logistical costs, for instance, by building common data platforms, monitoring mechanisms and reporting systems (United Nations, 2016). A focus on the implementation of common aspects of both agendas can also be beneficial for national planning purposes, as well as for coordinating the support of international development partners.

Are the Goals of the 2030 Agenda supported by the Istanbul Programme of Action relevant?

ESCAP (2016) conducted a survey of experts and practitioners from across the Asia-Pacific region on the implementation of the 2030 Agenda. The survey was distributed through the secretariat's network of experts via e-mail, inviting them to share their views.[9] It included questions on a number of issues related to adapting the 2030 Agenda at the national level, such as, its prioritization and sequencing in each country. Below is a brief discussion on the responses to the question on sequencing by 71 experts and practitioners from 11 of the 12 Asia-Pacific LDCs.

One question asked experts to select up to five Sustainable Development Goals that they thought their countries should focus on during the initial period of implementation, between 2016 and 2020. The results are summarized in figure 2.4. The coloured cells represent the top-five Goals selected as an initial priority in each country. The figure shows an important concentration of answers on the social pillar, particularly on Goal 1 (no poverty), Goal 2 (zero hunger), Goal 3 (good health and well-being) and Goal 4 (quality education).

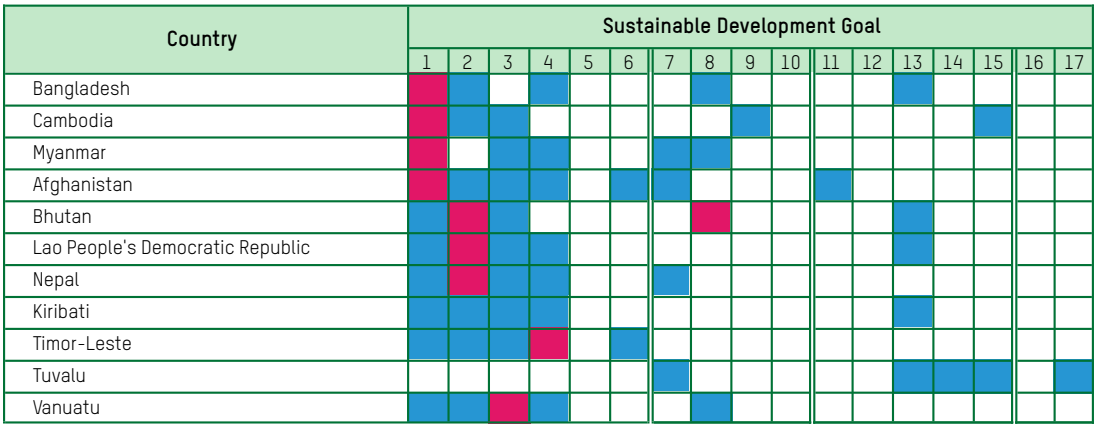
The concentration of preferences on the social pillar for the period 2016-2020 is consistent with the importance of this pillar in the Istanbul Programme of Action. It also reflects opinions on the "unfinished" Millennium Development Goal agenda of experts and practitioners from LDCs, 79% of which answered the eradication of extreme poverty and hunger (Millennium Development Goal 1) as the most important unfinished Millennium Development Goal to be addressed during the period 2016-2020 (ESCAP, 2016).

[8] See A/CONF.219/3/Rev.1, para. 60.

[9] The survey was completed between 18 November 2015 and 17 February 2016 by 160 respondents from 38 Asia-Pacific countries.

Figure 2.4

Initial Sustainable Development Goal priorities of the Asia-Pacific least developed countries



Source: ESCAP.

Notes: For each country, the Goals selected to answer question 3 in the survey (see annex II of ESCAP, 2016) were ranked according to how many respondents selected them. Each row of the figure shows the top-five choices in each country as coloured cells, with the red cells indicating the top positon in the ranking. In some countries there were ties in the rankings. When a tie occurred for the top positon, the country has more than one red cell. Ties at the bottom of the ranking may result in countries having more than five coloured cells. In cases in which a country had only one respondent, blue cells were used for the five selected Goals.

In sum, rather than viewing the Istanbul Programme of Action and the 2030 Agenda for Sustainable Development as two separate challenging agendas, they should be viewed as complementary and synergic with each other. The Istanbul Programme of Action proposes detailed actions that can help LDCs attain many of the Goals and targets of the 2030 Agenda. Because such actions are specifically designed to address the structural vulnerabilities of LDCs, they provide them with particularly relevant starting points for the implementation of the 2030 Agenda. Finally, the strong emphasis of the Istanbul Programme of Action on the social pillar, as well as on the economic pillar and governance and means of implementation, coincides with views from experts and practitioners from Asia-Pacific LDCs on which Goals to prioritize over the period 2016-2020.

3. PATHWAYS TO ENHANCE CAPACITIES FOR SUSTAINABLE DEVELOPMENT

As discussed in the previous section, the Istanbul Programme of Action provides guidance for the implementation of the 2030 Agenda in the form of specific actions that are appropriate for the circumstances, capacities and levels of development of LDCs. However, the Programme is still rather comprehensive, as it covers the 17 Goals. Because of the limited financial and technical resources of LDCs, they must prioritize and sequence the implementation of both the Programme and the 2030 Agenda.

When it comes to prioritizing and sequencing, the attainment of the 2030 Agenda, it is very important for countries to understand the interdependencies, synergies and trade-offs across Goals, targets and indicators (UN-OHRLLS, 2012).

When synergies are present, the cost of implementation can be substantially reduced. An example of potential synergies is among Goal 1 (no poverty), Goal 2 (zero hunger), Goal 3 (good health and well-being), Goal 4 (quality education), and Goal 8 (decent work and economic growth). Improvements in health, education and food security contribute to the skills and productivity of the work force. Investments in these areas are thus necessary to support economic growth and the creation of well-paid employment, which in turn is needed to reduce poverty. Policies that take into account such synergies are likely to be substantially more effective.

This section presents an analytical framework to facilitate the understanding of synergies and trade-offs across Goals and their targets at the national level, taking into account each country's unique level of development, capacities and structural characteristics.[10] The framework allows for the identification of optimal strategies of implementation

[10] See ESCAP (2016) for more details on the analytical framework.

of the Goals, including specific recommendations for the prioritization and sequencing necessary to achieve each Goal.

The framework is based on the premise that it is possible to conceptualize the Goals as a complex system composed of countries and degrees of attainment of a number of indicators representative of the 17 Goals and their associated targets. By allowing a systematic evaluation of the benefits of alternative policies and pathways for progress towards the achievement of the Goals, it is expected that the proposed framework will contribute to deliberations on the design of plans and strategies for the adaptation of the 2030 Agenda to national contexts.

Indicators used in the analysis

The network methodology in which the analytical framework is based requires a database of indicators with data available to the largest possible number of countries. At the time when research for the analytical framework was under way, the Inter-agency and Expert Group on Sustainable Development Goal Indicators had not yet finished the list of indicators that are to be used to track progress for each of the 17 Goals and 169 targets. Therefore, the indicators used for the analysis, which are listed in the annex, were selected as follows:

(a) All the indicators used to track progress towards achieving the Millennium Development Goals that overlap in meaning and scope with the Sustainable Development Goals and related targets were included, provided that they have reasonable coverage across countries;
(b) Among the indicators tentatively agreed to be included in the final list of Sustainable Development Goal indicators at the second meeting of the Inter-Agency and Expert Group, those for which data are readily available from official sources and do not overlap with indicators selected from the first criterion were added, again provided that they have reasonable coverage across countries;
(c) Other internationally comparable indicators that closely reflect the Goals and their targets and have reasonable coverage across countries were added to cover Goals for which relevant indicators could not be found using the first two criteria.

The data set is based on the most recent data available for each country. The finalized data set includes data spanning from 2006 to 2014, with the majority of data points for 2010 or later years. The median number of indicators per Goal is four, with a minimum of two for Goals 1 and 10 and a maximum of 10 for Goals 3 and 9. The correspondence between indicators and the Sustainable Development Goals is included in the annex.

After selecting the 82 indicators with reasonable country coverage, 120 out of 209 countries had missing data points. This presented a problem because the methods used in the analysis perform poorly with incomplete data sets. Instead of limiting the analysis to just the 89 countries for which a full data set was available, a multiple imputation technique was used to impute missing data. The technique was applied to countries with missing data for no more than 20 out of the 82 indicators.[11] After imputation, the number of countries in the data set increased to 174, including nine Asia-Pacific LDCs: Afghanistan, Bangladesh, Bhutan, Cambodia, the Lao People's Democratic Republic, Myanmar, Nepal, Solomon Islands and Vanuatu.

Attainment of the Goals by the Asia-Pacific least developed countries

A snapshot of the current status of Goal attainment by the Asia-Pacific LDCs is obtained by averaging the values of indicators corresponding to each Goal, for specific countries and for groups of countries. For that purpose, the values of each indicator were normalized to be between 0 and 100, where 100 is the ninetieth percentile and 0 is the tenth percentile of attainment across countries.[12]

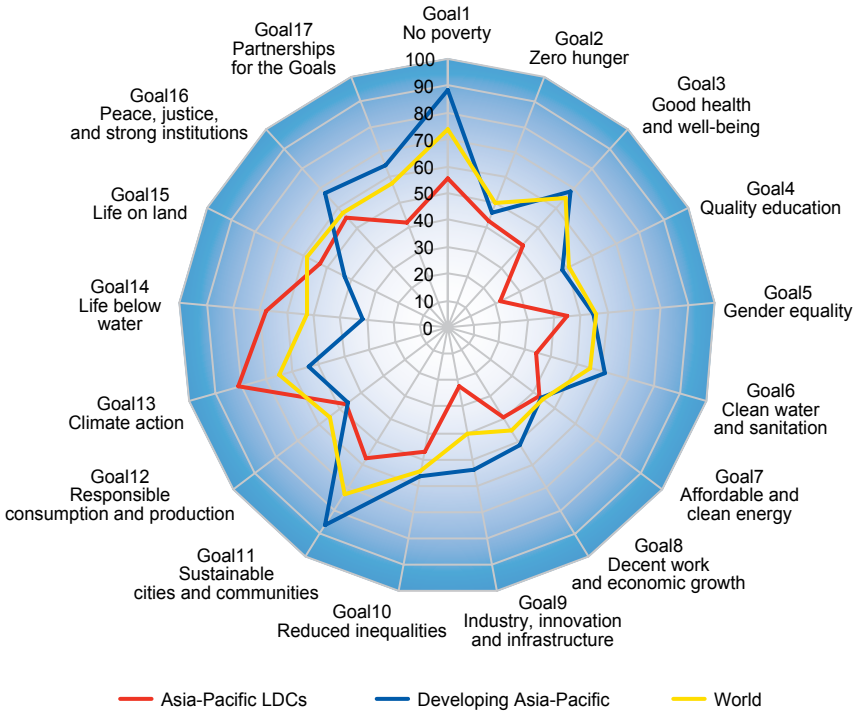
When taking a broad look at how Asia-Pacific LDCs are faring, it becomes evident that these countries are indeed lagging behind in many areas, some more than others (figure 3.1). Compared with the average of the developing Asia-Pacific countries, the region's LDCs lag behind in areas related to socioeconomic development. The weaknesses of Asia-Pacific LDCs are particularly evident for poverty (Goal 1), health (Goal 3), education (Goal 4), water and sanitation (Goal 6), industry, innovation and infrastructure (Goal 9) and means of implementation (Goal 17), for which their attainment levels are significantly lower than both the developing Asia-Pacific countries and the rest of the world.

[11] Multiple imputation utilizes information on the relationships among all 82 indicators, as well as with other indicators, such as nominal GDP, population, population growth and land area, to predict missing values. See Rubin (2004).

[12] See annex III of ESCAP (2016) for details.

Figure 3.1

Attainment across Sustainable Development Goals for Asia-Pacific least developed countries



Source: ESCAP.

Notes: The attainment for each Goal is normalized to be between 0 and 100, with 100 being the highest and 0 being the lowest level of attainment given the set of countries included in the analysis. Developing Asia-Pacific countries in the sample are: Brunei Darussalam; China; Georgia; India; Indonesia; Malaysia; Pakistan; Philippines; Republic of Korea; Russian Federation; Singapore; Sri Lanka; Thailand; Turkey; and Viet Nam.

However, it can also be seen that these countries are performing relatively well in areas related to environmental sustainability (Goals 12-15). Yet, considering that, in general, indicators related to the environment are inversely related to economic growth and wealth, a key issue for the Asia-Pacific LDCs is to devise a pathway for progress that does not relinquish their advantage in environmental aspects, while simultaneously making progress towards achieving other Goals that are dependent on economic development.

Overall, the analysis suggests that taking group-specific circumstances into serious consideration is very important when setting plans of action for Goal implementation. This, however, may not be enough, as the data also reveal significant variations within the group of LDCs at the national level, suggesting that country-specific circumstances are also of importance.

The Sustainable Development Goals as an integrated, complex system

An effective way to facilitate the understanding of the interdependencies, synergies and trade-offs across the goals and targets of the 2030 Agenda at the national level is to view the set of Goals and countries as a complex system. In essence, a complex system is a nexus of diverse, multiple interconnected elements in which the whole is not equal to the sum of the parts (Simon, 1991). Academic researchers from various disciplines have been increasingly using complex systems for the analysis of economic phenomena and sustainable development.[13] ESCAP (2015) has conducted research on this topic with regard to measuring productive capacities in the Asia-Pacific region, where such capacities are measured using information on interlinkages among products and countries.[14]

[13] See, for example: Arthur (1991; 1999 and 2014); Arthur, Durlauf and Lane (1997); Hidalgo and Hausmann (2009); Hidalgo and others (2007); ICSU and ISSC (2015); and Meadowcroft (2007).

[14] See also Le Blanc (2015).

In the present chapter, the Sustainable Development Goal system — or SDG system — is conceptualized as a network consisting of (a) the indicators relevant to each of the Goals, (b) the countries and (c) the linkages among and between countries and indicators. The following two subsections describe the SDG system.

The network of indicators

The advantage of viewing the indicators related to the Goals as a network is that it makes it clear how they are interlinked, revealing their synergies and trade-offs. The information provided by an indicator network can allow policymakers to devise plans of action that take advantage of the spillovers that are present among the indicators, while identifying potential trade-offs that need to be taken into account. The indicator network also allows for the identification of bottlenecks that act as barriers to the attainment of the broader 2030 Agenda.

The network of indicators is constructed so that each indicator is connected to another based on their "proximity". The proximity of two indicators from the perspective of a specific country is higher when the attainment of the country in the two indicators is similar. A high degree of proximity between two indicators can be interpreted as meaning that attainment of the two indicators requires similar capacities.[15]

Networks of indicators are country-specific but they can also be constructed for group of countries. The network of indicators represented in figure 3.2 is based on the average values of the indicators for the Asia-Pacific countries with special needs. This group of countries comprises nine LDCs (Afghanistan, Bangladesh, Bhutan, Cambodia, the Lao People's Democratic Republic, Myanmar, Nepal, Solomon Islands and Vanuatu), eight landlocked developing countries (Armenia, Azerbaijan, Kazakhstan, Kyrgyzstan, Mongolia, Tajikistan, Turkmenistan and Uzbekistan) and five small island developing States (Fiji, Maldives, Papua New Guinea, Samoa and Tonga).[16]

The network of indicators suggests a clear core-periphery structure, with indicators related to health, hunger, infrastructure and poverty occupying a prominent space within the densely connected core. Life expectancy, infant mortality, food supply and agriculture value added are at the very centre of this core, as they represent essential needs that form the basis for higher attainment in other indicators. Poverty headcount, poverty-gap ratio, malnutrition, maternal and child mortality and years of schooling are also central for similar reasons. Infrastructure indicators regarding telephone, cellular and Internet subscriptions are relatively central within this core. This is consistent with the new institutional economic viewpoint that facilitating information exchange is important in transforming the political economy of a society, as it results in lower transaction costs, alleviation of information asymmetries and thus a more sustainable socioeconomic development (Coase, 1998).

In figure 3.2, the size of each node is based on how "important" the corresponding indicator is within the network.[17] The importance of an indicator is based on two distinct characteristics: (a) how well connected each indicator is with the other indicators, in the sense of being close to many other indicators; and (b) how important the indicator is in serving as a "gatekeeper" between different portions of the network. Gatekeeper indicators represent indicators that a country must pass in order to cross between otherwise unconnected groups of indicators. From figure 3.2, it can be seen that most of the indicators within the broad core of the network are important in the sense that they are close to many other indicators. However, other indicators such as natural resource depletion or carbon dioxide (CO_2) emissions per $1 GDP are also relatively important because of their role as gatekeepers.

The red nodes in figure 3.2 represent indicators for which average attainment by the Asia-Pacific countries with special needs is below the fiftieth percentile for the 174 countries considered in the analysis. The figure shows that these countries have low levels of attainment in a number of important indicators, such as income (GDP per capita, GDP per capita at purchasing power parity), telephone and Internet access, gender and human inequality and years of schooling. Their relative centrality within the network suggests that an improved performance in these indicators could have positive spillover effects on the attainment of other relevant indicators.

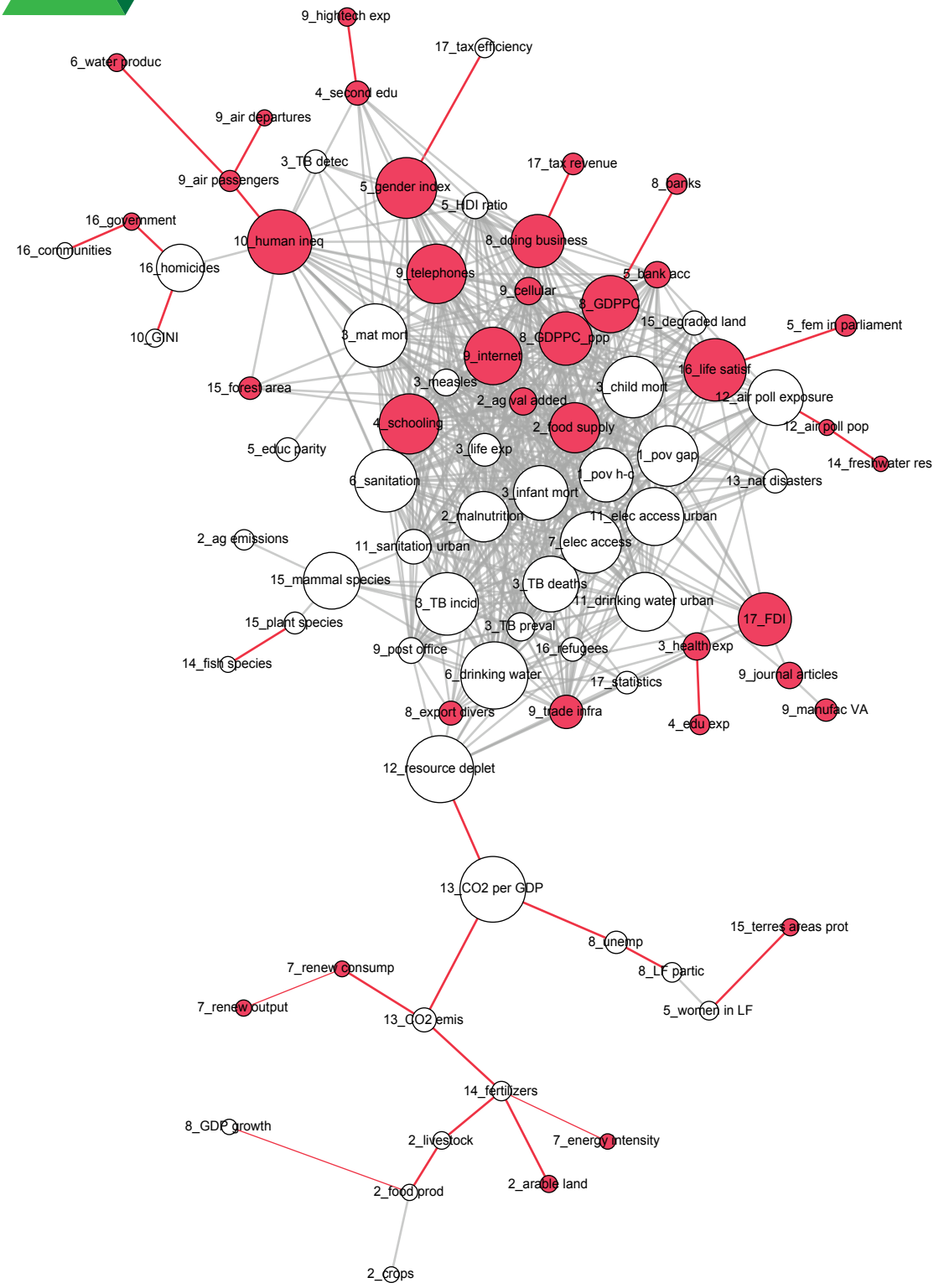
[15] The measure of proximity used in this report is based on conditional probabilities, similar to the one proposed by Hidalgo and others (2007) to make inferences about capacities to export different products. See annex III of ESCAP (2016) for details.

[16] The figure is constructed so that all indicators are first connected to its closest indicator, forming a skeleton that represents the backbone of the network. Afterwards, links representing probabilities of 0.75 or more are added to this skeleton to differentiate between indicators that are in close proximity to other indicators and indicators that are relatively distant from others. Notice that network diagrams, such as this one, are country-specific.

[17] Using network theoretic terminology, "importance" is calculated here as the average of an indicator's weighted degree centrality and betweenness centrality. See annex III of ESCAP (2016) for more details.

Figure 3.2

The network of indicators



Source: ESCAP.

Notes: (a) The red links represent proximity values that are less than 0.75; (b) the size of nodes is based on the average of an indicator's weighted degree centrality and betweenness centrality (see annex III of ESCAP, 2016); and (c) red nodes are those for which the group average of attainment is below the fiftieth percentile of attainment across all the countries included in the analysis.

The red links in figure 3.2 represent indicators that are relatively less connected to each other. They show that many of the indicators related to the environment, such as CO_2 emissions per capita, consumption and production of renewable energy and fertilizer consumption, are in the lower portion of the network and are not directly connected to the core. This could be interpreted as representing a trade-off between environmental and socioeconomic indicators. However, the two main gatekeeper indicators that connect this lower portion of the network and the upper core are resource depletion and CO_2 emissions per $1 GDP. The figure suggests that addressing these two particular environmental indicators can facilitate the attainment of other environmental indicators in the lower portion of the network.

Overall, the network representation of indicators shows a dense core of highly interrelated socioeconomic indicators and a periphery that includes a number of environmental indicators. The representation shows that these countries have relatively low levels of attainment in a number of indicators that are both in the core and highly connected to other indicators. This suggests that implementing policies to improve the attainment of such indicators could have positive spillover effects, facilitating the attainment of other core indicators.

However, the representation also shows that a number of indicators related to environmental sustainability are in the periphery of the network. Because these indicators are not closely connected to the core of the network, progress in this area is less likely to benefit from positive spillover effects. This indicates the existence of trade-offs between the achievement of the socioeconomic and environmental pillars of sustainable development.

The network of countries

Countries can also be linked together in a network, in which the links are representative of how similar two countries are in attainment across the 82 indicators included in the analysis. Figure 3.3 shows a graphical representation of this network, which is constructed similarly to the network of indicators, with the size of the nodes based on each country's per capita income. The network shows distinct clusters of countries, with low-income countries at the bottom and developed economies at the top.

The Asia-Pacific LDCs tend to be located close to each other in the network, suggesting that they have similar levels of attainment in the indicators. Eight of the nine LDCs for which data are available (Bangladesh, Bhutan, Cambodia, the Lao People's Democratic Republic, Myanmar, Nepal, Solomon Islands and Vanuatu) are, in fact, located next to each other, in the bottom-centre of the network. The other LDC, Afghanistan, is located in the bottom-left of the network, close to LDCs from other regions, such as Sudan and Haiti.

The countries' network also identifies obstacles to the development of lower income countries. The red links in figure 3.3 represent comparatively weaker links, in the sense that the two countries that share such links are less similar to each other in their attainment of the indicators. The figure shows that the majority of the weaker links reside in the bottom portion of the network. Examples of weak links in the figure include the link between Bangladesh and Indonesia — which separates the region's LDCs from developing countries, such as China, the Philippines, Sri Lanka, Thailand, and Viet Nam, — and the links of Afghanistan and Papua New Guinea with other LDCs. Such weak links are indicative of structural differences among the countries connected by them. Addressing them would require targeted agendas, such as the Istanbul Programme of Action, and special measures of support by the international community aimed at reducing their structural impediments to sustainable development.

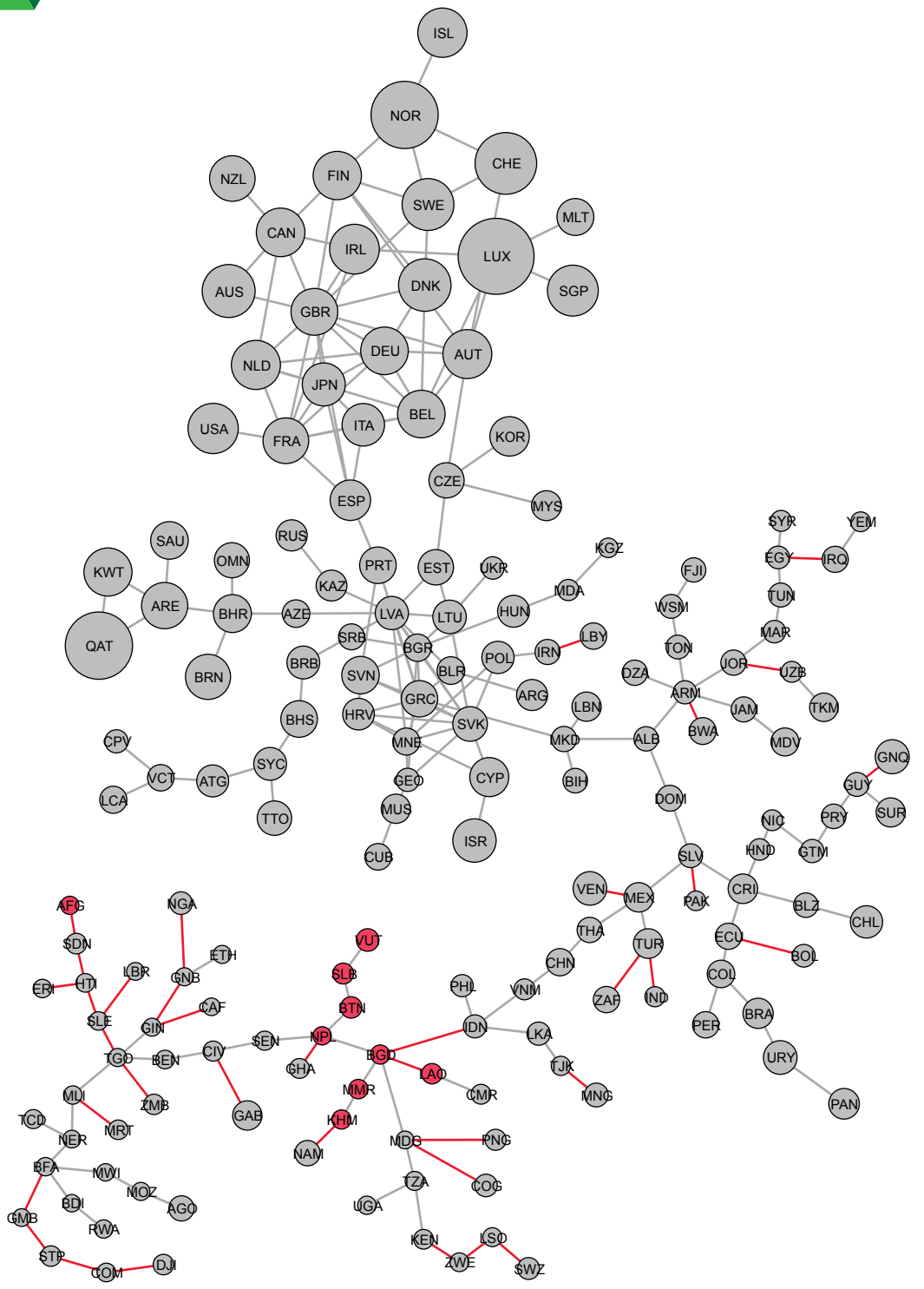
Sustainable Development Goal capacities

The attainment of the Sustainable Development Goals requires countries to possess specific capacities related to the effective implementation of socioeconomic and environmental policies, which are very difficult — if not impossible — to directly observe and measure. They could include a Government's capacities to design and implement policies, as well as capacities in the population at large to contribute to the attainment of the Goals. In the present report — in a similar fashion to ESCAP (2015) in the case of productive capacities — the SDG capacities of a country are measured using information provided by the SDG system.

Using the 82 indicators included in the analysis, the simplest way to construct a measure of SDG capacities for a particular country is to calculate the average level of attainment across all the indicators. However, this measure is unsatisfactory because it does not take into consideration that different indicators are characterized by different degrees of complexity. For instance, it is reasonable to assume that it would take considerably more resources for a country to increase its number of articles published in scientific and technical journals than to increase the number of users of mobile phones.

Figure 3.3

The network of countries, based on proximities



Source: ESCAP.

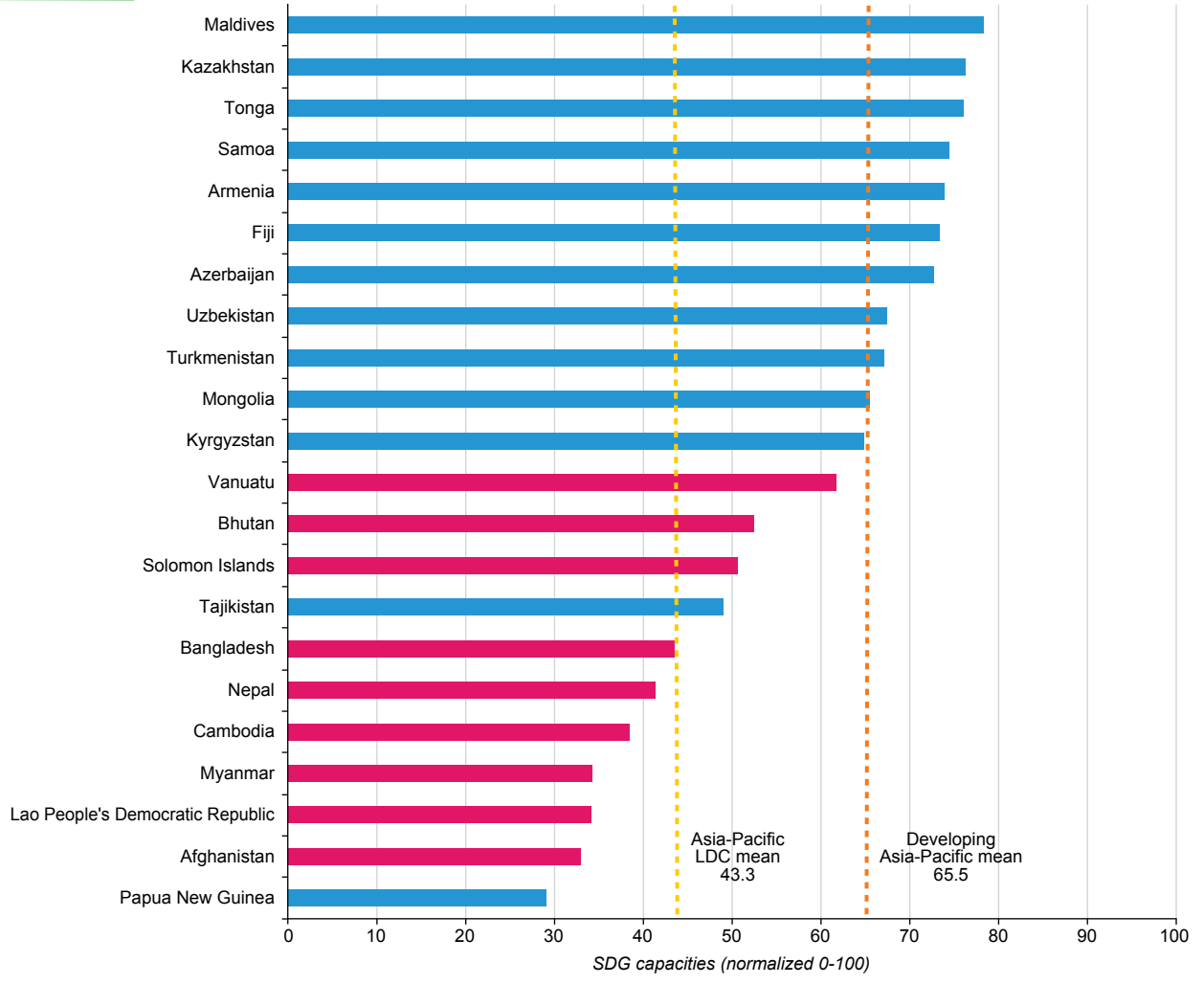
Notes: (a) The red links represent proximity values that are less than 0.75; (b) the size of a country is based on nominal GDP per capita (2014); and (c) red circles are LDCs. Country codes and names are as follows: AFG - Afghanistan, BGD - Bangladesh, BTN - Bhutan, KHM - Cambodia, LAO - Lao People's Democratic Republic, MMR - Myanmar, NPL - Nepal, SLB - Solomon Islands, VUT - Vanuatu.

It is assumed that the degree of complexity of an indicator is inversely related to the number of countries that have high attainment in it. That is, if many countries are doing well in a particular indicator, its complexity is assumed to be lower. Thus, a more accurate measure of the SDG capacities of a country is a weighted average of the levels of attainment in the indicators, using each indicator's complexity as weights. As shown in annex III of ESCAP (2016), the measure of SDG capacities can be further refined by using the method of reflections. The more refined measures of SDG capacities are higher if a country is doing well in indicators that other countries are struggling with, since this suggests that the country possesses unique capacities that others do not have.

Figure 3.4 shows the SDG capacities of the selected Asia-Pacific countries. It indicates that the nine LDCs are among the bottom of the region in SDG capacities. While the lower levels of SDG capacities of LDCs reinforce the message of the countries' network that these countries need particular attention and support from the international community for the implementation of the 2030 Agenda.

Figure 3.5 shows that SDG capacities are, to varying degrees, correlated with both income levels and the human development index, although the relationships are non-linear in both cases. The left panel of the figure shows that when comparing income levels measured by GNI per capita with the SDG capacities,

Figure 3.4 **Sustainable Development Goal capacities, selected Asia-Pacific countries**

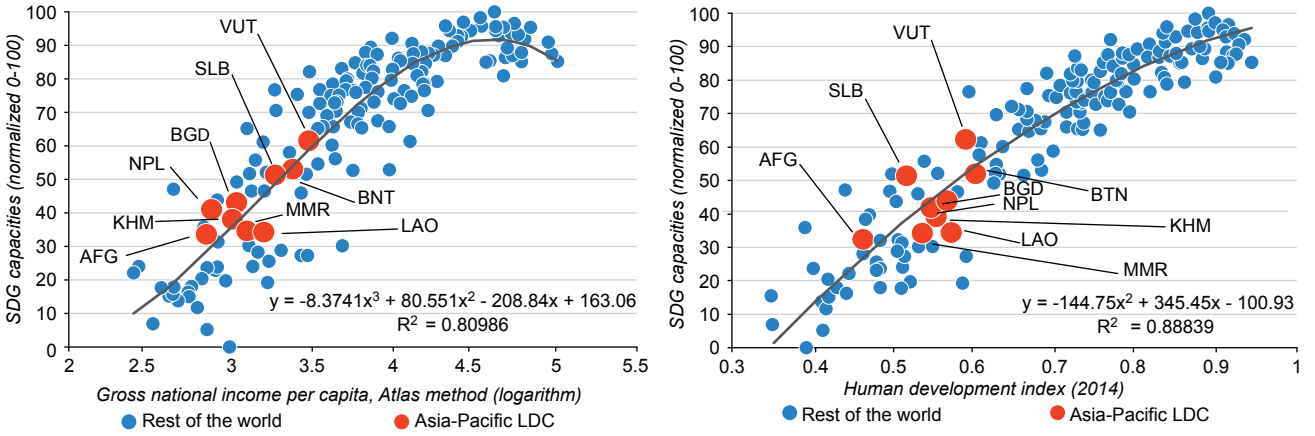


Source: ESCAP.

Notes: (a) The SDG capacities for each country are normalized so as to be between 0 and 100, with 100 being the highest and 0 being the lowest level of the SDG capacities given the total set of countries included in the analysis; (b) developing Asia-Pacific countries in the analysis are the regional ESCAP member States, with the exception of Australia, Japan and New Zealand; and (c) red bars represent LDCs.

Figure 3.5

Sustainable Development Goal capacities versus gross national income per capita and the human development index



Source: ESCAP.

Notes: The SDG capacities for each country are normalized so as to be between 0 and 100, with 100 being the highest and 0 being the lowest level of capacity observed within the total set of countries included in the analysis. Country codes and names are as follows: AFG - Afghanistan, BGD - Bangladesh, BTN - Bhutan, KHM - Cambodia, LAO - Lao People's Democratic Republic, MMR - Myanmar, NPL - Nepal, SLB - Solomon Islands, VUT - Vanuatu.

there is a tipping point at income levels of around $40,000 (about 4.6 on the logarithmic scale), in which a further increase in income levels actually results in a decline in the SDG capacity. The reason is that although the overall attainment levels across the indicators are high for high-income countries, these countries have lower attainment levels in indicators related to the environment, food production and sustainable energy. For example, Luxembourg and Qatar, the two highest income countries in the sample, have very poor attainment in such indicators CO_2 emissions per capita, renewable energy consumption and output and air pollution from particulate matter, all of which are considerably lower than even the LDC average.

Because per capita income refers to only one of the three pillars of sustainable development, a better way to gauge the appropriateness of the proposed measure of SDG capacities is by comparing it with the human development index, which includes life expectancy and education in addition to per capita income. Not surprisingly, the figure shows that SDG capacities correlate more with the human development index than with income per capita. What is more interesting is that the relationship between the human development index and SDG capacities is also characterized by diminishing returns: for higher index levels, a unit increase has less of an impact on SDG capacities compared with a unit increase at lower index levels. This result could also be caused by the absence of environmental indicators in the human development index, along with a poorer performance in such indicators for countries with higher levels of human development.

In sum, the figure is reassuring in that the proposed measure of SDG capacities is highly correlated to existing measures of economic and socioeconomic progress. However, considering that the 2030 Agenda is multidimensional and applies to countries of all levels of income, SDG capacities is more relevant because it is based on a very broad set of indicators covering not only the three pillars of sustainable development but also governance and means of implementation.

Optimal pathways for implementing the Goals

As the proposed measure of SDG capacities is directly related to the levels of attainment in all the indicators associated with the Goals and targets, it provides a synthetic way for countries to assess their progress towards the achievement of the 2030 Agenda.[18] However, SDG capacities can also serve as a planning tool to guide countries on the prioritization and sequencing of the attainment of indicators. For that purpose, the value of the SDG capacities measure could be calculated for a small increase in the value of a number of indicators, one at a time, selecting the indicator that yields the largest increase in SDG capacities. Iterating this calculation many times can produce an "optimal" pathway for progress towards the achievement of the Goals.[19]

[18] Although at the time of writing the official set of indicators has not been finalized, the methodology presented in this chapter can be easily applied to an increasingly more complete sets of indicators, eventually including the final list of official indicators.

[19] Annex III of ESCAP (2016) provides technical details of the optimization problem.

This calculation is country-specific, as it depends on the specific levels of attainment of a country in each of the indicators and on the position of the country in the SDG system. The latter provides critical information about the interlinkages, synergies and trade-offs between indicators and the degree of complexity of each indicator. This information facilitates the selection of those indicators that will contribute the most to increasing SDG capacities. For instance, it seems intuitive to assume that it would be more costly for a country to make progress in an indicator characterized by a high degree of complexity compared with making progress in a less complex indicator, which could represent a "low hanging fruit".

The level of attainment of a country in a particular indicator also provides useful information for the selection of indicators to prioritize because of the existence of diminishing returns. For example, when seeking to decrease CO_2 emissions, small changes in behaviours, such as increased use of public transport, cycling or walking, can bring about large reductions. However, as emissions decline, more significant investments are required for further decreases, for example, in significant behavioural and urban development and social planning solutions, such as transit-oriented development. Similarly, the provision of various services, ranging from the Internet to education, is subject to agglomeration economies, as the same investment in infrastructure can reach significantly more people in densely populated areas, such as large cities, than in sparsely populated rural areas. This suggests that it would be effective for countries to prioritize indicators in which their level of attainment is low.

In sum, a country-specific, optimal pathway for the implementation of the Goals can be derived by choosing to improve the attainment of those indicators that contribute the most to increasing a country's SDG capacities. By constraining the set of indicators eligible for improvement based on the criteria described above, the derived optimal pathway is specific to the current situation, capacities and levels of development of each country. The following section illustrates results from the derivation of optimal pathways for the implementation of the 2030 Agenda in an LDC (Bangladesh). The final section of the chapter compares the benefits of the derived optimal pathways with alternative scenarios.

A pathway for Goal implementation: the case of Bangladesh

Table 3.1 lays out the suggested priority areas for Bangladesh based on the objective of maximizing SDG capacities. The results are aggregated into three five-year phases: 2016-2020; 2021-2025; and 2026-2030. The priority levels for each indicator are calculated as the percentage of steps in each phase for which the indicator is chosen as a priority, relative to the total number of steps in each phase.[20]

The first characteristic of the optimal pathway for the implementation of the 2030 Agenda in the country shown in table 3.1 is a large concentration in a relatively small number of indicators. Although the top indicators for country and phase shown in the tables represent 10% or less of the total number of indicators in the data, the small number of indicators concentrate around 80% of the steps taken by country in each phase. This suggests a very strategic approach for the achievement of the Goals, with a heavy policy focus on selected areas of great importance to the country.

A second characteristic of the optimal pathways is sequencing, in the sense that the priorities vary from phase to phase. A third characteristic is that the results are dependent on country's level of capacities and position in the SDG system, tending to emphasize "low hanging fruits" or indicators in which the country underperforms compared with other countries with similar levels of SDG capacities.

In the case of Bangladesh, the optimal pathway emphasizes improvements in education as the top priority area in the first phase (2016-2020), with 23.6% of the improvements directed towards increasing years of schooling and the percentage of the population with secondary education. This is consistent with the finding of ESCAP (2016) that Bangladesh is underperforming in Sustainable Development Goal 4 (quality education). Additional priority areas in the first phase include two inequality indicators representing 18.6% of the improvements, and two infrastructure indicators, representing 18.4% of the improvements. In the second phase (2021-2025), the top priority indicator for Bangladesh is ease of doing business (17.2%), followed by infant mortality (12.1%) and water productivity (10%). The two education indicators that were so highly prioritized in the first phase receive a

[20] Each step represents a small increase in the value of an indicator. The number of steps in each phase is country-specific and is derived from historical trends in the human development index, which are used to determine the amount of effort a country is able to exert annually for capacity improvement. See annex III of ESCAP (2016) for details.

Table 3.1

Top priority indicators for the implementation of the 2030 Agenda in Bangladesh

First phase (2016-2020)		
Sustainable Development Goal	**Indicator**	**Priority level (%)**
4. Quality education	Education index (years of schooling)	12.1
4. Quality education	Secondary education	11.5
10. Reduced inequalities	Human inequality (health, education and income)	10.6
9. Industry, innovation and infrastructure	Internet users	10.1
9. Industry, innovation and infrastructure	Trade and transport-related infrastructure	8.3
5. Gender equality	Gender inequality (health, empowerment and labour)	8.0
8. Decent work and economic growth	GDP per capita	7.8
2. Zero hunger	Food supply	7.5
8. Decent work and economic growth	Commercial banking	6.3
Other		17.8
Second phase (2021-2025)		
Sustainable Development Goal	**Indicator**	**Priority level (%)**
8. Decent work and economic growth	Ease of doing business index (regulations)	17.2
3. Good health and well-being	Infant mortality	12.1
6. Clean water and sanitation	Water productivity	10.0
2. Zero hunger	Food supply	5.5
16. Peace, justice and strong institutions	Overall life satisfaction index	5.5
9. Industry, innovation and infrastructure	Trade and transport-related infrastructure	5.2
8. Decent work and economic growth	GDP per capita	4.8
4. Quality education	Education index (years of schooling)	4.5
4. Quality education	Secondary education	4.5
10. Reduced inequalities	Human inequality (health, education and income)	4.1
Other		26.6
Third phase (2026-2030)		
Sustainable Development Goal	**Indicator**	**Priority level (%)**
16. Peace, justice and strong institutions	Overall life satisfaction index	12.1
6. Clean water and sanitation	Improved sanitation	9.7
3. Good health and well-being	Health index (life expectancy)	8.3
9. Industry, innovation and infrastructure	Internet users	7.2
9. Industry, innovation and infrastructure	Air transportation	6.9
9. Industry, innovation and infrastructure	Scientific and technical journal articles	6.6
2. Zero hunger	Agriculture value added	5.2
3. Good health and well-being	Infant mortality	4.8
4. Quality education	Secondary education	4.8
10. Reduced inequalities	Human inequality (health, education and income)	4.8
Other		29.7

Source: ESCAP.

Notes: Priority levels for the indicators are calculated as the percentage of steps in each phase for which the indicator is chosen as a priority relative to the total number of steps in each phase. See annex III of ESCAP (2016) for details.

lower, but still important, priority in the second phase (9%), further highlighting the urgency for Bangladesh to invest heavily in education early on.

In the third phase (2026-2030), overall life satisfaction (12.1%) becomes the top indicator on which Bangladesh should focus, followed by improved sanitation (9.7%) and life expectancy (8.3%). Three infrastructure and innovations indicators — the Internet, air transportation and scientific and technical journal articles – represent 20.7% of the improvements in the third phase. The top priority of overall life satisfaction in this phase is consistent with the strong investments in education recommended for phase 1 and in ease of doing business in phase 2, as it is well documented that life satisfaction is positively related to human capital and governance.[21]

[21] See, for example, Abdallah, Thompson and Marks (2008) and Helliwell and Huang (2008).

Figure 3.6 illustrates the relative importance of each Goal during subsequent phases of development for Bangladesh. For Bangladesh, Goal 4 (quality education), Goal 8 (decent work and economic growth) and Goal 9 (industry, innovation and infrastructure) are important early on.

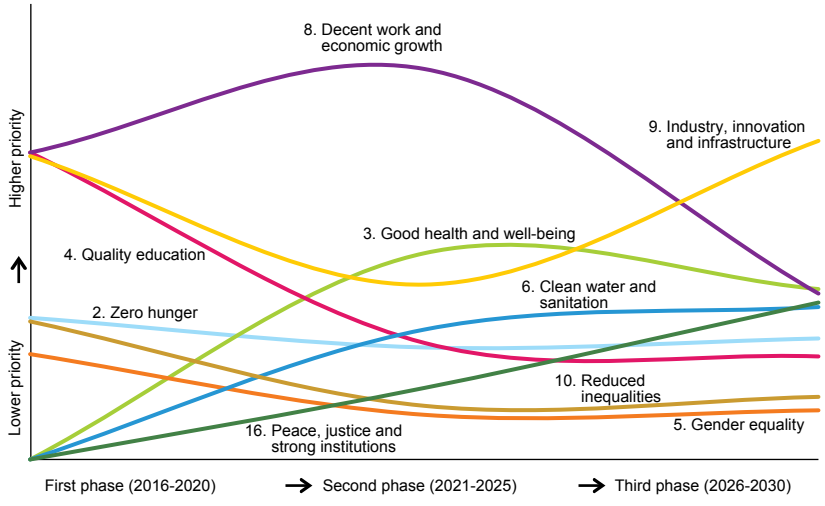
Identifying bottlenecks in developing Sustainable Development Goal capacities

The optimal pathways, illustrated in the previous section for the case of Bangladesh, are built so that they focus on improving the indicators in the most effective manner. This implies, as previously discussed, a preference for indicators in which the country is lagging behind compared with other countries with similar SDG capacities, for instance to take advantage of agglomeration economies, as well as for indicators that are relatively less complex. As such, it is easier to improve on them. The discussion in the previous section provided some examples of these choices. The present section complements the previous discussion by showing graphically the progress of Bangladesh in the implementation of the 2030 Agenda in their respective indicators networks.

In the indicator network for Bangladesh shown in figure 3.7, the red nodes represent indicators in which Bangladesh is performing better than other countries with similar levels of SDG capacities (its "peers") at present.[22] The green nodes represent indicators in which Bangladesh is progressing from below the mean for the peer group at present to above the mean in 2030. These indicators are prioritized in the optimal pathway, indicating that improving their attainment is effective for the country. Finally, the white nodes represent indicators that are still below the average for the country's peers by 2030. These are indicators for which Bangladesh may have faced difficulties in making much progress, either because of their complexity or the absence of synergies with other nearby indicators in the network. Some of the white nodes are large, representing indicators that are "important" within the network because of the number and strength of their connections with other indicators or their positions as "gatekeepers" between separate clusters of indicators. These are referred to as "bottlenecks".

The optimal pathway of Bangladesh for the implementation of the 2030 Agenda includes improvements in indicators that are near other indicators in which Bangladesh is already performing better than its peers. These indicators, which are mostly clustered in the bottom portion of the network, include the gender index, GDP per capita, average years of schooling and human inequality. The top portion of the network shows a cluster of indicators in which Bangladesh will not be able to outperform its peers by 2030. These include high-complexity indicators, such as tax revenue, the percentage of high-tech exports and export diversification, and some indicators that are broadly related to health and infrastructure. The depiction of

Figure 3.6 Priority Goals for the implementation of the 2030 Agenda in Bangladesh

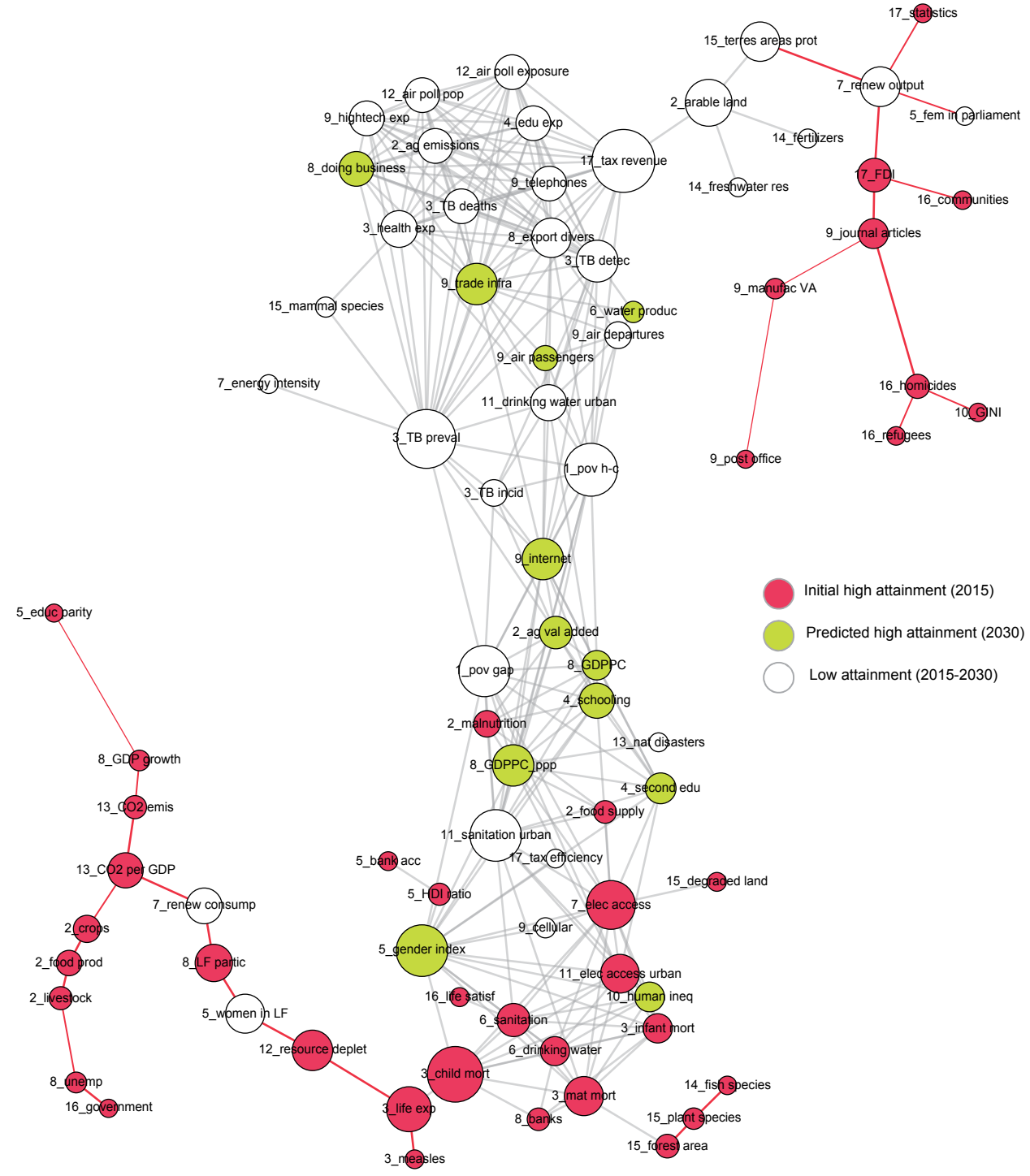


Source: ESCAP.

[22] A country's peers are defined as a group of 20 countries comprising those that occupy the 10 positions in the ranking of SDG capacities immediately above and immediately below the country. See annex III of ESCAP (2016).

Figure 3.7

Progress across indicators in Bangladesh



Source: ESCAP.

Notes: (a) The red links represent proximity values that are less than 0.75; (b) the size of indicators is based on the average of weighted degree and betweenness centrality; (c) indicators are coloured based on the level of attainment of Bangladesh compared with its peers, identified as those countries with similar levels of SDG capacity. Red indicators are those in which Bangladesh exhibits higher attainment levels compared with its peers presently, while green indicators are those in which Bangladesh is predicted to exhibit higher attainment levels relative to its peers in 2030 if it follows the optimal pathway. White nodes represent those in which Bangladesh may not exhibit higher attainment levels relative to its peers by 2030. See annex III of ESCAP (2016) for further details.

the optimal pathway of Bangladesh also shows a number of bottlenecks, represented by large white nodes. These include poverty headcount, poverty gap ratio, the prevalence of tuberculosis and urban sanitation.

Scenario analysis

The present section compares predicted time series of SDG capacities for the optimal paths and two alternative scenarios.[23] In addition to the optimal scenario, two additional scenarios are analysed: (a) the pathway a country follows when it makes improvements only on selected Goals associated with the main areas of focus of the Istanbul Programme of Action; and (b) a random pathway, which does not give precedence to any particular indicator. The Goals associated with the main areas of focus of the Programme are identified by ESCAP (2016).[24]

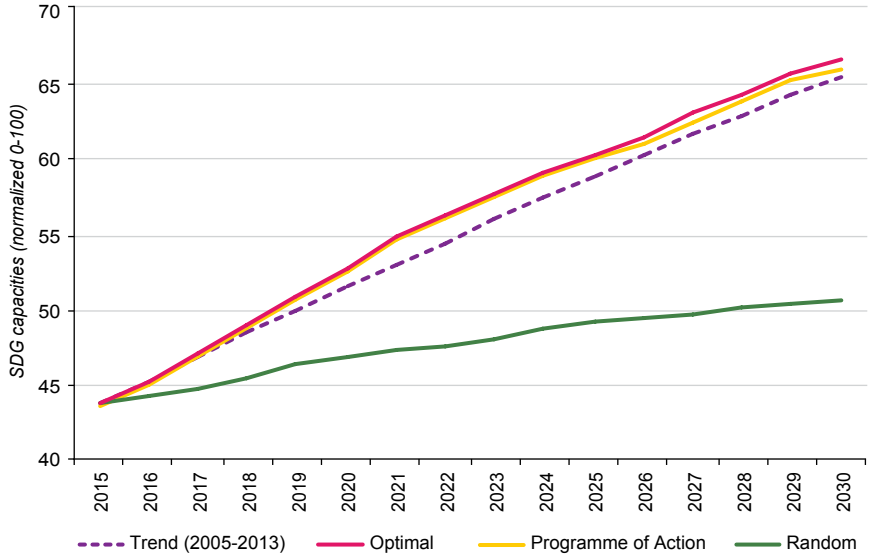
The random pathway for progress assumes that a country does not optimize its SDG capacity, but instead randomly selects indicators for improvement. While the third scenario is rather extreme and unrealistic; it serves as a baseline for comparison purposes. It could also represent a situation in which there is no policy coordination among various government agencies and levels of Government.

Figure 3.8 compares the three scenarios in Bangladesh. The optimal pathway results in higher levels of SDG capacities compared with the pathway obtained from addressing only the main areas of focus of the Programme, while the random pathway leads to low or negligible increases in SDG capacities. For comparison purposes, the figure shows the historical trends in the human development index for Bangladesh expressed in terms of SDG capacities.[25]

The optimal pathway and the pathway defined by the Istanbul Programme of Action follow almost identical courses up to 2025, after which the optimal pathway results in a slightly more rapid growth in SDG capacities. This suggests that the Programme is both comprehensive and a good match for the priorities of Bangladesh with regard to implementing

Figure 3.8

Comparison of scenarios for Bangladesh



Source: ESCAP.

Notes: See annex III of ESCAP (2016) for details about how this figure was constructed.

[23] To estimate the predicted time series of SDG capacities from the cross-sectional data used in the analysis, a number of steps, described in annex III of ESCAP (2016), were taken. In essence, the calculation involved estimating how many steps countries are likely to undertake each year to increase SDG capacities based on the historical trends of increases in the human development index. This allowed each country to be assigned SDG capacity values each year.

[24] The Sustainable Development Goals associated with the main areas of focus of the Istanbul Programme of Action are those for which the Programme of Action covers 50% or more of their targets. According to ESCAP (2016), this criterion implies the following areas of focus: Goal 1 (no poverty), Goal 2 (zero hunger), Goal 4 (quality education), Goal 6 (clean water and sanitation), Goal 7 (affordable and clean energy), Goal 8 (decent work and economic growth), Goal 9 (industry, innovation and infrastructure), Goal 10 (reduced inequalities), Goal 13 (climate action), Goal 16 (peace, justice and strong institutions) and Goal 17 (partnerships for the Goals).

[25] The regression equation shown in figure 3.5 is used to convert predicted values from historical trends of the human development index into SDG capacities.

the 2030 Agenda. The predicted trajectories in SDG capacities associated with both the optimal pathway and the pathway defined by the Programme exceed the historical trend of the human development index.

In sum, the results show that the main areas of focus of the Istanbul Programme of Action provide very good guidance for the implementation of the 2030 Agenda in Bangladesh. Nevertheless, planning and prioritization are essential for progress towards sustainable development as the expected outcome from randomized policies are strictly inferior, justifying the need for policy coordination across different state agencies and different levels of governments.

4. CONCLUSION

With 251 actions included in the Istanbul Programme of Action and 169 targets in the 2030 Agenda for Sustainable Development, it is clear that a strategic approach based on prioritization and sequencing for their achievement of both of them is necessary. Fortunately, as shown in this report, there are significant complementarities between the Programme and the 2030 Agenda. Therefore, LDCs could make substantial progress towards the achievement of the Sustainable Development Goals by pursuing actions of the Programme. Understanding the complementarities between the Programme and the 2030 Agenda will allow policymakers to design effective and coherent policies that address the structural vulnerabilities of LDCs and help them make progress towards the achievement of the Goals.

While the Istanbul Programme of Action should play a fundamental role in supporting the implementation of the 2030 Agenda in LDCs, this programme is still rather comprehensive, as it covers all 17 Goals. Because of the limited financial and technical resources of LDCs, it is critical for them to prioritize and sequence the implementation of both the Programme and the 2030 Agenda.

The unique analytical framework proposed in this report allows for the identification of optimal strategies of implementation of the Goals, including specific recommendations for the prioritization and sequencing necessary to achieve each Goal in each individual country. The report illustrates the functioning of the framework in Bangladesh. The results suggest that the initial priority should be on education, reduction of inequalities and infrastructure. The first two elements could be related to the importance of human capital for a country to increase the diversification and sophistication of its production and the potential for a more even distribution of income to boost aggregate demand.

The exercise also allows for identification of indicators that can be considered as bottlenecks for progress and isolated areas of the country networks that represent trade-offs. An important regularity found was the potential difficulties in progressing in the environmental targets of the 2030 Agenda. This result seems to be due to the isolation of the environmental indicators in the countries' networks from the core socioeconomic indicators. This finding suggests that the integration of the three pillars envisioned in the 2030 Agenda is not going to be easy to achieve.

The lack of progress in indicators belonging to the environmental pillar and the identification of bottlenecks that impede progress towards attaining the Goals require careful consideration by national policymakers and development partners. In particular, the identified bottlenecks represent areas that require the most attention and for which additional financial resources and support from development partners could be most effectively allocated.

A comparison of different scenarios strongly illustrates the importance of a thorough understanding of linkages, synergies and trade-offs across the Goals, as well as the relative benefits of different implementation plans for each country. The main areas of focus of the Istanbul Programme of Action provide good guidance for the implementation of the 2030 Agenda in LDCs.

To be sure, the results presented in this report are only preliminary, as the official list of indicators for the 2030 Agenda was not yet available at the time of writing. In the meantime, the authors believe that the proposed analytical framework, even if preliminary, can provide useful inputs for discussions on how to adapt the 2030 Agenda at the national level. While analytical results should never be the only basis to support policy decisions, they can provide new perspectives and information, which could motivate further explorations and analyses providing a more solid basis for the adoption of policies.

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Annex

List of indicators used for analysis of section 3

Goal	Indicator	Source
1	Population below $1.25 per day (purchasing power parity, percentage)	World Bank
	Poverty gap ratio at $1.25 a day (purchasing power parity, percentage)	World Bank
2	Population undernourished (percentage)	Food and Agriculture Organization of the United Nations (FAO)
	Arable land (hectares per person)	FAO
	Crop production index (2004-2006 = 100)	FAO
	Food production index (2004-2006 = 100)	FAO
	Livestock production index (2004-2006 = 100)	FAO
	Food supply (kcal/capita/day)	FAO
	Agriculture value added per worker (constant 2005 US$)	FAO/World Bank
3	Health index	United Nations Development Programme (UNDP)
	Tuberculosis detection rate under DOTS (percentage)	World Health Organization (WHO)
	Tuberculosis incidence rate	WHO
	Tuberculosis prevalence rate	WHO
	Tuberculosis death rate	WHO
	Children immunized against measles (percentage)	United Nations Children's Fund (UNICEF)
	Health expenditure, total (% of GDP)	WHO
	Maternal mortality ratio	UNICEF
	Children under five mortality rate	UNICEF
	Infant mortality rate	UNICEF
4	Education index	United Nations Education, Scientific and Cultural Organization (UNESCO)
	Government expenditure on education, total (% of GDP)	UNESCO
	Population with at least some secondary education (percentage)	UNDP
5	Seats held by women in national parliament (percentage)	Inter-Parliamentary Union
	Gender Parity Index in primary level enrolment	United Nations Statistics Division (UNSD)
	Labour force participation rate, female (percentage)	International Labour Organization (ILO)
	Gender inequality index	UNDP
	Female to male ratio of Human Development Index	UNDP
	Account at a financial institution, female (percentage age 15+)	World Bank
6	Proportion of the population using improved drinking water sources	UNICEF/WHO
	Proportion of the population using improved sanitation facilities	UNICEF/WHO
	Water productivity	FAO/World Bank
7	Renewable electricity output	International Energy Agency (IEA)
	Renewable energy consumption	IEA
	Energy intensity level of primary energy (MJ/$2011 purchasing power parity, GDP)	IEA
	Access to electricity (percentage of population)	World Bank

Goal	Indicator	Source
8	Labour force participation rate	ILO
	Unemployment rate	ILO
	Ease of doing business index	World Bank
	GDP per capita, logarithm (current United States dollar)	World Bank
	GDP per capita, purchasing power parity, logarithm (constant 2011 international dollar)	World Bank
	Number of commercial bank branches per 100,000 adults	International Monetary Fund (IMF)
	GDP growth (annual %)	World Bank
	Export diversification index	United Nations Conference on Trade and Development (UNCTAD)
9	Fixed-telephone subscriptions per 100 inhabitants	UNSD
	Mobile-cellular subscriptions per 100 inhabitants	UNSD
	Internet users per 100 inhabitants	UNSD
	Air transport, registered carrier departures worldwide per capita	International Civil Aviation Organization (ICAO)
	Air transport, passengers carried per capita	ICAO
	Logistics performance index: quality of trade and transport-related infrastructure	World Bank
	Average area covered by a permanent post office (km^2)	Universal Postal Union
	High-technology exports (percentage of manufactured exports)	United Nations Commodity Trade Statistics Database (UN Comtrade)
	Scientific and technical journal articles	National Science Foundation of the United States
	Manufacturing, value added (percentage of GDP)	World Bank/ Organisation for Economic Co-operation and Development
10	GINI index	World Bank/ United Nations University - World Institute for Development Economics Research (UNU-WIDER)
	Coefficient of human inequality	UNDP
11	Proportion of the population using improved drinking water sources, urban	WHO/UNICEF
	Proportion of the population using improved sanitation facilities, urban	WHO/UNICEF
	Access to electricity, urban (percentage of urban population)	World Bank
12	PM2.5 air pollution, mean annual exposure (micrograms per cubic meter)	Brauer and others (2015)
	PM2.5 air pollution, population exposed to levels exceeding WHO guideline value (percentage)	Brauer and others (2015)
	Natural resource depletion	UNDP
13	Carbon dioxide (CO_2) emissions (metric tons of CO_2 per capita)	UNSD
	Carbon dioxide (CO_2) emissions (kg CO_2 per $1 GDP, purchasing power parity)	UNSD
	Population affected by natural disasters (per million)	Emergency Events Database, Centre for Research on the Epidemiology of Disasters
	Emissions of methane and nitrous oxide produced from agricultural activities	FAO

Goal	Indicator	Source
14	Renewable internal freshwater resources per capita	FAO
	Fertilizer consumption (kilograms per hectare of arable land)	FAO
	Fish species, threatened	Fish Base Database
15	Terrestrial and marine areas protected to total territorial area (percentage)	United Nations Environment Programme (UNEP)
	Mammal species, threatened	UNEP
	Plant species (higher), threatened	UNEP
	Percent change in forest area (1990-2011)	FAO
	Percentage of the population living on severely or very severely degraded land	FAO
16	Refugee population by country or territory of origin per capita	United Nations High Commission for Refugees (UNHCR)
	Homicide rate	United Nations Office on Drugs and Crime (UNODC)
	Overall life satisfaction index	UNDP
	Satisfaction with local labour market	UNDP
	Trust in other people	
	Satisfaction with community	
	Satisfaction with efforts to deal with the poor	UNDP
	Satisfaction with actions to preserve the environment	
	Trust in national government	
17	Foreign direct investment, net inflows (balance of payment, logarithm, current United States dollar)	IMF
	Tax revenue (percentage of GDP)	IMF
	Time to prepare and pay taxes (hours)	World Bank
	Statistical capability	ESCAP calculations